A Comparative Analysis of Outsourcing Strategies in Medium-Sized Japanese and American Firms

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Abstract
This study examines the similarities and differences of outsourcing strategies of medium-sized manufacturing firms in the U.S. and Japan. Analyses of the questionnaire data, obtained from 234 Japanese firms and 94 American firms showed that: (1) Japanese firms tended to use more process-oriented R&D outsourcing, while American firms tended to depend on result-oriented R&D outsourcing; (2) Japanese firms tended to utilize manufacturing outsourcing by depending on subsidiaries and affiliated companies, while American firms tended to conduct manufacturing in-house; (3) American firms employed more OEMs strategies than Japanese firms, suggesting heavier marketing outsourcing in American firms.

1. Introduction

The rapid paces of technological advancement, shortened life-cycles of new products and limited resources force firms to explore various forms of outsourcing strategies not only in the area of R&D but also in manufacturing and marketing. Whether or not firms can efficiently utilize such outsourcing is becoming a strategically important issue.

Although numerous researchers have studied outsourcing strategies, surprisingly few attempts have been made to investigate "outsourcing strategies as a configuration." Researchers in technology management have investigated mainly technological outsourcing (Roberts and Berry, 1985, Pisano 1990, Noria & Galsiapolito, 1992). Marketing researchers have focused only on marketing outsourcing (Heide and John 1988, Heide 1994). Other investigators have limited their scope only to manufacturing outsourcing (Heide and Weber 1984, Buchowicz 1991, Gambino 1990). This study is an first attempt to focus on outsourcing strategies in the three functions--i.e., R&D, manufacturing, and marketing. By focusing on outsourcing in these three function, this study aims at offering a framework to analyze outsourcing as a "configuration."

This paper is also unique in that it examines medium-sized manufacturing firms located in Japan and the U.S. Although many comparative studies exit regarding large companies (Dore 1973, Cole 1979, Kagono et al. 1985) and small companies (Ayukawa 1989, Kurokawa 1991, McMillan 1993), medium-sized firms are rarely studied in an international context. By focusing on the outsourcing strategies of these medium-sized manufacturing firms, this paper offers precious data on keiretsu relations in Japanese and American industries, because these firms are likely to be located at the center of "industrial webs" of supplier-customer transactions. It is our hope that the paper will shed light on the universal trends of keiretsu relations rather than on the differences between the two countries.

There are four major sections in the paper. First, based on the relevant literature and discussions, the paper forms hypotheses regarding the difference and similarity of outsourcing strategies in Japan and the U.S. Second, after examining the research methodology, the paper tests the hypotheses by using the data from medium-sized manufacturing firms in Japan and the U.S. The paper then investigates the reasons for the supported and unsupported hypotheses. Finally, it concludes with observations for further research.

2. Outsourcing Strategies in Japan and the U.S.

It is widely known that Japanese firms, in general, are inferior in product innovation to U.S. firms, although they are superior in process (manufacturing) innovation (Makino and Shimura 1984, Mita Press 1986). Such an inferiority in product innovation is even more pronounced in small and medium-sized Japanese firms, due to the "dual" structure of Japanese industry. The "dual" structure of Japanese industry divides firms according to size, and poses some clear disadvantages for smaller Japanese firms. Namely, smaller firms tend to be subcontractors or OEM (Original Equipment Manufacturer) suppliers for larger firms--as seen in the "keiretsu"-- and thus likely to have lower status and less negotiating power compared with larger firms.

Because of their lower status, it is difficult for small and medium-sized Japanese firms to attract advanced engineers. Japanese university graduates tend to stress company size
and stability in choosing their work place and are therefore less apt to join a smaller company whose future is uncertain.

Furthermore, small and medium-sized Japanese firms have difficulty in acquiring government-sponsored and defense-related funds and subsidies, making it difficult for them to conduct basic in-house R&D. On the other hand, small American firms often receive government funds to undertake R&D projects--see Kurokawa (1991).

The difficulties in recruiting advanced engineers and in receiving government and defense-related funds are likely to move small and medium-sized Japanese firms not toward basic in-house R&D but toward R&D outsourcing and immediate commercialization of technology. Thus, it is more natural to assume that small and medium-sized Japanese firms tend to complement their shallow in-house R&D with external technology. In other words, Japanese firms are more active in R&D outsourcing than are American firms.

For example, purchasing patents is one effective method for acquiring external technology. Akashi (1995) shows that the balance of royalty payments to the U.S. and European firms from Japanese firms in the last forty years was characterized by an enormous deficit. Although Akashi's discussion is centering around large Japanese firms, small and medium-sized Japanese firms are also likely to purchase patents from foreign firms and larger Japanese firms, as well. Study by O.R.D. (1990) indicates that 24.2 percent of small and medium-technology-based firms in Osaka area are introducing new technologies by licensing from other organizations. On the other hand, in the U.S., the strong sense of independence of R&D personnel--or not invented here (NIH) syndrome--would lead to the reluctance for licensing.

The qualitative difference in incentives is also responsible for our claim. It can generally be assumed that R&D outsourcing shortens development periods, reduces development costs, and enhances the values of technology (Kurokawa 1991). However, non-economic aspects of R&D outsourcing should also be included, such as the purchase of patents as a means to avoid patent infringements, collaborative R&D projects with large firms as a precursor to future sales, collaborative R&D projects with government labs for political reasons.

In the U.S., R&D outsourcing seems to be conducted mainly for (short-term) economic reasons, while in Japan, non-economic (or long-term economic) issues play important roles in R&D outsourcing (Kurokawa 1992). In particular, small and medium-sized Japanese firms tend to conduct collaborative R&D projects with larger firms as a means to increase future sales and to better understand user's know-how.

Contrarily, subtle psychological pressures for in-house R&D are all too common and practiced all too frequently in American firms (Roman, 1986). In particular, when a firm has a high internal R&D capability, such pressures can be very acute. Arthur D. Little Co. (1981) reports that American firms with a long history of success with internal R&D often waste resources by investing heavily in strategically less significant technologies, particularly in base technologies which have become commonplace and easily accessible to all competitors.

Therefore, we have the following hypothesis:

Hypothesis 1. Japanese firms are more likely to depend on R&D outsourcing than U.S. firms are.

Japanese firms are more likely to acquire not only external R&D capabilities, but also external manufacturing capabilities--i.e., asking other firms to manufacture or assemble (manufacturing outsourcing). There are a variety of reasons for this. For example, a number of efficient (usually smaller) firms specializing in manufacturing or assembly are available in Japan (Kurokawa 1992). In addition, medium-sized Japanese firms, especially those in high-tech areas, tend to avoid the risks of high capital investment associated with manufacturing, because of their scarce financial resources.

Discussions with R&D managers in medium-sized Japanese firms also suggest that they seem to have difficulty managing manufacturing and assembling sections with "different cultures." Needless to say, the cooperative nature of Japanese society also seems to facilitate the use of manufacturing outsourcing.

On the other hand, in American firms, the strong sense of autonomy, coupled with the belief that manufacturing is fundamental to a firm, seems to discourage the use of manufacturing outsourcing. Furthermore, it is also natural to assume that American firms, especially those in high-tech areas, tend to avoid manufacturing outsourcing, because of the fear of technological leaks (Kurokawa 1995a).

Therefore, we have the following hypothesis:

Hypothesis 2. Japanese firms are more likely to depend on manufacturing outsourcing than U.S. firms are.

Although we hypothesized that Japanese firms are more active in both R&D and manufacturing outsourcing than American firms are, we take the position that both Japanese and American firms depend partly on marketing outsourcing, and that there would be no difference of the degree of marketing outsourcing between the two countries.

As discussed before, the cooperative nature of Japanese society seems to facilitate not only manufacturing and R&D outsourcing, but also marketing outsourcing. Actually, many external marketing and sales organizations such as the "sogo shosha" (general trading company) are available in Japan, and these organizations are active as consultants for small and medium-sized Japanese firms which lack marketing skills, especially for exporting.
However, American small and medium-sized firms face similar marketing difficulties, because of geographically larger markets, making marketing outsourcing viable. Furthermore, compared with R&D or manufacturing outsourcing, the fear of technological leaks in marketing outsourcing generally seems to be minimal for American firms.

Accordingly, we can hypothesize that both Japanese and American medium-sized firms would depend on marketing outsourcing, and that there would be no significant difference between the two. However, needless to say, these medium-sized manufacturing firms must have direct access to market needs for their new product developments. Thus, it should also be noted that these manufacturing companies tend to avoid too much dependence on marketing outsourcing.

Therefore, we have the following hypothesis:

Hypothesis 3. Both Japanese and American firms depend partly on marketing outsourcing. There would be no difference between the two.

While the above three hypotheses are related to the "degree" of outsourcing in medium-sized firms in the two countries, the following two hypotheses regard the "method" of outsourcing. We postulate that structural or country-specific differences are more observable in the method of outsourcing than in the degree of outsourcing, because the method selection decisions usually involve non-economic judgments due to the characteristics of industrial organizations, regulation, and business practices.

In our previous study on small high-tech firms in the U.S. and Japan, we reported that Japanese firms tended to view R&D outsourcing strategies as process-oriented activities rather than focusing on the end result itself, because of the numerous long-term relationships that characterized Japanese business—i.e., the life-long employment and subcontractor system—while, American firms were likely to rely on explicit contracts for the transfer of external technologies—i.e., result-oriented strategy (Kurokawa 1991). We found that Japanese firms were more likely to use process-oriented forms of R&D outsourcing, such as collaborative R&D projects or joint ventures, while American firms tended to depend on arm's length transactions, such as R&D contract-outs or purchases of key components.

For example, R&D contracts—hiring another firm to conduct a particular kind of research—is one method for R&D. This method, like manufacturing or marketing contracts, is characterized by division of labor based on functional specialization—i.e., a firm with a solid core technology contracts their peripheral research out to specialized firms, as Mowery (1983) suggests. Thus, we hypothesize that American firms, with their solid core technologies, are apt to contract R&D out, while Japanese firms, with their broader technological bases, are less likely to contract R&D out to other firms.

Although many studies indicated that a trustworthy relationship between technology acquirers and technology suppliers was an essential factor for successful technology transfer (Allen 1977, Tushman 1979), result-oriented external acquisitions, such as R&D contracts, may damage carefully nurtured long-term relationships in Japan, while in the U.S., trustworthy relationships are likely to be defined by adherence to written contracts (Kurokawa 1991). Numerous studies, especially those dealing with Japanese-style management, also emphasize such a point (Nishiguchi 1994, Urabe 1984, Kagono 1984, Iwata 1977).

Accordingly, we hypothesize:

Hypothesis 4: Japanese firms are more likely to use process-oriented forms of R&D outsourcing, while American firms tend to employ result-oriented forms.

Closely related to the above hypothesis, we posit that Japanese firms are more likely to use subsidiaries and affiliated firms for manufacturing and marketing outsourcing, while American firms tend to depend on other firms for such outsourcing. The reason for this stems from Japanese firms' emphasis on long-term relations with suppliers and distributors as suggested above.

For example, "just-in-time system" or "design-in" would become possible by such long-term relations. To have subsidiaries or affiliated firms by equity investments or mutual share-holdings is an effective method for maintaining such long-term relations. "Offspring" or "Bunsha" (to divide a company into smaller ones) is also another strategies which Japanese companies have long been depending on (Sakai and Sekiya, 1985). Ito (1994) describes "genealogical transformations" of large Japanese companies by which these companies have successfully maintained entrepreneurial spirits among their employees.

On the other hand, short-term and arm's length transactions seem to be major business practices in the U.S. In other words, "bidding" has been a major decision criterion for selecting possible suppliers or distributors. Accordingly, we have the following hypothesis:

Hypothesis 5: Japanese firms are more likely to depend on subsidiaries and affiliated firms for both manufacturing and marketing outsourcing than American firms are.

3. Method

In order to investigate the above hypotheses, companies were selected from various sources, based on the following criteria: (1) the number of employees must be approximately between two hundred and a thousand; (2) firms must belong to either electronics-related (electronics...
and electrical appliances) or machinery-related (machinery and metals) fields; (3) firms must not be heavily involved in business group or financial group (keiretsu).

In selecting Japanese firms, we depended on Nikkei's series of directories of local medium-sized companies (Chihou no Chuken Kigyou 100 Sha) and Toyo Keizai's directory of privately-held companies (Mijoujou Kigyou Shikihou). In selecting American firms, we used Standard & Poor's Register of Corporations, Directors and Executives (1990).

In the spring of 1993, questionnaires were mailed to the presidents of 624 medium-sized manufacturing firms selected in Japan--293 electronics-related firms and 331 machinery-related firms. Responses were received from 234 companies, representing an effective response rate of 37.5% - 43.3% in electronics related firms and 32.3% in machinery-related firms. The average number of employees was 433, and the average age (years since start-up) of the firms was 40 years. Their average sales in the previous 5 years was $139.4 million ($1 = 100 yen).

In the spring of 1994, questionnaires were mailed to the presidents of 1064 medium-sized manufacturing firms selected in the U.S.--424 electronics-related firms and 641 machinery-related firms. Responses were received from 94 companies, representing an effective response rate of 8.8% - 7.3% in electronics-related firms and 9.5% in machinery-related firms. The average number of employees was 433, and the average age (years since start-up) of the firms was 58 years. Their average sales in the previous 5 years was $55.9 million. Table 1 compares the responding firms from both countries.

Table 1. Responding Firms Compared

<table>
<thead>
<tr>
<th></th>
<th>JAPAN</th>
<th>U.S.</th>
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<tbody>
<tr>
<td></td>
<td>(n=234)</td>
<td>(n=94)</td>
</tr>
<tr>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Number of Employees</td>
<td>433.4</td>
<td>433.5</td>
</tr>
<tr>
<td>Age of Firms***</td>
<td>40.9</td>
<td>56.5</td>
</tr>
<tr>
<td>Keiretsu-related Firms/Total Firms (%)**</td>
<td>27.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Electronics-related Firms/Total Firms (%)***</td>
<td>54.3</td>
<td>32.0</td>
</tr>
<tr>
<td>Average Sales in Previous 5 Year ($million)***</td>
<td>139.4</td>
<td>55.9</td>
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</tbody>
</table>

Asterisks in the variables indicate the level of significance of the t-tests (two-tailed). $1 = 100 yen

Measurement

R&D outsourcing was measured by asking respondents how many times they had practiced the following R&D outsourcing strategies since the startup of their company: licensing-ins, R&D contracting-outs, collaborative R&D projects, recruiting key engineers, purchasing key parts (or components), joint ventures for R&D purposes, minority investments for R&D purposes, and M&As for R&D purposes.

The index of manufacturing outsourcing was obtained by asking respondents what percentage of their manufacturing capacity last year was contracted out to other companies and affiliated companies during the previous year, versus the percentage made by their own manufacturing department (total 100%), thus ranging from 0 to 100 percent.

Marketing outsourcing as indexed by asking respondents what percentage of their product was sold by other firms (such as retailers) and affiliated companies during the previous year, as opposed to the percentage sold by their own sales force (total 100%). Thus, market outsourcing ranges from 0 to 100 percent.

In addition to the above index, the present percentage of OEMs (Original Equipment Manufacturing supply) in total sales was asked, because OEMs constitute one of effective marketing outsourcing in the sense that it can compensate weaker marketing capabilities in small firms with wider brand recognition of large firms.

4. Results

4.1. R&D Outsourcing

Table 2 compares R&D outsourcing in the two countries. The table shows that the total number of history of R&D outsourcing in the U.S. firms (17.25) is larger than that of the Japanese companies (13.33). This result lends no support to Hypothesis 1--Japanese firms are more likely to depend on R&D outsourcing than U.S. firms are. However, such a difference is not statistically significant. Taking into consideration the fact that the American firms were older than the Japanese firms, the frequency of yearly R&D outsourcing can be said to be approximately the same in the two countries.

Statistically significant differences were observed in "M&As" and "Purchasing key parts"--i.e., the American firms were more likely to acquire external technologies by these methods. From the table, we can also observe that the Japanese companies tend to emphasize process-oriented outsourcing such as collaborative R&D, although these were not statistically significant. Accordingly, these results moderately support Hypothesis 4--Japanese firms are more
likely to use process-oriented forms of outsourcing, while American firms tend to employ result-oriented forms.

Table 2: R&D Outsourcing Compared

<table>
<thead>
<tr>
<th></th>
<th>JAPAN (n=234)</th>
<th>U.S. (n=94)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>Licensing-ins</td>
<td>1.70</td>
<td>2.33</td>
</tr>
<tr>
<td>R&amp;D contracting outs</td>
<td>3.71</td>
<td>3.26</td>
</tr>
<tr>
<td>Collaborative R&amp;D projects</td>
<td>5.29</td>
<td>2.96</td>
</tr>
<tr>
<td>Minority investments for R&amp;D</td>
<td>0.14</td>
<td>0.10</td>
</tr>
<tr>
<td>Joint ventures for R&amp;D</td>
<td>0.29</td>
<td>0.90</td>
</tr>
<tr>
<td>M&amp;As from R&amp;D*</td>
<td>0.10</td>
<td>0.76</td>
</tr>
<tr>
<td>Purchasing key parts*</td>
<td>0.87</td>
<td>6.09</td>
</tr>
<tr>
<td>Recruiting key engineers</td>
<td>1.23</td>
<td>1.35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13.33</strong></td>
<td><strong>17.25</strong></td>
</tr>
</tbody>
</table>

Asterisks in the variables indicate the level of significance of the t-tests (one-tailed): * p<0.05

In spite of the above differences, it can be said that R&D outsourcing with equity investments (e.g., joint ventures, minority investments, or M&As) are rare both in the U.S. and Japan, compared with those without equity investments (e.g., licensing, collaborative R&D projects or R&D contracts). This may imply the possibility of the universal trend in R&D outsourcing. One reason for this is that, compared with large firms, medium-sized firms have scarce financial and managerial resources and find it difficult to conduct equity-forms of acquisitions. Another reason would be that equity-forms are not suited for the purpose of acquiring external technologies, as Teece et al. (1987) and Kurokawa (1991) suggests.

4.2 Manufacturing Outsourcing

As stated above, the index of manufacturing outsourcing was obtained by asking what percentage of their manufacturing capacity was contracted out to other companies and affiliated companies during the previous year, versus the percentage made by their own manufacturing department. Table 3 compares the results.

Table 3: Manufacturing Outsourcing Compared

<table>
<thead>
<tr>
<th></th>
<th>JAPAN Mean</th>
<th>U.S. Mean</th>
</tr>
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<tbody>
<tr>
<td>Manufacturing outsourcing***</td>
<td>76.2%</td>
<td>23.1%</td>
</tr>
<tr>
<td>--by affiliated companies or subsidiaries***</td>
<td>64.1%</td>
<td>4.6%</td>
</tr>
<tr>
<td>(In-house Manufacturing***</td>
<td>22.8%</td>
<td>69.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Asterisks in the variables indicate the level of significance of the t-tests (one-tailed): ***p<0.001

From the table it is observed that the Japanese are more likely to depend on manufacturing outsourcing (76.3%) than U.S. firms are (23.1%). These results support Hypothesis 2--Japanese firms are more likely to depend on manufacturing outsourcing than American firms. Furthermore, the Japanese firms tend to contract their manufacturing to affiliated companies or subsidiaries than the American firms do. These also lend support to Hypothesis 5--Japanese firms are more likely to depend on affiliated firms or subsidiaries for manufacturing outsourcing.

4.3. Marketing Outsourcing

As in manufacturing outsourcing, we asked respondents about the degree of their marketing outsourcing (contract-outs) to affiliated companies and other firms (such as retailers), versus in-house marketing. In addition, OEMs ratio--i.e., OEMs sales divided by total sales--was also asked. Table 4 indicates the results.

From the table, it is understood that there was no significant difference of marketing outsourcing between the Japanese and American firms, thus supporting Hypothesis 3--both Japanese and American firms depend partly on marketing outsourcing and there would be no difference between the two. Table 4 also shows that there was no significant difference of marketing outsourcing by affiliated companies or subsidiaries, lending no support to Hypothesis 5.

Table 4 shows that OEMs ratio of the American firms (58.5%) is much higher than that of the Japanese firms (11.8%)--the difference was statistically significant at the
0.1 percent level. This result, however, conflicts with Hypothesis 4, because we hypothesized that there would be no difference of marketing outsourcing between the Japanese and American firms.

The possible reasons for this would be: (1) the Japanese medium-sized firms have more marketing capability than we expected, making OEMs unnecessary; (2) the American medium-sized firms are more likely to be tied up with larger (but not necessarily parent) companies, which have larger marketing capabilities.

Table 4. Marketing Outsourcing Compared

<table>
<thead>
<tr>
<th></th>
<th>JAPAN</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Outsourcing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-by affiliated</td>
<td>33.3%</td>
<td>28.2%</td>
</tr>
<tr>
<td>or subsidiaries</td>
<td>9.9%</td>
<td>11.7%</td>
</tr>
<tr>
<td>-by other firms, such as retailers</td>
<td>23.4%</td>
<td>16.5%</td>
</tr>
<tr>
<td>(In-house Marketing)</td>
<td>76.7%</td>
<td>71.8%</td>
</tr>
<tr>
<td>OEM sales/total sales</td>
<td>11.8%</td>
<td>58.5%</td>
</tr>
</tbody>
</table>

Asterisks in the variables indicate the level of significance of the t-tests: ***p<0.001

4.4. Offspring Strategies

Although not shown in tables, we asked each respondent the degree to which a firm has divided itself into separate (usually smaller) companies—resulting in affiliated companies and subsidiaries. The result shows that 61 % of the Japanese firms employed offspring strategies, while 26 % of the American firms did so—statistically significant at the 0.1 percent level.

This result also support Hypothesis 5—Japanese firms are more likely to depend on subsidiaries and affiliated firms than American firms are. Our interviews with the Japanese presidents reveals the following reasons why the Japanese medium-sized companies tend to employ offspring strategies, in the order of importance: (1) to avoid the "bureaucratization" of their organizations, (2) to relieve cultural conflicts among different functions and divisions, and (3) to pay fewer taxes.

5. Discussion

Questionnaire data were obtained from 234 medium-sized manufacturing firms in Japan and from 94 American firms. Although we hypothesized that the Japanese firms were more likely to depend on R&D outsourcing than the American firms, our analyses showed that the U.S. firms conducted more R&D outsourcing than we expected. This result may imply that the strategies of medium-sized American firms have changed recently. According to numerous business journals, American automobile companies are attempting to introduce a Japanese-style subcontractor system. Furthermore, collaborative R&D projects seem to be becoming increasingly popular (Dimancheau and Botkin 1986).

Our hypothesis that Japanese firms are more likely to depend on manufacturing outsourcing was clearly supported by our data. The reason why per capita sales in the Japanese firms outperformed significantly those in the American firms—as seen in Table 1—can partly be attributed to such manufacturing outsourcing, because the numbers of manufacturing employees in the Japanese affiliated firms and subsidiaries were not included in calculating those figures. Actually, there is a large difference in the numbers of manufacturing employees in the two countries. Namely, the ratio of manufacturing employees in the total number of employees in the U.S. firms was 89.0%, while that in the Japanese firms was 70.0%—statistically significant at the 0.1 percent level.

It was found that American medium-sized firms were more likely to use OEM supply strategies than Japanese firms were. According to the Small and Medium Enterprise Agency (1992), 55 % of Japanese small and medium-sized firms are affiliated with parent companies (keiretsu relations) in some way or other. Thus, the Japanese data represent rather independent types of firms, because only 27.5 % of the Japanese firms were affiliated with parent companies, as seen in Table 1.

On the other hand, in the process of selecting the American firms from Standard & Poor's Register of Corporations, Directors and Executives (1990), we found that approximately 40 % of the firms in electronics and machinery-related industries, whose employees range in number from 200 to 1,000, were subsidiaries of larger companies. Thus, our data in the U.S. also represent independent-type firms, because only 14 % of the American firms were subsidiaries.

Accordingly, our data on the OEMs may have depicted the real situation of the American Industrial structure. Namely, medium-sized manufacturing firms in electronics and machinery-related industries in the U.S. were more likely to be affiliated with larger firms via OEMs. However, as Nagashima (1992) claims, it should be noted that such "affiliations with larger firms" would not be the kinds of "parent-child" or "dominator-subordinate" relationships, well-observed in the Japanese keiretsu relations.

On the other hand, we have relied too heavily on the belief in the dual structure of Japanese industry. The basis for the dual structure of Japanese industry is long-term
transaction relationships which prevailed in the Japanese economy--one of the aspects of this dual structure is the keiretsu. However, the Japanese keiretsu system has been changing gradually, because of the deregulation of the financial system and the change in Japanese work ethics. Okumura (1991) claims that informal ties between Japanese firms as seen in keiretsu--e.g., sending managers to subcontractors--are becoming less effective as a means of control because these methods are less expensive but also less effective compared with equity investment.

Furthermore, the present Japanese economic situation favors small and medium-sized firms. The days of mass production have ushered in a new era. Small-quantity batch production combined with a move to a segmented market enable small Japanese firms--with their flexible organizations, focused product lines, and short response time--to take full advantage of not only the intricacies of the market but also the splintering of technology. The recent explosive developments in micro-electronics and computer technology also offer small and medium-sized Japanese firms large markets.

These changes in the industrial environments in both economies are sure to affect individual firms' behavior. In particular, such changes seem to stimulate the convergence of outsourcing strategies in the Japanese and American firms. Although large structural differences existed regarding general characteristics of firms (e.g., age of firms, industries, or keiretsu ratio), there were common phenomena. For example, both the Japanese and American firms depended on marketing outsourcing to the same extent, as we hypothesized. Our data also showed that equity-forms of R&D outsourcing--e.g., joint ventures, minority investments, mergers--were infrequently employed by both the U.S. and Japanese firms, suggesting the inefficiency of equity-forms of external acquisitions.

In the process of our interviews, we often observed that joint ventures with larger firms ended in failure in both countries. The main reason for such failures seemed to stem from conflicts between partners caused by large firms' hidden motivations for mergers. Thus, it may be said that equity-forms of external technology acquisitions are not necessarily required, simply for transferring technologies. Non-equity forms of acquisitions (such as licensing or R&D contracts) can be employed more economically--without costly arrangements.

6. Conclusion

Our analyses of the data from medium-sized manufacturing firms in Japanese and American firms showed that: (1) Japanese firms tended to use more process-oriented R&D outsourcing, while American firms tended to depend on result-oriented R&D outsourcing; (2) Japanese firms tended to utilize manufacturing outsourcing by depending on subsidiaries and affiliated companies, while American firms tended to conduct manufacturing in-house; (3) American firms employed more OEMs strategies than Japanese firms, suggesting heavier marketing outsourcing in American firms.

There are, however, some limitations to this paper. For example, due to the possible sample selection bias, especially in the U.S., the data may lack external validity. Furthermore, because some of the information may be vital for firms' success, respondents may have intentionally distorted some of their responses. Despite these limitations, this paper is best viewed as a preliminary investigation of effective outsourcing, because we believe that the results of our analysis serve as a foundation for further examination of the determinants of outsourcing strategies and their performance.

The opportunity for further research into the phenomena of alliance strategy is great with respect to the characteristics of the data. Namely, the findings in this research must be interpreted with care, as they stem from cross-sectional data and therefore cannot validate causal predictions. Thus further qualitative data, such interview data, should be collected. Research with respect to different technologies (e.g., software, biotechnology), as well as company size, would also broaden our understanding of alliance activities. Without such research, it is uncertain whether these findings are specific to medium-sized Japanese and American manufacturing firms in the current study or if they represent firms in general.

7. Acknowledgement

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8. Endnotes

1) As Gerlach (1992) suggests, the distinction between alliance strategies and keiretsu relations is obscure. We define keiretsu as a stable and long-term relation with a parent company(s) that usually involves mutual shareholdings. Alliances, on the other hand, are short and middle-term oriented and generally do not involve mutual share-holding.
2) Originally, the dual structure of the Japanese economy meant that there were large differences in the average wages and productivities between large firms and small-to-medium sized firms in Japan (Yokokura 1984).

3) According to an article in the Nihon Keizai Shinbun, "stability" was the most frequently cited reason by new Japanese graduates for choosing companies (Nikkei Shinbun, July 20, 1990).

4) The survey of small and medium-sized Japanese technology-based firms by Nihon Keizai Shinbunsha (1988) shows such a tendency. According to this survey, the reasons for having alliances with large firms are: to complement each other’s technology in order to make system products (65.4%); to gain access to marketing capabilities (46.7%); to gain the trust of large companies (29.3%); to start businesses in order to address problems of larger firms (25.1%); to receive experienced managers from larger firms (12.1%); to gain access to capital (10.2%); to gain access to organizational and manufacturing know-how (9.9%).

5) Although "shosha" (trading companies) can generally be defined as companies which engage in wholesale activities, "sogo shosha" (general trading companies) is unique Japanese business entities which combine many of the features of other businesses, including finance and insurance. Major sogo shosha include Mitsubishi Shoji, Mitsui Bussan, Sumitomo Shoji, Marubeni, and C. Itoh (Yoshihara 1982).

6) For example, the institutional reasons why Japanese firms favor more collaborative R&D projects than American firms include: (1) because of a severe shortage of engineers and difficulties in recruiting engineers from outside—resulting from the tradition of the "life-time employment system"—Japanese firms tend to be forced to conduct collaborative R&D projects with other firms; (2) the Japanese government as well as local governments are eager to promote collaboration among firms through a variety of means, such as legal arrangements, subsidies, tax exemptions, and hosting of technology exchange (Kurokawa, 1989; Kogyou Gijutsuin, 1983); (3) however, in the U.S., collaborative R&D with private firms, especially with rivals, has been prohibited by anti-trust laws; (4) sense of independence of American engineers tend to foster reluctance for collaborative R&D.

7) This decision was made because: (1) in our previous study, we collected data from firms in the two countries whose number of employees was between 20 and 200 --see Kurokawa (1991); (2) in large firms, regulatory issues and huge organizational slack often times acted upon alliance decision-makings in ways that obscured corporate performance; (3) especially in large Japanese companies, it is not clear who is taking responsibility for alliance decisions, which makes follow-up interviews difficult.

8) Software companies were excluded from electronics-related firms.

9) The reason why the Japanese firms were younger than the American firms is that almost all the Japanese companies were established after World War II.

10) "Keiretsu-related firm" represents whether a firm is heavily tied up with a larger parent company(s), as seen in business groups or financial groups. In the Japanese companies, "Keiretsu-related firm" was defined as one if the largest share of a company's stock belonged to a larger company. It was coded zero if the largest share belonged to an entrepreneur, his (her) family or an employee's shared stock organization (Juyugyouin-Mochikabu-Kai). In the American companies, "Keiretsu-related firm" was coded as one if Standard & Poor's specified a company as a subsidiary of a parent company(s). Otherwise, it was coded zero. As Gerlach (1992) suggests, the distinction between outsourcing strategies and keiretsu relationships is obscure. We define "keiretsu" as a stable and long-term relation with a parent company(s) that usually involves mutual shareholdings. Outsourcing, on the other hand, is short and middle-term oriented and generally does not involve mutual share-holding.

11) The actual question item was: what percentage of your manufacturing capacity was contracted out to the following organizations last year?: (1) to other companies, (2) to affiliated companies or subsidiaries, (3) to your own manufacturing department. [(1)+(2)+(3)=100%]

9. References


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