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TECHNOLOGY AND
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APRIL 2000

ASIA E-COMMERCE REPORT 2000

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The East Asian “miracle” has been tarnished in the eyes of the world by the financial crisis and political turmoil of the late 1990s, leading to a lively debate over who bears the blame for the crash: foreign investors, corrupt governments, the IMF, or a conspiracy of Western governments and investors bent on discrediting the Asian development model. In the meantime, however, most of Asia is already recovering economically and is busy making up for lost time on the Internet and electronic commerce. Asian entrepreneurs and investors are in a frenzy to start new companies and take them public, while established companies try to figure out what the Internet means for their businesses. Governments are loosening restrictions on IPOs, promoting e-commerce, trying to attract new investment in the Internet sector, and introducing competition into the critical telecommunications market.

Recently we visited Japan, Taiwan, Singapore and Malaysia to see firsthand how the Internet and e-commerce are transforming those economies, and to study how leading computer companies are using e-commerce in the region. As always, there were plenty of interesting stories and we were as impressed as ever at the diversity and dynamism in the region.

Japan

In the midst of economic stagnation that has dragged on for nearly a decade, Japan is seeing an exciting force for change emerging around the Internet. As the traditional computer makers struggle with slow growth and dwindling profits, news reports trumpet the emergence of young, Internet-savvy entrepreneurs in areas such as Tokyo’s Shibuya district, referred to as Bit Valley.

A recent speech by Softbank founder and Internet billionaire Masayoshi Son filled Tokyo's largest night club with thousands of admirers looking for advice and inspiration. Son has made a fortune with investments such as Yahoo! (Softbank has a 24% stake in Yahoo! in the U.S. and owns 50% of Yahoo! Japan). Softbank's investment in more than 300 companies has helped fuel the Internet revolution in Japan, although with its stock now down more than 2/3 from its peak, Softbank is facing the same devaluation of its investment currency as U.S. counterparts like Yahoo or Amazon.

Son is also using his money and newfound clout to push down the barriers that have stood in the way of innovative Japanese entrepreneurs. Softbank is leading the creation of Nasdaq Japan, a computerized stock market set to open in June, making it easier for Japanese venture companies to go public by avoiding the heavily regulated Tokyo Stock Exchange. In response, the TSE has set up its own exchange for start-up companies, with easier listing requirements, dubbed "Mothers", which is expected to list some two dozen companies in the

first half of this year. Mothers generated enthusiasm when it opened last year, but with the recent fall in technology stock prices, there has been “an overwhelming criticism of the exchange, mostly centered around the low risk threshold of the average Japanese investor,” according to one expert.

In the PC industry, perennial powers NEC and Fujitsu still control 45% of the PC market, although NEC’s share has dropped from 50% in the early 1990s to just 22% in 1999. New competitors such as Dell, Gateway, Apple and Sony are shaking up the market with innovative products and new distribution models. Dell and Gateway have seen rapid growth with their direct sales, build-to-order business models. Gateway’s Country Stores have been a hit with consumers, while Dell is making inroads into the corporate and small and medium-sized business markets. Hewlett-Packard Japan recently announced it would sell PCs for the small business market directly on the web.

Apple and Sony have succeeded by offering attractive new products such as the iMac and Vaio lines that are as popular in Japan as in the U.S. In fact, some of the design features of the iMac came from Japan, including the built-in handle that allows Japanese families to move their iMacs around to convenient work spaces in small houses. In general, Japanese customers favor small, light PCs, and it is estimated that nearly half of all PCs (desktops and notebooks) sold in Japan have an LCD screen. IBM has developed products specifically for Japan for some time, and with its strong position in corporate markets maintains the largest market share of any foreign PC maker at about 10%. Compaq recently announced it would develop Japan-specific PC products, and Dell has similar plans.

Japan’s computer titans, Fujitsu and NEC, run the two largest ISPs in Japan, NiftyServe and BiGlobe, but they have been slow to adopt direct online PC sales themselves. Their reluctance is similar to that of other indirect vendors such as HP and Compaq, who face potential conflict with channel partners. This is particularly a problem for the Japanese PC makers who rely on extensive networks of exclusive dealers to sell and support their products. NEC works with online catalog retailers who bundle PCs and Internet service for customers, but visitors to NEC’s site are directed to nearby dealers. Eventually, however, NEC expects to sell directly online, as it attempts to shore up its struggling PC business. Sony also runs an ISP, So-net, with 1.2 million subscribers in Japan. The company plans to expand So-net internationally as part of an overall Internet strategy which includes devices, access, content and services.

Perhaps the most striking development in Japan’s Internet world has nothing to do with PCs at all. It is the emergence of the i-mode Internet service provided by NTT DoCoMo. I-mode offers Internet over small cellular hand sets, which can be seen all over Tokyo. NTT DoCoMo signed up nearly 5 million subscribers in the first year of i-mode’s operation. Over 350 companies are using the i-mode portal to provide mobile online services, such as banking, news and games, and over 7,000 Web sites are available with content that can be accessed on the tiny screens of the i-mode phone.

The success of the i-mode Internet service (and of similar wireless data services in Europe) are an important part of the larger shift of the Internet away from the PC-centric model that

drove its growth during the 1990s. While the PC is not going to disappear as a device for accessing the web, it will be joined by a variety of access terminals that are less like computers, and more like appliances. Some of these (such as Sony's Playstation2 or the U.S. I-opener) will be used in homes as a direct PC substitute, while others (especially cellular phones) promise ubiquitous access based on new concepts of web content and delivery.

Any shift away from the PC-centric model will of course lessen the dominance of U.S. producers and users in determining the future of the Internet. In particular, the wireless data options are reaching new Internet users in Asia and Europe, while U.S. users with existing (and inexpensive) access seem less enthusiastic about such options. Domestic-focused U.S. firms could thus miss the Internet's next wave in wireless data, unless they compete much more aggressively in Asia and Europe to learn from these leading markets.

Taiwan

Taiwan continues to be the arms supplier for the global computer wars. According to the Ministry of Economic Affairs (MOEA), information hardware production grew by 18.1 percent to US\$39.8 billion in 1999, in spite of the devastating earthquake in September. Most of Taiwan's hardware production is sold to multinational IT companies, who are increasingly outsourcing manufacturing to concentrate on design, marketing and services. Compaq, IBM, Hewlett-Packard, and Dell accounted for 67 percent of total foreign purchases last year. Compaq bought US\$7.1 billion worth of products, followed by IBM at US\$4 billion, HP at US\$3 billion and Dell at US\$2.5 billion. These companies have developed long-term relationships with leading Taiwanese manufacturers, including Compaq with Inventec, Mitac and FIC; IBM with Acer; Dell with Quanta; and HP with FIC, Compal, and Asustek.

Taiwanese companies offer strong capabilities in design, engineering, manufacturing and logistics. On the other hand, they have paradoxically been slow to adopt the very technologies that they have been manufacturing for the rest of the world. Indicators of IT use such as PCs/100 population or IT spending as a percent of GDP show Taiwan ranking well behind neighbors such as Singapore, Hong Kong and South Korea. This slowness to adopt IT was not a problem in the days when the major computer vendors were willing to process orders by phone or fax, but it is becoming a problem now that these big customers are moving to electronic commerce systems for procurement and supply chain management.

In order to respond to the shift to e-commerce, both the Taiwan government and the big multinationals are working with Taiwanese companies to get their operations online. Compaq and IBM have begun developing e-commerce networks to link up with their major first-tier suppliers. However, the Taiwanese suppliers need to improve their own internal information systems to be able to integrate e-commerce with order management, manufacturing, finance and other functions. Even further behind are the smaller second- and third-tier suppliers and subcontractors with inadequate or non-existent IT infrastructures.

In order to promote e-commerce and help smaller suppliers take advantage of its capabilities, the Ministry of Economic Affairs, the Institute for Information Industries, and the Taipei Computer Association are implementing a project aimed at developing electronic marketplaces with common standards. Companies are categorized as Type A (large multinationals), Type B (first-tier Taiwanese suppliers such as Acer, Inventec, FIC and Mitac), and Type C and D (smaller Taiwanese suppliers). The government is encouraging the Type A and Type B companies to set up their own electronic linkages, generally to standards set by the multinationals. Its own efforts are aimed at developing simpler interfaces between Type B, Type C, and Type D companies. The government also is encouraging local companies to develop electronic marketplaces, become application service providers, and develop other Internet services and content to support e-commerce.

While smaller companies are still behind in IT and e-commerce infrastructure, surveys by the Market Intelligence Center (MIC) show that the number of suppliers who have e-mail and/or web sites has increased from 10% three years ago to 50% today. MIC estimates that business-to-business e-commerce totaled NT\$1 billion (about US\$33 million) in 1999 and will grow to NT\$16 billion (US\$525 million) by 2002.

Another trend in the hardware industry is increasing offshore production to cut costs and move closer to end users. Taiwanese companies have been producing lower value products in Southeast Asia for some time, and more recently are investing heavily in facilities in China. For instance, Acer is opening what is called the world's largest motherboard plant in Zhongshan, Guangdong Province, China. On the other hand, as the PC industry moves to build-to-order production, it is not feasible to assemble systems in Asia and then ship them to the U.S. or Europe for sale. As a result Taiwanese companies are moving some final assembly and distribution to those markets, while keeping most board and component manufacturing in Asia. Acer has opened a large PC assembly plant in Ciudad Juarez, across the border from El Paso, Texas, and makes monitors in a plant in Baja California. Acer, FIC and Mitac also have assembly plants in Europe. Mitac bought a distributor to provide the logistics support needed to meet the demands of its customers. One Taiwan executive said his customers require him to deliver in three days, "what I want, how and where I want it, at the lowest cost."

Outside the traditional hardware industry, Taiwan is now moving into the software and services sectors, which have long been underdeveloped. One reason is the Internet, which is creating new opportunities, and another is the improved availability of venture capital. Banks and other investors have been hesitant to invest in software and services companies, and it has been difficult for those companies to go public and reward venture capitalists. Currently, firms cannot go public if they are not profitable, but most Internet companies don't turn a profit for years. The Industry Development Board is trying to loosen up the regulations for Internet companies so they will go public in Taiwan instead of on the NASDAQ or in Hong Kong, as some Taiwanese companies have done. New stock markets are being created, including an over-the-counter market and another market specifically for small, high-risk companies.

Perhaps the most important news out of Taiwan is in telecommunications, where the government has finally introduced competition into the market by granting operating licenses for its fixed-line telephone market to three consortia: New Century InfoCom, Taiwan Fixed Network and Eastern Broadband. This move will end the monopoly of Chunghwa Telecom and should drive prices down and encourage Internet use and development of broadband services.

Singapore

Singapore's role as a manufacturing hub for PCs, disk drives and other computer hardware is being challenged by lower-wage neighbors. However, the city-state is repositioning itself as a business services hub for the IT industry, hosting regional headquarters, engineering operations, data centers, web hosting and other operations for companies such as Hewlett-Packard, Compaq, Dell, Apple and Gateway. Hewlett-Packard has moved much of its manufacturing out of Singapore, but remains one of the country's largest employers with over 9,000 employees involved in design, engineering and other activities. These services, along with higher value manufacturing such as semiconductor fabrication, fit with the government's visions for Singapore's future economic structure.

This is not to say that manufacturing is disappearing. For instance, Compaq is selling its Singapore board manufacturing plant, but the buyer will be a local contract manufacturer who will continue to use the facilities. Apple has outsourced production of most of its iMac computers, but still produces some iMacs, along with other desktop and notebook PCs, in Singapore. And while Singapore is rarely referred to as "Winchester Island" any more, it is still host to major hard disk drive companies such as Seagate and Quantum.

Singapore has become a hub for contract manufacturing in electronics. Locally-owned NatSteel has grown into one of the world's largest contract manufacturers, with plants around the globe. Smaller local CMs such as Venture Manufacturing and Omni Industries are also growing fast, and large CMs such as Flextronics and SCI have facilities in Singapore. The decisions of companies such as HP to outsource most of their manufacturing is creating abundant opportunities for CMs worldwide, and Singapore is benefiting from the trend.

Singapore has long been a leader in IT use in Asia, since its first National IT Plan in 1981. Its most recent efforts have been aimed at developing the infrastructure for broadband networks and increasing competition in telecommunications and Internet service. Broadband access is now available only through Singapore Telecoms and Singapore Cable, and only 100,000 households have signed up. Cost is a problem, as DSL service costs around US\$50 a month, depending on level of usage.

In order to speed up adoption of broadband and other services, the government moved up the full deregulation of its telecommunications market by two years to April 1, 2000, issuing 66 licenses for a variety of services that will compete with Singapore Telecoms. The first major competitor is StarHub, a consortium that includes the Singapore Technologies group, Singapore Power, British Telecommunications PLC and Japan's Nippon Telegraph & Telephone Corp. StarHub is offering a variety of services, and is the first company in

Singapore to offer free Internet service. It is estimated that StarHub has about 200,000 Internet subscribers, second to Singapore Telecoms' SingNet, which has about 450,000.

Malaysia

Malaysia was hit hard by the Asian financial crisis, and is now pulling out with the help of major government spending programs. One of these is the Multimedia Super Corridor (MSC), a region south of Kuala Lumpur that includes a new government complex (Putrajaya) and technology park (Cyberjaya), both near the new international airport.

The MSC, which covers an area the size of Singapore, is an effort to enable Malaysia to leapfrog into the information economy. Cyberjaya, which is expected to reach a population of 240,000 and to have 500 world class companies, is to be the center for business and high tech industry in the MSC—a whole city that is a technology park. It is being developed by the Multimedia Development Corporation (MDC), a government corporation supervised by an Implementation Council whose members include the Prime Minister and ministers of major government agencies such as Finance, Communications, Education, Central Bank, State Court and the Economic Planning Unit. As a corporation, the MDC is freed from the operational requirements of regular government departments. That special status is reportedly the basis of some bureaucratic foot-dragging by government departments with whom the MDC must work, and that, combined with Malaysia's fiscal crisis, has slowed down MDC's efforts somewhat.

Nevertheless, considering that MDC only became operational in 1996 and ground-breaking first occurred in 1997, Cyberjaya is developing more or less as would be expected. It already has an advanced physical infrastructure, a very high-speed fiber optic backbone, a Multimedia University with 3,000 students, a program for encouraging R&D technopreneurship and 50 companies with R&D centers. Sun Microsystems, Synnet and Lucent have already made Cyberjaya their regional headquarters; Ericsson and Lucent have training centers there; DHL has a large regional data center; and Bloomberg and Reuters have set up operations. The MSC is intended not only for such foreign multinationals, but also for local firms which are beginning to show up as a result of MDC's R&D grants program.

Companies wanting to locate in Cyberjaya must apply for MSC status to ensure that they will contribute to the technology-oriented character of Cyberjaya.. While there were only four applications in 1996, there were nearly 300 applications in 1999. There are two major attractions for firms to seek MSC status. The first is a so-called Bill of Guarantees which includes things such as unrestricted company ownership, foreign investment, and employment of knowledge workers, as well as freedom from taxes for ten years, IP and cyberlaw protection, competitive telecommunications rates and no censorship of the Internet. The other incentive, available only to Malaysia companies, is a RM\$100 million (US\$26.3 million) program of R&D grants for start-up companies. So far, awards averaging about RM\$2 million (US\$500,000) each, have been made for work in the area of computer

telephony integration, IP-PABX, wireless telecommunications, electronic bill presentment and payment, and electronic commerce.

Despite its progress, Cyberjaya, the MDC and the MSC have come in for criticism from government departments, private companies, and foreign journalists who react to the special freedoms, failure to win government contracts or awards, and the initial rosy scenarios painted for the effort. One thing is clear—the jury is out, and probably must be out for a long time on the MSC and Cyberjaya as such developments take at least a decade before one can reasonably assess their success or failure. Probably the strongest criticism that can be levied against Cyberjaya is its lack of ties to existing technology centers such as Penang or Kuala Lumpur. But then that too was part of the original plan—to create a new center focused on multimedia and the Internet. Still Cyberjaya cannot be said to be developing on Internet time.

Malaysia also is host to a number of computer hardware manufacturers, including Dell in Penang and Gateway in Melaka. We visited the Gateway plant to find out why they located there, how they operate, and how they use IT and e-commerce in their operations.

Gateway's plant in Melaka provides build-to-order production for all of the Asia-Pacific region, with an average order turnaround of about a week. This is achieved through efficiencies in the plant and by air freight shipping to all markets, often directly to the end customer.

Gateway selected Melaka because it is located between two major airports, Singapore and Kuala Lumpur, giving the company two options for air freight. It is also located next to a local company that supplies its plastic casing, and can source nearly all of its components from Singapore, Penang, or other locations in Malaysia and nearby. There is less worker turnover in Melaka than in Penang, which has a large cluster of electronics manufacturers.

Gateway uses IT extensively in the plant, with locally-developed systems to track orders from the time they are released to the shop floor until they are shipped. These systems, linked to bar code scans, are important to ensuring that orders are filled correctly and that any quality problems can be easily traced to the source. Software is downloaded from servers onto hard drives before assembly, and testing is done using applications developed in the U.S. Gateway's ERP system manages the rest of the order fulfillment process, from entry to billing. There is less use of external IT systems such as EDI, which is mainly used with freight forwarders. Parts and components are delivered to a warehouse that is inside the plant, but managed by a third party that specializes in central production replenishment (CPR).

Comments on e-commerce in Asia

E-commerce is new and evolving quickly in Asia, so it is difficult to draw any firm conclusions yet, but we can offer some early impressions based on our short visit.

- E-commerce in Asia will lag behind the U.S. until Asia catches up in Internet penetration. The percentage of households and companies that are online in Asia is perhaps a third the level of the U.S. (much lower if China is included). However, in some markets such as Japan, Hong Kong and Singapore the gap is smaller and will probably be closed soon.
- Payment is a problem, as credit card use is much lower in most Asia-Pacific countries than in the U.S. Some companies are developing innovative solutions, such as 7-Eleven Japan, which is putting kiosks in its stores for people to shop online, then pay for and pick up goods at the store.
- Asia's markets are smaller and more heterogeneous than the U.S. market, making it more difficult to achieve economies of scale in everything from web site traffic to order fulfillment. Individual sites must be developed for each market, with appropriate language, content and currencies. Likewise, logistics must be handled at the country level, as there are no shipping companies that can cover the entire region, and companies must deal with separate customs requirements, tax rates and accounting principles. Anyone considering implementing e-commerce in Asia needs to look carefully at the market potential for each country and the costs of developing the necessary infrastructure to serve each market before investing.
- Asia offers a wealth of resources for e-commerce, including skilled human resources, growing markets, and an entrepreneurial spirit that in some places matches that of Silicon Valley. There are also some extraordinarily wealthy and Internet-wise investors such as Masayoshi Son and Hong Kong's Richard Li, who are Asia's equivalents of Steve Case, Jeff Bezos or Bill Gates.
- The ties between the U.S. and Asia are very strong in the Internet market, just as in the computer industry. Companies such as Yahoo! have strong Asian connections, and Softbank is a major player in the U.S. Internet industry, while many smaller companies and individual investors are at home on both sides of the Pacific. These ties should provide Asia with the technology, capital and business experience that it needs to ramp up quickly in e-commerce. They also could help U.S. companies capitalize on the opportunities developing in Asia. However, many U.S. Internet companies are so focused on the domestic market that they have paid little attention to Asia, especially during the financial crisis there. This needs to change, however, or those companies will find themselves left behind in Asia and perhaps even facing competition from Asia in the U.S. market.

Jason Dedrick and Kenneth L. Kraemer are the authors of *Asia's Computer Challenge: Threat or Opportunity for the United States and the World?* Oxford University Press, 1998.

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