



**CENTER FOR RESEARCH
ON INFORMATION
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ORGANIZATIONS**

University of
California, Irvine
3200 Berkeley Place
Irvine, Ca., 92697-4650

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Japan E-Commerce Report

AUTHORS:

Jason Dedrick

Email: Jdedrick@uci.edu

Kenneth L. Kraemer

Email: Kkraemer@uci.edu

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Jason Dedrick and Kenneth L. Kraemer

Center for Research on Information Technology and Organizations

This report is based on a visit to Tokyo in November 2000 and on secondary sources.

Introduction

Japan's economy shows signs of pulling out of recession, with government and private economists forecasting GDP growth of around 2% in both 2000 and 2001. Japan's corporate sector has seen strong profitability gains, led by electronics giants such as NEC and Fujitsu. The stock market has been slow to respond, however, with the Nikkei index dropping from 20,000 in March to below 15,000 by November (compared to 38,915 in late 1989), the banking system is still saddled with bad loans, and government debt has soared to over 100% of GDP.

While the big picture in Japan looks much like it has for nearly a decade—i.e., slow growth, financial instability, and weak political leadership unable to make difficult reforms—the technology sector is much more dynamic these days. A visit last March (see <http://www.crito.uci.edu/git/PUBLICATIONS/PDF/asia2000.pdf>) found Japan at the

peak of Internet frenzy, with thousands of people packing night clubs to hear digerati such as Softbank founder Masayoshi Son dispense wisdom on the networked economy. Entrepreneurs in Tokyo's "Bit Valley" were awash in venture capital and the press was heralding the arrival of a revolution in the Japanese economy.

Today, the picture is quite different. The Internet stock bubble in Japan has burst just as it did in the U.S., many Internet ventures have gone under, and the Bit Valley Association that hosted "bit style" parties has disappeared. Yet, the news is not so bad overall. Venture capital is now flowing toward technology companies with real technologies and the prospect of actually turning a profit. The explosive growth of the wireless Internet market has continued, making Japan the world leader in adopting the new technology. And government policies toward the Internet and electronic commerce have become more user-oriented (with the glaring exception of telecommunications). Table 1 presents comparative Internet and e-commerce indicators for Japan and the United States.

Table 1. Japan and U.S. Internet and e-commerce indicators

	Japan	United States
PCs per 1000 people, 2000	389	579
Internet users per 1000 people, 2000	163	485
Internet hosts per 1000 people, 2000	19	160
Secure servers per 1,000,000 people, 2000	15	170
Cost of 40 hours off-peak Internet use, US\$	85.25	35.40
Mobile phone users per 1,000, 1998	373	312
B2C e-commerce, 2000 (US\$ billions)*	3	38
B2B e-commerce, 2000 (US\$ billions)*	30	450

* See text for alternative estimates

Sources: Coppel, 2000; OECD, 2000; ITU 2000; AEA/Nasdaq, 2000; Forrester Research, 2000.

Wireless Internet

While wireless Internet is barely getting off the ground in the U.S., there are now about 20 million users in Japan. NTT DoCoMo's i-mode service has about 14 million subscribers, followed by KDDI's EZ web, and J-phone's J-Sky service. Sitting in a Starbuck's, riding the train, or just walking the streets of Tokyo, one observes the extent to which the fad has captured trend-conscious Japanese youth (70% of users are under 35). The handset is almost a physical appendage, either held to the ear to speak or in front of the face to type a message, read the latest horoscope, or buy a concert ticket.

I-mode's extraordinary success has little to do with its technology and a lot to do with an innovative business model. I-mode phones and service are hawked in an aggressive manner reminiscent of AOL's flooding of the U.S. markets with trial disks (perhaps a common appreciation for each other's hypermarketing style helped bring AOL and DoCoMo together in a recently-announced joint venture). Users are charged a packet fee for each bit of information sent or received, and DoCoMo collects a 9% charge for each service that the user subscribes to from an official i-mode site (such as a daily horoscope or cartoon character). These small charges are all added to the customer's monthly bill, providing a simple billing system that does not involve credit cards, electronic wallets or other systems.

NTT DoCoMo has over 500 official content partners. In addition, there are over 18,000 unofficial sites, who can be reached by i-mode users over the Internet. This arrangement can be a bottleneck for e-commerce sites that are not official

partners and thus cannot use DoCoMo's billing system. However, as i-mode's competitors grow, they provide an alternative channel and put some pressure on DoCoMo to open its billing system to more vendors.

Technically, i-mode is based on HTML, which makes content development relatively easy, while EZ Web is based on the WAP standard that is being promoted mainly in Europe (and has been slow to take off). It is unclear which standard will prevail in the next generation of high bandwidth wireless systems which will begin to appear next year.

Business-to-Consumer E-commerce

B2C e-commerce in Japan is estimated by the Electronic Commerce Promotion Council of Japan (ECOM) and Andersen Consulting to have been about US\$3 billion in 1999, including transactions for which the web was used for information gathering only. Actual transactions were about US\$1.3 billion (Coppel, 2000 puts B2C e-commerce in Japan at \$1.6 billion for 1999). The largest market segments for online purchases were PCs, travel, foods, financial products, and clothing. Overall, electronic commerce accounted for about 0.1% of total household consumption (ECOM 2000).

B2C e-commerce has been hindered by three major factors. First is the low penetration of PCs in Japanese households, which limits the number of potential online shoppers. Second is the high cost of Internet access, which makes browsing in online stores quite expensive. Third is the low penetration of credit cards and concern among Japanese consumers about sending credit card numbers over the Internet.

These barriers are being surmounted in creative ways that may be leading to a unique Japanese model of e-commerce. Wireless Internet service is bringing millions of potential shoppers online, although few are doing much shopping so far. Also, Japan's ubiquitous convenience stores are setting up kiosks on which customers can shop online and then pay for and pick up the merchandise at the store. The best-known example is 7-Eleven Japan, which has created the 7dream.com service. Another major convenience chain, Lawson's, has contracted with IBM to put servers in its stores for customers to download music and video.

Meanwhile, some Japanese courier companies accept cash-on-delivery and bank transfers for online purchases, so that credit cards are not needed. One Japanese model of shopping online could be ordering via a wireless device and picking up and paying for the order at a convenience store on the way home.

A few B2C success stories are as follows:

- Yamadaya: an early online site selling Japanese noodles, affiliated with a well-known noodle vendor. Has attractive photos of its products on the web site, and accepts payment by credit card, cash card, COD or bank transfer.
- Ichiban Rakuten: the most successful online mall. Has 4900 shops with 566,000 products. It also has an auction site, on which Rakuten charges a commission on sales.
- Yamato Transport: A delivery company with its own online mall. Delivery people can take payment from customers for any store in its mall.
- Sony: took 1 million orders for the PlayStation 2 the day it was introduced. However, one analyst noted that Sony

still faces channel conflict as it expands its online business.

- Gateway Japan: 20% of its sales in Japan are online, with two-thirds of those going to consumers. Gateway also offers software, peripherals and office furniture on its site, and runs web auctions of discontinued products.

Business-to-Business E-commerce

Japan's businesses have always lagged several years behind the U.S. in terms of information technology adoption, whether it was PCs, LANs, enterprise resource planning (ERP) systems, or the Internet. Japan's total spending on IT as a share of GDP is only half the level of the U.S., according to IDC. Not surprisingly, B2B e-commerce has likewise been somewhat slow to get off the ground in Japan.

A study by MITI and Andersen Consulting estimates that B2B e-commerce totaled about US\$110 billion in 1999, and expects a figure of US\$180 billion in 2000. This figure includes transactions in which the Internet and extranets were used for pre-sales activities such as product specifications and sales promotion. By comparison, Forrester Research estimates that actual B2B transactions will total about US\$30 billion in 2000. This figure pales compared to Forrester's estimate of US\$450 billion for the U.S.

However, as one commentator pointed out, Japan's large companies are heavy users of electronic data interchange (EDI), and so have considerable experience in using IT for business transactions. Those transactions are largely within corporate families, or *keiretsu*, and based on proprietary standards and private networks. Those groups are now moving to web-based systems and electronic markets

linking domestic suppliers to major manufacturers such as Hitachi, NEC, Canon and Matsushita. This shift to more open systems is most marked in industries such as electronics, where the *keiretsu* system is breaking down, and is becoming evident in traditional industries such as steel and autos.

A number of electronic marketplaces are also being developed by large trading companies such as Marubeni Corporation and Mitsui & Company, which are trying to extend their roles as key intermediaries into the virtual economy. Japanese companies also are part of international e-marketplaces in industries such as electronics, autos, and oil and chemicals.

When the focus shifts to small business, the picture is much less optimistic. Small and medium-sized enterprises (SMEs) account for 99% of Japanese firms, 72% of employment and 65% of GDP. Only 35% of SMEs had a LAN in 1998, and less than 4% had ERP systems. It is hoped that those companies can gain access to needed applications such as ERP, supply chain management and e-commerce through application service providers rather than having to invest in their own systems. Whether they will actually turn to ASPs is another question, as there is a major issue of trust in turning over internal operations and finances to an outsider. And even using an ASP requires some level of in-house IT skills and infrastructure. Still, for small suppliers in manufacturing and other industries, IT and e-commerce may be the price of survival in the future.

Venture financing

Venture capital has long been limited in Japan, as banks are very conservative and there is little expertise to judge the quality

of companies with non-tangible assets such as intellectual property. The situation has improved recently, as U.S. venture capital firms such as J.H. Whitney have entered the market, bringing expertise as well as capital.

In addition to the inflow of venture capital, two venture-oriented stock exchanges have opened—NASDAQ Japan, a joint venture of the U.S. NASDAQ and Softbank, and the Tokyo Stock Exchange's MOTHERS board. These exchanges were expected to provide new listing venues for venture firms who found it almost impossible to meet the listing requirements of the TSE. However, the MOTHERS exchange came under criticism for its lax requirements; for instance, founders were not required to hold onto their stock for a specified period of time, so some entrepreneurs could bring companies public and sell out immediately, leaving other investors holding the bag if the company flopped. The NASDAQ Japan market has tighter listing restrictions, but like MOTHERS it has suffered from the collapse of the Internet bubble worldwide. So far the MOTHERS exchange has 20 listed companies and NASDAQ Japan has just 30 listings, many of which trade only a few shares per day since the Internet bubble burst.

Meanwhile, investors are still excited about the prospects of venture companies in Japan. Many entrepreneurs have innovative technologies or business ideas, and they are finding support from both venture capitalists and the investment arms of corporations such as IBM and Fujitsu.

Government policy

The Japanese government has been promoting e-commerce for about five years through various programs. In 1995, the

Ministry of International Trade and Industry (MITI) designated e-commerce promotion as a priority measure, and began earmarking funds from its supplementary budget for that purpose. It funneled money to the quasi-governmental Information Technology Promotion Agency (IPA) to implement pilot projects in B2C and B2B e-commerce. These projects were contracted to private companies for the most part, and covered a applications such as supply chain management, EDI and CALS, and infrastructure such as next-generation Internet. Sectors covered included manufacturing, health care, education and government. In all, nearly 200 projects were funded from 1996-2000, with funding of over US\$1 billion.

Other MITI-affiliated organizations have been selecting projects funded by IPA and working to promote common standards and better cooperation. These include the Japan Information Processing Development Corporation (JIPDEC) and three affiliates: the Center for Informatization of Industry (CII), which promoted EDI standards; the Electronic Commerce Promotion Council of Japan, which conducted research and made policy recommendations for B2C e-commerce, and the Japan EC/CALS Organization, (JECALS), which conducted research and made recommendations for B2B e-commerce. In April 2000, these three organizations were integrated into a new ECom, whose mission is to develop policy recommendations for all areas of e-commerce. ECom represents industry, and has 300 corporate members who pay an annual fee and participate in ECom committees and working groups.

While government e-commerce efforts have been more promotion oriented in the past, the focus is now on regulatory issues

such as privacy, security and consumer protection. For instance, ECom has working groups on consumer issues, authentication, security, promotion, mobile e-commerce and business models. It also has standardization groups dealing with EDI, XML and STEP (Standard for Exchange of Product Model Data).

MITI's policy approach has shifted from years past, emphasizing IT use rather than just production, and seeking advice from foreign as well as domestic companies. It is said to be acting more as a catalyst for change, trying to move Japan to a more information-oriented economy. It also is taking a lighter touch on policy issues such as privacy, where it has pushed for adoption of a U.S.-style self regulatory approach, rather than a stronger European-type government standard.

In addition to MITI, the Ministry of Posts and Telecommunications (MPT) has played an active role in promoting e-commerce, focusing especially on infrastructure and on telecoms regulations. It also has been involved in issues such as e-settlement, privacy, and security.

At the legislative level, the Japanese Diet passed an IT Basic Law in November to ease regulations on the Internet, set up rules to expand electronic commerce and make Internet access more affordable. The government earlier passed a supplementary budget allocating \$35.4 billion for projects including a high-speed telecommunications network linking the nation's schools.

In addition, a government-sponsored IT Strategy Council led by Sony chairman Nobuyuki Idei released a report on November 27 with recommendations to fulfill Prime Minister Yoshiro Mori's rather ambitious goal of making Japan the

world's most advanced IT nation within five years. These included recommendations in the following areas:

- E-Commerce. Use the Internet to increase the B2B market by 10 times and the B2C market by 50 times.
- E-Government. Make government more accessible and transparent to citizens by (1) conducting public administration business online, (2) disclosing more public information online and (3) putting government procurement online.
- Education. Promote computer literacy in the general public, strengthen IT education in K-12 and post-secondary education, and increase the number of Japanese and foreign knowledge workers with advanced degrees
- High-Speed Network. Create a high-speed fiber-optic network reaching 30 million families within 5 years, and provide open access at a competitive price.

It is that final recommendation that strikes at the heart of the biggest obstacle to e-commerce in Japan—i.e., the continued dominance of NTT in the telecommunications sector. Internet access prices are about three times those of the U.S., thanks mostly to the cost of telecommunications service, and flat-fee access is not available to most users. The failure of the government to break up NTT or to enforce stronger access requirements to NTT's local loops hinders competition and is the biggest barrier to e-commerce. This is one point on which every person interviewed agreed (admittedly, no one from NTT was interviewed on this visit). Reportedly, the staff report developed for the IT Strategy Council took a stronger position on telecommunications deregulation, but the final report was more

muted after it was reviewed by the corporate chairmen, some of whom represented large suppliers to NTT.

While NTT's access charges will be coming down 22% by 2002 as a result of an agreement negotiated with the U.S., there are other problems such as access to NTT's switching stations for DSL and other service providers. The Telecommunications Council, an advisory panel to the Ministry of Posts and Telecommunications, recently released a report discussing ways to reorganize the NTT group to promote competition in the telecommunications market. An earlier reorganization of NTT implemented in 1999 did little to increase competition, and the politically powerful NTT is strongly opposed to any type of breakup.

Conclusions

- E-commerce in Japan is taking a different form from the U.S. and elsewhere (for Europe, see <http://www.crito.uci.edu/git/publications/pdf/european-e-commerce-report2.pdf>). B2C e-commerce will be conducted more via wireless devices and less via PCs. It will rely less on credit card payment and more on mechanisms such as billing by wireless service providers, and cash payment to convenience stores and delivery companies. B2B will probably be slower to shift from EDI to web-based systems than in the U.S., but high-tech and export-oriented companies will make the transition faster.
- While Japan lags behind the U.S. on most IT and Internet usage indicators, it leads in wireless adoption, especially in wireless Internet, and its wireless providers are expanding into global markets with alliances such as the NTT

DoCoMo/AOL partnership. However, there is a possibility that the rest of the world will adopt different standards, and Japanese companies will lose some of their lead as a result.

- Government policy is relatively enlightened on several issues related to e-commerce, with the focus shifting from pilot projects to creating a better regulatory environment. The agreement to lower NTT access charges should help lower the biggest barrier to Internet adoption, but it will not create the kind of dynamic, competitive telecoms services market that Japan needs.

- Capital markets are becoming more friendly to e-commerce startups, as venture capitalists and corporate investment funds provide money and expertise to Japanese entrepreneurs. But the collapse of Internet stocks and the struggles of the MOTHERS and NASDAQ Japan markets have created a poor environment for companies to go public, so the trend will be toward longer-term investment in companies with solid profit models and valuable intellectual property.

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