

Failing to Change: The Plight of the Japanese Computer Industry

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Japanese companies are still suffering from low earnings and profits, legacies of the collapsed „bubble economy“ of the late 1980s. Among the sufferers are the biggest electronics firms in the country: Fujitsu, Hitachi, Mitsubishi Electric, NEC, and Toshiba. Some industry observers believe that the good times will return when the economy improves. We say they won't – unless the Japanese electronics industry makes some big changes.

While most articles in this issue of *Prism* address *how* to change, here we talk about *why* change is necessary. In Japan, failure to change – and change fast – could be devastating.

The fact is that an economic recovery alone cannot improve the profitability of Japanese electronics companies. Worse: the revolutionary changes now occurring in computer-related industries around the world are virtually certain to precipitate a crisis in the Japanese computer, electronics, and software industries during the 1990s. And the Japanese computer industry cannot evade this crisis by relying on its established strengths. Japanese-style management, production technology, and emphasis on the group simply cannot close the gap. There are four main reasons for this crisis, which I discuss in some detail in the latter portion of this article. But first, let's take a quick look at the twisting path of the computer industry.

A Shift in Computer Culture

At every stage in the history of the computer industry, smaller companies with newer technologies and newer ways of doing business have snatched market share away from the leading companies of the day. Since computers first became widely used in the 1960s, major structural changes in the industry have taken place at roughly 10-year intervals. The 1960s saw the spread of the mainframe computer. In the 1970s, the minicomputer came into common use. The 1980s brought the personal computer and the workstation onto the stage. Now, in the 1990s, all these computers are being linked into networks.

The pivotal event among all these changes was the shift from the old mainframe culture, in which users logged on to a single large computer, to the new distributed processing culture, in which each user has access to a workstation or other device with its own processing capabilities and logs on to the mainframe only when necessary. This new approach offers better performance at a lower cost. The effects of this new culture are spreading throughout the world.

As noted above, one of the major issues facing the industry today is the phenomenon of downsizing. Downsizing implies not only reducing the computer's physical size and price, but also shifting from the old mainframe culture to the new distributed processing culture. It involves a complete transformation in technology, in the framework of business, and in the identity of the main corporate actors. The chasm between the two cultures is so great that it is impossible for an enterprise whose thinking is still based on the old culture to succeed in areas associated with the new paradigm.

The Old Culture. In selling mainframe computers, major computer manufacturers sought to become the sole providers of all computer-related equipment and services for their customers. By treating the internal structure of the computer and of the operating system software as proprietary, a single supplier, such as IBM or Fujitsu, effectively captured their customers for all their computing needs. In terms of industrial structure, this meant that a small number of very large companies could dominate the computer industry as a whole.

And because users could not switch vendors without major disruption and expense, those dominant vendors could charge more or less what they wished. Profits were legendary.

Those heady days are long gone. But the five big Japanese electronics companies mentioned earlier still depend on business of this old-culture type for the bulk of their computer-related operations. Even the Japanese software industry, which is in the midst of a severe slump, practices largely old-culture business.

The New Culture. In the new culture – that of accepted worldwide standards and open systems – users can assemble the various elements of a computer system from a variety of specialized vendors according to their own needs. Open standards have made it possible for a wide range of companies to build significant, even if small, businesses. And these small companies with highly distinctive business cultures have dethroned IBM and other corporate behemoths. As the industry has fragmented, it has also become polarized between extremely high-profit, high-value-added sectors and low-profit, low-value-added sectors. American companies increasingly dominate the former sectors and Japanese companies the latter.

Independent industries (not PC manufacturers) are producing high-value-added products, such as microprocessors and operating systems. If a company gets its own type of microprocessor or operating system soft-

ware accepted as a global standard, it can acquire a virtual monopoly position and make lucrative profits from the supply of these system components. For example, the personal computers of NEC, Toshiba, and Compaq Computer all use the same microprocessor (made by Intel, an American company) and the same operating system (made by Microsoft, also an American company). Now that their products are de facto standards, Intel and Microsoft are posting spectacular profits of well over 10 or even 20 percent of sales. Their lines of business, which may be said to deal directly in intellectual property, exemplify the new computer culture.

As the system component business becomes increasingly standardized, it becomes more and more difficult for computer makers to differentiate themselves on the basis of their finished products. This difficulty has led to furious price competition, which has seriously eroded the profitability of the computer hardware business. Thanks to Japanese companies' decisive edge in manufacturing, Japanese products remain quite competitive at the finished-product level. But thanks to their success in creating standards, American companies have managed to grab most of the high-value-added portion of the computer business.

Restructuring an Industry. Events in the American market since the late 1980s demonstrate that the shift to the new computer culture is irreversible. Companies that cling to the past are in deep trouble. IBM and Digital Equipment Corporation, which were the heavyweights in the old culture, are both now in the red, and some of the second-tier firms under the old order, such as Wang Computers, have approached bankruptcy.

While many older firms have undergone layoffs and restructuring, many of the newer and smaller outfits are enjoying rising profits. This does not mean that all new-culture companies are sound. On the contrary, many of them have a very fragile managerial foundation. And while being „distinctive“ sounds good, being dependent on a single strength may not be.

Some observers claim that the industry is suffering through a process of natural selection. Competition to establish de facto standards is a classic form of high-risk, high-return undertaking. Usually there will be only one, or at most two, victors in any particular field, and the others will pull out.

The Impending Change in Japan

Why do I assert that the changes occurring in the computer business are virtually certain to precipitate a crisis in the Japanese computer, electronics, and software industries during the 1990s? There are four principal reasons:

- Downsizing
- A lack of venture-type businesses
- Monopolies on value-added products
- A lack of leadership

Downsizing. The Japanese market cannot avoid the trend toward the downsizing of hardware and the installation of open architectures. Once the Japanese economy recovers and corporations start spending money again on information systems, their outlays are certain to go toward the distributed processing systems of the new culture. In other words, it is very likely that economic recovery will confront Japanese computer makers with the very same fundamental structural changes that have overtaken the former heavyweights of the American industry.

In 1991, sales of hardware and software associated with the new culture accounted for a full 60 percent of total computer industry sales in the American market, compared with less than 40 percent in the Japanese market. The patterns of computer usage in Japan are running about half a decade behind those in the United States: Japanese businesses remain heavily dependent on the centralized processing systems of the old culture, as did American businesses around 1987.

Change needs an impetus. In the American market, the stimulus may have been Black Monday in October 1987. When corporations recovered from the aftereffects of the plunge in stock prices and resumed spending on information systems, they conducted a hard-nosed reassessment of the direction of their spending. Many decided to switch to downsized hardware and open architectures. Today it is Japanese companies that are caught in a recession. Now Japanese managers must rethink their information strategies, and, no doubt, when business eventually picks up again, they will make the same choice as their American counterparts.

What will happen when Japan shifts to the new culture? Sales of centralized processing systems will stop growing, and the old-line manufacturers – the companies that develop, produce, and market finished computer products – will see their profitability erode dramatically. The American computer makers are already in this position, and their response has been to restructure themselves. In a bid to make profits, despite gross margins several percentage points lower than six years ago, they have moved decisively to cut staff and outsource manufacturing to countries like Japan. Japanese companies will find it hard to lay off workers. Instead, they will be inclined to look for new sources of revenue so they can adjust to the new culture without shrinking the scale

of their operations. However, such giant corporations have too much organizational overhead and take too long to make decisions. They are ill-suited to the computer business, which is a place of rapid change in technology, customer identity, and industry structure.

In America, such computer behemoths are losing strength as a number of small venture-type companies rise up, glowing with vitality, innovation, and individuality. With their dynamic strategies, these new companies are producing fundamental changes in technology, in the customer base, and in the industry's structure. Big Japanese corporations cannot hope to emulate them.

The leaders of the Japanese computer industry also manufacture industrial electronics, consumer electronics, telecommunications devices, office equipment, and electronic components. Because of their sheer size and the qualitative complexity of having many different lines of business, these companies are unable to make good decisions quickly. They are used to making everything their rivals in the industry are making and battling with them for market share. It will be very difficult for them to compete in the world of the new computer culture if they persist in trying to be all things to all people. But Japan offers no alternative models.

A Lack of Venture-Type Businesses. Specifically, Japan has almost no American-style venture-capital businesses, and it lacks the corporate culture and the environment required to nurture them. The lifetime employment system, despite some recent signs of weakening, remains deeply rooted, and labor mobility is low, making it difficult for new ventures to recruit talented personnel.

Moreover, even if such companies were to come into existence in large numbers in Japan, they would be unable to get ahead in high-profit, high-value-added lines of business unless they targeted the global market. And that would mean succeeding in the United States, which accounts for fully half the global marketplace for computer-related products.

Monopolies on Value-Added Products. A small group of American companies, mainly venture-type concerns, holds a virtual monopoly on the computer products with the highest value-added ratios. This near-monopoly is unlikely to be broken anytime soon. The greatest added value comes not from technology – knowing *how* to manufacture – but rather from concepts – knowing *what* to manufacture. American firms lead in the key areas of microprocessors and operating systems – the brains of computer hardware and software systems, respectively. Japanese computer companies have failed to establish a presence in these areas, and few are even aware of the importance of doing so.

Companies in the global computer and semiconductor industries can be assessed in terms of their strengths in conceptualization (coming up with good product ideas) versus implementation (working out good production methods). We can then plot this dimension against whether the business is global or local in scale. In the exhibit, existing computer makers fall into three basic groups: those with excellent concepts and global operations (quadrant I), those that serve local markets and are good at both conceptualization and implementation (quadrants III and IV), and those that excel only at implementation and supply users at home and abroad (quadrants II and III).

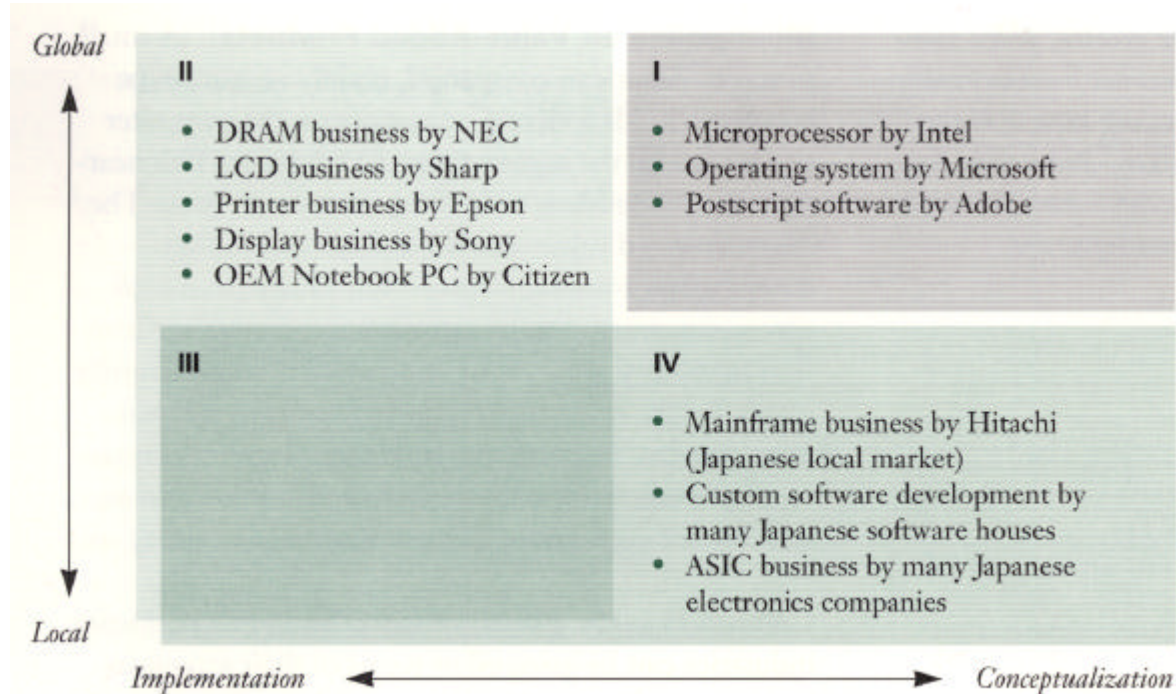
Japanese computer companies fall into either the second or third of these three categories. That is, some do almost all their business within Japan, while others also supply the global market but are known for the quality of their products rather than the value of their ideas. No Japanese companies have come up with the kinds of concepts needed to succeed globally. This failure has kept them out of the high-profit areas of the new culture. In the old culture, it was possible to compensate for weaknesses in product ingenuity through strengths in manufacturing ingenuity. Now, however, the conceptual elements have split off into independent product lines, and the prospects for profitability on the implementation side are dim.

Furthermore, in the past it was possible for some Japanese companies to prosper even while operating only locally. In some cases, the local orientation of these firms was a result of their emphasis on integrating systems, customizing software, and supplying services – activities that are highly local in character. In others, it came about because of distinctive features in the design of computers for the Japanese market. The former orientation will continue to be viable, but the latter is proving to be vulnerable to competition now that globally usable products are being developed.

A noteworthy example of the latter type of local operation can be seen in the area of personal computers. The PC business inherently belongs to the new culture rather than the old, but the Japanese PC industry retains a highly local character and is strongly oriented toward the domestic market. A single Japanese company, NEC, commands more than 50 percent of this market. But the only reason NEC has been able to achieve this local hold is by creating specialized hardware and proprietary software to meet the demands of Japanese-language processing. Because the technology for handling Japanese was still immature when the PC market came into being, Japanese users required products that incorporated special functions. Now, however, substantial improvements in performance mean that PCs made for the global market are capable of adequately processing Japanese. Because the global market is so much larger than the Japanese market, manufacturers of PCs for sale

around the world benefit from economies of scale and can thus offer lower prices. The result is that Compaq and Dell Computer have launched sales campaigns in Japan featuring low-priced PC models. Clearly the process of globalization has begun in the Japanese computer market.

Scope vs. Focus in Selected Japanese Companies



What, then, of the Japanese businesses that manufacture for global sales? Certainly, Japanese companies know how to make things, once a decision has been reached on what to make. This strength is the source of Japan's trade surplus. Probably Japanese manufacturers will be able to retain a competitive edge over manufacturers in other Asian countries. The problem, however, is excessive competition among Japanese firms themselves. In the past, this head-to-head competition over very similar products tended to spur technological innovation, and it provided the driving force that allowed Japanese manufacturers to dominate many markets. Now, however, the extreme level of competition is making it hard for companies to turn a profit. In those areas where the scale of the market is large and sales prospects are good, Japan-based manufacturers must jostle with numerous domestic rivals, and this forces them to pare their margins to the bone.

A Lack of Leadership. The fourth reason Japan's computer industry will face a crisis is that its major corporations lack the management skills needed to succeed in this fast-changing business. Specifically, they do not have executives capable of articulating a clear vision and providing leadership for their organizations on a top-down basis.

The „vision“ I am talking about is much more profound than slogans. Successful American computer companies all have visionary leaders. They are the most important competitive assets in the industry. A visionary in the context of the computer industry is someone who has a profound understanding of technology and who can see how new technological developments will affect users. Such a person can visualize the new markets that will emerge and can translate this vision into effective business strategy.

For Japanese companies to succeed in the computer industry, they will have to achieve this type of profound vision. They will also have to develop the leadership required to drive the organization top to bottom. This will require significant changes in the style of management currently practiced in Japan.

A Call to Action

The computer industry stands at the forefront of a historical transformation – from an industrial society into a knowledge-based society. To succeed in this culture, corporations will be forced to reinvent themselves. Japanese management will have to give up its parochialism, its perverse egalitarianism, its in-group orientation, and its tendency to suppress individuality and creativity. Much will depend on how Japanese companies respond now. If they recognize what is happening, there is still time for them to change. Nearly all the American com-

panies that are now driving the industry started out from zero. Japanese companies have a huge advantage over these start-ups in their first-rate financial resources, human resources, and technological resources. Their success – and perhaps their survival – depends on what strategy they decide to pursue. If their Japanese employees cannot come up with conceptual breakthroughs, then they should recruit talent from around the world.

Such drastic changes will not be easy. But the Japanese have no choice but to take up the challenge.

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