BUILDING THE INTEGRATED NETWORK CORPORATION:
AN EXAMINATION OF U.S.-BASED CORPORATIONS IN JAPAN

by

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B.S. Electrical Engineering, Massachusetts Institute of Technology (1981)

Submitted to the Sloan School of Management
in Partial Fulfillment of
the Requirements of the Degree of

MASTER OF SCIENCE IN MANAGEMENT

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ABSTRACT

Corporations are facing both a surge in competition from abroad and a significant increase in opportunities to provide products and services for widely-dispersed foreign markets. A new organizational and strategic construct called the "integrated network corporation" seeks to satisfy the competing demands for global scale economies, centralized decision-making and responsiveness to local market requirements. This thesis studies the managerial challenges faced by multinational corporations in building the integrated network by examining the experience of a number of U.S.-based multinational corporations and their strategic operations in Japan.

The methodology of this study included a one-and-a-half year internship with the wholly-owned subsidiary of a U.S. corporation in Japan, followed by interviews with executives from a number of different U.S.-based multinational manufacturing companies. An analysis of the interviews has provided insight into the U.S. corporate experience in Japan. The uneven history of successes and failures, the varying strategic importance attached to Japan by different corporations, and the diversity of equity arrangements and types of collaboration point to Japan as fertile ground for application of integrated network principles. The interviews also provide a measure of the difficulty inherent in coordinating a transnational enterprise whose basis for competition is both time and knowledge, but whose value-added chain and markets have become more and more evenly distributed across the globe.

Thesis Supervisor:  Dr. D. Eleanor Westney
Thesis Reader:    Dr. Janice A. Klein
Title:            Building the Integrated Network Corporation:
                  An Examination of U.S.-Based Corporations in Japan
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I would like to thank the MIT-Japan Program for helping me to take a rough idea - to move my life to Japan and work within a Japanese organization - and to make it a reality. Special thanks to Ms. Patricia Gercik, Acting Director of the MIT-Japan Program, for her advice to "just do it."

To Mr. Takashi Miyata, Manager at Toyo Carrier, who spent many days and evenings with me discussing Japan and the Japanese, I am truly indebted. To Ms. Fumiko Kamogawa, who shared Japanese life and culture with my family and me, we are truly grateful and hope that one day we can respond in kind.

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Section I.
The Changing Multinational Corporation
Chapter 1.

Changing Environment for The Multinational Corporation

The last decade has been witness to a remarkable succession of events, not the least of which include the dismantling of the Berlin Wall, the collapse of the Soviet Union, the human rights protest in Tiananmen Square and the economic surge of mainland China, the progress of GATT and NAFTA, the halting advance of the Maastricht treaty, the fall of the Liberal Democratic Party in Japan, the appreciation of the yen to a post WWII high, and threats to a unified Europe such as the dissolution of the former Yugoslavia. These events suggest that we have entered a fertile period in both political and in economic terms, and one which promises tremendous business opportunity, social change, and a continuing realignment of the world order.

One view of this fundamental realignment, as described by Lester Thurow in Head-to-Head, is that it will be along geographical lines, and will create a triad of economic superpowers, including the U.S., Germany, and Japan, to replace the former U.S.-Soviet Cold War dyad. Furthermore, the near realization of global instantaneous communication, the rapid diffusion of technologies, and the advent of freer trade throughout the world gives credence to the notion that the regional alignment could one day yield to the "borderless" world.

On the other hand, recent events also suggest that models other than the triad may be potentially more accurate and descriptive of the coming world order. The rapid economic growth of twenty or more emerging countries around the world, when viewed against a backdrop of simmering regional hostilities, suggests that atomization might be an equally believable, though more complex conception of the world in the next century. Events in Europe indicate that forces of unification will, with few exceptions, be counter-balanced by local and deeply-rooted historical, ethnic and religious forces. Instead of a "borderless" world, there may in fact be more geopolitical fragmentation which creates, rather than erases boundaries. In some cases, political reform will lead to economic reform, and in other cases, the reverse process will take place.
To the degree to which free-market economics will prevail, it too will be characterized by an increasing diversity and atomization of markets. So economic progress may proceed to the point that goods and capital can freely cross borders, but for worldwide corporations with significant investment in human capital, the relative mobility or immobility of people and knowledge only attains greater significance. If, as Robert Reich asserts, "every factor of production other than workforce skills can be duplicated anywhere around the world," then in the long-term the only winning strategy is to educate, recruit and retain the most skilled people in every theater of corporate operations. In the interim, there is ample opportunity to refine the structure and strategy of the worldwide corporation to mitigate the many sources of risk and to compete for the many sources of income.

For the sake of simplicity, the multinational firm and its facilities, capabilities and markets will be overlaid on top of this geopolitical description of the world. Of course, many multinational firms are larger (in terms of annual sales) than the GDP of many of the countries in which they operate. In a more detailed explication, the firm would be treated as being intimately inter-connected with the politics and demographics of its location, as well as bearing responsibility and accountability for the social impact of its presence. Even without addressing respective national policies, the recognition that customer requirements are often fundamentally local still points to the critical need for the multinational corporation to have a strategic presence inside each of its prospective and existing markets. Homogeneous "world products" and mass marketing may have only limited success when competing with the focused products and marketing of a local enterprise. The multinational firm must always balance local responsiveness against the opposing needs to pursue economies of scale, the consolidation of facilities and the centralization of decision-making.
Chapter 2.

Changing Models of the Multinational Firm

David Ricardo, in building on the work of Adam Smith, first advanced his theory of comparative advantage in 1817. In this work he showed that a nation would import a particular good even if it could produce it domestically more efficiently, provided that it was more efficient in yet a different good. Thus, not only is a nation's absolute advantage in productivity of a good a determinant for trade with other nations, but a relative advantage within a nation's borders would also lead to trade.

In the middle of the 19th century, examples of large hierarchical organizations were limited to the military, the clergy, and trading companies such as the Hudson Bay Company and the British East India Company. Later in the 19th century, the development of the steamship, the railroad, and the telegraph served to unify national markets and offered tremendous opportunities for companies to compete on economies of scale. Companies responded by colluding to maintain high prices. In 1890 the Sherman Antitrust Act made the alternative of merger and vertical integration the more attractive strategy, creating such giant enterprises as U.S. Steel.

In the same period, a number of companies were born of invention, including Eastman Kodak and General Electric, and grew to be large hierarchical enterprises. The multi-divisional business structure became more common after World War I as companies sought to cope with post-war production requirements and product diversification within the firm. Firms created business divisions and a central office to oversee overall strategy and monitor divisional performance. To find scale advantage the objective was to grow the firm vertically and horizontally, yet still strive to maintain control of all of its business activities. As the enterprise grew, divisions were formed which could satisfy the competing requirements for being both self-contained and limited in size. The central office of the firm strove to find complementarity between divisions as well as to find joint efforts that would benefit all divisions together.\(^2\)
Massive undertakings such as the building of the railway or telegraph networks in the U.S. needed a new type of enterprise in which management no longer had significant equity in the venture and investors no longer could participate directly in the day-to-day operations. The shares of the founders became increasingly distributed among investors and the decision-making became increasingly the domain of salaried management. The dominant model for the enterprise came to be the large manufacturing firm, which endeavored to achieve economies of scale and scope not possible for smaller competitors. In turn, expansion into new markets presented the opportunity for the firm to diversify and create new products.³

In the 20th century, the idea of comparative advantage was further advanced by Heckscher and Ohlin to show that the sources of comparative advantage are the factors of production, including land, labor and natural resources, and not technology, which could flow freely between nations. However, the dilemma remains that today trade exists in overwhelming proportion just between the industrialized nations, some of which are not in fact endowed with plentiful land, labor or natural resources. Models such as the "technology gap" have been postulated to explain this by showing that the relative advantage in technological development of a given nation leads it to become a global exporter. Regardless of the explanation, it is evident that some nations have been more successful at finding, developing and sustaining competitive advantage, just as it has been true for some corporations.³

Michael Porter further defines the relationship between the nation-state and the multinational corporation, saying that:

National success in an industry increasingly means that the nation is the home base for leading multinationals in the industry, not just for domestic firms that export...Multinational status is a reflection of a company's ability to exploit strengths gained in one nation in order to establish a position in other nations. Multinationals are most common, outside of natural resources involving scarce deposits, in industries with differentiated products and high research intensity, where successful firms have skills and know-how that can be exploited abroad.⁴
To the extent that absolute advantage does exist between different nations, and comparative advantage does exist within nations, there are corporations which can now straddle these advantages and link them together across borders. In fact, the trade between nations 'inside' multinational corporations has become a significant portion of all trade. Roughly one-quarter of all U.S. exports go to the majority subsidiaries of U.S.-based corporations, and 16% of U.S. imports come from majority subsidiaries to U.S.-based corporations in aggregate.5

In the case of U.S. corporations, foreign expansion often began nearby proximity in Canada, where it came to represent 60% of the industry by 1972.6 After Canada, the next step was the United Kingdom and continental Europe. Before 1946, Canada was estimated to have been 23% of all foreign subsidiary locations, declining to 13% by 1975. Some corporations ventured as far as Asia: both General Motors and Ford developed substantial assembly operations in Japan in the 1920s. World War II led to U.S. economic hegemony in much of the world, and U.S. firms took advantage of the economic and technological advantages of their home base. Often local governments attempted to protect their local markets and jobs by demanding that U.S. firms establish production as well as marketing and sales operations. More often, in many industries, U.S. firms established offshore production to protect the markets they had won by export over local competition7.

Between 1950 and 1975, overseas subsidiaries became increasingly dispersed, as shown below:

<table>
<thead>
<tr>
<th>Number of enterprises with networks including...</th>
<th>1950</th>
<th>1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fewer than 6 countries</td>
<td>138</td>
<td>9</td>
</tr>
<tr>
<td>6 to 20 countries</td>
<td>43</td>
<td>128</td>
</tr>
<tr>
<td>More than 20 countries</td>
<td>0</td>
<td>44</td>
</tr>
</tbody>
</table>

Table 1.
Networks of Foreign Manufacturing Subsidiaries of 180 U.S.-Based Multinational Companies from 1950 to 19758
During the 1960s and 1970s corporations established a pattern of organizational evolution based on the degree to which they diversified internationally, and the degree to which the sales of international products contributed to total sales. The table below provides a snapshot of the types of multinational U.S. corporations that existed in that period:

<table>
<thead>
<tr>
<th>Structure</th>
<th>Total Number of Firms</th>
<th>Products within only 1 industry</th>
<th>Products in more than 1 industry, only 1 dominant product</th>
<th>Products in many industries, no dominant product</th>
</tr>
</thead>
<tbody>
<tr>
<td>International departments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralized, functional structure</td>
<td>8</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Multidivisional structure</td>
<td>82</td>
<td>39</td>
<td>39</td>
<td>4</td>
</tr>
<tr>
<td>Area Divisions</td>
<td>17</td>
<td>11</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Worldwide product divisions</td>
<td>30</td>
<td>0</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Mixed</td>
<td>22</td>
<td>0</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Grid</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
<td>57</td>
<td>68</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 2.
Multinational enterprises, classified by structure and by diversity of products made abroad for 162 American industrial enterprises, 1966.

In the initial stage of organizational evolution corporations generally grouped their foreign operations into an international division. As foreign sales and/or product diversity increased, corporations split into divisions either by geographical area or by product. In the final stage, where there is both a high percentage of foreign sales and a large number of products across many industries, the global matrix or grid becomes the dominant organization form. This evolution is summarized in the figure below:
The global matrix requires local management to report to two corporate executives, generally one of whom is defined by function and one of whom is defined by activity or program or geography. The global matrix has been viewed as a failure by a number of large companies, including Dow Chemical and Citibank, who cite duplication of communication and excessive coordination costs.

As corporations expanded to new countries, the corporate presence typically evolved in a predictable manner. A new country was viewed first as a market for existing products, then as a contributor in the product value-added chain, and in some cases, ultimately as an autonomous business which may or may not provide strategic capability back to the corporation.

In the more advanced stages of evolution, the corporation considered the creation of foreign R&D units, typically after the downstream components of the value chain such as production, marketing, service and sales had already
been established. In a study of U.S. organizations between 1931 and 1974, Ronstadt found that these R&D units fell into four categories, which are summarized below:

- **TTU (Transfer Technology Units)** - created to provide technical service to the local subsidiary's manufacturing plants and customers after the parent company could not overcome such barriers as language difference, cultural difference and distance.
- **ITU (Indigenous Technology Units)** - created to provide new products for the local market which were not previously available from the parent company.
- **GPU (Global Product Units)** - created to develop new products for worldwide production.
- **CTU (Corporate Technology Units)** - created to generate new technology for the parent company.

In this study, 7 companies established 42 different R&D Laboratories in 14 countries, distributed in these numbers to each category:

<table>
<thead>
<tr>
<th>R&amp;D Unit Type</th>
<th>Number established in foreign countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer Technology Units</td>
<td>31</td>
</tr>
<tr>
<td>Global Product Units</td>
<td>5</td>
</tr>
<tr>
<td>Corporate Technology Units</td>
<td>4</td>
</tr>
<tr>
<td>Indigenous Technology Units</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3.
Type and Number of Foreign R&D Units

It is interesting to note that access to lower-cost R&D labor was not the primary motivation for establishing these foreign R&D centers. The Transfer Technology Unit was by far the most numerous. Ronstadt found an evolution within the R&D units over time from TTUs to GPUs and ITUs. Of the original 31 TTUs, the status in 1974 and the date of formation are shown below:
Table 4.
R&D Units Originally Created as TTUs, Classified by Primary Purpose in 1974

<table>
<thead>
<tr>
<th></th>
<th>Still TTUs</th>
<th>Now ITUs</th>
<th>Now GPUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of R&amp;D Units</td>
<td>17</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Average Date of Formation</td>
<td>1961</td>
<td>1951</td>
<td>1930s</td>
</tr>
</tbody>
</table>

The mid-1980s witnessed the emergence of a new model of the multinational corporation that reflected the growing capabilities of the offshore parts of the company and the management challenge these created. Percy Barnevik, President and CEO of ABB (Asea Brown Boveri), puts the challenge succinctly for his worldwide corporation: "ABB has three internal contradictions. We want to be global and local, big and small, decentralized with centralized reporting. If we resolve those contradictions, we create real organizational advantage."

ABB is organized as a global matrix, with one dimension being traditionally organized national companies, and the other dimension being a distributed global network. Managers are forced to work in mixed-nationality teams and to take on line assignments in a number of countries. The distributed global network is broken down into about 50 business areas, each of which fits into one of 8 business segments. This is further broken down into about 1200 companies, each with an average of four units each having P&L responsibility and 50 employees.

Bartlett and Ghoshal describe worldwide corporations in terms of three broad needs:

- to be responsive to local market requirements,
- to be efficient and cost-competitive, and
- to be capable of effective worldwide learning.

These divide corporations into three categories and capabilities as shown below:
Multinational  |  Global  |  International  
---|---|---
Building strong local presence through sensitivity and responsiveness to national differences | Building cost advantages through centralized global-scale operations | Exploiting parent company knowledge and capabilities through worldwide diffusion and adaptation

**Figure 2.**

Key Strategic Capabilities for Multinational, Global, and International Corporations

Each of these kinds of organizations can be differentiated by their worldwide priorities, and their actual organizational structure can be examined for fit with their respective strategies. The model for the multinational corporation is shown below:

**Figure 3.**

Model for the Multinational Corporation

The Multinational Model describes only simple central control, and focuses on the local country organization and markets. In contrast, the International Model describes strong central control combined with significant local resource and decision-making capability to serve the local market. The International Model is shown below:
The third case, the Global Model, describes an organization best suited for a homogeneous and "borderless" world marketplace. The allocation of resources becomes solely an issue of hub-and-spoke optimization, without the need for local market focus. The Global Model is shown below:
Of course, these three models may apply to different activities within a given corporation, though one model would tend to predominate. In summary, the organizational characteristics for each kind of corporation are shown below:

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Multinational</th>
<th>Global</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration of assets and capabilities</td>
<td>Decentralized and nationally self-sufficient</td>
<td>Centralized and globally scaled</td>
<td>Sources of core competencies centralized, others decentralized</td>
</tr>
<tr>
<td>Role of overseas operations</td>
<td>Sensing and exploiting local opportunities</td>
<td>Implementing parent company strategies</td>
<td>Adapting and leveraging parent company competencies</td>
</tr>
<tr>
<td>Development and diffusion of knowledge</td>
<td>Knowledge developed and retained within each unit</td>
<td>Knowledge developed and retained at the center</td>
<td>Knowledge developed at the center and transferred to overseas units</td>
</tr>
</tbody>
</table>

Table 5.
Organizational Characteristics of Multinational, Global, and International Corporations

In considering the allocation of corporate resources, and the geographic placement of the parts of the value-added chain, R&D represents perhaps the last and most strategic activity to be moved offshore. In the 1980s, distributed R&D capabilities were pursued by corporations generally either by acquisition or through the evolution of local subsidiary capabilities. Corporations recognized that to achieve sustainable competitive advantage, these foreign R&D facilities must become both "local insiders" and "company insiders", in order to truly be able to "think globally, and act locally".

At the same time, companies recognized that there were many factors which made this objective difficult to achieve, and that these factors are roughly split between those which require local responsiveness and knowledge and those
which require scale, scope and cross-border networking within and beyond the corporate value chain. These factors include:

| Competitive Factors | • geographic dispersion of key competitors (cross-border) |
|                     | • access to state of the art components (cross-border) |
|                     | • image-building (local) |
| Market Factors      | • growing geographic dispersion of lead users (cross-border) |
|                     | • customizing products to local markets (local) |
|                     | • niche personnel (cross-border) |
| Science and Technology Factors | • increasing scientific and technological capacity of industrial societies (local) |
|                     | • complementarity of national strengths in science and technology (cross-border) |
|                     | • shortage of scientific and technical labor (local) |
| State/Regulatory Factors | • policy incentives for R&D (local) |
|                     | • standards-setting and regulations (cross-border) |
|                     | • condition of market entry (local) |

Table 6.
Factors Promoting the Geographical Dispersion of R&D Capabilities

This combination of factors serves to illustrate why the existing multinational, global and international structures are insufficient to provide competitive worldwide coordination and local value against a corporation that is structured specifically for such an objective. The corporation which is consciously structured to find markets wherever they are and to deploy resources to them at the greatest speed and the lowest cost will gain the strategic advantage.

Thus the structure which can combine and optimize finite resources to achieve the best capabilities of each of the former structures - the multinational, the global, and the international - will be the winner in this increasingly complex and interlinked competition. The organizational characteristics for the integrated network corporation are shown below:
Table 7. Organizational Characteristics of Integrated Network Corporations

This new model for the worldwide corporation brings together the features of all the previous models and introduces a higher level of coordination and complexity for both the headquarters and the subsidiaries. The Integrated Network Model is shown below:

Figure 6. Model for the Integrated Network Corporation

Though this organizational structure is dependent on the simultaneous and rapid transfer of information between distant locations, it is also especially well designed to realize the promise of new communication technologies. It can also be viewed as the conceptual amplification of such concepts as the
self-directed work team and the horizontal, customer and process-oriented firm brought to the largest scale of operations.
Chapter 3.

Changing Subsidiary Roles

As the environment and models for multinational corporations have changed, so has the subsidiary role. All intra-firm concerns of the past decade, from the choice of Quality practices to the management of organizational change to the exponential growth of technologies to time-based competition remain the concerns of the corporate subsidiary, only more so. If the subsidiary does not have the luxury of proximity and simple communications with corporate headquarters, it must still compete in the local market with firms that do. If the subsidiary does have close ties to corporate headquarters, it must still master its market and seek further ways to contribute to the corporation within and beyond its home borders.

The trend toward creating self-contained, complete value-added-chain subsidiaries in foreign locations continues. In 1994, for the first time, the total cost of R&D overseas by U.S.-based firms exceeded 10% of total R&D costs. For many firms it has been a much larger percentage for more than two decades. Firms increasingly can find highly-educated staff in strategically critical locations, and can justify creating R&D facilities abroad. Many firms describe their sales as roughly one-half U.S. domestic and one-half foreign, and now look to locate production capability not just in low-cost-labor markets, but in countries which offer high-productivity workforces.

In considering the role for a subsidiary, each corporation determines the amount of resources required at a location based on the strategic importance of that particular location. Strategic importance can mean not only the size and potential value of the market and nearby markets, but the potential access to specific talent and assets. Based on this, a historical mapping can be created which tracks the growth in strategic importance of a location against the changing capability of its local operations over time. This typology, introduced by Bartlett and Ghoshal, permits foreign subsidiaries or operations to be compared and evaluated. Clearly, differences in evolution of different overseas operations in a specific location can be traced directly to corporate
management's ongoing assessment of the strategic importance of the place, as well as their ability to deploy resources and develop strategic capability in that place. The Bartlett-Ghoshal typology is shown below:

In the lower left corner, the "implementer" is the subsidiary which markets and sells parent company products in a non-strategic location. In contrast, the "strategic leader" may research, develop, manufacture, market and sell a highly successful product in a highly strategic location. The "contributor" represents a potentially successful evolution of the subsidiary in a non-strategic environment, such as the placement of a plant in a low-labor-cost location. The "black-hole" is the situation where a subsidiary is in a strategic location, but has insufficient capability to compete successfully, much less contribute back to the corporation.
For the purposes of this study, Japan is a strategically important, and in some cases, critical location in which to compare the overseas operations of U.S.-based multinational corporations. As already described, the locus of activity for U.S.-based companies abroad was formerly in Canada and in Europe, but increasingly the trend has been toward direct investment in Asia. Within the Asia Pacific region, Japan will continue to be the dominant player, if for no other reason than its economic and technological strength. In turn, Japan-based multinational corporations have looked to the U.S. for their overseas operations, and expansion into the U.S. for manufacturing and R&D proceeded at a rapid rate in the 1980s.

Furthermore, Japan offers a rich set of circumstances which make it among the most difficult of overseas operations for a U.S.-based multinational: a sizeable market, a highly-educated workforce, sophisticated product and process technologies, oligopolistic and collusive behavior in high-technology businesses, differing treatment of intellectual property rights, sustained government involvement in strategic industries, and proximity to other huge and potentially lucrative markets such as mainland China. The distance and the language and cultural differences make the challenge of placing a corporate subsidiary, or any kind of venture, into Japan even more acute. It would be no surprise then to examine the Japan operations of U.S.-based multinational corporations and find large variation in the treatment of the strategic importance of Japan, and in the historical development of local corporate capabilities within Japan.

The challenge for subsidiary operations in Japan is not just the factors mentioned above, or the competitive crucible of the domestic market, but also the indigenous factors specific to Japan, including the shortage of labor, the aging of the population, the recent trade friction with the U.S., the fall of the Liberal Democratic Party, the fractious coalition government of Hata, and the appreciation of the yen to a post-World War II high level.
Section II.
An Examination of U.S.-Based Corporations in Japan
Chapter 4.

Research Methodology

The research methodology for this thesis has included a one-and-a-half year internship in Japan at the wholly-owned subsidiary of United Technologies Corporation Carrier, called Toyo Carrier. This was followed by telephone interviews with the executives of a number of U.S.-based multinational corporations that have Japan operations. These corporations include IBM, Xerox, Motorola, DEC, Teradyne and ATT. In addition, material gathered from presentations, company brochures, annual reports, periodicals and the academic literature were researched to include two more companies, Eastman Kodak and Cummins Engine, and to provide background information.

In general, the corporations under study were chosen to be representative of U.S.-based, globally successful manufacturing companies that have a current presence in Japan. In particular, technology companies were chosen that would have some exposure to decision-making across borders, that would have significant investment in the generation of new knowledge (R&D), that would seek economies of scale in production, that have faced changing national markets and policies, and that have sought to be competitive in the Japanese market itself. Not coincidentally, a number of these companies are also sponsors of the MIT-Japan Science, Technology, and Management Program. In this thesis the companies are divided into three groups:

1. Four detailed cases of U.S.-based multinational corporations which include telephone interviews and background research and are used as a primary focus in the examination of alternative scenarios for strategic operations in Japan. [IBM, Xerox, Eastman Kodak, and Cummins Engine]

2. Four supporting cases of U.S.-based multinational corporations which include background research and are used to provide further perspective on the U.S. corporate presence in Japan. [Motorola, Digital Equipment, Teradyne, and ATT]

3. One case in which the author has had personal experience addressing strategic and operational issues in the subsidiary of a major U.S.-based multinational corporation. [Toyo Carrier]
The individuals who provided information through the telephone interviews all were chosen because they could provide a corporate strategic perspective on the importance of the Japanese operations, their history and their current status. The telephone interviews followed the format shown below:

<table>
<thead>
<tr>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. What do you think is the greatest potential contribution Japan could make to the corporation?</td>
</tr>
<tr>
<td>A. What are the major contributions made by the Japan operations to the corporation at this time?</td>
</tr>
<tr>
<td>B. What is the role of Japan operations in Asia? (Where is Asia HQ? Where is Japan HQ?)</td>
</tr>
<tr>
<td>C. To what state of evolution has the Japan organization reached at this point?</td>
</tr>
<tr>
<td>D. How would you explain the corporation's Japan strategy to your own employee before you sent them to Japan?</td>
</tr>
<tr>
<td>II. What are the greatest constraints on the expected role that Japan operations could play in the corporation?</td>
</tr>
<tr>
<td>A. What other external linkages has the corporation considered in Japan? (e.g., joint ventures, strategic alliances, licensing technology, etc.) What linkages have been chosen and why?</td>
</tr>
<tr>
<td>B. Where is the corporation's Japan strategy going in light of the slowdown in the Japanese economy?</td>
</tr>
</tbody>
</table>

**Figure 8.**
*Telephone Interview Format*

In the following chapters, corporations are examined first in aggregate to provide a profile of their origins and growth in the U.S. Then the corporation's Japan operations are profiled, including a description of the type of equity arrangement or collaboration that was chosen for entry into the
Japanese market, and the subsequent story of the enterprise. The Japan operation is then examined to provide insight into its relative success in the Japanese and world markets, and its relative success within the corporation. In particular, using the Bartlett-Ghoshal typology, the potential for significant contribution to the corporation and the degree to which the Japan operation's capability has expanded to meet the increasing strategic importance of Japan is studied. Finally, there is a discussion of current issues and challenges facing the corporation, and the direction that the corporation expects to take in Japan.

(Please note that in the following chapters the text of the transcript from the telephone interviews will be indicated by indented, double-spaced block-form paragraphs without footnotes.)
Chapter 5.

IBM

Corporate Profile

When we started to rebuild Japan in the fifties, we looked around for the most successful company we could find. It's IBM, isn't it?14

IBM, known as Big Blue, has traditionally been the bluest of blue-chip stocks. In the last decade IBM has for the first time in its remarkable history of sustained growth been faced with real erosion of its business. This has led to actions unheard of in its halcyon years: large-scale downsizing, turnover in top management, and a rethinking of its corporate strategy. Ironically, as recently as 1986, one author had this to say:

Other firms in other industries age and become arthritic - U.S. Steel in basic metals, General Motors in automobiles, RCA in consumer electronics, and Xerox in copying machines come to mind - and concede ground to younger, more vigorous challengers. Not IBM, as its rivals, and investors, have come to know. On Wall Street IBM is known as the one stock that has been the star of bull markets since the 1920s...Most industry observers expect IBM to expand at the rate of approximately 15-20 percent per annum for the foreseeable future...

In 1992, with John Akers still as Chairman, the annual report began with these words:

...the changes that are fundamentally reshaping the worldwide computer industry accelerated. Customers showed a growing preference for smaller computers and open systems, and placed growing value on software, services, and integration skills. The increasing pace of our participation in these opportunities was not enough to offset generally weakened business conditions around the world and severe competitive pressure on revenue, price, and profit across our hardware businesses, especially large systems and personal computers...IBM's financial performance was not acceptable to us or to our stockholders15.
The S-shaped curve which describes IBM's history of exponential revenue growth is shown below (please note that the vertical axis is scaled logarithmically):

As seen in the above figure, relative to the life of the corporation, IBM's revenue growth has only recently begun to flatten. In 1986 IBM was estimated to be the most valuable company in the world, with a then-current market value of $91 billion. At its height IBM employed about 400 thousand people, of whom 42 thousand were managers, and 1500 were executives. 

In March of 1993, Louis Gerstner, Jr., former CEO of RJR Nabisco, was chosen as the new chairman of IBM. Gerstner's first objective was to downsize the corporation and to cut costs:

IBM said it will lose 85,000 employees, or 28% of its work force, in 1993 and 1994, including many who have already left the company. Including some modest hiring, the moves will bring IBM's work force
down to 225,000 at the end of 1994, down from a 1985 peak of 405,000. The impressive cuts set the stage for Mr. Gerstner's biggest challenge of all: Picking the markets where IBM can ultimately grow strong again. Right now IBM is trapped in hardware markets with collapsing profit margins, and merely playing catch-up in the most lucrative high-tech businesses, such as personal-computer software and microprocessors. Mr. Gerstner yesterday aggressively dismissed questions about his long-term vision for IBM. 'The last thing IBM needs now is a vision,' he said. 'What IBM needs right now is a series of very tough-minded, market-driven, highly effective strategies in each of its businesses.\textsuperscript{17}

\textbf{Japan Operations Profile}

IBM Japan has held a unique and respected position in Japan because of the significant technological advantage that IBM established worldwide in mainframe computers. Early on, IBM was allowed to operate a wholly-owned subsidiary while other foreign companies were not. IBM Japan is the only foreign company manufacturing computers in Japan (as of 1986), and remains wholly owned in spite of government pressure to sell a minority share to local interests. As of 1992, IBM Japan accounted for 11\% of IBM's global sales

In the early '80s, IBM Japan was 15000 people and 2 plants and a development lab. Half of the people were in manufacturing and development, and half were in service and sales. It was a $6 billion company. Shiina-san persuaded IBM to use the Japanese model of steady hiring in about 1986, and as a result there were 25000 employees in 1992.

The lack of joint-ownership or collaboration, along with the image that local IBM affiliates are run by natives, is the pattern seen in IBM's operations in other foreign countries. IBM has, to a great extent, established itself as a distinctly Japanese organization, capable of hiring the top graduates from Japanese universities and selling within the Japanese market. Today, IBM Japan is IBM's largest single company, larger than IBM Germany and IBM U.K.

Before WWII, there was only a marketing organization in Japan. IBM Japan is now over 50 years old. It was started around 1949. There was
only marketing until about 1971, with some customization for local market needs. The first plant was started in Fujisawa in about 1970. The plant offered a low cost of labor, local market access, a skilled workforce and low cost manufacturing. Then a development lab was attached to the factory.

In about 1980, a semiconductor plant was started in Yasu, near Kyoto. Its original mission was to assemble mainframes, but it became a semiconductor plant. This progress was driven by Japanese management seeking local prestige, just like any other country management within IBM. IBM Japan's management has been very successful at driving for facilities. In about 1985 a research lab was established.

IBM Japan is part of IBM Asia Pacific, which includes everything west of Hawaii and east of the Red Sea. IBM Japan contributes 75% of Asia Pacific revenue, or more. Until 1984, Asia Pacific headquarters was in Westchester Country New York, while the Japanese headquarters were in Tokyo (Roppongi). In 1985 Asia Pacific headquarters moved to Tokyo. In what was called the 'Second American Invasion', about 400 people were moved to Tokyo, probably none of whom spoke Japanese.

In the mid-1980s Tokyo looked to be an ideal base for an Asian headquarters, but the rapid appreciation of the yen against the dollar has made it a very high-cost location.

Since then, staff has been reduced to about 100 and functions have been distributed throughout the rest of Asia. The Asia Pacific headquarters is still in Tokyo. The fact that hardly any of the original staff spoke Japanese was a big burden on the local Japanese organization. The secretaries were extremely competent and bilingual.

In the early '80s, 'Tiger teams' were created to deliver knowledge explicitly to Japan, including management practices. The Asia Pacific staff worked in English. In the late '80s, typically an individual with a specific skill would deliver knowledge. IBM Japan was always more
aggressive than domestic IBM. IBM headquarters does not tell Development what to do. IBM Japan would negotiate with headquarters for their 'mission' and then negotiate for the people necessary to accomplish it. IBM Japan was most aggressive at building domestic vertical alliances, to the point that they became the model for the rest of IBM and other Japanese companies including NTT, the newspaper companies, etc.

In Japan, IBM Japan is third in revenues behind Fujitsu and Hitachi in mainframe computers as of 1989. Other competitors include NEC, Toshiba, Oki Denki, and Mitsubishi. Japan has mounted numerous efforts to defeat IBM in the computer business, but has never succeeded. Most notable was the Japan Electronic Computer Company, Ltd. (JECC) undertaking started in 1961 with the specific purpose of sheltering Japanese companies, excluding foreign companies, and producing a computer superior to IBM's. In the '70s, Fujitsu tried to unseat IBM through an alliance with IBM-archrival, Amdahl. In the 1980s, Hitachi was caught by the FBI involved in the outright theft of IBM design secrets. Hitachi and Fujitsu were ordered to pay for past illegal use of IBM software and a monthly amount for use of software and licensing fees.

In the PC industry in 1993, IBM is making inroads against number one NEC, which still has more than a 50% market share. An important recent development has been the sales of a Kanji-based operating system (DOS/V) and the introduction of Microsoft's user interface called "Windows", also using Japanese characters. The second largest company, Fujitsu, has recently committed to convert over to IBM-compatibility for personal computers.

IBM Japan is in major transition: where it's been is different from where it's going. The corporation is downsizing. The 1980 projection was for IBM to be a $120 billion corporation by now, but the infrastructure is now too large. The number of employees has been reduced from 400,000 to 250,000, and there is pressure on everything: development, factories, marketing staff, and headquarters staff.
Japan Operations Role in Corporation

IBM Japan has evolved into a mature organization. IBM Japan is the largest IBM subsidiary at about 1 trillion yen, or about $8 billion, in part because of the explosion of the yen. This is larger than the German, French or UK subsidiaries.

IBM Japan is just IBM, like anywhere else, and it looks like anywhere else. Development and Manufacturing all have one point of management from the U.S., and the assets are on the books of Worldwide Manufacturing. The only exception is the research lab, which is still on IBM Japan's budget.

IBM Japan has been and remains uniquely IBM and uniquely Japanese in character. They have made steady contribution to the corporation in many forms, but they suffer now because the entire industry has turned away from IBM's mainframe business. IBM Japan's problems are IBM's problems.

The major contributions to the corporation from IBM Japan include money, products, manufacturing capability, fame, glory and all the things IBM looks for in any part of the corporation. In particular, they have created products for Japan and special products for Asia. Even their own PC! In the early '80s, a PC had to have Kanji to sell in Japan. Those issues are only now being reconciled.

There are 100s or 1000s of external linkages in Japan. All licensing is done out of Westchester County, and no subsidiary has rights. IBM Japan is a major Japanese exporter. They have made contributions to product development, but have a less than sterling record of success at basic research.
Current Issues and Challenges

Why be in a foreign country at all? It's a combination of local skills, economic efficiency, and the government requires it. Then it becomes a matter of achieving an overall optimization given those points.

The greatest constraints on IBM Japan's contribution to the corporation are money, the cost of the yen, the hollowing out of the Japanese economy, and the economic slowdown. Manufacturing is moving to Thailand.

...but IBM Japan suffers more than the rest of IBM due to the lifetime hiring policies of both IBM and Japan. Now we are faced with buying people out in Japan. For people who want to own a business, the Japanese method of 'kogaisha', IBM will fund them. So far there has been a 10-20% reduction in staff.

Conclusion: Analysis of Japan Operations Role

IBM's unique leadership position in the computer industry permitted it to enter Japan and establish a stronger presence at an earlier time than other foreign corporations. Furthermore, the IBM image and management policies were consistent with many Japanese management practices and IBM came to be copied as a model corporation in Japan. The downturn in the worldwide mainframe business is reflected in the sales of IBM Japan, and in the Bartlett-Ghoshal diagram below:
Figure 10.
IBM Japan Strategic Map
Chapter 6.

XEROX

Corporate Profile

The Xerox Corporation was founded in 1906 and is now a worldwide company serving the document processing and financial services markets. The corporation employs over 100 thousand people across the globe, including 54 thousand in the U.S., with the great majority in the document processing business. Sales in 1992 reached over $18 billion. Document processing hardware products include copiers, electronic printers, optical scanners, facsimile machines, networks, multifunction publishing machines, workstations and related products, as well as software and supplies.

Chester Carlson invented the process named electrophotography and tried to sell the rights in 1938 to such companies as IBM, Kodak, GE and RCA, but as the story goes, they all said "no". A small photographic paper company, Haloid Corporation in Rochester New York, was the first to commit to the new technology. It wasn't until 1948 that the name Xerox, the process, now called xerography, and the first products to use the copy technology were introduced to customers. After further investment in research and development, Haloid sought new sources of funding. Ironically, IBM again turned them down, based on an Arthur D. Little study which predicted the world market to be only about 500 copiers. The Haloid Xerox Corporation officially became the Xerox Corporation in 1961 following the success of the first copier model that could use ordinary paper.

After the considerable initial success of its products, Xerox considered expanding into new areas, including medicine, education and most importantly, computers. They approached Digital Equipment and Burroughs, but were rebuffed. Nevertheless, they were later to set up a digital technology research center in pursuit of the 'architecture of information'. What was to become the Palo Alto Research Center (PARC) went on to pioneer in such technology as Ethernet, personal computing and laser printing by the mid-70s. Meanwhile, IBM entered the copier market in 1970, and Eastman
Kodak, their cross-town rival in Rochester New York, joined in 1975. Xerox's monopoly in large copiers was besieged by domestic competition, and at the same time Japanese companies including Ricoh and Canon had entered and become dominant in the low-end of the market. As told by former Xerox CEO David Kearns:

...we dominated the industry we had created. We were convinced that we were providing the world with high-quality machines, and our convictions were reinforced by the broad acceptance of Xerox products by our customers. We had always been successful, and we assumed that we would continue to be successful. Our success was so overwhelming that we became complacent.\textsuperscript{20}

In the 1980s, Xerox was able to stem the decline in sales by introducing new products and new Quality management practices. In 1989, Xerox won the Baldrige Award, the top Quality honor in the U.S.

**Japan Operations Profile**

Between 1971 and 1989, Fuji Xerox rose from 5\% of the total revenue of Xerox, to 20\%, at about $3.5$ million. Employment grew to almost 20 thousand, the number of Japanese patents granted per year to Fuji Xerox approached 200, and their share of the Japanese market reached 22\%. Today, Fuji Xerox researches, develops, manufactures and markets a list of products similar to Xerox's for customers in Japan, as well as the South Pacific Region. The headquarters for Fuji Xerox is in Tokyo, and there are 4 plants in Japan.

Its subsidiary, Fuji Xerox Asia Pacific Limited, headquartered in Singapore, serves the markets of Australia, Indonesia, Malaysia, New Zealand, the Phillipines, Singapore, South Korea, Taiwan and Thailand, with manufacturing plants in South Korea and Taiwan. In many of these markets, including Korea, Taiwan, Thailand, and India, participation is through joint ventures. China and Hong Kong are not included because they belong directly to Xerox.

The Japan operations of Xerox is called Fuji Xerox. In 1956 Xerox formed a 50/50 venture with the Rank Organization of Britain. By 1958, Rank Xerox
was seeking a Japanese partner, and there were 27 firms interested. The Japanese government required foreign companies to form ventures or to sell through Japanese licensees. Remarkably, the only non-electronics-based company was Fuji Photo Film, and that was the company chosen. Fuji Photo was second only to Kodak in photographic film, but had already made significant investment in facilities for copiers. Rank Xerox insisted that they form a venture rather than just license technology\textsuperscript{21}. In turn the Japanese government refused to approve Fuji Xerox as a marketing arm for copy products manufactured by Fuji Photo Film. The resulting deal gave Fuji Xerox exclusive rights to Rank Xerox technology, access to Fuji Photo Film manufacturing capability, and exclusive rights to sell products in Southeast Asia. In return, it would pay a royalty and share its profits with Rank Xerox.

Fuji Xerox was and has remained distinctly Japanese. In particular, it has maintained functional rotation of employees, lifetime employment, bottom-up decision-making and close cooperation with vendors. By 1967, Fuji Xerox had surpassed the sales of the French and German subsidiaries. In 1969, Xerox acquired an additional 1\% of Rank Xerox, which became a Xerox subsidiary. In the same period, competitive pressure pushed Fuji Xerox to integrate manufacturing and migrate it over from Fuji Photo Film. From 1971 on Fuji Photo Film became a passive partner in the venture.

In contrast to the near-monopoly situation that Xerox enjoyed in the U.S. for an extended period, Fuji Xerox was faced from the start with an uphill fight to wrest market share from Ricoh. There were different market requirements as well, requiring a different kind of product, as described by President and CEO Tony Kobayashi:

We had been insisting that the Xerox Group needed to develop small copiers as an integral part of its worldwide strategy. However, Xerox's attitude was that the low end of the market was not a priority...On the other hand, we were seeing rising demand for small copiers in Japan. By 1973, Fuji Xerox introduced the world's smallest copier with the slogan "It's small, but it's a Xerox."\textsuperscript{22}

Fuji Xerox also wanted to break with company policy and to sell copiers, instead of only renting them as the U.S. parent corporation prescribed. One of
the original executives at Fuji Xerox, originally from Fuji Photo Film, described it this way:

Xerox insisted on uniform policies - every country had to be managed like the U.S. firm. That was successful only while we were protected from competitors because of our monopoly. If Xerox had been more flexible from the beginning, we might have captured a larger market. That was a lost opportunity. 

By 1977, Fuji Xerox was second in the Japanese market with 25%, behind Ricoh with 34%. As Fuji Xerox grew, it also focused internally on its own product development process and a Total Quality Control program. In 1980 Fuji Xerox won Japan's prestigious Deming Award, following in the tradition of Fuji Photo Film, which had won the same award in 1956.

In terms of external linkages, there will be more alliances and technology exchanges than in the past. Fuji Xerox is Xerox's preferred ally in Japan and Asia, but if necessary an alliance will be made with an outside company. Technology licensing is a two-way street. If we can sell more laser printers to Sun, DEC, Compaq as OEMs, that provides leverage and product volume.

**Japan Operations Role in the Corporation**

Initially viewed as an implementer of Xerox products for Japan, Fuji Xerox continued to find ways to innovate and contribute to the corporation.

Fuji Xerox is a 50/50 venture with Fuji Photo and Rank Xerox. Xerox and Rank Xerox operate as one unit - Xerox controls their 50% of Rank Xerox. The control of Fuji Xerox by Xerox is through 50% of the board. The day-to-day management is local. There are only 2 general managers in Japan as liaison. The Japan strategy is the same as the Xerox strategy. The image in Japan is the same as Xerox's image worldwide.

There are joint design teams with Fuji Xerox members contributing. All products have Xerox technology as a result of deep technology
exchange between Xerox and Fuji Xerox over the past 3 decades. Furthermore, there are between 50 and 100 Fuji Xerox staff in the U.S. at any given time. The information exchange with Japan is actively managed through a Fuji Xerox office in the U.S.

In Japan, Fuji Xerox products are supplemented with Xerox products. Fuji Xerox is viewed as a local company in Japan, with strong management led by Tony Kobayashi, who is on the board of the Xerox Corporation and the Wharton School of Management. He is on the same level as Akio Morita.

IBM and Xerox have the same management approaches - balance and direction. There is a lot of respect for Fuji Xerox within Xerox in the U.S. If we were to offer any simple advice to U.S. employees traveling to Japan, it would be to 'pay attention and learn', and to 'shut up and listen.'

As the strategic importance of the Japanese market increased, Fuji Xerox played a critical role in keeping the entire corporation competitive.

In 1980 and 1981, profit was cut in half. The response was that Kearns studied Fuji Xerox, which (had just) won the Deming Prize. The huge contribution from the Japan operation was the exposure of the corporation to TQM methodologies. In engineering, the Japanese operations contributed techniques, processes, and products. Xerox succeeded at improving time-to-market, became more successful at working with the vendor base, and JIT was implemented almost "through osmosis". Fuji Xerox can be viewed as a microcosm of Xerox today. Although there is still little contribution in basic technology, Fuji Xerox excels in some areas. Software is not currently a strength, but it is improving. Many Fuji Xerox products are marketed as OEM worldwide, and the company excels at the low-end of the market in small copiers and in laser printers. There is no limit on creativity at Fuji Xerox, as evidenced by significant product contributions to the corporate portfolio. In addition, Fuji Xerox's success contributes financially to the corporation.
Current Issues and Challenges

There is no question that Fuji Xerox is well respected within Xerox, and can influence its own course and the course of the corporation. Efforts have been made more recently to formalize this influence at the highest levels:

In 1989 the President's Summit was started as a semi-annual meeting for senior management to discuss the relationship, functional issues, division of responsibilities, and unresolved conflicts. It is viewed as being very effective.

The successes of Xerox and the successes of Fuji Xerox are overlapping, and the case can be made that neither one could have done nearly as well without the other. However, with a subsidiary as substantial as Fuji Xerox, it would not be surprising to find that the subsidiary would seek still further autonomy in decision-making, as well a redress of corporate royalty payments as they become more than a self-sufficient part of the corporation, but a strategically critical contributor. The following represents the viewpoint from the U.S.:

In terms of evolution, Fuji Xerox has grown from a child-company to an adult company, but Xerox is still the parent. There is no question that they are extremely capable and competent, but that they still need Xerox technology. They could not be as successful if they were autonomous. They have a competent management structure with entirely Japanese management who have been trained in the U.S. and steeped in the American way of business. They have good English skills, are entrepreneurial, and are advanced in their social policies. The only exception might be the social leave policy.

Japan, like the U.S. faces similar circumstances in the near-term:

Long-term, Fuji Xerox is still profitable, though there will be some tightening up - they will be doing the same things as in the U.S. There will be a slowdown in hiring.
Japan is no longer cost-effective for manufacturing. The reasons for this include raw materials, energy costs, real estate, labor costs, and so on. Also, the market growth is limited. At the same time as Japan is perceived as not a good place for sourcing, other places including Korea, Taiwan, Singapore and Thailand are perceived as good for sourcing.

Japan remains a good source of engineering talent, however. It is very much a source of innovation. Consider the fax market's evolution in Japan as a response to the need to communicate in Kanji characters. Consider digital copiers for the same reasons. PCs have not been as prevalent as in the U.S.

There is evidence that bridging the needs of the Japanese and American markets will serve both the parent and the subsidiary well. In some products, Japan can be expected to foretell developments in the U.S. market, and in other products the U.S. will be the front-runner:

Japan is fundamentally a different market. Customer priorities include a small footprint, light weight, and low energy consumption. Xerox is learning these things. Furthermore, the majority of the competitors are in Japan. Fuji Xerox can keep tabs on competitors and their product developments. Japan lags the U.S. in publishing, for instance in PC-based, in-house capability and in networking.

In terms of worldwide markets, the Pacific Rim will gain share, the U.S. will decline, and Japan will stay even. Southeast Asia, which is Fuji Xerox's area, is very exciting.

What's good for Fuji Xerox is good for Xerox.
Conclusion: Analysis of Japan Operations Role

The Xerox corporation's decline in the 70's is paralleled by the transition of Fuji Xerox from "implementer" to "contributor." Fuji Xerox's subsequent strategic contribution to the corporation, in terms of products, local market leadership, and Quality practices have made it a "strategic leader" in Japan in the 1990s, as shown in the diagram below:

![Fuji Xerox Strategic Map](image)

Figure 11.
Fuji Xerox Strategic Map
Chapter 7.

EASTMAN KODAK

Corporate Profile

Eastman Kodak, known in the trade as the "Yellow Giant", is a leader in a range of products from photographic accessories to copiers to pharmaceuticals, with above $20 billion in sales and about 140 thousand employees in 1992, including 83 thousand in the U.S. The corporation was reorganized into four business sectors: health, imaging, information systems, and chemicals. Under the direction of former Chairman, President and CEO Kay R. Whitmore, Kodak committed to its principal business of 'images', including recording, storing, transmitting and delivery.

An example of this is the Kodak Photo CD System, in which photographic images can be stored on CD for display on a TV or editing on a PC. The system takes film negatives and translates them into images to be stored on compact disks. The disks themselves must be prepared by photo developers. This idea is not new however, and in Japan rival companies such as Sony and Canon have been making digital cameras since the mid-80s. In these cameras the image is stored directly as digital information, removing the development step. Digital cameras are expensive, and image quality does not compare favorably with film, but the trend is clear:

Eastman Kodak Co. illustrates how companies try to avoid being blindsided by rivals... Kodak hopes to lessen its dependence on film, but 'it is also a defensive program,' says Scott Brownstein, manager of digital-imaging development.

Kodak's 'Photo CD' plan is in a race against all-digital cameras, which capture images on semiconductor chips... So, the long-term threat to film is serious, and Kodak really has to respond... But protecting the film business is expensive -- and risky. (An industry analyst) estimates that Kodak will spend hundreds of millions of dollars to launch Photo CD; the company declines to estimate the cost. And consumers may not bite because they would need a special CD player and perhaps a computer, plus a camera.24
Kodak is facing the problem that many other U.S. firms have faced - they have dominated the U.S. market in their main business, photo film, and they are now facing serious competition from abroad. Their archrival is Fuji Photo Film Co. of Japan. At the same time, there is the threat of substitution by such products as camcorders, while foreign demand for film has slackened with the economic slowdown, reducing the cash flow from the film business and putting further pressure on other products to fill the void.

In April of 1993, the CFO of Kodak, Christopher Steffen, abruptly quit because of differences with Mr. Whitmore over the pace of employment reductions and the sales of assets. Mr. Steffen, who started in February, felt action should be swifter. Mr. Whitmore had hired Mr. Steffen for the purpose of restructuring the company, in response to sluggish business forecasts.

Kodak has tried to diversify into prescription drugs and electronic imaging, but so far, both have gobbled up research dollars without producing blockbuster products. The drug business, Sterling Winthrop, has cancer drugs and other potential winners in the pipeline, but most are at least two years away from market. In electronics, Kodak bet on high-volume copiers, only to watch customers flock to low-volume machines instead. To stay in that business, Kodak enlisted Canon to make low-volume copiers that Kodak sells under its own name.

Kodak's most solid business is chemicals. Eastman Chemical is the largest supplier of polyethylene terephthalate, or PET, resins for recyclable soda bottles. Some analysts think Mr. Steffen may suggest spinning it off as a separate company.

But Kodak's first priority, no doubt, is cutting costs. Its research and development budget, $1.6 billion, or 7.9% of last year's sales, is among the fattest in the Fortune 500; also high is spending on sales, advertising, distributing and administrative costs, which were $5.9 billion last year, or 29% of sales.25

Many of these same issues are also being played out in Japan, where there is not only severe competition, but a huge potential market for Kodak products.
Japan Operations Profile

Kodak created the Japanese Region division in 1984, reporting directly to the Chief Executive. The General Manager of the Japanese Region became the President of Eastman Kodak, Ltd. in Japan, and brought with him Vice Presidents for Marketing, Materials, and R&D. Initially, the R&D task was to monitor technology in Japan, but that evolved to the decision to build a Japanese R&D center. The new lab was opened in 1988 with a staff of about 100.

Beyond market access, the R&D lab was found to provide potential access to technology, either through people or through the establishment of relationships with Japanese partners and university research groups:

The companies that have a strong technical presence, including technical service, product development activities, research, or manufacturing, are heavily favored in this competition. Also, this complete 'technology chain' is necessary for the U.S. corporation wishing to learn about designing for manufacture from the Japanese. It's not sufficient to have the people, you've got to have the activities, too.26

But the downsizing that has affected the corporation in the U.S. has also affected the Japan operations:

Kodak's Japan subsidiary plans to cut 70 employees through voluntary separations, including about one-third of the work force in the company's research and development arm in Yokahama, a spokesman confirmed. The reductions will affect mainly semiconductor-related researchers.27

The relatively young operations of Eastman Kodak in Japan, which expanded aggressively in the late 1980s, faces contraction in the early 1990s.

Japan Operations Role in Corporation

Kodak believed that the opening of the new R&D lab would provide access to the market as well as demonstrate commitment to the market, the customer,
and to doing business in Japan. The local development capability also
provided a path for Kodak to use corporate technology to meet local market
requirements:

One of the things I am convinced of, is that you can't design high
technology business products for the Japanese market, unless you have
engineers who understand the culture, speak the language, and are in
Japan working with the Japanese customers. The best engineers in the
world, be they American or Japanese, will not innovate solutions to
Japanese customers needs if they are in the U.S. By having a laboratory
of capable product engineers in Japan, the American company is able to
transfer technology in to develop products better suited to the Japanese
customer. These products may be manufactured in Japan, elsewhere in
Asia, or in the U.S.\textsuperscript{28}

Eastman Kodak viewed Japan not only as market for "technology in", but as a
rich source for "technology out."

The most effective way I know to access this technology is through
people, but getting this technology is a competitive situation. Other
companies are seeking strategic alliances with Japanese Partners,
establishing relationships with university research groups, and trying
to hire the best engineers from the universities.\textsuperscript{29}

Recruitment of college graduates in Japan happens one full year ahead of the
similar recruitment schedule in the U.S. The expectations of college
graduates are, of course, that they will work their entire career at their first
employer. In turn, employers invest tremendous effort in building an
attractive image and a deep academic network that will allow them to draw
on the best graduates from the best schools.

Historically, Japanese students basically have been assured a lifetime
job upon graduation from a university. And while Japanese companies
have made similar moves, foreign companies have gotten more
scrutiny. Eastman Kodak (Japan) Ltd. recently caused a stir when it told
eight university recruits that it couldn't hire them after all\textsuperscript{30}
...a highly embarrassing move in protocol-conscious Japan.\textsuperscript{31}

The impact of withdrawing offers of employment represents much more
than the loss of talent for Eastman Kodak in this recruiting cycle, but in Japan
it symbolizes the loss of commitment to the recruiting network and to the Japanese, the degree to which the corporation has not become an insider, and the kind of short-sightedness often expected from American firms.

**Current Issues and Challenges**

The conventional wisdom is that Japanese companies may be moving slowly toward incentive and merit-based employment systems in order to become more efficient and more attractive to young Japanese and to foreign workers, but the seniority-based system is still dominant. The decision to rescind offers of employment recently has probably set back Eastman Kodak in Japan for a decade, if not more, according to an executive at one of the other companies interviewed.

For the foreign firm, which is already subject to increased scrutiny, a carefully cultivated image as an insider in Japan is an invaluable asset. IBM, by virtue of its lead in early computer technology, established itself as an attractive employer early on in Japan. Fuji Xerox, by virtue of its joint venture and Japanese organization, also established itself as a destination for talented college graduates.

In November, 1993, Eastman Kodak’s board replaced Kay Whitmore with the former CEO of Motorola, George M. C. Fisher. Mr. Fisher was highly praised at Motorola, where he had succeeded in doubling profits since 1990, the year he became their chairman. The choice of Fisher signals a refocusing of Kodak’s technologies on digital imaging, and participation in defining the emerging standards for user-friendly multi-media applications, even though the recent foray into the Photo CD was "a flop," for one reason because consumers weren’t willing to pay $300 for the special Photo CD player. Mr. Fisher is not expected to be a cost-cutter, and his selection also shows a commitment by the board to new technologies and the possibility of cannibalizing Kodak’s cash cow, traditional photographic film.
Conclusion: Analysis of Japan Operations Role

Eastman Kodak's relatively short history in Japan shows rapid progress and significant commitment to the local market where their primary competitor in photo film resides. Recent events, however, signal a rapid retreat from that commitment, and the adoption of short-term business practices which may have a long-term negative impact on business in Japan. This is reflected in the diagram below:

![Diagram](image)

**Figure 12.**
Eastman Kodak Japan Strategic Map
Chapter 8.

CUMMINS ENGINE

Corporate Profile

The Cummins Engine Company, which began in the U.S. in the 1920s, is the world's leading independent maker of heavy-duty diesel engines, with sales at $4.5 billion. Sales are 52% U.S. and 48% foreign, and total employment is 26 thousand people. In the 1980's Cummins invested approximately $1.8 billion in the development of new engines with emission-control technology, and in revamping its factories. Cummins spends about 6% of sales on R&D, which is roughly triple the average for the capital goods business. Cummins sells engines for heavy-duty trucks and pick-up trucks from Chrysler and Ford, as well as for the growing marine, construction, and utility markets. We are "the largest single-product company on the New York Stock Exchange," says President and CEO Henry B. Schacht.

In 1984 Komatsu Ltd., a diversified company with sales approaching $8 billion in 1993 and Japan's largest equipment manufacturer, teamed with other Japanese industrial giants including Mitsubishi and Nissan to enter the U.S. market for diesel engines. The Japanese were estimated to have been 30% better on cost. Cummins response was to cut prices by 30%, and to make severe cuts in costs and personnel. The price cuts permitted Cummins to maintain sales, but created more and more losses. Mr. Schacht summed it up with "we all learned something from that."

In the late 1980's Cummins faced reliability problems and increasing warranty payments due to poor designs that were rushed to the marketplace. The cleaner engines failed too often in fleet use, and Cummins market share in the U.S. fell from 50% to 38%. As Mr. Schacht adds, the "EPA buys no engines," so Cummins resolved to meet customer requirements first while satisfying the EPA mandates. Even though severe cost-cutting measures were undertaken, Cummins lost money in 5 of the 6 years before 1993, and lost $223 million over 4 years. Another part of the story is that the Cummins response to tighter air-quality controls in the '80s had actually spun back to
provide the company with a more competitive engine and a stronger bargaining position from which to pursue partnerships.

**Japan Operations Profile**

In a breakthrough, in February 1993 Cummins and Komatsu announced that they would join forces for the manufacture of existing products and for the development of new ones. Komatsu was no stranger to Cummins, having been for more than two decades previous to that both a customer and a licensee of Cummins.

One of Cummins' and Komatsu's initial plans was to manufacture two of the popular Cummins engines in one of Komatsu's Japanese factories, with the output directed to Komatsu's construction customers in Japan and to Cummins customers throughout Asia. In both cases, Cummins and Komatsu will compete against a joint venture of Caterpillar and Mitsubishi Heavy Industries which dates back to 1963. Another plan was to build large Komatsu-designed engines in one of Cummins' U.S. factories for sale through Cummins domestic dealer network, in direct competition with Caterpillar for the market in large-scale construction equipment. These agreements were finalized in the fall of 1993.

**Japan Operations Role in Corporation**

Cummins is not alone among American diesel engine manufacturers, and both Caterpillar and the Detroit Diesel Corporation also invested heavily in pollution reduction during the same time period. All of them now enjoy an advantage over foreign manufacturers as worldwide pollution regulations follow the U.S. lead. "Competence has given us an economic opportunity", points out Mr. Schacht\(^{33}\). "Komatsu had to link up with Cummins to stay competitive with Caterpillar", adds one industry analyst\(^{34}\).

It may not be immediately apparent that Cummins, while grappling with the competitive threat from Japan, also had no choice but to transform itself internally. Cummins sustained year-after-year losses and proceeded to completely overhaul its organization, to rethink its relationship with labor,
and to seek all sources of cost-reduction and improved efficiency\textsuperscript{35}. Cummins is now employing only one-half the previous number of employees to make twice the number of engines, and paying new employees about one-half of the former wage\textsuperscript{36}. They now produce 90\% new products when compared with 1984, and the products last 4 times as long, 90\% more reliable, 25\% more fuel-efficient, and cost 30\% less to make.

The remarkable collaboration with Komatsu signifies that Cummins history has come full-circle: from their initial position as a U.S.-based competitor focused on the domestic market using licensing agreements abroad, to their do-or-die price-cutting response to credible foreign competition, to their current agreement with Komatsu which brings access and expected success in the Japanese market.

**Current Issues and Challenges**

In the investment community, "hated" was the label given to Cummins Engine. But Cummins was able to find "patient capital" in 1990 when it convinced Ford Motor Company, Kubota Corporation and Tenneco Incorporated to invest in a 27\% stake in the company and to not expect any returns for 6 years.

It would appear that Cummins has ample reason to now stay the course, and to reap the profits, so long delayed, from their cooperation with government policy initiatives and their investment in research, re-organization, and human capital.

**Conclusion: Analysis of Japan Operations Role**

Cummins Engines' singular history is one of considerable internal change, sustained financial losses, and ultimately news of victory in the Japanese market. This transformation was facilitated by U.S. government anti-pollution initiatives, and precipitated by Komatsu, the Japanese firm that started as a Cummins licensee, became a Cummins competitor, and ended up as a Cummins partner. Cummins has succeeded in establishing a strong position in its own market and a direct entry to the Japanese market through
their collaboration with Komatsu. In terms of the Bartlett-Ghoshal typology, Cummins has moved rapidly from "implementer" to "strategic leader" in Japan, as shown below:

Figure 13.
Cummins-Komatsu Collaboration Strategic Map
Chapter 9.

Selected Other Companies

MOTOROLA

Motorola was founded in 1928 in Chicago as the Galvin Manufacturing Corporation. In 1992, Motorola had sales of $13.3 billion and a total of 107 thousand employees worldwide. Businesses include wireless communications, semiconductor technology and advanced electronics equipment and services. Products include pagers, cellular telephones and systems, semiconductors devices, aerospace and industrial electronics, computers, and other communication and data processing equipment. The largest business segment was Semiconductors, with 32% of sales, followed by Communications, with 29%.

In 1988, Motorola won the first Malcolm Baldrige National Quality Award. The corporation has been highly praised and copied for it's "Six Sigma" Quality Program.

The Japan operations now have about 3000 employees. All Motorola businesses are represented (in terms of marketing). There is capability for back-end testing in finished goods, full wafer fab and assembly for semiconductors, and R&D and development engineering. There is a nation-wide sales organization. We have a major JV in semiconductor manufacturing with Toshiba - joint supplier with NEC in digital cellular, licensing technology, partnerships in land-mobile...

The corporations Japan strategy is to achieve sales and profits, to grow market share, to bring the latest innovations to Japan, and to use the U.S. government to help break down non-tariff barriers. The major contributions from the Japan operations include sales and profits, a window on technology and business trends, and the most demanding customers in the world both for quality and service.
Japan operations in Asia have had very little role to date. However, this is picking up as Japanese companies move manufacturing into Asia and expect Japanese-based support from their vendors. The Asia headquarters are in Hong Kong and Singapore. The Japan headquarters are in Tokyo.

Motorola cannot hope to be a premier company if it cannot compete in Japan. Japan is a tough customer and a tough competitor, which keeps you at your best. Though the Japanese economy has slowed down, Motorola's strategy is to stay the course, and to try to build market share. The economy will slowly recover, maybe stronger than before. The Japanese will always consider a foreign capital company as 'gaijin' and never allow us to truly become an insider.

In news of the spring in 1994, Motorola lobbied successfully with the U.S. government to press Japan for access to potentially lucrative markets in the corridor south of Tokyo. Motorola has maintained that their products are under-represented in market share in Japan, and has actively sought U.S. policy intervention. Figures from 1992 indicate that Japan was 7% of total sales, and the Asia Pacific Region outside of Japan was another 15%. Motorola has been able to enter the Japanese market, but only after it has established itself worldwide with superior quality and technology, and then, in some cases, only after considerable political effort.

DIGITAL EQUIPMENT

In 1992, sales fell to $7.7 billion, from a high of $8.3 billion in the year before. There were 114 thousand employees, down from a peak of 126 thousand in 1989, and the R&D budget exceeded $1.7 billion.

The corporation is the leading worldwide supplier of networked computer systems, software and services. They pioneered the areas of interactive, distributed, and multivendor computing for a wide range of customers and applications. More than half of sales are outside the U.S.
The Digital Equipment Corporation, also known as Digital or DEC, and once the darling of high technology, is facing massive problems as the information technology industry has moved away from its core business, mini-computers, in favour of increasingly powerful and networked PCs. Recent announcements indicated that DEC plans to layoff another 20 thousand people, from a current total around 90 thousand, in order to come closer to the revenue-per-employee levels of such companies as Hewlett-Packard and Sun.

The Japan operation is a wholly owned DEC Japan organization which operates a local arm of the corporation. The Asian headquarters moved from Hong Kong to Singapore, and DEC Japan reports into it. DEC Japan has had freedom to pursue large contracts for mature countries (like Japan and Hong Kong) in contrast to developing countries (like Korea, etc.).

The former head of BMW's Japan operations, Yoji Hamawaki, a Japanese national, now heads DEC Japan. He started last spring, and it is the first time that there has been a Japanese national on the top. He formerly headed Kawasaki's U.S. operations. There are somewhere between 500-2000 employees total, the bulk of whom are Japanese. Most of them are sales and marketing with some technical people deployed to customer projects. There is one R&D center with about 50 researchers, which is aimed to serve both Japan and global, but is probably not global yet.

The primary contribution that Japan could make to the corporation is as a sales venue is for advanced hardware and software systems, typically to large Japanese companies. There has not been much attention in the past to distribution channels in Japan or elsewhere. A secondary contribution would be to gather competitor, business and technology intelligence.

The role of the Japan operations in Asia includes some local development, no manufacturing, some inspection, and a direct sales force. The sales force focuses on large companies and large sales. In
terms of marketing, the Japanese language applications differentiates the Japanese market, but Japan and Hong Kong get the same treatment.

Japanese 'appliances' differentiate it from the rest of the world. In other words, Japan is ahead of the world in this area, which includes flat-panel displays, for instance. Both in terms of the market and product development, Japan is a window on the future. In the same way, the U.S. can be looked at for software and telecommunications.

External linkages in Japan are mostly strategic alliances and licensing. The most important Japanese alliance is with Mitsubishi Electric for the Alpha microprocessor. This is two-way transfer of technology and business knowledge. MELCo is also an important supplier to DEC, and the MELCo has been successful. Of equal magnitude is the alliance in the U.S. with Microsoft for software. These are 2 of the top 3 alliances. Licensing is done mostly within alliance relationships. Licensing to non-alliance partners is a new idea to DEC. Joint ventures are rare at DEC, and there is no history to draw on. DEC is not accustomed to thinking 'outside'.

DEC and IBM have relied on direct sales, but that may not work anymore. What is the new model for selling? They may have to get smaller, and there will be a worldwide transition to the new model.

There have been few U.S. expats in Japan, as well few tours of duty. Therefore, there is relatively little preparation done. DEC Japan acts somewhat independently, except for in PCs, where DEC is very active directly in Japan. The semiconductor operations are actively seeking Japanese partners for the Alpha.

What is DEC's strategy in Japan? First of all, 'none' may be the best answer. Like Ford in the '40s, the imprint of the founder remains, and DEC is caught without an explicit strategy. When Olsen retired, the strategy was not internalized in DEC. The strategy will probably evolve through a process of articulation and refinement, though this is not
effective yet. Japanese firms use downturns to consolidate, so it is
dangerous for the U.S. to think that it is ahead.

The greatest constraints on the role that Japan operations could play in
the corporation include the sales and marketing legacy, in which many
product organizations view Japan as only a market, and not a source of
technology, with the exception of semiconductors, the direct sales
legacy, and the ignorance of developments in Japan. There is the view
that it is too hard to do business in Japan.

The slowdown in the Japanese economy has given DEC a bit of a
reprieve, and time to get its story together. But it has also slowed the
pace of DEC's moves, such as seeking alliances. There is a counter-
argument that DEC should in fact be moving aggressively in Japan.
PCs are seen as a major opportunity in Japan, and is DEC's most active
effort. This is part of a larger effort that includes other products which
are less active.

**TERADYNE**

Teradyne was founded in 1960 in Boston, and became publicly held in 1970.
Products include systems for the test of semiconductors, circuit boards,
telecommunication systems, as well as backplane connection systems and
software. Sales in 1992 were $530 thousand, with 4100 employees worldwide.

Teradyne had offices in Japan prior to 1973, and after 1973 Teradyne in
Japan was formed as a wholly-owned subsidiary called TKK. Japan is
the headquarters for all of Asia, but Sales is managed out of Hong
Kong. TKK is 21 years old. There are about 160-170 people, of which
about 10 are expats. They are trying to recruit directly from Japanese
universities, and to be as Japanese as possible without losing good
communications to ensure corporate strategy and local strategy remain
in alignment.
Historically, the view has been 'Japan and the rest of Asia', but there will need to be more integration going forward as manufacturing appears in China and in other parts of Asia.

There is a tendency to move manufacturing out of Japan due to the high yen and the tough economy, but the basic strategy is still the same. Because the decision-makers at the customers are still in Japan, the new plant locations will follow the Japanese lead. In turn, when a facility is moved, the Japanese standards will go with it.

Teradyne takes Japanese customers as having the leading-edge requirements for the entire world. The component business has Engineering in Japan. Japan serves to seed the U.S. divisions. In some cases, Teradyne in Japan has developed and/or adapted specific products for Japan. At this point, most Engineering is still in the headquarters, though.

Communication Systems and Components in Japan have manufacturing capabilities which include final assembly and modifications.

Teradyne has a strategic alliance with Okano for an MDA (Manufacturing Defect Analyzer) which costs about $30 thousand, and for an analog in-circuit tester, which costs much less. These are more popular in Japan than in the U.S., and become a process check at the end of the assembly line. The philosophy in Japan is 'process verification', which is different from the 100% functional test philosophy in the U.S. But the trend to digital makes the MDA less attractive. Testing for an open on an SMT device requires module-under-test power and digital test capability. The Zehntel 1800, which starts at about $50 thousand, is the high-end tester for Japan. MDA standard fixturing is pneumatic, mechanical, press-down, which is a good match for the 1800, which doesn't use a vacuum pull-down. Teradyne is looking to a strategic alliance to get the Japanese board-test philosophy (as differentiated from the device philosophy).
As a market, Japan is in a league by itself. The importance of the electronics market, and the requirement for Japanese language makes Japan unique. Teradyne is committed to the long-term. As our president, Alex D'Arbeloff says, 'we won't succeed anywhere if we don't succeed everywhere.'

The greatest potential contribution Japan could make to the corporation includes for Teradyne, as a maker of automated test equipment for the electronics industry, Japan as a huge market and source of electronic products. Japan is extremely important, no matter how you look at it.

The greatest constraints on the expected role that Japan operations could play have to do with communication and understanding. Language is difficult for both sides, and it is difficult to do routine phone follow-up.

Understanding the market is critical to the future of the product line, and there is no substitute for learning first-hand. Establishing personal relationships is critical to doing business in Japan. I see myself as part of the Japanese organization located in the U.S. There is a much corporate integration, including engineering for local needs and marketing information which returns to the U.S. as input for the product development process.

In light of the economic slowdown in Japan, manufacturing may move out of Japan, but TKK will make that decision. All high value-added work will stay in Japan. The sales philosophy will stay the same as the U.S. philosophy - sell 3 by 3. That is, sell to 3 organizations, such as manufacturing, design, and purchasing, and sell 3 levels deep in the organizational hierarchy.

**ATT**

ATT is a worldwide corporation that provides communications products and services, computer systems, and network equipment to a
wide range of customers. The ATT network across the globe is made of more than 200 million miles of transmission facilities, and carries over 100 million voice, video, data and fax messages every day. In 1991, revenues exceeded $63 billion with 317 thousand employees. The ATT Bell Labs are where the transistor and the laser were invented. ATT has targeted 25% foreign revenue by 1995, and 50% by 2000.

ATT has been in Japan for 11 years, and grown from 1 to 5000 employees. NCR accounts for about 4200 of those people, and there are JVs with about 22 other companies, so there are really about 450 people. The leading business unit sells equipment to telephone companies like NTT.

There is perhaps no strategy going into Japan. Globalization took place in pieces - the approach was to send staff out, and tell them to 'see what you can do.' There was a strategic plan prepared with consultants in 1988, but the management wasn't ready to proceed. Expect a new focus on ATT strategy in Asian countries with the new Asia head. They have done benchmarking with other companies, but there is not necessarily any clear pattern.

Motorola's strategy was to pressure the U.S. government, but they alienated the Japanese. However the net effect that they now have market share. In their case, they may have done the right thing - they are now respected. The best strategy may be muscle and to do 'all the other nice things as well.'
Section III. Conclusion
Chapter 10.

Discussion

In this chapter, profiles of the previous section will be reviewed and summarized. The next chapter will explore one more company, Toyo Carrier, the Japan operations of United Technologies Carrier. In the final chapter, a set of alternative scenarios for Toyo Carrier will be described and discussed, in the hope of shedding further light on the general problem of pursuing success with Japanese operations in the Japanese market, and the larger challenge of trying to build the integrated network corporation.

In the previous section, eight different U.S.-based multinational corporations were presented, and the strategic development of their respective Japan operations were examined. Four of the corporations, IBM, Xerox, Eastman Kodak and Cummins Engine, were described in some detail and evaluated using the Bartlett-Ghoshal typology, which tracks the evolution of local capability against the growing strategic importance of Japan. Four other corporations, Motorola, Digital Equipment, Teradyne and ATT, were presented in order to provide further perspective on Japan, and to attempt to reinforce or refute the lessons learned from the first group of corporations.

The companies studied vary in size from $0.6 billion to $66 billion in annual sales, and have varying degrees of profitability. They have had operations in Japan for periods ranging from about a decade to more than three decades. Their Japan operations include wholly-owned subsidiaries, joint ventures, strategic alliances and licensing arrangements. Their functional capabilities range from simple marketing and sales offices to complete value-added chains, including R&D, product development, manufacturing, marketing, sales and service. There are examples of business success for the parent corporation or the local operations, or neither, or both as the different histories have been traced.

The Bartlett-Ghoshal diagrams are shown again below:
IBM Japan has been a strategic leader in Japan, as well as providing unique contribution to the corporation. The downturn in IBM's sales worldwide is reflected in IBM Japan's situation.

Fuji Xerox has been a model of success in Japan as a joint venture, and Fuji Xerox's contributions to the corporation have been nothing short of critical in meeting the competitive challenge from Japan and in rethinking Xerox's product quality and management practices.

Eastman Kodak is faced with moving from photographic images to digital images under new leadership. What looked to be a promising entry into
Japan has been set back, perhaps for the long-term, by their recent decision to rescind offers of employment to Japanese college graduate.

Cummins Engine has chosen a completely different path to success in Japan and worldwide, which required nothing less than reinventing their products and their organization. In this singular case, Cummins was faced with surrendering their home markets to Japanese competitors, and now a decade later, are being invited into the Japanese market directly through a Japanese partner.

In order to assess companies performance in the relative sense, a list of foreign firms that are market leaders in Japan has been prepared. IBM Japan, Fuji Xerox and Eastman Kodak Japan all appear prominently. An alphabetical list showing the ranking of foreign companies with leading market shares from 1989, is shown below:
<table>
<thead>
<tr>
<th>Foreign Company</th>
<th>Product</th>
<th>Market Share in Japan</th>
<th>Ranking in Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ajinomoto-General Foods</td>
<td>Instant coffee</td>
<td>24.8</td>
<td>2</td>
</tr>
<tr>
<td>Applied Materials Japan</td>
<td>IC etching equipment</td>
<td>32.0</td>
<td>1</td>
</tr>
<tr>
<td>Caterpillar-Mitsubishi</td>
<td>Crawler Tractors</td>
<td>37.4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bulldozers</td>
<td>38.9</td>
<td>2</td>
</tr>
<tr>
<td>Coca-Cola Japan</td>
<td>Soft drinks</td>
<td>60.0</td>
<td>1</td>
</tr>
<tr>
<td>Eastman Kodak (Japan)</td>
<td>Color photo film</td>
<td>11.2</td>
<td>3</td>
</tr>
<tr>
<td>Fuji Xerox</td>
<td>Copiers</td>
<td>19.2</td>
<td>3</td>
</tr>
<tr>
<td>IBM Japan</td>
<td>Large-scale computers</td>
<td>30.0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Personal computers</td>
<td>5.6</td>
<td>4</td>
</tr>
<tr>
<td>International Rectifier</td>
<td>Discrete Si Thyrist devices</td>
<td>12.1</td>
<td>5</td>
</tr>
<tr>
<td>Johnson&amp;Johnson</td>
<td>Adhesive Band-Aids</td>
<td>39.5</td>
<td>1</td>
</tr>
<tr>
<td>Levi Strauss</td>
<td>Jeans</td>
<td>10.2</td>
<td>2</td>
</tr>
<tr>
<td>Lipton</td>
<td>Black Tea</td>
<td>28.7</td>
<td>1</td>
</tr>
<tr>
<td>McDonald's</td>
<td>Fast food</td>
<td>30.0</td>
<td>1</td>
</tr>
<tr>
<td>NCR</td>
<td>Cash registers</td>
<td>28.2</td>
<td>2</td>
</tr>
<tr>
<td>Nestle</td>
<td>Instant coffee</td>
<td>65.1</td>
<td>1</td>
</tr>
<tr>
<td>Nippon Lever Industries</td>
<td>Shampoos</td>
<td>12.0</td>
<td>3</td>
</tr>
<tr>
<td>Nihon Otis Elevator</td>
<td>Elevators</td>
<td>12.4</td>
<td>4</td>
</tr>
<tr>
<td>Nihon Sun Microsystems</td>
<td>Engineering Workstations</td>
<td>30.0</td>
<td>1</td>
</tr>
<tr>
<td>Pyrex</td>
<td>Cookware</td>
<td>30.0</td>
<td>2</td>
</tr>
<tr>
<td>Procter&amp;Gamble</td>
<td>Disposable diapers</td>
<td>15.0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sanitary napkins</td>
<td>10.1</td>
<td>3</td>
</tr>
<tr>
<td>Schick</td>
<td>Safety razors</td>
<td>70.0</td>
<td>1</td>
</tr>
<tr>
<td>Sumitomo 3M</td>
<td>Magnetic tapes</td>
<td>20.0</td>
<td>3</td>
</tr>
<tr>
<td>Texas Instruments</td>
<td>Bipolar digital ICs</td>
<td>12.9</td>
<td>3</td>
</tr>
<tr>
<td>Tupperware</td>
<td>Kitchenware</td>
<td>20.0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 8.**

Alphabetical Listing of Foreign Companies with Leading Market Shares in Japan\(^{37}\)
Another view of foreign firm's performance comes from examining a listing ranked by percentage of the worldwide revenues represented by the sales in Japan. In the cases of Fuji Xerox, IBM Japan, Teradyne KK, and Nihon Digital Equipment, as well as most of the companies shown below, the percentage of revenues exceeds the percentage of worldwide employees:
<table>
<thead>
<tr>
<th>Company</th>
<th>Employees Worldwide (thousands)</th>
<th>% Employees in Japan</th>
<th>% Revenues in Japan</th>
<th>Revenues Worldwide ($ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Materials Japan</td>
<td>2</td>
<td>18</td>
<td>37</td>
<td>0.4</td>
</tr>
<tr>
<td>Molex Japan</td>
<td>6</td>
<td>17</td>
<td>35</td>
<td>0.5</td>
</tr>
<tr>
<td>Amway (Japan) Ltd.</td>
<td>7</td>
<td>6</td>
<td>30</td>
<td>1.8</td>
</tr>
<tr>
<td>Fuji Xerox</td>
<td>99</td>
<td>13</td>
<td>27</td>
<td>10.9</td>
</tr>
<tr>
<td>Shin Caterpillar Mitsubishi</td>
<td>54</td>
<td>12</td>
<td>15</td>
<td>10.4</td>
</tr>
<tr>
<td>NCR Japan Ltd.</td>
<td>62</td>
<td>7</td>
<td>14</td>
<td>5.6</td>
</tr>
<tr>
<td>IBM Japan Ltd.</td>
<td>387</td>
<td>5</td>
<td>14</td>
<td>59.7</td>
</tr>
<tr>
<td>Johnson Co., Ltd.</td>
<td>12</td>
<td>5</td>
<td>14</td>
<td>1.5</td>
</tr>
<tr>
<td>Texas Instruments Japan</td>
<td>78</td>
<td>6</td>
<td>13</td>
<td>5.6</td>
</tr>
<tr>
<td>Sony Tektronix Corp.</td>
<td>20</td>
<td>5</td>
<td>13</td>
<td>1.4</td>
</tr>
<tr>
<td>Nihon Unisys</td>
<td>98</td>
<td>8</td>
<td>12</td>
<td>9.7</td>
</tr>
<tr>
<td>Banyu Pharmaceuticals (Merck)</td>
<td>31</td>
<td>9</td>
<td>11</td>
<td>5.1</td>
</tr>
<tr>
<td>Revlon</td>
<td>25</td>
<td>4</td>
<td>11</td>
<td>2.4</td>
</tr>
<tr>
<td>Yamatake-Honeywell Co.</td>
<td>78</td>
<td>5</td>
<td>10</td>
<td>6.7</td>
</tr>
<tr>
<td>Nihon Data General Corp.</td>
<td>16</td>
<td>6</td>
<td>9</td>
<td>1.4</td>
</tr>
<tr>
<td>Japan Upjohn (45 Sumitomo)</td>
<td>21</td>
<td>4</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Yokogawa Hewlett-Packard</td>
<td>87</td>
<td>3</td>
<td>8</td>
<td>9.8</td>
</tr>
<tr>
<td>Teradyne KK</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>0.4</td>
</tr>
<tr>
<td>Bristol-Myers</td>
<td>35</td>
<td>3</td>
<td>7</td>
<td>5.4</td>
</tr>
<tr>
<td>Measurex Japan, Ltd.</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>0.2</td>
</tr>
<tr>
<td>Sumitomo 3M</td>
<td>83</td>
<td>3</td>
<td>7</td>
<td>10.6</td>
</tr>
<tr>
<td>Avon Products Co., Ltd.</td>
<td>35</td>
<td>5</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>AMP (Japan) Ltd.</td>
<td>22</td>
<td>5</td>
<td>6</td>
<td>2.3</td>
</tr>
<tr>
<td>Nihon Digital Equipment</td>
<td>95</td>
<td>3</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>Mitsubishi Monsanto</td>
<td>52</td>
<td>3</td>
<td>6</td>
<td>7.6</td>
</tr>
<tr>
<td>Nippon Roche KK</td>
<td>47</td>
<td>3</td>
<td>5</td>
<td>5.5</td>
</tr>
<tr>
<td>Squibb Japan Inc.</td>
<td>17</td>
<td>3</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Samsung Japan Co., Ltd.</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>27.4</td>
</tr>
<tr>
<td>Teisan K.K. (L’Air Liquide SA)</td>
<td>25</td>
<td>4</td>
<td>2</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Table 9.
Leading Foreign Subsidiary Performance
Ranked by % Worldwide Revenues (1987-1988)38
Chapter 11.

CARRIER

Corporate Profile

The Carrier Corporation was acquired in 1978 by the United Technologies Corporation (UTC), just as Otis Elevator Co. had been acquired in 1975. Carrier hoped to discourage the "bear hug" of Harry Gray, the chairman of UTC, by suggesting that the deal would be an antitrust violation. Carrier argued in court that "it would receive significant competitive advantages if it were able to offer its heating and air conditioning equipment in a package deal with an Otis Elevator and Hamilton-Standard management system." However, in the end Carrier added its $2.1 billion in revenues to UTC's books, and Harry Gray moved on to his next acquisition target, Mostek, a maker of semiconductor memories. Mostek was bought in 1979.

By 1992, the annual sales for the major parts of UTC broke down as shown below:

<table>
<thead>
<tr>
<th>Segment</th>
<th>Company</th>
<th>Sales ($ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>Pratt&amp;Whitney (commercial)</td>
<td>3.7</td>
</tr>
<tr>
<td>(31%)</td>
<td>Pratt&amp;Whitney (government)</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Pratt&amp;Whitney (Canada)</td>
<td>1.2</td>
</tr>
<tr>
<td>Flight Systems</td>
<td>Sikorsky</td>
<td>2.1</td>
</tr>
<tr>
<td>(18%)</td>
<td>Hamilton Standard</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0.7</td>
</tr>
<tr>
<td>Building Systems</td>
<td>Otis</td>
<td>4.5</td>
</tr>
<tr>
<td>(40%)</td>
<td>Carrier</td>
<td>4.3</td>
</tr>
<tr>
<td>Automotive</td>
<td>United Technologies Automotive</td>
<td>2.4</td>
</tr>
<tr>
<td>(11%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>22.1</td>
</tr>
</tbody>
</table>

Table 10.
United Technologies Revenues (1992)
Carrier’s revenues represented almost 20% of total revenues, and combined with Otis, the Building Systems Segment reached 40%.

Dr. Willis Carrier first encountered the problem of “air conditioning” in 1902 in Brooklyn, when he discovered a problem at a printing press which couldn’t line up the colors on a popular magazine of the time. He found that by controlling the temperature of the air, he could control the humidity and reduce variation in the paper size, allowing more accurate and reliable printing. Specifically, he found that chilling the air removed humidity from it. This new idea soon found many industrial applications, including paper mills, meat-packing houses, breweries, and bakeries. Over the next few years he was able to refine the idea, and in 1915 he helped found the Carrier Engineering Company. Air conditioning became famous in movie houses, where people could go as much for the cool air as to see the movies.

Meanwhile, elevator technology was being pioneered by the Otis Elevator Works, which was founded by the inventor Elisha Graves Otis in Yonkers, New York in 1853. In 1931 Otis installed 67 elevators in the world’s tallest building, the Empire State Building in New York. The parallel development of the elevator presented a new challenge for Carrier, to provide air-conditioning for skyscrapers, and by the 1950s a huge proportion of commercial buildings were being air-conditioned. Residential buildings, another potentially gigantic market, were soon to follow.

Today, the Carrier Corporation is the world’s largest manufacturer and marketer of heating and air conditioning equipment (HVAC). Carrier is 37% larger than its closest competitor, Matsushita. Carrier dominates each of its geographic regions, including North America, Latin America, Europe, Middle East, Africa and Asia Pacific, excluding Japan. In terms of annual industry sales, the relative regional market sizes are shown below:
The North American market, which Carrier has always dominated, has traditionally been led by ducted central air conditioning and heating systems. In an interesting contrast, the Japanese residential market has developed along a completely different path - ductless, split air conditioning and heating systems. The reasons for the difference are numerous, but can be attributed to some obvious demographic and climatic factors: population density in Japan is roughly two orders of magnitude higher than the U.S., housing is relatively smaller and more expensive than in the U.S., the climate for much of the population is suited to having one compact, integrated heating and cooling system, and houses have not traditionally been designed to accommodate the volume of ductwork and equipment needed for a central systems. Furthermore, ductless split systems can easily be added to existing housing, and can be added incrementally to one room at a time, reducing the overall expense for a Japanese customer.

**Japan Operations Profile**

Dr. Willis Carrier, the man who invented air conditioning and created the company that was to bear his name, went international at an early stage, and chose to start business in Japan shortly after the Stock Market crash of 1929. In 1930 Dr. Carrier started a 50/50 joint venture with the Mitsui zaibatsu, from which the "Toyo" pre-name originated. Shortly after that, in 1932, Toyo Otis Elevator, the predecessor to Nihon Otis, was founded as a joint venture with Mitsui, which claimed a 40% share. 

<table>
<thead>
<tr>
<th>Region</th>
<th>Sales ($ billions)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>North America</td>
<td>6.6</td>
<td>27</td>
</tr>
<tr>
<td>Europe, Middle East, and Africa</td>
<td>4.0</td>
<td>17</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>12.9</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24.0</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Table 11. World HVAC Market Size (1992)*
Toyo Carrier is now a wholly owned subsidiary of United Technologies Carrier. Today, the headquarters for Toyo Carrier is in Tokyo, and the major facilities today are a factory in Tsuyama and a new R&D center in Kikugawa. Toyo Carrier designs, produces and services air-conditioning systems and components for medium-sized commercial applications. They sell to both the domestic Japanese market and to foreign markets in roughly equal proportion. Annual sales are $150 million, and there are approximately 400 employees in Japan, including about 80 engineers in a new R&D center Kikugawa in the Shizuoka Prefecture. Toyo Carrier's manufacturing is done in Tsuyama in the Okayama Prefecture, a facility established in 1974, with about 250 employees.

In the early 1960's Toyo Carrier dominated the Japanese HVAC (Heating, Ventilating, and Air-Conditioning) market. Toyo Carrier provided air-conditioning for such flagship installations as the Imperial Palace, the Toshiba R&D Center, and the the Imperial Hotel in Tokyo. From the beginning in the HVAC industry, commercial markets for medium and large applications were dominant around the world.

However, as has already been described, the Japanese market did not develop along the same lines as the American market. As Japan grew economically, and as domestic markets for air-conditioning exploded, they became increasingly dominated by residential rather than commercial applications. A new type of product was introduced in 1965 that was called a "ductfree split system". Ductfree split systems now account for more than 75% of the Japanese market, a market which has now grown to be larger than all of North America's at a figure of about $10 billion. The great irony is that Toyo Carrier never chose to participate in the residential market.

Toyo Carrier's market share is currently about 1%, and it trails a list of diversified Japanese competitors that includes Matsushita, Mitsubishi Heavy Industries, Mitsubishi Electric, Sanyo, Hitachi, Toshiba and Daikin. In fact, though United Technologies Carrier is still the largest HVAC supplier in the world, the next seven Japanese competitors ranked by market share are the same seven Japanese competitors that Toyo Carrier faces in Japan.
"Carrier had no sales outlets for residential products back in the 1960s...the company had been importing some U.S.-made units, but they didn't really satisfy the market's needs", says Mr. Tadashi Kanaori, Managing Director of Engineering at Toyo Carrier, who joined the company in 1963. Furthermore, Toyo Carrier was profitable at the time, and the residential and commercial markets were perceived as completely unrelated, adds Mr. Kanaori.

**Japan Operations Role in Corporation**

As recently as 1992, Toyo Carrier was growing at greater than 10% per year. "A lot of the increase is due to the rise in OEM business...Carrier supplies commercial equipment to four of the seven large Japanese manufacturers, and they are turning to us more frequently for their needs in this market", says Masayasu Hisatome, Director of Production at Toyo Carrier. Toyo Carrier competes on "low-cost reliable air conditioning for light industrial applications", which they believe to be "virtually recession-proof", cites one Carrier newsletter. Toyo Carrier is known within the corporation for its high-quality manufacturing standards and capabilities.

Today, Carrier also has several related operations in Japan that include Ebara Carrier Co., Ltd., a joint venture created for the sale of absorption chillers outside of Japan, Nippon Building Systems Service Co., Ltd., a wholly-owned subsidiary of Toyo Carrier with 36 employees that provide service and repair of HVAC equipment, and General Aircon Tecnica, Inc., which sells and services light commercial HVAC equipment.

**Current Issues and Challenges**

The Japanese HVAC market is larger than the entire North American market, but the Toyo Carrier market share is less than 1%. Toyo Carrier faces a huge challenge and a potential opportunity in their home market if they can offer the right product for a niche application, or otherwise differentiate themselves and their products. Toyo Carrier may have sources of competitive technology within the Carrier Corporation and UTC-at-large, including the United Technologies Research Center, that it can leverage in order to carve out competitive space in the domestic marketplace. The
potential for finding a large Japanese partner with which to form joint venture is also very attractive, offering the advantages of scale, extended distribution, and technological applications that are tuned to the demands of local customers.

Toyo Carrier's and the Carrier corporation's larger challenge is to be poised to enter new markets when they are ready to explode. In the industry it is well understood that in developing countries HVAC markets grow two-and-a-half times as fast as their respective country's gross domestic products. In moderate temperature countries, including Italy, South Korea and Spain, sales of HVAC equipment grows very rapidly after disposable personal income surpasses $10 thousand per year, and only $5000 in hot climates. China is already drawing significant attention, and Carrier has a strong position overall in the Asia Pacific region, as shown below:

<table>
<thead>
<tr>
<th>Company</th>
<th>World Market Share</th>
<th>Company</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>40</td>
<td>Other</td>
<td>44</td>
</tr>
<tr>
<td>Carrier</td>
<td>11</td>
<td>Carrier</td>
<td>18</td>
</tr>
<tr>
<td>Matsushita</td>
<td>8</td>
<td>Matsushita</td>
<td>8</td>
</tr>
<tr>
<td>Hitachi</td>
<td>7</td>
<td>Hitachi</td>
<td>5</td>
</tr>
<tr>
<td>Mitsubishi Electric</td>
<td>7</td>
<td>Goldstar</td>
<td>7</td>
</tr>
<tr>
<td>Toshiba</td>
<td>7</td>
<td>Century</td>
<td>4</td>
</tr>
<tr>
<td>Mitsubishi Heavy</td>
<td>4</td>
<td>Samsung</td>
<td>6</td>
</tr>
<tr>
<td>Daikin</td>
<td>7</td>
<td>Sanyo</td>
<td>4</td>
</tr>
<tr>
<td>Sanyo</td>
<td>5</td>
<td>Mitsubishi Electric</td>
<td>4</td>
</tr>
<tr>
<td>Trane</td>
<td>4</td>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 12.
Market Share Comparisons
Conclusion: Analysis of Japan Operations Role

The market leadership of Carrier in the world and in the Asia Pacific region belies the competitive threat from Japan that has emerged in the last three decades. The same seven Japanese firms which trail Carrier in world market share are also present in the Asia Pacific region, and overwhelmingly dominant in the world's largest market, Japan, as shown below:

<table>
<thead>
<tr>
<th>Company</th>
<th>World Market Share Ranking</th>
<th>Japan Market Share Ranking</th>
<th>Asia Pacific Market Share Ranking (excluding Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Matsushita</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Hitachi</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mitsubishi Electric</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Toshiba</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mitsubishi Heavy</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Daikin</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sanyo</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Trane</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 13.
HVAC Equipment Market Share Ranking Comparison

The competition from Japanese firms can be expected to move to new products and new market frontiers as these firms apply their superior technologies to such areas as efficient, small, low-noise compressors and electronic systems and controls.

Toyo Carrier's ascent followed Carrier's ascent, though punctuated by World War II. Toyo Carrier was the leading HVAC firm in Japan at the time when some of their current top management was recruited out of college. The last three decades have witnessed the erosion of Toyo Carrier's market share, and put them in the position as an OEM supplier of low-cost commercial building HVAC equipment which bears other companies' names at the installation site. Toyo Carrier can't compete on scale economies with the other seven and has no easy entry point into new product niches which are already covered.
exhaustively. The lack of name-brand recognition exacerbates Toyo Carrier's difficulties in recruiting the best college graduates.

Ironically, Toyo Carrier has always been strictly a Japanese organization, but without a major Japanese partner like it once had in Mitsui, it is now not a "local insider" or a "corporate insider". The collapse of the "Bubble Economy" in Japan has hurt domestic business, and "endaka", the appreciation of the yen has put tremendous pressure on exports. This history is reflected in the Bartlett-Ghoshal diagram shown below:

Figure 15.
Toyo Carrier Strategic Map
Chapter 12.

Alternative Scenarios

The various scenarios that sketch the history in Japan for the eight firms described in Section II provide a useful basis for considering the evolution of Toyo Carrier. Toyo Carrier represents a classic example of the challenge faced by a U.S.-based multinational corporation's subsidiary in Japan, and in this case, one with a long history and a former leadership position.

Like IBM, Carrier established an early position in Japan with dominant technology. Unlike IBM, the Japanese and U.S. markets diverged at an early stage and Carrier did not respond.

Like Fuji Xerox, Toyo Carrier started as a joint venture between the Carrier Corporation and an influential Japanese partner, the powerful Mitsui zaibatsu (predecessor to the post-World War II keiretsu). Unlike Fuji Xerox, Toyo Carrier is no longer a joint venture. It did not survive World War, and when Toyo Carrier reemerged in the 1950s it was a wholly-owned subsidiary of Carrier. Though Toyo Carrier has been a Japanese organization throughout its history, it has not developed the same level of strategic capability that Fuji Xerox has within its market and its corporation. Over the long run the same kind of strategic dialog has not evolved, such as the Presidential Summit at Xerox now symbolizes, to permit discussion of corporate priorities and realignment of local strategies. The Fuji Xerox model, however, presents a promising example should Carrier and Toyo Carrier find a suitable Japanese partner in the future.

Like Eastman Kodak, Toyo Carrier faces the challenge of competing against giant industrial companies in an important local market while the corporate parent faces the same companies in Asian and world markets. If lessons from such industries as automobiles and office products still hold value, then the Japanese companies can be expected to enter foreign markets at low-cost and high-quality, and follow by offering increasingly higher-priced, higher-value-
added items. Unlike Eastman Kodak, Toyo Carrier is long-established and can be expected to continue to follow traditional Japanese business practices.

Like Cummins Engine, Toyo Carrier is in an industry that is being shaped today by environmental policy decisions. The need for alternative refrigerants alone may force the turnover of a significant proportion of the installed product base in the industrialized world. This represents a compelling opportunity to respond to national policies directly and locally in order to protect existing customers and to win over new ones. Unlike Cummins Engine, a "one-product company", the United Technologies Corporation is a diverse corporation comprising government and commercial businesses across about a dozen companies and a broad band of technology industries.

Perhaps the operative phrase entering the next century should be what Alex D'Arbeloff offered:

We won't be successful anywhere, if we're not successful everywhere.

As such, United Technologies, the Carrier Corporation, and the Toyo Carrier subsidiary offer an excellent testing ground for application of the integrated network concept. It is apparent that no fixed strategy or organizational construct has been able to sustain any of these corporations in Japan or worldwide, as the IBM story attests, and that major U.S. corporations with a major stake in Japan are still just considering and executing their entry strategies, such as ATT. Failure in Japan may not signal imminent decline in other markets, but success in Japan surely promises great rewards to the corporate network beyond Japan.
Notes

1 United Technologies Corporation Annual Report, 1992


5 Dennis J. Encarnation, Rivals Beyond Trade, Cornell University, 1992

6 Raymond Vernon, "Social Responsibility in Foreign Operations", a paper based on research of the Harvard Multinational Enterprise Project


8 Adapted from Vernon 1979

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14 Robert Sobel, IBM vs. Japan, Stein and Day, New York, 1986: 144 - comment by Peter Drucker
15  Ibid.: 12


17  *Wall Street Journal*, "IBM POSTS $8.04 BILLION 2ND-PERIOD LOSS, HALVES DIVIDEND, PLANS 35,000 JOB CUTS; GERSTNER...", Michael W. Miller, Laurie Hays, July 28, 1993


21  Harvard Business School case, "Xerox and Fuji Xerox", #9-391-156

22  Ibid.

23  Ibid.


26  Presentation at MIT by Kodak executive on April 19, 1990.


28  Presentation at MIT by Kodak executive on April 19, 1990.

29  Ibid.

Cummins followed a 4-step program: 1. Lay out the factory into product-focused cells, directing similar products through tightly clustered groups of machines, 2. After production ramp-up, reorganize once again, divide the plant into classes of production based on volume, design stability, and demand predictability, 3. Based on its production requirements, map each product onto the appropriate class of machinery, 4. As product life cycles evolve, continuously revisit the mapping step. (Harvard Business Review, Cummins Engine Flexes Its Factory, Ravi Venkatesan, Mar/Apr 1990)
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