

INNOVATION THROUGH REINVENTION: AN EXPLORATION OF JAPAN'S INNOVATION ENVIRONMENT



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Preface

The story of innovation in Japan is in large part a story of reinvention. It is a story of ideas, products, and services being reinvented in the process of being adopted to fit unique cultural, social, consumer, and household patterns, in the end redefining the meaning and utility of these ideas, products, and services. Many in the West mistakenly view this as inability to be creative: the Japanese are simply unable to create new things and thus borrow from others and imitate, the thinking goes. Examples of such imitations or adaptations abound—Chinese script, Korean pottery and textiles, American corporate efficiency and popular culture, French education, and many others. But when one looks at what happens to all these adaptations, one quickly realizes that none of them are adopted outright but rather, are reinvented to fit the local context. In fact, the Japanese are engaged in an ongoing creative synthesis and reinvention, combining exotic with domestic, modern with traditional, Western with Japanese. Concepts, ideas, and practices are reinvented in their encounter with Japan, and then often are returned to Western and other Asian countries as innovations.

Dr. W. E. Deming’s theories of productivity, for example, were reinvented in Japan, emerging as total quality control (TQC) and zero-defects movements. Soon American and European manufacturers hurried to apply these techniques in their own businesses. The Sony Walkman is another example of

reinvention—existing technology (radio music players) was re-packaged and marketed for Western consumption. However, in the process Japanese values of “smaller is better” transformed the existing device into the personal portable music player that

became ubiquitous in most industrialized and many developing countries. Today, the genius of Japanese reinvention is shown most poignantly in the story of I-Mode (see Chapter 6). This successful reinvention of existing relatively low-level technology has created a new social medium for consumers.

Silicon Valley’s innovation system, best described as the epitome of “creative destruction” (successive waves of innovation creating new busi-

nesses and new products, which are swiftly wiped out by the next generation of innovations) is driven largely by small entrepreneurial companies. In stark contrast, the two pillars on which Japan’s innovation system rests are large traditional companies—and consumers.

In the following chapters we analyze these two pillars of the Japanese innovation system. In Part I, we explain why we expect large companies to continue driving innovation and the “new economy” in Japan. In Part II, we take an in-depth look at Japanese consumers and households as drivers of innovation. In Part III, we tell the story of I-Mode as a case study of Japanese innovation in action. We conclude the report with the scenarios of consumer and household lives in 2010.

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Part I:
Old Companies as Drivers of Japan's
New Economy

Toyota Corp., a bastion of the economic old guard known as Japan Inc., is making waves in the new economy. A Web site called Gazoo.com set up by Toyota to sell new and used cars is proof positive that many of Japan's corporate monoliths will find it far easier to thrive in the new economy than experts originally had predicted.

According to the *New York Times* (Dec.18, 2000)¹, Gazoo is cutting the time between orders placed and payment received, helping Toyota speed up the disposal of used cars, and providing a treasure trove of customer data. It also is helping the company retain young, restless employees who might otherwise strike out for Bit Valley, Japan's version of Silicon Valley.

Old, big companies may have been slow to move at first, but today every one of them is incubating new businesses inside—and at just the right time. According to Joichi Ito, president and founder of Neoteny, a venture incubator, “their delay has actually become an advantage because they have all of the cash and the markets are cheap right now.”

Similarly, the corporations' reluctance to cut jobs, long criticized as a major drag on the Japanese economy, also is now working to their benefit, according to Ito. “The brains are still at the big companies,” he said. “They've never quit or been pushed out, so all the good new-economy people are still sitting in the old-economy companies.”

While Toyota's Web venture is thriving, Fujitsu and NEC Corporation are locked in a fierce battle to determine which of them will be the America Online of Japan. Even NTT

(Nippon Telegraph and Telephone Corporation), the former government monopoly whose high prices make it the new economy's worst enemy, is embracing new technology that is likely to make it the leading provider of low-cost, high-speed Internet connections and sophisticated telecommunications services. That shift will be much to the chagrin of several small, new companies that have been counting on NTT to be too big, too dumb and too slow to compete in new markets.

Japan's big companies, only recently dismissed as the brontosaurus of the global economy, are reinventing themselves to stay competitive, in fact becoming the drivers of new economy in many areas. Unlike their counterparts in Silicon Valley, smaller entrepreneurial companies backed by risk capital have played a very small role in Japan's new economy, and this is likely to continue in the future. Here are some key reasons:

Scarcity of True Venture Capital

Scarcity of venture or risk capital is an important deterrent to the development of new entrepreneurial businesses. While on paper there exist investment organizations called “venture capital firms” in Japan, these can hardly be considered venture businesses by U.S. stan-

Table 1–1
Most Venture Firms in Japan Are Branches of Traditional Financial Organizations
 (Number of venture capital firms by type of financial organization, 1995)

Type of Firm	Number of Firms	Percent of Total
Traditional		
Securities	22	18
City Banks	16	13
Regional Banks	7	6
Joint by Regional Bank and Regional Government	34	28
Insurance	10	8
Foreign Company	4	3
Independent	30	24
Total	123	100

Source: Hata, Nobuyuki, and Toshiki Kamijo, "Diversification of Venture Finance," Nikkei Press, 1996. (In Japanese)

Table 1–2
The Role of Independent Venture Firms is Limited in Japan
 (Assets of 31 largest venture capital firms in Japan, 1995)

Type of Parent Firm	Firm Assets	
	100 Million Yen	Percent
Securities	4,860	59
City Bank	1,906	23
Government	895	11
Independent	132	2
Joint by Regional Bank and Regional Government	94	1
Insurance	89	1
Regional Bank	66	1
Other	168	2
Total	8,210	100

Source: Institute for the Future; Hata, N., and Toshiki, K., "Diversification of Venture Finance," Nikkei Press, 1996. (in Japanese)

dards, as they rarely provide a broad range of support services such as management, marketing, recruitment, relationship building, and other assistance provided by their U.S. counterparts. Rather, these organizations are branch offices of large Japanese banks or securities firms, that utilize the same criteria for screening and providing financing as do their more traditional parent organizations.

In the 1980s, such parent organizations (large-scale and city-based banks) served as powerful drivers of economic growth in Japan. They usually occupied key positions within powerful *keiretsu*, providing large-scale capital for expansion of companies within the group. *Keiretsu* is a broad grouping of companies that operates in different industries or markets but has interlocking boards and financial relationships. A *Keiretsu* group typically consists of 20 to 40 or more firms, and has the group's main bank (could be a trust company, an insurance company, or a trading company) at the core. Relative to their U.S. and United Kingdom counterparts, these banks provided more managerial support, such as establishing new sales channels, and had a longer-term vision in their investment strategy, often helping companies expand their market share at the expense of short-term profitability. However, their primary investment strategy was based on low-risk and low-return debt investments in return for collateral—a strategy fundamentally different from high-risk and high-return investments in return for equity pursued by U.S. venture capitalists.

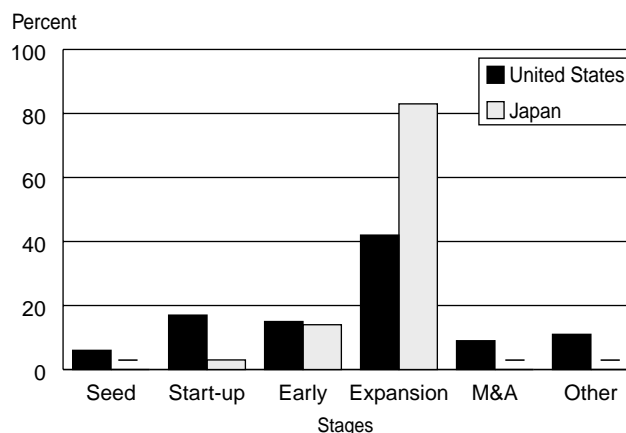
Table 1–1 shows the strong affiliation of Japanese venture firms with traditional financial institutions: securities, city banks, regional

banks, and insurance companies. Branch offices of traditional financial organizations account for roughly half of all the venture capital investments. Venture capital firms closest in nature to those in Silicon Valley are considered "independent" and constitute less than a quarter of the total. The role of independent venture capital firms is even smaller in terms of sum of managed assets, as Table 1-2 shows.

The low-risk, low-return investment strategy of venture capital firms in Japan has had two important consequences. First, Japanese firms do not make early stage or seed investments, which are more risky and have a longer payoff horizon. Figure 1-1 compares venture investments by stages in Japan and the United States, and clearly shows preference for later stage investments on the part of Japanese venture firms. Similarly, the Table shows that 83% of investments are for expansion in Japan, almost twice as much as in the United States.

The second consequence of bank-style investments is scarcity of services and management support for new ventures. Such support, often more than money, is the most valuable service provided by U.S. venture firms. U.S. firms have a very hands-on attitude with companies they invest in, frequently meeting with company executives, participating in operational and strategic decisions, helping in recruiting managers and key employees, connecting them with possible partners and other service providers, etc. Japanese venture capitalists, on the other hand, avoid this time-consuming effort. Table 1-3 shows that meetings between venture capitalists and venture managers in Japan are quite infrequent.

*Figure 1-1
Most Japanese Firms Avoid Early Stage or Seed Investments
(Percent of investments by stage, 1995)*



Source: Ono, M., "Practical Guide for Venture Establishment and Investment," Tokyo Keizai Press, 1997. (In Japanese)

*Table 1-3
Japanese Venture Firms Have a Hands-Off Approach
to their Investments
(Frequency of meetings between venture capitalists
and their portfolio companies)*

Frequency	Response	Percent
Once a year	26	10
Once in six months	38	23
Once in three months	37	22
Once a month	43	26
Twice a month	12	7
More than once a week	7	4
Seldom	5	3
N/A	—	5

Source: Nomura Research Institute, "Survey of Changing Environment in Corporations and Supporting Infrastructure," NRI Press, 1999, p.3-9. (In Japanese)

**Salaryman—Not Entrepreneur—
as a Desirable Lifestyle**

Since World War II, the desirable lifestyle model in Japan has been that of a salaryman—a Japanese man employed by a large Japanese company offering lifetime employment and various company benefits. A salaryman was a model citizen who helped rebuild Japan after the war and propel it into the ranks of one of the most highly industrialized and prosperous countries in the world (see more on this in Part II). For many Japanese young people, getting into a good university so they could get a job with a well-known company, became a goal at a very young age. One's social and economic status in many ways was based on attaining this goal. A large company provided job security and in return, its employees were expected to give complete loyalty to the company. As a result, most Japanese men working in large companies (and these were mostly men; women were used as temporary or non-professional labor) stayed with the same company for their entire working lives. The low labor mobility and the preference for secure, long-term positions with large companies resulted in a severe scarcity of talent for small entrepreneurial ventures. Also, the entrepreneur was not given a high social status; instead young people were encouraged to join a large company and stay there for life.

Even though the situation has been changing, college recruitment practices and lifetime employment are still predominant in Japan. That is, once a person enters a firm, it is unlikely that he/she will switch jobs frequently. A survey shows that only 15% of the class of 1980 engineering graduates from Tokyo University (which attracts the most academically

competitive students in Japan) have changed jobs at least once; the number stands at 27% for the class of 1960. By contrast, 81 and 73% respectively of MIT students changed jobs in the same period.² This low labor mobility makes it difficult for ventures to attract talented individuals. Most of the technological and managerial know-how thus resides in Japan's large companies. Moreover, an individual's professional and social networks are usually limited to those within his company. Leaving the company may impose severe social and professional penalties, as individuals lose access to information and knowledge resources they built up throughout their careers.

The preference for large companies as a lifestyle choice extends into business relationships. Big companies are big brands in Japan. Suppliers, retailers, and service providers prefer to work with "brand" names rather than with unknown startups. Thus, it is extremely challenging for new ventures to establish a sales channel or to recruit suppliers. The CEO of a new venture pointed this out in an interview: "After listening to my description of the product, potential customers saw that it is a good product. But they decided not to buy it. Their thinking was 'why are none of the large companies making it? If they start making it, we will buy from them because it will be better. If they don't, we will not buy yours because it must not be a good product.'"³

Even though their importance declined in the 1990s, the presence of large industrial groups or *keiretsu* is still strong in Japan. Although *Keiretsu*-related companies represent only 0.1% of Japan's total number of firms, the top six groups consistently accounted for roughly

one quarter of GNP during the postwar period. Furthermore, they account for approximately three-quarters of the value of all shares on the Tokyo Stock Exchange.⁴

Lack of Venture Infrastructure and Attitudes Toward Failure

Lack of financial and legal infrastructure for start-up companies makes it difficult for new companies to obtain necessary funding and to assume necessary risks. Until recently, there was no so-called 'pink-sheet' stock market in Japan. This stock market is especially designed for start-up ventures. It allows companies to publicize their stocks in spite of their negative cash flows. In Japan, all companies must show a positive cash flow for the past three years in order to be listed on the stock market. This makes it virtually impossible for new companies to obtain necessary funding for growth. Thus, a vicious cycle is created—banks and other financial institutions have no interest in funding companies with negative cash flows and lack of funding in turn makes it impossible for companies to invest sufficient amounts in R&D and other aspects of operations. Clearly, this makes growth very difficult.

Bankruptcy laws in Japan also severely discourage individual risk-taking because they make company owners personally responsible for any debt incurred by the company. If a founder's business fails, he is responsible for repaying all the company debts until the end of his life. There is also a substantial social stigma associated with failure, which often is carried over to successive generations of the founder's family. Those who fail literally become social pariahs, sometimes decid-

ing to commit suicide rather than face the shame of bankruptcy for the rest of their lives. No wonder that few brave souls dare to become entrepreneurs and face the high social and economic risks of failure.

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Ineffective and Often Confusing Government Policy

Government policy can play an important role in giving support to new businesses by providing tax incentives and creating regulatory environments that encourage investments in new areas, promote labor mobility and encourage competition and entry of new firms in different market segments. These measures are most successful when they do not try to pre-empt the market, but rather help markets operate efficiently. A series of venture support programs launched by the Japanese government, however, have done just that—pre-empted efficient market operations. Most of the programs targeted specific sectors—creating incentives for companies in certain sectors rather than instituting overall market policies that would encourage new business creation across the board. Invariably, by the time such incentives were instituted (these included tax write-offs, government funding schemes, or joint research initiatives), the incentives were too

late to achieve desired outcomes. While bureaucrats operate on yearly budget cycles and engage in tortuous and lengthy decision-making processes, markets shift quickly. By the time politicians make their decisions, the market has often moved in a different direction. Notorious Japanese bureaucracy, with its strict requirements for extensive documentation and multiple permit levels, has been playing a constant catch-up with fickle markets.

A part of the problem is that very few Japanese bureaucrats, although highly educated and intelligent, have private-sector experience and can fully appreciate the workings of the market. A large wage gap between the public and private sectors makes it difficult to recruit qualified people with private sector expertise into the government. For example, the average wage in a private firm with more than 1,000 employees is ¥12 million for employees 35–39 years old, while that for civil servants in the same age category is only ¥5.7 million. The rigidity of the civil service system also makes it difficult for people to move back and forth between private and government jobs.

Government programs are operated by bureaucrats from MITI (Ministry of International Trade and Industry), other central ministries, or local government officials in

industry-related divisions. Adding to the lack of private sector expertise is a lack of coordination, and sometimes-outright conflicts among ministries in Japan. The mission of MITI, for example, is to support industrial development and this often conflicts with the Ministry of Finance mission to provide sound fiscal management and thus discourage many forms of tax incentives aimed to provide relief to new businesses. Therefore, many incentives and regulations are the result of lengthy compromises, and are often much watered-down from their original versions.

For example, proposals to exempt new firms from taxes for a period of five years resulted in a compromise regulation, which allowed firms to deduct losses in an unprofitable year from profits received in any other year within the five years of their establishment. Similarly, the Ministry of Labor mission is to guarantee decent wages to employees, and it considers with suspicion any schemes that would give employees access to stock options and incentives for capital gains, fearing these might cause companies to lower guaranteed wages in exchange for access to equity. In a resulting compromise, companies can now distribute only one-quarter of their stock, thus significantly limiting stock incentives for their employees.

Perhaps the most controversial battles are fought between MITI and MPT (Ministry of Post and Telecommunications). While MITI is responsible for industrial and venture promotion, especially in the manufacturing sector, MPT has authority over the telecommunications industry. For decades, the two ministries have fought turf battles. The resulting political compromises gave MITI responsibility for the computer and telecommunications equipment industry, while MPT was held responsible for the telecommunications industry. Needless to say, this has created even more confusion for the private sector companies that now must scramble to figure out where the jurisdiction of one ministry ends and the other's begins—where do they need to go for various permits and licenses?

Poor Links Between Universities and Industry

Universities and other educational institutions are important drivers of innovation in Silicon Valley and in Northern Europe. Ideas, products and technologies developed at these institutions are often transferred to industry for commercialization. These serve as the basis for starting new companies or new ventures within

existing ones. Many now-familiar companies such as Netscape, Hewlett-Packard, Sun Microsystems, and others have been founded by groups of entrepreneurial students and professors who capitalized on ideas they developed at universities. In Japan, such linkages between universities and industry are quite limited. Universities remain “ivory towers” and professors' advancement and pay are based on their academic work rather than contracts or grants from industry. Therefore, research alliances with the private sector are rare.

Applied research also is not rewarded; in fact it is discouraged—most universities place severe restrictions on professors' involvement in consulting work and other private sector activities. The system is even more rigid at public universities, which are major research sources in Japan. Professors at public universities are considered to be civil servants and thus are subject to numerous regulations. Ministry of Education recently made it easier for professors to work part-time in the private sector. Nonetheless, those who wish to pursue such work must go through a complicated and lengthy documentation and approval process. This severely impedes the flow of ideas and people between academia and business in Japan.

FORECAST 2010
MORE VENTURE BUSINESSES, BUT THEIR
SCALE IS NOT SUFFICIENT TO MAKE A
BIG DIFFERENCE

Recent changes in Japan point to a better environment for venture businesses. These changes include the following:

New Venture Firms
Entering the Scene

Capitalists who worked in traditional VC firms and saw their limitations first-hand have left to establish their own firms. Many of these individuals have experience working in Silicon Valley and are often “social missionaries” who strongly believe that Japan’s economy and society need to be revitalized through a different, more entrepreneurial approach to business. JAFCO, the largest VC in Japan and a subsidiary of financial giant Nomura Securities, recently lost two of its most prominent leaders to such start-ups. Kazutaka Muraguchi established Venture Technology Partners in 1997, and Hirokaru Hasegawa started Global Venture Capital by joining forces with his former colleague, a Silicon Valley venture capitalist.

New Generation of VC’s Taking
Helm in Traditional Japanese
Venture Firms

As mentioned above, most of these firms were started by large financial and insurance organizations, from which their management and staff were recruited. However, since the 1980s, these firms have hired recruits from outside—so-called “probers” who entered venture businesses and received training as venture capitalists rather than as bankers. After 15 years in the business, these in-house venture

capitalists are being promoted to more senior positions, and are exerting more influence on the management of venture firms. This cohort of venture capitalists has a fundamentally different investment perspective and understands high-risk and high-return strategies. They realize the need for hands-on involvement in their portfolio and provide a variety of services for their clients, from gathering market information to assisting with recruitment and operations. The improvements are gradual, but with the first generation of venture capitalists approaching retirement, the very nature of venture businesses in Japan is changing. In fact, in the near future they might well resemble their counterparts in Silicon Valley and elsewhere in the world.

End of Salaryman as a
Desired Lifestyle

The salaryman lifestyle as a role model is quickly eroding in Japan (see more in Part II). Japan has achieved economic parity with other industrialized countries, as Japan’s GDP per capita is higher at \$32,350, than that of the United States (\$29,240) and of Germany (\$26,570). Therefore, Japanese people are increasingly questioning the sacrifices required by a life of total dedication to work and to a single company. For young people who are watching their fathers being laid off or constantly worrying about being laid off, the salaryman path is no longer that appealing. Even established salarymen find that radical corporate restructuring in the midst of recession is eroding their corporate loyalty. The situation is similar to that in the United States two decades ago when large companies such as IBM, GM, and Lockheed underwent wrenching restructuring and were forced to

NEOTENY CO., LTD.

The word "neoteny" refers to the retention of childlike attributes into adulthood. Childlike attributes include collaboration, learning, fun, and growth.

Neoteny is an "incubator" that establishes internally or makes early stage investments in Internet-related start-up companies and offers a full range of support services, from facilities to accounting, public relations, legal, marketing, human resources, and operations support. These services are particularly needed in Japan where the accounting systems and various approval and permitting procedures are quite complicated and burdensome, particularly for smaller companies.

In addition to working with stand-alone companies, Neoteny focuses on creating joint ventures with leading blue-chip Japanese corporations, many of which are struggling with creating an entrepreneurial environment that would allow them to take advantage of new technologies and new market opportunities. According to Joi Ito, Neoteny's founder and CEO, "Large Japanese companies will have small children

that will carve out assets with a completely new entrepreneurial spirit. And they will populate the new e-business space." Neoteny is thus betting on the restructuring of large Japanese corporations and their willingness to carve out portions of their businesses and manage these in a more flexible and entrepreneurial way. By combining the deep technology knowledge of traditional Japanese companies and Neoteny's entrepreneurial approach and market savvy, the company hopes to create a portfolio of spinoff companies from large Japanese corporations.

Neoteny also is tapping into the network of expatriate technology entrepreneurs in Japan. Many of Neoteny's key staff come from Europe, the United States, India, and China. Ito himself is as much a product of Silicon Valley, where he lived and worked for many years, as of Japan. This ability to tap into professional and personal networks in Silicon Valley and other entrepreneurial regions, is of great importance in Neoteny's development.

More on Neoteny at www.neoteny.com

lay off many long-term employees. Some of the laid-off employees by necessity became entrepreneurs and opened small businesses or went to work for small companies, in part fueling an entrepreneurial revolution in the United States.

Silicon-Valley-trained Japanese are linking up with American, European, and Asian expatriates in Japan to start new businesses.

Restructuring of Japan Inc.

Restructuring is occurring throughout Japan's industries. Companies of all sizes are questioning the desirability of the rigid *keiretsu* system. On the one hand, companies within the *keiretsu* can avoid over-competition and invest more in research and development. On the other hand, these close relationships lead to subsidization of businesses that are marginal or even unprofitable, preventing member companies from investing in new areas. In times of economic downturn and fierce international competition, inflexible *keiretsu*-based relationships are simply becoming too expensive for companies in every tier of the system.

Large companies in the *keiretsu* are looking for better quality products and lower prices from firms outside, as well as inside, the *keiretsu* organization. Smaller firms are looking for new sales channels and are expanding beyond traditional firms they were serving.

This struggle for survival was seen in an increasing number of inter-*keiretsu* mergers in the 1990s. Most prominently, the leaders of two *keiretsu* groups announced a merger between Daiichi Kangyo Bank (Ichikan Group) and Fuji Bank (Fuyo Group) in 1999.

Rise of Venture Networks and Transnational Communities

The most promising change is the rise of venture networks and transnational entrepreneurial communities in Japan. The first generation of successful entrepreneurs, exemplified by Masayoshi Son, the founder of Japan's largest venture, Softbank, is now involved in nourishing new ventures. Rather than competing with each other, these entrepreneurs are creating alliances and promoting other types of networking opportunities for potential entrepreneurs, thus creating a support infrastructure necessary for nurturing new ventures. Most importantly, there are a number of Japanese entrepreneurs emerging today who have lived and worked in Silicon Valley and other parts of

the world, where they have gained substantial first-hand experience in new venture businesses rather than in large Japanese companies. Not only did they gain important experience; they also built professional and social networks, which they can use to grow businesses in Japan. Such “diasporas” or immigrant networks have played important roles in building new businesses in Taiwan and India. Today, this diaspora population is playing an increasing role in the Japanese economy. Silicon-Valley-trained Japanese are linking up with American, European, and Asian expatriates in Japan to start new businesses. In many ways, “expats” are ideal candidates for such start-ups, as they do not face the same risks of social alienation if they fail as do their Japanese counterparts.

Although these people are making changes in the Japanese business environment, their population is small and it will be difficult for them to achieve sufficient scale in the next 10 years to make a substantial difference in the Japanese economy. Thus, we expect large Japanese companies to drive the new economy in Japan. Many of these companies, like Toyota, will change their business practices to remain competitive in fast-changing markets. Toyota's Gazoo.com venture was put into a separate unit within the company to isolate it from bureaucratic management and inflexible policies. But

when a large company like Toyota enters a market, it is very difficult for smaller companies to compete. Autobytel and Carpoint, two purely online car-sales ventures, for example, aimed to end Toyota's tight grip on its dealerships. Honda and Nissan dealers immediately leapt at the chance to participate in the independent online sales ventures. But Toyota's dealers were harder to convince, because Gazoo provides them all the benefits of an Autobytel or Carpoint—at no cost. Gazoo, with 660,000 members and more than 60 million Web page views a month, gets more hits than either Autobytel or Carpoint and has proven so attractive to Toyota dealers that Carpoint's sales team has stopped trying to recruit them. By offering its dealers an attractive alternative to other online car sales services, Toyota, which controls about 30% of the total car market, expects to shrink the potential market for Gazoo's competitors by one-third.

Large companies, with their depth of human and financial resources, brand names, established sales channels and production expertise, will prove tough competitors for smaller entrepreneurial businesses in Japan. We expect small players to occupy market niches, but not substantial shares of the market in the next 10 years.

¹ “In Japan, An Established Company is Transformed,” *The New York Times*, December 18, 2000.

² Ishii, M., Yokoo, Y., and Hirano, Y., “Comparative Study on Career Distribution and Job Consciousness of Engineering Graduates in Japan and the U.S.,” Science and Technology Agency, 1993, p.16.

³ Nomura Research Institute, “Research of Venture Supporting Policy in 21st Century,” NRI Press, 1998, p.50-52. (in Japanese)

⁴ Pempel, T.J., “Regime Shift: Comparative Dynamics of the Japanese Political Economy,” Cornell University Press, 1998, p.70.



Part II: Households and Consumers— The Loci of Innovation

Most consumer goods companies know that Japanese consumers are among the most demanding in the world—if the product passes muster in Japan, it is certain to be successful elsewhere. This applies as much to cosmetics as to household goods and electronics. Thus for many, Japan is the ultimate test market. Not only are Japanese consumers quick to detect defects in products, they readily communicate their concerns to the manufacturer or retailer, pointing out problems in minute detail.

Consumption is an important part of everyday life in Japan—discussions of which products are good and how to use them dominate conversations in the workplace. Window shopping, browsing, and actual purchasing in the multitudes of urban stores serve important entertainment as well as utilitarian functions. Eating out with friends and colleagues is a daily ritual for many Japanese office workers. Reading trend magazines that advise “what’s hot and what’s not” is a daily routine for many teens and adults.

Describing key features of the innovation milieu in Silicon Valley, Manuel Castells in his book, *Technopoles of the World*, points out that for many people living in the Valley, what they do at work is more important than the money they earn. This is largely because they see work as an opportunity and an expression of their innovation—work gives these people a feeling of being on the cutting edge of technology and knowledge. Work is thus at the core of the innovation system in Silicon Valley.

In Japan, by contrast, consumption is both the expression and the driver of innovation. Looking at consumption is an integral part of understanding the innovation landscape in the country. As we pointed out in previous GIF project reports, our framework for studying innovation involves looking at both the supply side (organizational capacity for producing innovation) and the demand side (whether consumers are demanding and in fact generating innovations in the process of adopting new products and services).

In this chapter, we explore in depth the social and technological contexts in which Japanese consumers conduct their everyday lives. We look at Japanese households and how new products and services, particularly those that are technology-based, fit into people’s everyday lives and activities. What are the unique usage patterns and drivers generating demands for new products and services? Understanding consumers and households makes it possible for us to develop an innovation forecast for Japan.

RESEARCH OBJECTIVES AND METHODOLOGY

In the Institute for the Future (ITF) household research, we analyze core desires, expectations and concerns that shape the purchase and use of information and communication technologies within households in different markets and cultural contexts. The household is a rich ecology of people, tasks, tools, and practices and is thus a good unit of analysis for exploring consumer lifestyles and technology use patterns. Households also generate demands for new products and services, thus serving as an important locus of innovation. Looking closely at the social dynamics and the use of technology in the household allows us to discover the underlying motivations for adopting various technologies, and the unique use patterns and diffusion dynamics at play in the larger consumer market. This ultimately serves as a valuable input into developing a larger innovation forecast for the region.

To understand evolving lifestyles and consumer patterns, we employ both primary research (i.e., surveys, qualitative interviews, aggregated expert opinions, and so forth) and secondary research methods, using literature reviews, statistical and trend analyses, etc.

Our core primary research effort included in-depth interviews with different types Japanese households (conducted in Japanese) in the Tokyo metropolitan area (see Appendix for details). The purpose of the interviews was to understand underlying patterns of behavior (core needs, pains, and desires) and daily routines household members engage in. We also wanted

to identify the factors influencing adoption of new products and services. These ethnographic interviews were an integral part of the larger research process examining the innovation climate in Japan. Specifically, our objectives for the interviews were the following.

- Map out the roles and activities of different household members and understand how these shape desires for new products/services, and how information and communication tools and services are used throughout the purchasing cycle.
- Understand the technology ecology of Japanese households, including the physical and social context in which various devices within the ecology are used.
- Analyze the drivers that prompt a Japanese household to adopt new product and service brands—including packaged food, cosmetics and beauty products, major household appliances, household products, information technology and communication products.

In the next section, we bring together the research and insights from ethnographic interviews to develop a forecast of how Japanese households and lifestyles will evolve in the next 10 years. The forecast is detailed in this chapter; then illustrated through three scenarios of individual lives in 2010, each at a different life stage and in a different household setting (see Part III). We also discuss implications of these scenarios for company strategies in Japan.



CHAPTER 1

Social and Economic Context of Japanese Households

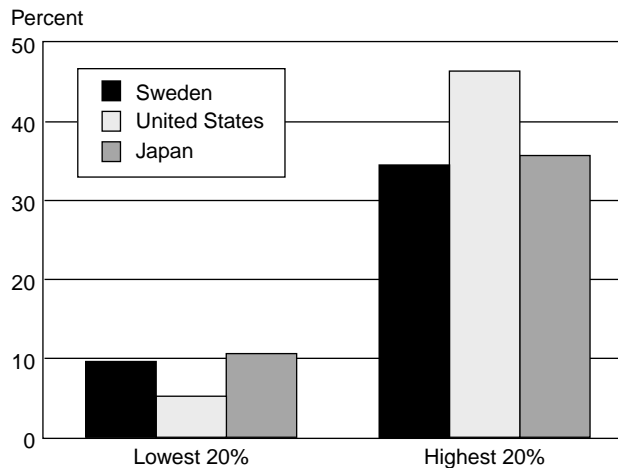
In the period of rapid economic growth after World War II, enormous economic and social changes transformed the concept of a Japanese household. This period saw a “model” family form established, largely patterned on Western notions of a nuclear family. While in prewar years, it was normal for women to work even after marriage, the postwar period saw the withdrawal of married women from the labor force and an accompanying increase in the number of full-time housewives. In this period rigid division of roles in the household according to gender emerged: the men assumed the economic burden by going out to work, while the women assumed responsibility for the home, in the form of housekeeping and childbearing. The typical and ideal form of a household comprised a husband who was a salaried employee (salaryman) and a wife who was a homemaker.

Figure 2–1
An Idealized Western Family Circa 1958



Source: Partner, Simon, *Assembled in Japan—Electrical Goods and the Making of the Japanese Consumer*, University of California Press, 1999.

Figure 2–2
Low Levels of Income Disparities
(Real GDP in PPP per capita, thousands of dollars)



Source: United Nations Development Programme, "Human Development Report," 1999.

The society adopted many aspects of Western culture and social identities. For example, the concept of "adolescence" emerged as a marked stage in the Japanese life course for the first time. In fact, Western concepts of the family were not only adopted; they were promoted and held as the ideal to achieve. The new Japanese concept of household and family implied "strong preferences" for a particular life path with predetermined life stages, including all the steps necessary to achieve the "idealized" middle class lifestyle (see Figure 2–1).

While the concept of a traditional family and household has undergone tremendous change in most Western countries as a result of women's increased participation in the labor force, rising divorce rates and a growing number of single-parent homes, Japanese households have largely clung to the idealized notion. Today, several characteristics of the Japanese family and household make them distinct from their Western counterparts:

Economic and Social Uniformity

Japanese households have a higher degree of economic and social uniformity than do households in the West. Income disparities are lower than those in the West. For example, the income gap between the highest 20% and the lowest 20% of the population in Japan is much smaller than that of the United States (see Figure 2–2). And Japan's income gap is even smaller than that found in the social welfare states of Nordic Europe. Greater economic uniformity allows for more equal access to goods and shared consumer experiences; these contribute to greater social uniformity.

Rigid Gender Roles

Japanese households have rigidly defined gender roles in that the wife stays at home and rears the children while the husband earns a salary that affords them a middle-class lifestyle. Much of Japan's recent economic success rests on the development of this social innovation—the salaryman household. Rigid gender roles in the home created the household conditions for the male population to go to work—ultimately fueling economic growth and the development of a consumer market for Japanese products.

Rigidly Defined Life Stages with Pre-Determined Social Expectations

The Japanese life course is largely pre-defined by social expectations to be met at every life stage. These expectations shape lifestyles, behaviors, and purchasing choices for people and households. For example, elementary school children are expected to attend cram schools; middle-class teenagers are expected to go to university; middle-aged women are expected to wear certain types of clothing; and grown children are expected to take care of their older parents. Any deviation from the standard cycle is considered undesirable. There is a high degree of social criticism if one deviates from what is considered to be the norm; thus it is difficult for individuals to adopt a life cycle or a lifestyle of their own choice.

There is an expectation, for example, that a grown daughter will care for her parents when they become old; this defines a woman's choice of where she—and her family—will

live and what she/they will do in the next stage of life. As one married woman explains:

My parents live in Tama-plaza and we want to make it a two-household house there. My parents are getting older and sick. So, we are planning to move closer to them so we can take care of them when necessary.

—Married woman, no children

Life stages also set clear consumption patterns—what was acceptable before is no longer acceptable when one becomes an office worker or a salaried employee:

I used to be fashionable before I got married. Now I'm an office worker, so I don't have to worry about what I wear.

—Married woman, no children

I bought a watch in July. I did so on impulse while I was on a business trip in the United States. I had a digital watch before then. I had been thinking it wasn't appropriate since I am over 30 and have started going on business trips with high-ranking executives who are older than I am. I've even decided to buy another new one that looks more formal.

—Married man, with young children

Japanese Households Are Fragmented

Japanese households are quite fragmented, with family members living in distinct and separate worlds with individual daily rhythms and social networks, which often do not intersect those of other household members. This fragmentation is particularly obvious between husbands and wives (particularly if the husband is a salaryman), but it also occurs between parents and children, who hardly spend time together, each preoccupied with their own individual activities and daily routines. In the Citizen Watch Company's recent survey of male businessmen in the Tokyo metropolitan area, salarymen were found to spend more time drinking, checking e-mail, web surfing, and enjoying other leisure activities than chatting with the family or playing with their children.¹

For example, in one family where the husband is a salaryman and there are two teenage daughters, the husband is not seen during the week at all. But even on weekends when he could be around, he usually escapes to the Pachinko parlors.

Interviewer: How much time do you spend alone on the weekends?

Husband: It depends. I sometimes leave home around noon, and sometimes in the morning; I try to come back before dinner but sometimes arrive home later—about 8 o'clock.

—Married man, with teenagers

The older daughter, in the meantime, has her own individual schedule.

I practice at my club on Saturdays. I leave home at 7 and come back around 7 in the evening.

—Teenage girl

Here is what the wife says:

I suspect that our family will disintegrate after our younger daughter (11) enters junior high...Basically, we don't get together for meals as often as before since our younger daughter started cram school. We take breakfast individually. I have lunch alone. We have dinners separately, also. Two of us (wife and younger daughter) eat dinner first, then the other daughter eats dinner later, and my husband eats last.

—Married woman, with teenagers

In another family with one teenage daughter, the wife says:

"In the next 5-6 years my daughter will be graduating from college. If she were to go on to study music, the two of us (husband and wife) will be left here. I need to prepare myself for that because my husband and I don't have any hobbies in common. I have to do something about that."

—Married woman, with teenage daughter

**ALL THE HAPPY FAMILIES ARE ALIKE, EVERY UNHAPPY FAMILY
IS UNHAPPY IN ITS OWN WAY**

—Leo Tolstoy, *Anna Karenina* (1875)

Fragmentation of Japanese households is evident in the number of terms that have arisen to describe various ways in which relations within the household falter:

Sekkuresu fufu—Couples who continue a conjugal relationship in spite of no longer having sexual relations

Otto zaitaku shokogun—Stress that wives suffer when husbands are at home full time (usually after the transfer, retirement or layoff of a salaried employee/husband who previously came home only to sleep)

Kateinai rikon—Divorce within a family (ranges from couples who have ceased communicating, simply by not talking to each other, to those who share the same dwelling but in all other respects lead separate existences, sometimes preparing their meals separately and having separate bedrooms)

Nureochiba—Husbands who, after retirement, cling constantly to their wives like wet fallen leaves (occurs when husbands who previously devoted themselves totally to their jobs and built no outside interests, have nothing to do but cling to their wives)

Kurenaizoku—Wives who frequently say to their husbands, “Why don’t you do anything for me?” (full-time homemakers whose children have moved away and whose husbands spend all of their time at work)

Source: Yamada, M., *The Japanese Family in Transition*, Foreign Press Center, 1998.

**Japanese Households have
Fragmented Social Networks**

One result of family fragmentation is that families' social networks are fragmented, with each household member operating in a distinct world of contacts and relations, apart from the other family members. IFTF's research points to differences in the depth and reach of these distinct social networks among family members. Men's social networks tend to be limited to their work, while women have multiple social networks across diverse areas of their lives—family, work, neighborhood, hobbies, school, parents of their children's playmates, etc. This difference can be seen in how men and women describe their lives.

Compare, for example, this woman's rich social life to that of her husband:

Wife: My work is flexible. I spend a lot of time with my school friends and my customers. I go for a lunch buffet, have French food and tea with them. I sometimes go watch plays. A few friends go together. I meet

someone usually everyday when I don't have any work to do. I dine out with someone. I sometimes ask a friend to have lunch. I spend more time with friends than alone.

Husband: I leave work around 7:40 and get home around 11:00 p.m. I don't go out much. Even when I do, it's only once or twice a week, to meet with people in my company. I go to my company in Kawasaki.

Interviewer: Where do you eat meals?

Husband: There is a convenience store on the first floor of the building, and there's a hamburger shop, so I eat a light meal there at nights. Other than that I eat at home...I only eat and sleep when I come home.

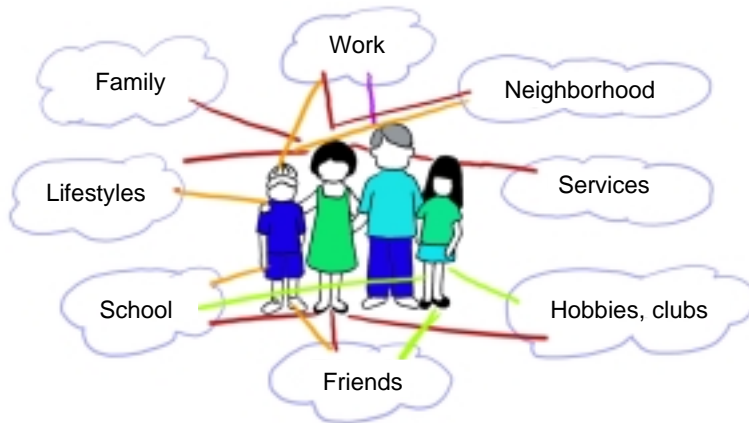
—Married couple, with grown children living outside home

In a fragmented household, each person (dad, mom and the kids) has access to different resources—information, knowledge, ideas, and experiences through his/her individual network. Taken together, individual household members create a portfolio of resources that can serve to meet the needs of the household. However, because of the uniqueness of their social networks, each individual plays a distinct role and brings unique resources to the household context. For example, kids often learn and acquire information about technology in peer networks and in turn, become

interpreters of technology trends for the household. Mom, with her extensive community contacts, acquaintances and extended family, keeps the household connected to the broader social context around them (see Figure 2–3).

The social systems of the Japanese “networked household” thus facilitate the flow of information and other resources to and from the household—helping facilitate household work, navigate product and service choices, and transcend information barriers in diverse areas of household and personal life (see sidebar: Social Networks Shape Purchasing Behavior).

Figure 2–3
Social Systems of the Japanese Networked Household



Source: Institute for the Future

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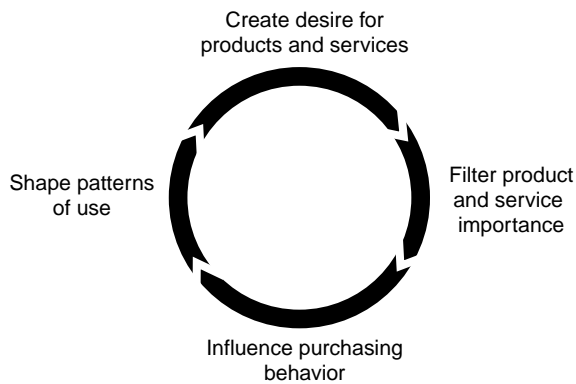
SOCIAL NETWORKS SHAPE PURCHASING BEHAVIOR

Technology adoption and diffusion patterns in the Japanese context can be explained by strong social network effects that create a critical mass of “acceptance” resulting in rapid diffusion and widespread adoption of new products and services. Social network effects are important for understanding Japanese consumers’ purchasing behavior for a whole

range of innovations (e.g., technology, fashion, and lifestyle changes). Social networks create the desire for new products and services, serve as critical information channels, and influence purchasing decisions (see Figure 2–4).

The dynamics of social networks can best be seen in how they affect the purchasing cycles of product and service innovations.

*Figure 2–4
Social Networks Shape the Purchasing Cycles of
Product and Service*



Source: Institute for the Future

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Social Networks Create the Desire for Product and Service Innovations

Certain objects become desirable within social networks because they are assigned important meaning and their acquisition becomes a necessary pre-condition for belonging to the network.

I don't buy things out of necessity. I buy things out of curiosity. When my colleagues are talking about something, I wonder what it's like; then I feel I want it, too.

—Married man, with young children

Social Networks Are Critical Information Channels

Social networks serve as channels to exchange resources of various kinds. One important resource that is exchanged is information. Japanese consumers rely on social networks as a critical source for product and service information. However, consumers exchange more than mere information; they exchange "filtered" information. Filtered information exchanges are actually "choices" made in the context of the social network. These choices (rooted in

trust and reputation) represent shortcuts for navigating multiple product and service options. This "filtered" information exchange is particularly important in the purchasing cycle for information technology products and services.

Interviewer: "Did you talk to anyone about it before you got this phone?"

Male Teen: "I bought what I wanted."

Interviewer: "How did you acquire the information about the brand-new model?"

Male Teen: "People I knew owned it, and I thought of changing mine to it. I wanted I-Mode, too."

Interviewer: "So, you saw and learned about it from your friends. Did you discuss obtaining it with your family?"

Male Teen: "No, I didn't."
—Teenage male





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Purchasing Decisions Are Made in Social Networks

Households are often thought of as loci for making purchasing decisions because household members pool resources and make budget allocations accordingly. In our ethnographic interviews, however, it became apparent that purchasing decisions are often made outside of the household context when people are out with friends or other members of their social networks. This is particularly true for teenagers in Japan, who spend a lot of time on the go with their peers. Several teenagers reported deciding—while with their friends—to purchase a product; then later

bringing a parent with them to actually buy it. Though a parent may have completed the final purchase, the decision regarding what to purchase was made in the social network of friends.

Social Networks Shape Patterns of Use

Not only are desires and information flowing across social networks but so are patterns of use. (See more in Chapter 5.) For example, the use of information technology devices in the context of social networks often results in idiosyncratic uses unique to the members of that group.

The Japanese “Home” Serves Multiple Functions

Family fragmentation is reflected in different perceptions of the home by different members of the household. For a husband who is rarely at home, it may be a “hotel” or just a place to sleep; for a wife who spends most of the time at home, it may be her “castle”; for a middle-aged woman who works mostly out of her home, the home is her “office.” Thus, depending on what they do and how much time they spend in the home, different household members view the physical home as serving different functions.

In one household where the grown kids have moved out, the husband and wife think quite differently about the house. The wife works part time for an insurance company and divides her days between clients and her friends. She says:

We consider this house as our office.

The husband voices another opinion:

When our children were in high school, we decided to move here because this house is located closer to their school and my office. This house is like a hotel for me. I don’t spend much time here throughout the week.

— Married couple, with grown children living outside home

In another household, where the husband uses the home primarily as his office, the wife sees it as her “castle.” She explains:

My dream is about the house. I want to make the house my castle. This is my nest, so I can make my wishes come true if I spend money on it. My family takes top priority for me.

—Married woman, with young children and employed part-time

Houses are divided into niches reflecting these different functions. Pictures of a tatami room, below, show corners for each member of the family (see Figure 2–5). They provide space for the kids’ numerous books, videos, and games, Mom’s collectibles and sewing area, and Dad’s home office.

But the function of the home and its different rooms may change throughout the day. Thus a tatami room in which a couple sleeps at night becomes an art studio for a wife during the day and then a “TV room” during the evening.

Figure 2–5
The Many Functions of the Tatami Room

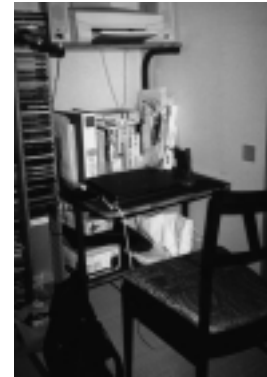
Kid’s play area



Mom’s collectibles and sewing area



Dad’s home office



Source: Institute for the Future

IMPLICATIONS FOR COMPANY STRATEGY

- ***Multiple Audiences within the Household.***

The household is not a unified unit in the Japanese context—it consists of multiple audiences, each with its own unique set of social networks, resources, daily routines, and desires, which often do not intersect. Companies need to think about multiple uses for different products and tailor their products and advertising messages to appeal to different audiences within the same household. Household fragmentation also necessitates that products which companies sell to Japanese households have the capability to be re-purposed for different users within the household and for different functions throughout the day. It also means that companies may be able to sell different forms of some products to the same household.

- ***Need to Look Beyond Traditional Consumer Segmentation.*** Because Japanese household members rely on outside networks for social interactions and for product information and recommendations, new methodologies for conducting market research are needed. Traditional segmentation techniques rely on psychographics or demographics for forecasting consumer behavior. These need to be supplemented by looking at Japanese social networks and analyzing how they shape the purchasing cycle, from creating desire for a certain product to dictating its use patterns.

¹ Citizen Watch Co., Changes in Businessmen's Weekly Life Style over the Past 20 years Survey, March 2000.



CHAPTER 2

Drivers Shaping the Future of Japanese Households

The notions of traditional households in Japan will undergo substantial changes in the next 10 years. The salaryman household and its place as the dominant and “appropriate” household form to follow are beginning to fray under the burden of economic recession, demographic and social shifts. Today, this Japanese ideal of family and the household is being questioned. It is viewed as too rigid and in many ways undesirable. People want alternatives and once again, the Japanese concept and form of family and the household is on the cusp of being reinvented.

Several key drivers are shaping the future social dynamics of Japanese society and in turn influencing the lifestyle choices and the character of emerging Japanese households. Taken together, these drivers imply a particular direction of change—away from social homogeneity to more social differentiation with diversity in lifestyles, desires, and social forms. These drivers or trends include:

Lower Economic Growth

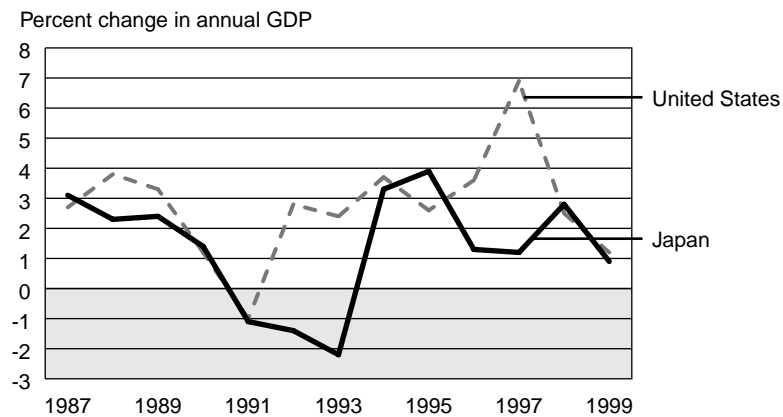
Certain lifestyles are no longer attainable in the current economic context. The volatility of the economy is creating new work and career forms as companies try to weather the economic storm (see Figure 2–6). The “ideal” family, in which a husband bears the economic responsibility and the wife assumes responsibility for child rearing and house keep-

ing, is being challenged by economic realities of the continued recession and corporate layoffs and restructurings. Being a salaryman no longer ensures lifelong employment or the superior economic and social benefits that came with the job 15–20 years ago. The social compact between employees and large companies is fraying, with many people—particularly young ones—questioning the desirability of a salaryman’s lifestyle.

Men and Women Are Postponing Marriage

Young people in Japan enjoy extremely affluent lifestyles. Figures below show a very high degree of contentment with their lives on the part of young people, particularly women in their 20s. Both women and men in that age group have a higher degree of economic com-

*Figure 2–6
Japan’s Stormy Economic Performance
(Percent change in annual GDP)*

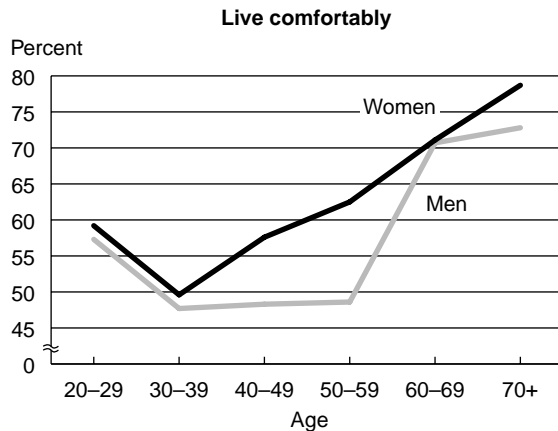
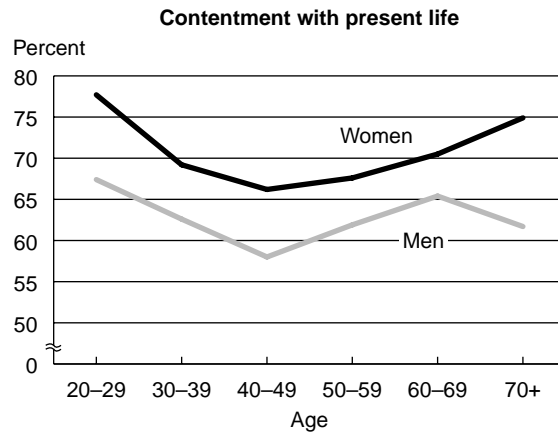


Source: Institute for the Future; World Bank, “World Development Indicators, CD-ROM,” 1998; Nomura Research Institute.

fort than those in their 30s and 40s (see Figure 2-7). The reason for this high standard of living by the young people is economic support from their parents. The parents with children in their twenties comprise the generation cohort which benefited most from Japan's economic boom years and the corporate seniority system. They have substantial economic assets with which to support their children in affluent lifestyles. Also, adolescence and young adulthood before marriage offer the period of greatest freedom in Japanese lives. Entering marriage and becoming an adult imply rigid social burdens and family responsibilities. Thus both men and women are postponing marriage (see Figure 2-8, page 36). Many realize that the ideal middle-class existence might be difficult to reach and their living standards might have to go down after marriage. Besides, they can eschew the rigidities and social burdens by living at home longer. Thus, the life path that served many of the older generation well is now too risky for younger Japanese to follow. Marriage may bring a lower quality lifestyle than remaining single, building a career, and living at home.

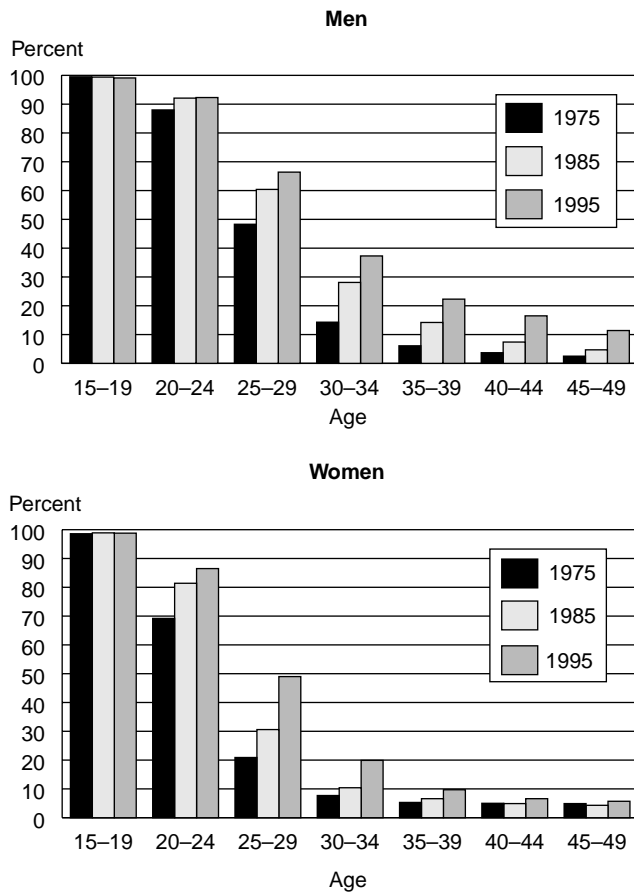
As marriage is being postponed, new lifestyles and patterns are emerging. One such lifestyle is termed a "social parasite" and describes young men and women living at home off their parents' assets, sometimes working full or part-time to support their spending habits.

Figure 2-7
Young Men and Women Are Content With Their Lives
(Percent of respondents by gender and age category)



Source: Prime Minister's Office, Gekkan yoron Chosa (Opinion Survey Monthly), March 1998.

Figure 2–8
Men and Women in Japan Are Increasingly Postponing Marriage
(Percent unmarried by age category)

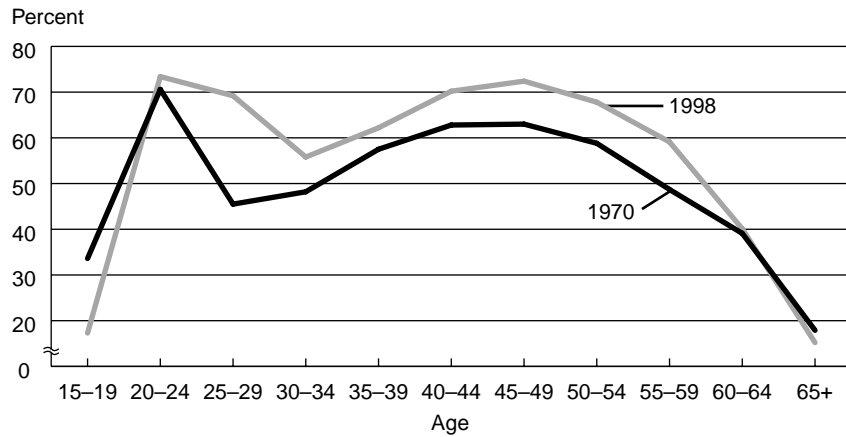


Source: Institute for the Future; Management and Coordination Agency, Census of Japan.

Women Are Pioneering New Work and Social Patterns

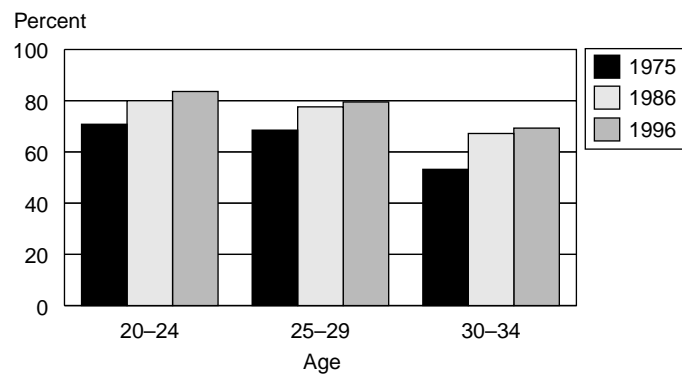
Women’s labor force participation still varies by life stage but is increasing overall (see Figure 2–9). More young Japanese women are entering the workforce as an alternative to marriage. They are joining not large companies which usually shepherd them into clerical positions, but Internet start-ups, consulting companies, and other non-traditional occupations which offer them more opportunities for advancement and for use of their professional skills and talents. There are now 7 million working women in their teens and twenties; they are better-educated, more widely traveled and more ready to experiment than are their male counterparts. Since many of them live at home and pay little rent and taxes, they have on average \$1400 a month to spend on clothes, cosmetics, music, holidays, and their hobbies (see Figure 2–10). As *The Economist* pointed out in its July 1, 2000 edition, “these women are a revelation to Japan.” They look different, they act different, they have more freedom and more economic power than did women in previous generations, and they are pioneering new lifestyle and work patterns. Teenage girls are early adopters of many fashion and technology trends. Not surprisingly, it is this cohort that took up the use of I-Mode phones and then diffused it to the rest of the Japanese population (see Chapter 6). Their impact will continue to be felt in the Japanese society as these young women pioneer new lifestyles, household forms, and consumption patterns.

Figure 2–9
Women’s Labor Force Participation Is Increasing But Still Varies by Life Stage
 (Percent of women in labor force by age category)



Source: Ministry of Labor, Labor Force Survey, 1999.

Figure 2–10
Unmarried Women Tend to Stay at Home Longer
 (Percent of unmarried working women living in parental home)



Source: Ministry of Health and Welfare, “Basic Survey on Life of People,” 1996.

Japanese Birth Rates are Declining and Households Are Getting Smaller

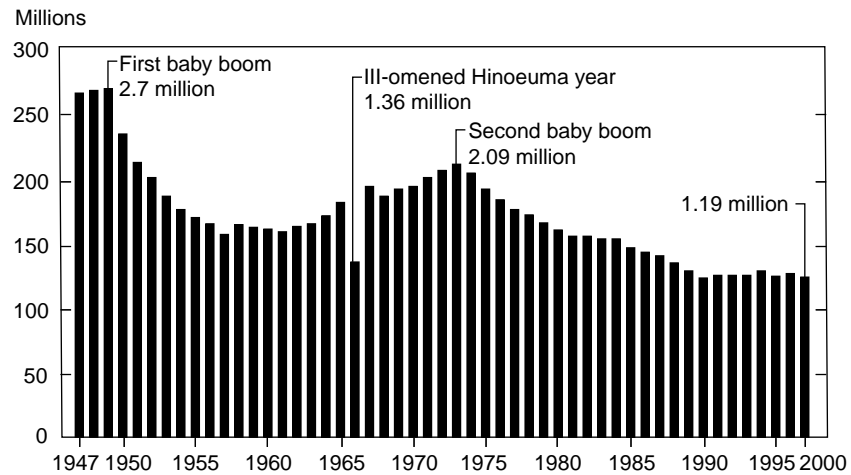
Birth rates in Japan have been on the decline since the mid-1970s as a result of young people postponing marriage and their preference for fewer children (see Figure 2–11). The result has been smaller families and an increase in the number of single-person households (see Figure 2–12). Demographers expect the population level to peak at 128 million in 2007 and then decline quite precipitously.

With Fewer Births and High Rates of Longevity, Japan Is Graying Fast

Clearly, with fewer overall births, Japan is facing the rapid aging of its society (see Figure 2–13). By 2010, those aged 65 and over will be over 22% of the population. Many of these older people are living beyond the age of 85, with little more than a few chronic diseases to manage. Older Japanese will be a strong economic, political, and social force in society as their numbers swell. Combined with decreasing birth rates, the aging population will put severe pressures on the Japanese economy and society. By 2025, there will be only 2.2 workers for each Japanese pensioner.

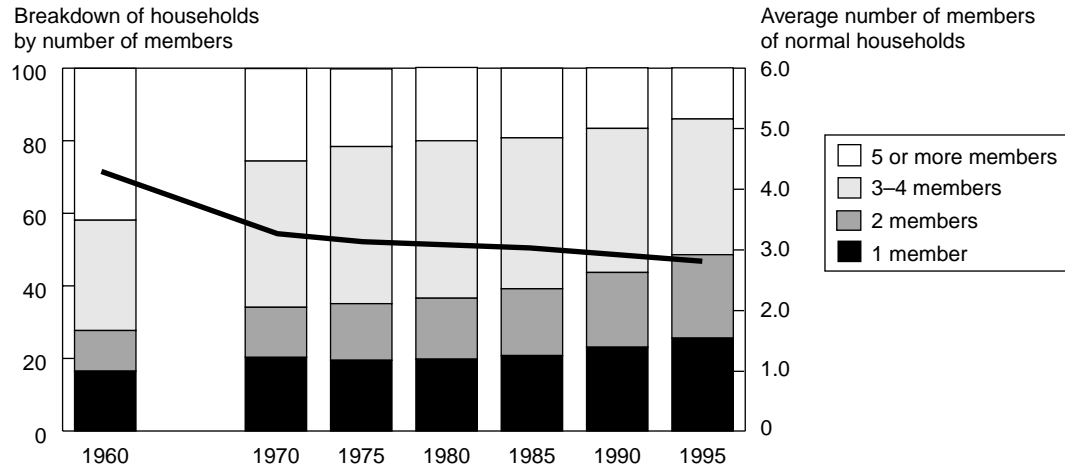
Taken together, these drivers represent powerful forces of change. They will ultimately shape the lifestyle choices and patterns that emerge in the 21st century Japanese household.

Figure 2–11
Birth Rates in Japan Have Been On the Decline
(Number of births in millions)



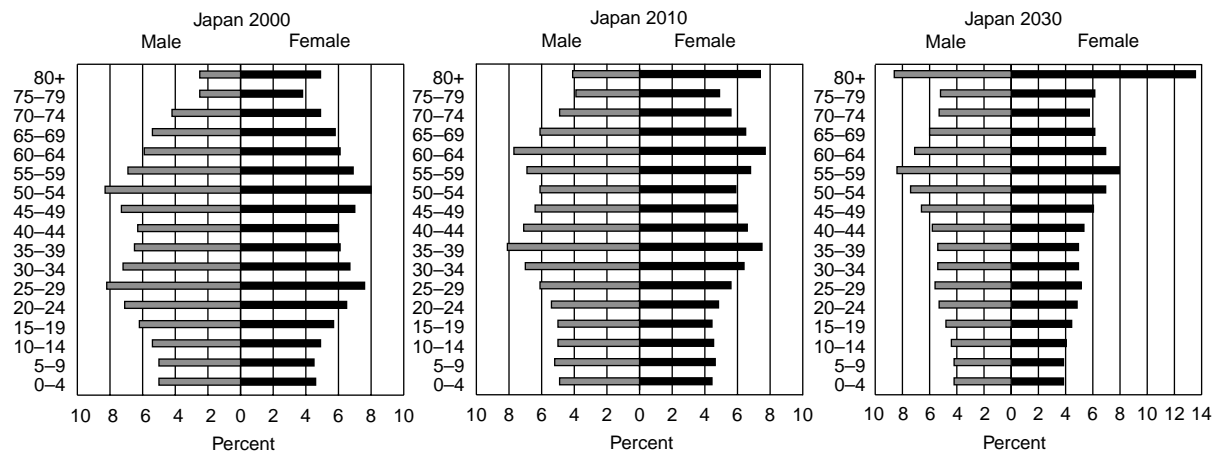
Source: Yamada, M., *The Japanese Family in Transition*, About Japan Series, Foreign Press Center, Japan, 1998, p.33.

Figure 2–12
Japanese Households Are Getting Smaller



Source: Yamada, M., *The Japanese Family in Transition*, About Japan Series, Foreign Press Center, Japan, 1998, p. 14.

Figure 2–13
Japan Is Graying Fast
(Population by gender and 5-year age category)



Source: Institute for the Future; U.S. Bureau of the Census, International Demographics Database, 2000.



CHAPTER 3

Forecast: Social Reinvention—From Uniformity to Diversity

This is clearly a time of large-scale social experimentation in Japan—old traditional dominant lifestyles and family forms no longer work; yet it is not clear what the new models are. The drivers of change, however, point to a much greater diversity of lifestyles, work patterns, and household patterns in the future. It is important to remember that in the pre-war years, there was considerable variation in family forms and lifestyles—there was a wide variation in people's marriage ages, many mothers worked, and there was nothing unusual in divorcing or having children out of wedlock. The form the Japanese family took in the post-war years and the uniformity of lifestyles it brought may be viewed as an aberration in this context, an aberration which will be corrected as the economy slows down and the demographics change considerably. Our forecast for Japanese households and lifestyles to 2010 follows.

Uniform Life Stages Will Give Way to Diverse Life Cycles

Interviews point to existing and growing differences in lifestyles, aspirations, and values within Japanese society. Hints at emerging alternatives are best summed up by a quote from a woman whose husband chose not to be a salaryman, but to start his own repair business, working primarily out of the house. This decision gives the husband more flexibility and makes it possible for him to spend more time with the family.

Whether it's common sense or not, in Japan you have to keep to a certain form—a couple or a family should be this way or that way. The husband should work all day and the wife should protect the children. The husband goes to work and afterwards goes out to drink with co-workers or to have a business dinner. From Monday through Friday he doesn't communicate with his wife and children. I don't like that! He (husband) is searching for his dream. I told him, 'Keep searching and I will support you.'

—Married woman, with young children, works part-time

In the following family, the husband manages an R&D organization and both adult children are in medical school. When asked why he and his wife wanted their children to go to medical school, the husband replied:

I am a salaryman. I don't want my children to be like me. We used to keep telling them that they must become professionals.

—Married man, with grown children

Household members we interviewed indicated that many of them are questioning traditional "life paths," modifying or abandoning them altogether. In several families, high school children—trying to "find" themselves—were not sure if they would go to college. In another household, where the husband has his own trading company and only one daughter, there did not seem to be an expectation that the daughter or her (future) husband would be involved in the company, which is quite unusual in Japan:

I am concerned about the succession in our company. But my daughter wants to pursue her music, so I want her dream to come true. I am thinking about these two matters separately.

—Married man, with teenage daughter

Meanwhile, the daughter expresses very different aspirations for her future.

Interviewer: "Have you ever thought about what you might do after you graduate?"

Daughter: "I want to live in Spain. I like the countryside in Spain. I don't know, but I just don't like Japan."

—Teenage girl

Many previously set and uniform life stages will be redefined as people experiment with new models and are less willing to abide by the rigid behavioral expectation accompanying each life stage. We already see this in young people delaying marriage. Instead of marrying right after college and having children, the young adults have created a new life stage, which brings with it new opportunities to pursue individual interests and to experiment, as reflected in our scenarios in Part III. In addition, many older retired people are engaging in new hobbies, redefining their post-retirement life stage.

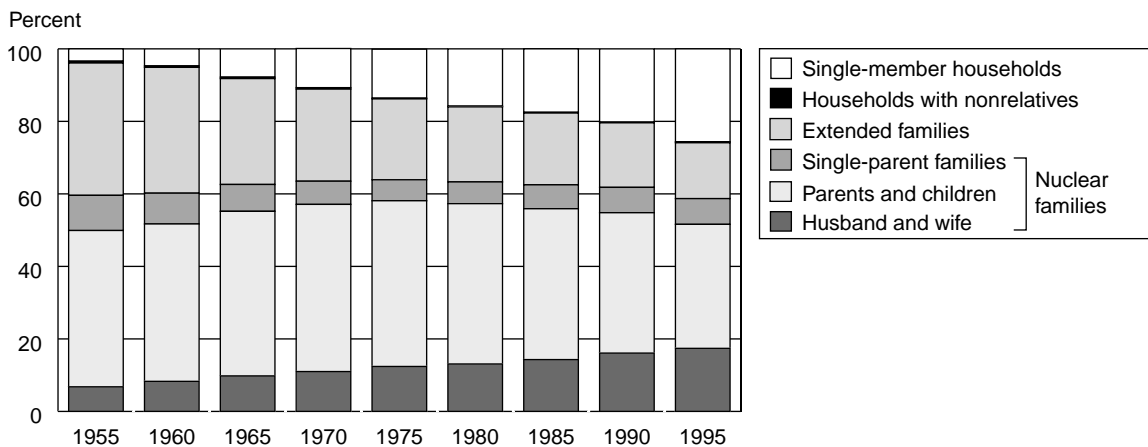
Diverse Household Arrangements and Family Forms Will Emerge

The number of multi-generation families or extended households has declined dramatically—from 37% in 1955 to 15% in 1995. This reflects the declining economic or social

need for them. In the same period, the number of single-member households has increased from 3.4 to 25.6% (see Figure 2–14). Yet the number of nuclear families has remained steady; young people choosing to form households have created nuclear households for the most part. And those choosing not to get married have remained in their parents’ homes, holding the decline of multi-generation or extended households at a slower rate than would be the case otherwise. Japan’s rapidly aging society also is mitigating the declining rate of extended inter-generation households—a trend that will likely increase as the proportion of Japanese aged 65 and older soars to 22% of the population by 2010.

We expect an increase in the number of different household arrangements (including extended households), in order to accommodate the elderly population and the young adults who desire to stay at home longer. In

Figure 2–14
Changing Household Composition in Japan



Source: Yamada, M., *The Japanese Family in Transition*, About Japan Series, Foreign Press Center, Japan, 1998, p. 14.

addition to older children staying at home until well into adulthood, such arrangements may take the form of:

- Older people living with their adult children
- Older people living independently
- Older parents and adult children in two dwellings on the same plot, or within walking distance, so that even though they do not live together, they can offer each other support as needed
- Older people living in communal arrangements, including nursing homes. Right now there is a considerable social stigma attached to such arrangements, but the need for such is likely to grow as the population ages.

New Work Styles and Arrangements Will Proliferate

As large companies are no longer able to guarantee lifetime employment, young people are no longer interested in following their parents' footsteps. This is evident in young people's much greater interest in working for foreign firms, which previously was not desirable in Japan; and in their interest in joining newer entrepreneurial companies and assuming more risks. Some of them are deciding to pursue careers as independent agents rather than company employees.

Major changes will also come with the entry of Japanese women into the labor force. We have seen this in the United States, where

women pioneered many flexible work arrangements. Japanese women will have a similar impact on the workplace. The new models are emerging for women in Japan from several "new economy" pioneers. Preeminent among them is Mari Matsunaga (the woman behind I-Mode's success), who recently launched "eWoman," a site for working women and women who would like to work but face various hurdles.

Preference for Less-Rigid Household Roles Defined by Gender

By international standards, Japanese men spend considerably less time on household work than their counterparts in most Western countries (0.26 hours a day compared to 9 hours in the United States and 10 hours in Denmark)¹. However, according to a survey by Hakuhodo, an advertising agency, if a wife's income is more than one-third that of her husband, the extent of the husband's participation in household work rises sharply. As women enter the workforce in larger numbers and their affluence increases, their equal status within the household also will grow. Men, on the other hand, are showing increased interest in closer family ties rather than being totally devoted to their work. Numerous attitude surveys show this trend. Change will not be sudden, but steady, as salaryman household expectations for women to be homemakers give way to various other alternatives.

¹ United Nations, Human Development Report, 1999, p. 82; U.S. Department of Labor, Report on the American Workforce, 1999, p. 104; Yamada, M., *The Japanese Family in Transition*, About Japan Series, Foreign Press Center, Japan, 1998, p. 28.



CHAPTER 4

Technology Ecology of Japanese Households

Japanese households are inundated with technology. It seems that per square inch of living space there are more technological devices in Japan—from PC's to game machines to mobile phones—than in any other place in the world (see Table 2-1 on page 46). As new technological devices are introduced, many Japanese abandon their old ones or place them out of sight (see Chapter 3), resulting in a rich household ecology where successive generations of the same devices often co-exist. Some of the “old” devices are integrated with newer ones; others are passed on to various household members. But many remain idle, some never even opened—a new model sometimes comes out before a person has a chance to use the recently purchased one. As soon as a new model hits the store shelves, the older device is placed out of sight—using older models when a new model is out is simply socially unacceptable.

Table 2–1
Japanese Household Technology Ecology
(Percent of households with different devices)

	1995	1998	1999
Color TV	98.9	99.2	99.0
VCR	73.7	76.8	77.8
Stereo	57.5	55.2	54.6
CD player	55.9	60.0	60.1
Word processor	39.4	42.0	40.8
Video camera	31.3	35.0	36.3
Satellite TV service	27.6	34.7	36.6
PC	15.6	25.2	29.6
Videodisc player	15.3	16.0	15.2
Karaoke	15.2	12.6	11.2
Cell phone	10.6	57.5	64.2
Fax	10.0	22.2	26.4
Internet	3.3	11.0	19.1

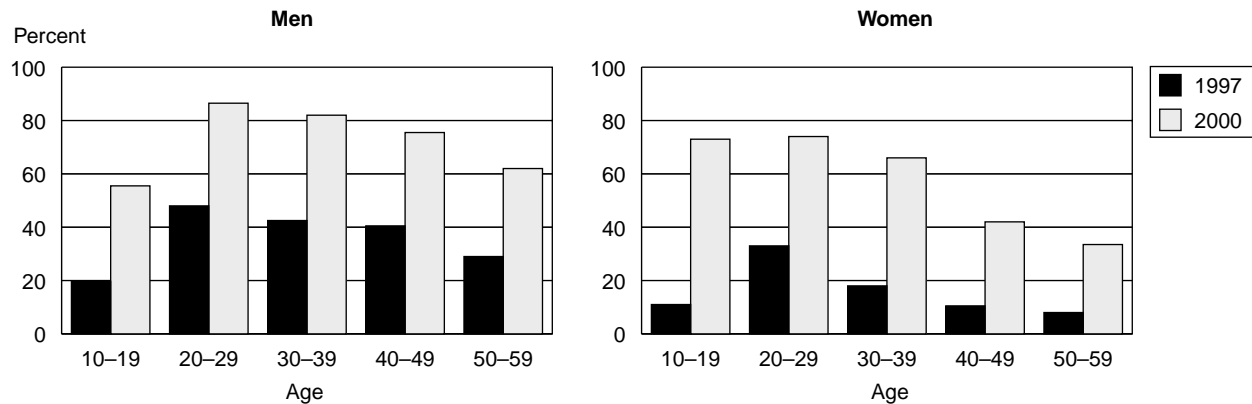
Source: Institute for the Future; Management and Coordination Agency, "Consumption Survey of Households," 1999.

One interesting exception to this is the fax machine, which continues to maintain its presence in Japanese households, despite it being an older technology. As Chapter 3 points out, faxes are still used to send visual information, to communicate with those who do not use computers, and to send credit card information and signatures.

Internet and Mobile Communications Are Central to the Technology Ecology

Mobile phones have diffused across Japanese society like wildfire. With penetration levels reaching nearly 90% in certain population segments, they are the most pervasive devices in Japan today (see Figure 2–15). While 10% of girls aged 10–19 were using mobile phones in 1997, by 2000 that figure soared to nearly 75%. Even older women, aged 50–59, are sophisticated mobile phone users. In 1997 less than 10% were using mobile phones, today that figure is at almost 35%.

Figure 2–15
Mobile Phones Are Becoming Pervasive Devices
(Percent of population with mobile phones, by age category)

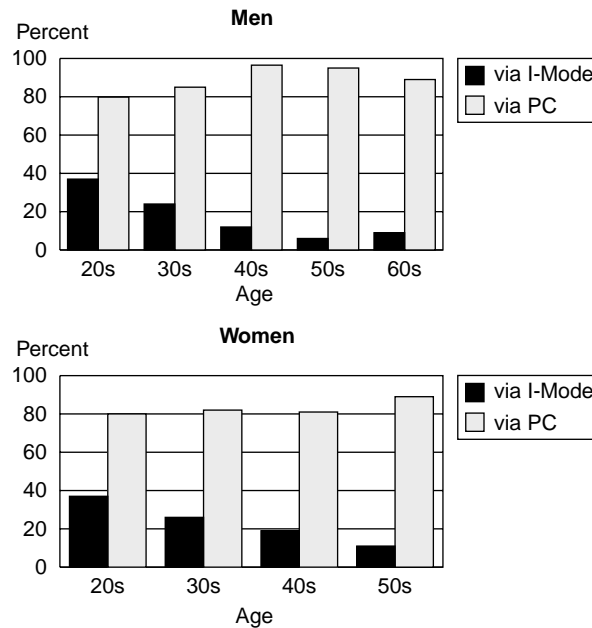


Source: Nomura Research Institute, Cyber Life Observations (Surveys 1–7), March 1997–March 2000.

The rapid diffusion of mobile phones is important since many of these phones are Web-enabled. The mobile phone in Japan is no longer just for making telephone calls; instead it has become a multifaceted, multifunctional device capable of sending and receiving not only voice but also data, text, and images. With the explosive success of NTT DoCoMo's I-Mode phone, mobile Internet communication is becoming a key feature of the Japanese household ecology (see Chapter 6). Today, around 10% of all mobile phone users access the Internet through their phones or in combination with a PC or other information terminal¹. Younger cohorts, however, are more likely than older cohorts to use I-Mode to access the Internet (see Figure 2–16).

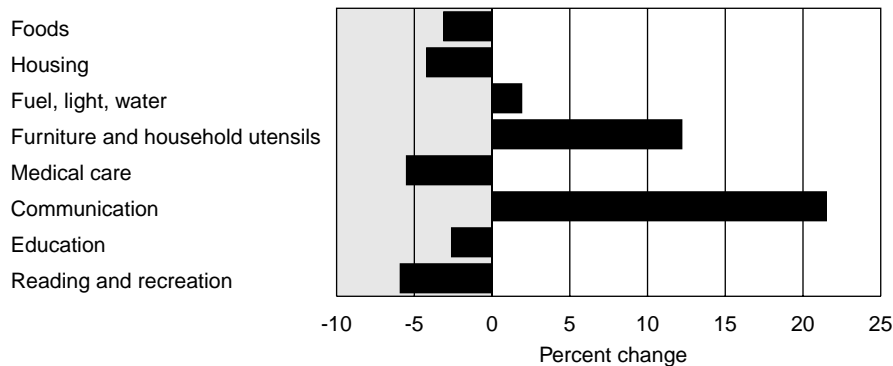
The importance of mobile phones is reflected in the large portion of Japanese household budgets being devoted to communications. This has increased more than 20% in the last year (see Figure 2–17). It is not uncommon for young people to spend \$200 a month for

Figure 2–16
Internet Access by Device
(Percent of population accessing Internet via I-Mode or PC, by age category)



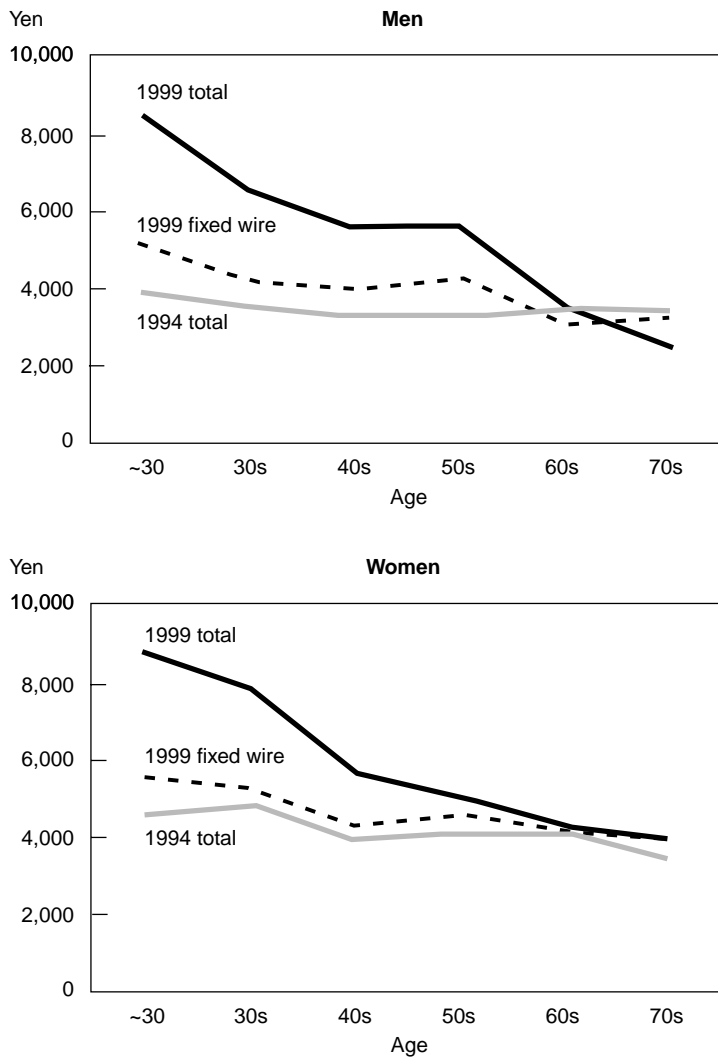
Source: Nomura Research Institute, Cyber Life Observations (Survey 7), March 2000.

Figure 2–17
Japanese Consumers Are Increasing Spending on Communications
(Percent change in household spending, 1999-2000)



Source: Institute for the Future; Management and Coordination Agency, "Household Spending Survey," 2000.

Figure 2–18
Spending on Telecom Services Is Increasing, Particularly Among Young Men and Women
(Monthly spending on telecommunications)



Source: Institute for the Future; Management and Coordination Agency "Household Consumption Survey," 2000.

communication; often they take part-time jobs in order to support their communication needs.

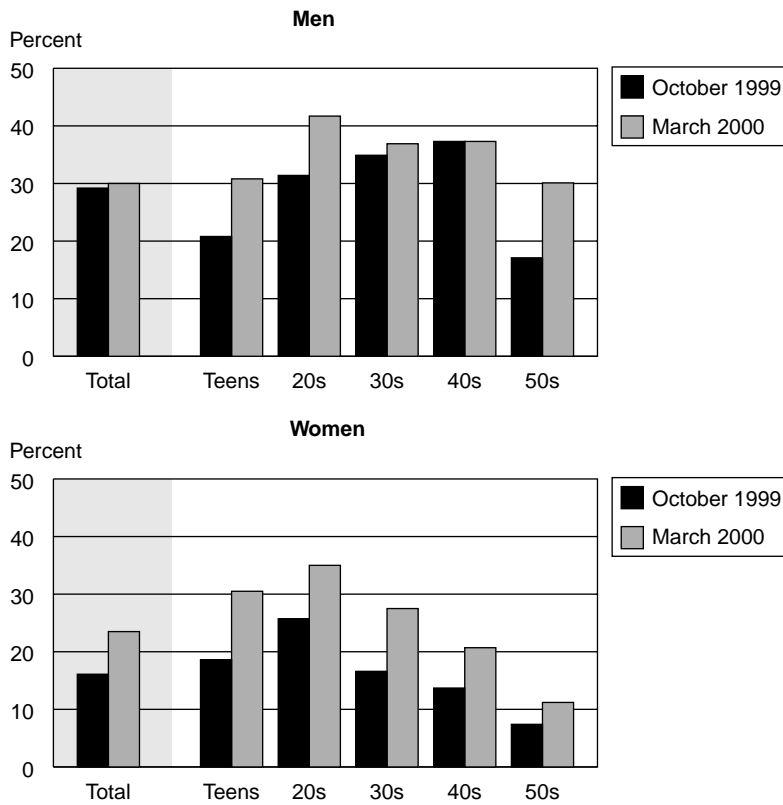
Recent data show that monthly spending is increasing among men and women but much faster among younger cohorts—a population segment that outspends all others on telecommunications (see Figure 2–18).

PC Diffusion Is Accelerating, but Lagging Mobile

Japan lags behind many other countries in PC penetration and Internet access via PCs. By early 2001, 30% of the population used a PC at home, compared to nearly 60% in the United States. Growth rates are dramatic, however, for certain population segments. For example, women across various age cohorts are increasingly adopting PCs (see Figure 2–19). This pattern reflects the popularity of e-mail among housewives in Japan.

While PCs are gaining acceptance, mobile phones are clearly the central devices in the technology ecology of Japanese households. In fact, a whole generation of Japanese young people is gaining its first Internet experience on mobile devices rather than on PCs—in stark contrast to their counterparts in the United States.

Figure 2–19
PC Use Is Accelerating
 (Individual usage rates for PCs by Gender and Age Group)



Source: Nomura Research Institute, Cyber Life Observations, March 1997–2000.

¹Nomura Research Institute, Cyber Life Observations (Survey 7), March 2000.



CHAPTER 5

Technology Adoption and Use

In this section we explore how technologies are integrated into the daily routines of household members, and analyze factors that motivate Japanese household members to adopt and use various devices. The section is organized around key themes derived from in-depth ethnographic interviews with Japanese households conducted by IFTF (see Appendix). The unique social/economic and technology contexts in which Japanese households are imbedded drive similarly unique patterns of technology adoption and use. It is important for companies to understand these in order to create products and services that will appeal to Japanese consumers.

Technology Has to Fit Into Daily Rhythms and Niches of Time

Technologies are increasingly becoming mobile; in fact, they are becoming extensions of our bodies as we carry them in our pockets, briefcases, sometimes on our heads or in our hands. As people become increasingly comfortable with using such devices, the technologies become intimately integrated into their daily routines. In fact, there emerge opportunistic niches of time for using such devices. Such niches may include a few minutes when one is walking to a subway; 30 minutes of “dead time” on the subway train commuting to work; 15 minutes in the morning before leaving for work; a few minutes in the evening walking from work to a restaurant, etc. In all of these cases, the device, the content accessed, and the experience of using it must fit into the user’s particular routine.

Niches of time, in fact, represent key “points of entry” into consumers’ lives by providing an opportunity for using/consuming the product or service. When a product/service becomes part of a habitual pattern, it finds a “fit” in the routine of an individual’s or household’s set of daily activities, thus making adoption more likely.

Throughout each day, household members find niches of time to engage in various activities such as read, check e-mail, have dinner, relax, prepare for work, get involved in a hobby, etc. Such routines are usually idiosyncratic and vary from household to household. Technologies often are integrated into such routines or evolve into routines of their own. Just as brushing one’s teeth is a routine that most people build into their daily activities, using various technologies readily becomes a habit—people evolve their own idiosyncratic

technology routines. These may include checking e-mail/voicemail in the morning, messaging while on the train, and checking the PC upon arriving at work. Next would come processing e-mail before leaving work at day’s end, messaging while in transit, accessing news information on I-Mode while walking home from the train station, checking e-mail and working at the home PC before going to bed, etc.—a pattern that repeats itself day after day (see Figure 2–20).

This is how one household member describes his technology routine:

I am addicted to the Internet. I check e-mail all the time. I often check it at home. I check it every hour or two while I am home. I check it after I wake up and before I leave for the office. I get more than 100 messages a day.

—Married man, with young children

Unique Japanese urban settings with long commutes on public transportation and crowded public spaces in which retail stores and offices are placed close to each other also create unique time niches, shaping patterns of technology use. It is impolite to be loud on a train, so it is not surprising that many people prefer to read e-mail or surf the Internet while on the train instead of talking. Commuting on public transport in Japan creates a very different setting for technology use than does driving a private car, which is more common in the United States. Thus, each urban setting shapes the niches of time during which devices and technologies may be used.

For example, this person’s niche of time for using I-Mode is the 10 minutes it takes him

to walk home from the subway station. The experience is shaped by this particular urban setting in which public transport plays an important role in people’s lives:

I like I-Mode because it provides a lot of information. I especially check the sports results. By the time I get home, the sports news is finished. That is why I check the soccer and basketball news on I-Mode, which I like. I usually do this on my way back home. The last train leaves at 12:00 midnight. After I arrive at the nearby station, I check it as I walk home—for about 10 minutes.

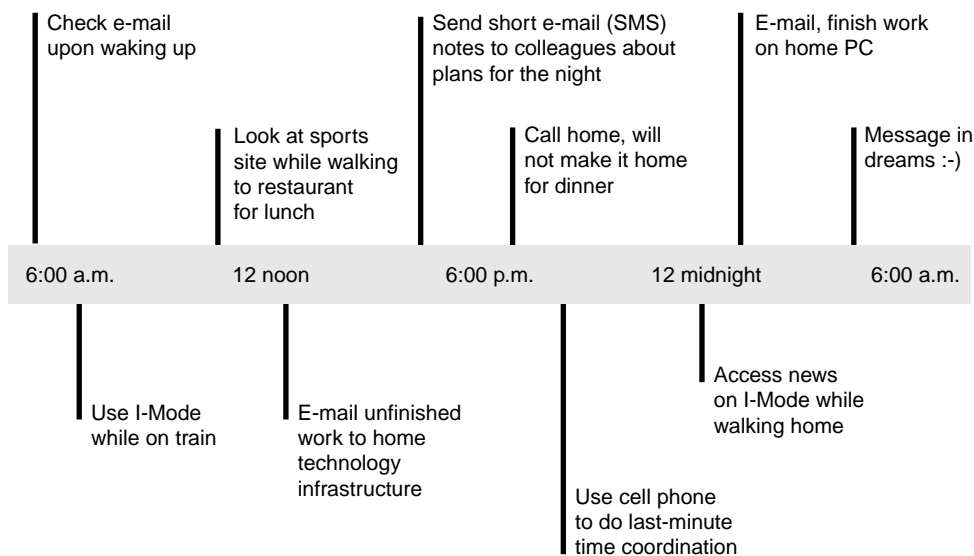
—Married man, with young children

For another person, the time niche for using an I-Mode is while he is in a taxi:

People watch TV while they are reading the paper in Japan, which is the country with ‘the culture of doing things while doing something else at the same time.’ It must be very convenient for Japanese to be able to check e-mail by I-Mode in the taxi instead of asking for the phone line at a customer’s office to use a laptop, which we used to do. They (we) must think nothing of it because everyone is used to it.

—Married man, with no children

Figure 2–20
Daily Rhythms and Niches of Time Shape Individual’s Technology Routines



Source: Institute for the Future

The lesson from this is that manufacturers and content providers must think about packaging their products and services to fit into opportunistic time niches imbedded in the daily activities of Japanese consumers. These time niches evolve in the unique social, economic, technological, and urban settings of Japan, and thus are quite different from those of consumers in the United States and Western Europe. Assuming that the technological devices and services that are successful in these other markets would be successful in Japan (and vice versa) is a great fallacy—and a cause of many company failures.

Technology Often Serves to Integrate Fragmented Households

When asked, “When do you feel like a family rather than a collection of individuals?” householders often talk about activities they do together. These activities in fact become “rituals” or routines that define a household as a family and serve as a counterbalance to the fragmentation we described previously, providing a degree of integration within the household. Such activities are idiosyncratic, however, varying from family to family. They may include outings to the beach, shopping together, going to a swimming pool or a health club as a family, eating dinner together at home or in a restaurant, etc.

Technological devices are often integrated into such family rituals and their use or purchase may become a family ritual in its own right. This ritual may include watching television together, playing video games, searching for information on different products, shopping together for technological devices, or communicating with friends and extended

family. For one family, such rituals include watching television together or getting information off the Internet:

Interviewer: When do you feel like a family (a household) rather than a collection of individuals? (Asked in the presence of the wife, husband, two teenage daughters, and one teenage son.)

Daughter: When we are watching TV together.

Mother: We get together around here (pointing to TV in living room).

Interviewer: What do you do when you are together?

Mother: Nothing special. We watch music programs together.

Father: Recently, I'd have to say, it's TV or the Internet.

Interviewer: You do the Internet with the whole family?

Father: My son (17) goes on the Internet and tells us there is certain information on this or that.

Interviewer: Does the Internet account belong to your son?

Father: No, it's a family account.
—Family, with three teenagers

Technology tools are particularly important as a means of integrating fragmented households, allowing members to coordinate schedules and exchange information while they are geographically dispersed. A mother and daughter describe how they keep in contact via e-mail over their mobile phones during the day:

Daughter: I seldom use the phone function on the I-Mode. I mostly exchange e-mail with it. I can return a message anytime, which doesn't interfere with my life at all. It is convenient. When I want my mother to pick me up at the train station, I send her e-mail. It's a message like, 'I will be at the station soon and meet you there.'

Mother: I also prefer e-mail to the phone. I don't want to be interrupted when I am having tea with my friends. Even when I can't answer at that moment, I can read it later. I feel free to ask her, 'Where are you? What time will you come back?' by e-mail when I have time. For example, when my daughter was out with her friends, I sent her a message saying, 'The three of us will go out now.' I don't have to hesitate to go out during her absence. She will know where we are by e-mail communication. It is quite helpful.

— *Married woman, with teenage daughter*

Social Networks Shape Technology Use Patterns and Often Result in Reinvention

How people use technology is strongly shaped by others in their social network. For example, an individual may not use e-mail until a critical mass of his or her acquaintances starts communicating via e-mail. People's use of different technology tools often depends on which group—friends, family or business acquaintances—they communicate with. In fact, each social network develops its own "rules of engagement" or protocols and communication tools that are used by its members.

This woman works part-time and clearly uses a whole portfolio of communication tools and strategies for keeping in touch with her various networks of friends and family members. For the non-working mothers of her kids' friends, she communicates via phone; for her working friends, the communication tool of choice is e-mail. She explains:

I use my cell phone to talk with my choir group members, and I use regular phones with other old-time friends. I have e-mail friends, too. This cell phone used to be my daughter's. New models are coming out fast—one after another. I can't do e-mail on this one, but I can do the short e-mail (sms). I often use short messages to communicate with my children.

—*Married woman, three teenagers*

Another part-time working woman with young children clearly shows preferences for different types of communication tools for different networks of friends and acquaintances:

I started using e-mail when we bought the computer and my friend told me she'd contact me via e-mail. Then I told all my friends who work—they can use e-mail whenever they want—and they started sending me e-mail. I don't use it for the mothers of my children's classmates; we use the telephone for passing on information.

—*Married woman, with children, works part-time*

This woman uses technology devices to customize her communications in accordance with her friends' schedules:

For my friends, I usually don't call them since my free time for calling is usually when they might be fixing dinner or they have children to care for. I fax or call friends who are in their old age, but I mostly e-mail.

—*Formerly employed housewife, no children*

Understanding “rules of engagement” within different social networks is thus critical to designing successful communication tools and services.

Workplace Shapes Technology Acquisition and Usage Patterns

The workplace serves as an important diffusion pathway for technology use and acquisition. The transfer of technologies and skills from work to home occurs in several ways:

Workplaces Distribute Devices to Employees

Many devices such as cell phones, laptops, or PDAs (personal digital assistants) end up serving both work and personal needs.

My I-Mode was given to me by the company. I need it for work so I can send my schedule to the company. The company wants to use the I-Mode to coordinate our sales schedule. Now the sales people don't have to carry around remote computers, because they have I-Mode.

—*Married man, with young children*

I have I-Mode. In my company all the employees are given I-Mode phones. We switched to I-Modes about a year ago. Before that, we were given regular cell phones.

—*Married man, with no children*

I can only make phone calls with my cell phone. I got it last October through a company contract. That's why I can't change it to another one. I really want to have an I-Mode but because of the company contract I can't...The company takes care of both the hardware and the monthly bill.

—*Married middle-aged man, with grown children*

Employers Shape Usage Patterns

Often, work considerations dictate how the device is to be used and what information is put onto it. For example, the head office may demand that a work schedule be put on I-Mode so everyone can access it in order to coordinate tasks. In another instance, since the employer pays the bill, employees may be restricted to using the device for work purposes only. Thus work may shape not only which technologies a person has, but also how they are to be used.

More than 90% of the time I use the phone function (on the I-Mode) though I am very curious about the Internet function. I know there are many categories including entertainment, but I can't make free use of it because it is owned by the company. It is paid for by the company, so I can't use it for private purposes.

—*Married man, with grown children*

Skills Learned in the Workplace Are Transferred into the Home

Many householders first learn how to use technologies, such as personal computers, at work and later transfer this knowledge into the household. Women who work, in particular, have a wider exposure to different technologies and are better skilled than non-working women at using them.

A woman who worked but recently had to stop because of health problems describes this in the following way:

I have two types of friends: those from my work and those from my college, who have never worked and are housewives. While my friends from work are fast in catching up on information technologies, it is hard for my friends who are always in the house to get such information...though recently housewives are sending e-mail more. But mostly they can only reply to e-mail—not create a new message...If I send them an attachment, they call me and say they don't know how to read it. Of course, Web sites are out of the question.

—*Formerly employed married woman, no children*

Novelty, Curiosity, Fun and Fear of Being Left Behind Put Japanese on a Technology Upgrade Treadmill

Most household members we interviewed never articulated a specific need for a product as a driver for purchasing. In many cases, people had previous generations of the same product or a similar product with the same functionality that easily could have filled their needs as well as the new product would. Nevertheless, fear of lagging behind and the desire for novel experiences with products drive most household members to acquire new products and technologies that they may not have really needed. One interviewee sums it up best:

Basically, I like new things, so I am interested in new things in every part of my life. It applies to clothes and food and my hobbies. I like new music, movies, software programs, and hardware to use them. If I hear about clearer pictures or better sound, I go look at them...I buy things if I like them. I buy impulsively or instantly.

—Married man, with young children

The Japanese householders we interviewed were willing—almost eager—to abandon old formats and technologies and switch to new ones. And unlike their U.S. counterparts, they rarely thought about how to integrate the new technology device into the existing ecology. This willingness to abandon the old was reflected in perceptions that new devices are inherently better and old ones are no good. As

a result, people simply stashed away old devices in closets and drawers, even though they were perfectly functional. Moreover, householders were quite attuned to minute visible changes in the new product, which made older products obsolete in their minds.

In one family, the wife was thinking about buying a new I-Mode because she felt hers was outdated; the latest I-Mode had a new feature—music.

Interviewer: What do you mean by outdated?

Wife: I really don't know, but I've heard the new ones have a function which plays music even when you receive an e-mail—not just when you receive a phone call.

Interviewer: How many cell phones have you owned before?

Wife: This is my fourth one. I got the first one four years ago with my husband, but since it was a PHS (Sanyo Personal Handy-phone System), I got bored with it soon.

—Married woman, no children

In this family, curiosity and fun are important drivers behind the desire to purchase new products, whether DVDs (digital video discs) or PDAs:

Interviewer: Why do you want a new DVD?

Husband: I want to see it out of curiosity.... I used to have an electronic datebook like Zaurus.

Wife: You gave it to someone, right?

Interviewer: Why didn't you use it?

Husband: I didn't need it anymore.

Wife: He always gets new things. After he reads the instructions and uses them once though, he doesn't need them anymore.

Husband: I buy things out of curiosity. When my colleagues are talking about something, it makes me feel that I want it.

—Married couple, no children

The desire for new things comes into direct conflict with the space limitations of most Japanese homes. This is particularly clear from the following exchange:

Wife: My father likes electric devices and buys them often. The word 'repair' doesn't exist in his mind. He often buys stuff like TVs and refrigerators. They have three refrigerators.

Interviewer: Do they have room for all of them?

Wife: It is a small house. One day Father called the department store, telling them to bring their biggest refrigerator because he couldn't get the ice out of his old one. They brought the big refrigerator and couldn't get it through the front door, so they took out the living room window and put it through there.

—Married woman, with small children

The desire for the latest and newest products and technologies makes Japan a heaven for manufacturers who compete to obsolete their own products, knowing full well that any new feature, however minute, will find a receptive audience in the Japanese market hungry for the latest and the trendiest.

Japanese Consumers Rely on Trusted Trend Interpreters When Making Purchasing Decisions

The desire to be "with the trend" and not left behind makes it necessary for Japanese consumers to turn to various institutions to interpret what is popular and trendy.

In fact, many innovations (particularly Western traditions such as "white" weddings and various holidays like Valentine's Day or Halloween) are introduced to Japanese consumers by "trusted" interpreters of the complex set of choices. These institutional interpreters include major department stores, multitudes of trend magazines that help consumers navigate the latest trends in fashion, technology, lifestyle, travel, etc., major media outlets, advertising agencies, and manufac-

turing companies. Reliance on these interpreters reduces the social costs and risks associated with falling behind.

Unlike consumers in the United States, Japanese consumers show great trust in salespeople and large manufacturers of brand goods to recommend the best products.

This young woman, for example, turns to the NTT DoCoMo salesman to recommend the best products:

Interviewer: How did you go about buying your mobile phone?

Woman: I got brochures from the store and I saw what my friends had. I receive calls from friends, colleagues and other people very frequently, so a mobile phone is indispensable for me. I bought it because I simply needed it...besides DoCoMo was promoting it. I used a standard cell phone service before but the cost was too high. A customer told me that DoCoMo was cheaper, so I decided to switch. Then I visited a DoCoMo shop and this phone was recommended...I have had about five different phones. I lost some. Some deteriorated in quality...that's why I replaced them.

—Married woman, no children

This man also turned to the DoCoMo store for advice:

I went to the shop and listened to their advice. I originally thought the Jphone was better, but I changed my mind after listening to advice from a DoCoMo salesperson.

—Married man, with children

Japanese Consumers Purchase Across Traditional Price Categories

Japanese householders ideally suit the “new consumer” category as defined by the Institute for the Future. These consumers have more education, disposable income, and more access to information technologies at home and at work. New consumers tend to buy across the traditional price categories, purchasing both luxury goods and low-end products based on the value these products represent to them individually.

Traditionally, Japanese consumers were known to buy only high-end brand products because these guaranteed quality and conferred higher social status. But as living standards increased, they traveled more, became more sophisticated, and began to resemble their Western counterparts. Japanese consumers we interviewed in fact exhibited the same behavioral characteristics as new consumers in the West. Many of them were willing to buy

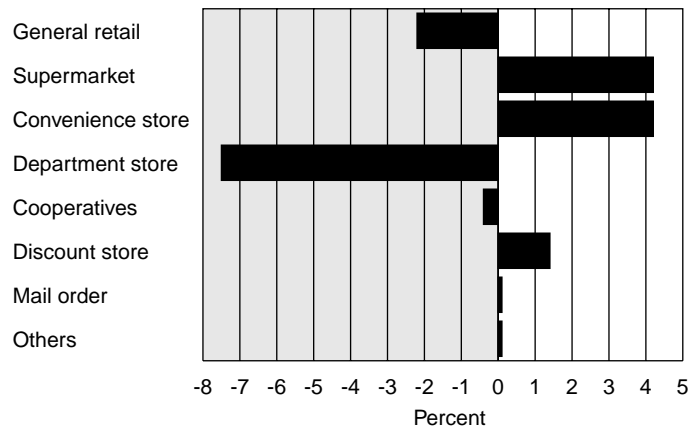
expensive audio equipment or accessories because they saw value in these, but at the same time, shopped online or in brick-and-mortar stores for discounted or second-hand bargains in other product categories. This may provide a partial explanation for the success of convenience and discount stores in Japan in the past few years (see Figure 2–21).

One woman who buys only high-end electronic brands, for example, does not shy away from buying used clothes online:

I do Internet shopping. I browse and mostly buy used clothes for my children and myself. It's where you can save money in your everyday life... You can compare prices online but in a store, you can't and you have only a short time to think. When it comes to the Internet, even though you pay for time online, you can look around different sites until you know what you want... I can save time, get more information, and have fun looking around.

—Married woman, works part-time and has young children

Figure 2–21
 Growing Popularity of Convenience Stores in Japan
 (Changes in spending by retail category between 1994 and 1999, age 30–59)



Source: Management and Coordination Agency, "Household Consumption Survey," 2000.

Householders Integrate Features of Different Devices to Obtain Best Price and Performance

Japanese householders combine features from different devices, such as voice/data storage/transmission to obtain the desired performance and help them in their daily activities. They often cluster features to compensate for the high use fees or deficiencies of different devices and services. They may use an I-Mode to check if they have new e-mail, but will open or send mail on a PC, because they find using the small I-Mode buttons “painstaking.” They are thus pulling features from different devices and integrating them into idiosyncratic and flexible clusters.

I receive messages via my I-Mode at work from my son, who usually asks me to send him some money. I don't send messages back through I-Mode, however. It's too troublesome to enter sentences. I'd rather use a personal computer.

—Married woman, with grown children and works part-time

The more I use it (I-Mode), the more it costs. Mine is basically for receiving calls. When I place a call, I use pay phones.

—Married woman, with young children

The benefit of I-Mode is that I can use it to check my home computer and forward e-mail from my house to work, without actually logging into the computer.

—Married man, with young children

As new devices enter the ecology, old devices may be abandoned or their use may be altered. For example, as e-mail became more widely used, householders sent fewer faxes. When they *do* use faxes, they mostly use them to communicate information that cannot easily be described in words—images such as maps or art works. Faxes also are used to send credit card information, which many householders do not want to communicate via e-mail.

This woman points out how she integrates the more secure feature of fax communications with the browsing capabilities of her PC:

When I shop on the Internet, I never want to send my credit card number on the computer. They say it's dangerous and I am scared to, so I send a fax. The only other time I use fax is to communicate with a friend who doesn't have e-mail; I have no choice but to fax her.

—Married woman, with young children

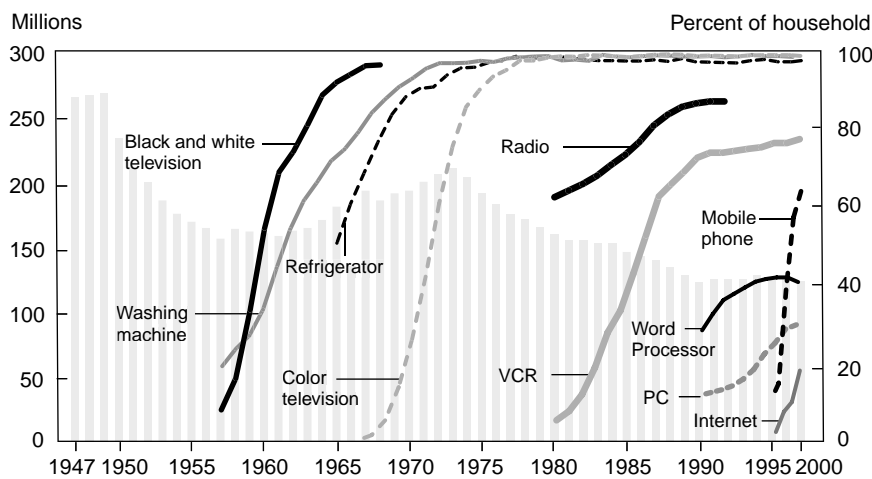
Japanese Youth’s Formative Technology Experiences Are Shaped by Mobile Devices

Japanese youth play a unique role in the household—they are often the innovators and early adopters of various technological devices and social patterns. They command a great deal of purchasing power and greatly influence the purchasing decision of the household in diverse product and service categories—particularly information technology. They also quite effectively network the household as they tap into their own social networks for various resources and information.

Unlike previous generations, the youth in Japan are growing up in a rich technology environment where mobile phones are ubiquitous (see Figure 2–22). What is unique

about this generation is that their formative experience on the Internet is largely shaped by mobile devices rather than PCs, in contrast to their counterparts in the United States and many parts of Europe. To the Japanese young people, Internet means getting short messages on a small screen rather than voluminous documents that can only be read on large screens. As these young people carry their experiences into workplaces and diffuse them to other population cohorts, they may well redefine how data is packaged and delivered via the Internet. They probably will also define the “rules of engagement” for mobile communications for the large portion of the Japanese society. They are thus the most important cohort to watch in Japan.

*Figure 2–22
Formative Media Experience by Generation
(Number of births per year in millions; technology penetration in households)*



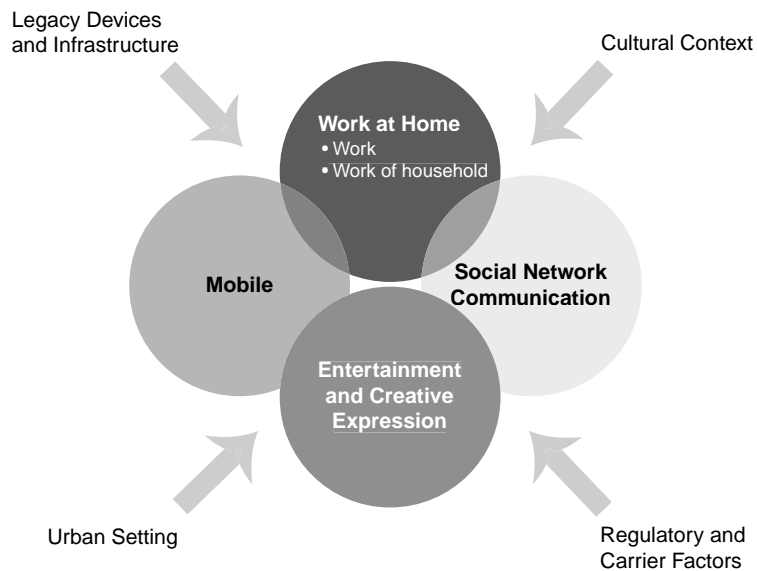
Source: Institute for the Future; Japanese government source.

SUCCEEDING IN JAPAN: IMPLICATIONS FOR OUR CLIENTS

• *Prepare for increasing market fragmentation.* Local matters more than ever. Our household research in Japan indicates that although household members in Japan are engaged in similar activities as their counterparts elsewhere in the world, they conduct these activities in a unique social, economic, technology, and urban setting which ultimately shapes *how* they conduct such activities and what tools they use (see Figure 2–23). Lack of a substantial legacy of PC devices, for example,

makes wireless devices clear winners in Japan. Urban settings with the dominant role played by public transportation create unique niches of time for using various technology devices. The conduct and rhythms of everyday lives, the meaning of family, and function of home are also substantially different in Japan from elsewhere in the world. As many technology devices and services become mobile, they become much more integrated into people’s bodies and their everyday lives. Thus their function and use become influenced more by cultural and social factors than by inherent technological factors.

*Figure 2–23
Household Activities Are Conducted in Unique Social, Technology and Urban Settings*



Source: Institute for the Future

Consequently, it becomes important to pay attention to differences and nuances of everyday lives in different markets, including that of Japan. Rather than globalization, we see increasing market fragmentation with regard to technological devices and services. While the underlying technologies may be the same, the product packaging, the content, and how this is provided will increasingly be driven by local cultural and social factors. Thus, do not expect to be able to transfer experiences wholesale from the United States or Europe to Japan and vice versa. Rather, pay increasing attention to the nuances of culture and everyday life in Japan in order to identify niches of time and daily routines into which to fit your products and services.

- ***Look to social networks—not simple consumer segmentation—to understand adoption and use patterns.*** Chapter 1 points out that social networks shape desire for new products, serve to filter new product information, and influence purchasing behavior. Findings presented in this chapter indicate that social networks also shape patterns of use, often influencing decisions regarding tools to use for communication within the network and “rules of engagement” for such communication. Thus, understanding key social networks in Japan, different roles people play within them, and how these shape choice of tools and communication patterns is critical to developing successful products and services.

- ***Look to youth cohorts to drive technology adoption and use patterns.*** Because young people are willing to take more risks and are apt to experiment more with different products and services, they are usually the early

adopters and innovators in Japan and elsewhere. I-Mode phones, for example, were first adopted by teenagers and then diffused to other parts of the Japanese society. With their influence on purchasing decisions and communication patterns within households and independent purchasing power, young people—particularly teenagers—are the cohorts to watch in Japan to understand forthcoming trends elsewhere in the society. Not only will they be pioneering new ways of work, life, and leisure; they will shape consumption preferences and communication patterns for the rest of the society.

- ***Obsolete your own products or someone else will.*** The desire for novelty and widespread perceptions of “old” as “bad” puts Japanese consumers on a constant technology upgrade treadmill—but also makes Japan an ideal market for manufacturers. Companies need to think about making their own products obsolete fast or about how to continuously add visible new features or services to the existing product, to maintain its novelty. Japanese consumers willingly pay for a service that provides a new jingle or a new manga (cartoon) character on their I-Modes because these add novelty and fun to their I-Mode experience. This desire for novelty and fun, and eagerness to abandon old forms and formats results in a much higher product turnover in Japan than in most other markets. Thus, for many products, particularly highly visible ones that are considered “plumage” (as many everyday technologies are now viewed), do not expect product cycles common in the United States and Europe to hold in Japan. Obsolete your own product or someone else will.

- ***Create alliances with trend interpreters.***

Trends are often packaged in Japan by trusted agents—advertising firms, department stores, large manufacturers, print media. These institutions not only package a product or story behind it, they also serve an important function of educating consumers about the trend and appropriate social etiquette around it. Thus, creating alliances with them to package your product or service into a trend would be a wise strategy. In addition, create close relationships with retailers, as they maintain a

high degree of trust with Japanese consumers and are often turned to for advice on what is “in the trend.” As purchasing online grows in scale, it is also important to identify trusted online trend interpreters. Often, these are the same trend magazines, large-scale manufacturers and retailers, who also develop online presence. However, we expect new online trend interpreters to emerge in the future. It is important to identify them early and to develop relationships with them.



CHAPTER 6

I-Mode: A Story of Reinvention

I-Mode, a service provided by NTT DoCoMo, the largest cellular operator in Japan, allows users to send and receive information using I-Mode enabled cellular phones. While manufacturers in Europe and the United States have concentrated on developing WAP (Wireless Application Protocol) phones, I-Mode phones—which use existing and not at all state-of-the-art technology—have taken off like wildfire in Japan. Rollout of I-Mode phones became the largest and most successful trial and deployment of wireless data in the world. In just one year, I-Mode users constituted 13 million people in Japan, creating enormous manufacturing economies of scale for DoCoMo's vendors and suppliers. This allows DoCoMo to reap benefits by keeping competition going among multiple suppliers. I-Modes are owned by about 80% of Japan's youth.

I-Mode is a good example of innovation in Japan, which is driven not by technology but a deep understanding of consumer needs and desires. I-Mode is based on well-understood technology that is packaged so it is simple, easy to use, and provides services that appeal to consumers. It is a perfect example of reinvention—reinvention of existing technologies to ideally fit into everyday lives and routines of Japanese consumers.

How did this innovation come about? The following is a little history of the evolution of I-Mode and some lessons from the experience.

In the Beginning, There was PHS (Personal Handy-phone System)

From today's point of view, PHS isn't quite cellular technology because it cannot do fast handoffs such as you need when driving a car. But not many people in Japan need to use phones in their cars since most everyone travels short distances on subway systems in densely populated urban areas. Thus, the "cells" can be small. Because handsets did not need the fast handoff logic, they could be cheap in the time when silicon was still fairly expensive. And because cell ranges were small, handsets also did not require powerful batteries; they could be light.

With these two parameters—cost and size—as drivers, PHS handsets quickly found a market among consumers in Japan and became a fashion accessory. As recently as three years ago, one could buy PHS cell phones in Akihabara in all different shapes and colors. Thus PHS technology, which was not up to the state of the art deployed in Europe and the United States, quickly diffused because it found a unique fit in the Japanese society and its urban environment.

PDC Enters the Stage

Personal Digital Cellular (PDC) is comparable to such early wireless standards as NMT (Nordic Mobile Technology) in the Nordic region and AMPS (Advanced Mobile Phone System) in the United States. This is a cellular technology that can actually do handoffs. But again, cells are smaller and handsets can be very light due to short range and the advances in semiconductors since the PHS release. PDC technology has been rapidly replacing PHS in the Japanese market, but the consumer focus on fashion and packaging has remained.

I-Mode Wins the Day

I-Mode is a derivative of PDC, but it is not the latest technology. It is not a 3G or—in some ways—not even a 2.5G (advanced second-generation) system. It uses the same air standard as PDC and overlays packet data on top of it. The important result, though, is that I-Mode is always on. With European phones, it takes a while to get a short message, but this does not happen with I-Modes. They are always on and ready to receive.

Data transmission rates are rather low in I-Modes (about 9,600 bits per second). The display technology is called compact HTML—a reduced subset of the HTML that is used on the Web. An important implication is that you can author with the same tools used for any Web pages, although you need to adapt them to the small screen.

Again, this generation of wireless technology in Japan is not the "cutting edge." There is no inclusion of CDMA2000, IMT2000 or WAP—newer generations of wireless technologies pursued by manufacturers in the West. I-Mode's cutting edge is its marketing and packaging to fit consumer needs and desires.

Tapping Into Consumer Need: I-Mode as a Social Communication Tool

Unlike WAP services, I-Mode started with a user—not a technology—in mind. In developing the service, the company followed just a few common sense rules: it has to be simple, easy to use, and it has to supply information people want. This message was carried over into the marketing of I-Mode. NTT DoCoMo never mentions the word “Internet” or “e-mail” in its advertisements. It never mentions TCP/IP, HTTP, HTML or any other acronyms. The message is “send a message to your buddy,” “find a restaurant,” “go to a movie,” or “buy some tickets.” The message is about social communication and activities that consumers are interested in. In Europe and the United States, in contrast, service providers are trying to sell “the Internet on a phone.”

Average revenue per I-Mode user per month for NTT DoCoMo is \$100; about \$85 of this comes from voice traffic and only about \$15 from data services. About 80% of I-Mode use consists of sending e-mails, not surfing the Web. This includes messaging via e-mail or short messaging. This distribution of activity is true for wired Net in the United States as well—most frequent application on the Internet is e-mail, second is ICQ. Thus social communication is the most widely used application on the Internet, whether wired or wireless. Tapping into this desire for social communication is what made I-Mode an instant success. With I-Modes, everyone is a content producer. In fact, NTT followed a business model of selling

people to each other—they own the content, NTT makes the money.

With this consumer-driven approach, I-Modes found an eager market among the early adopters in Japan—teenagers, particu-

I-Mode’s cutting edge is its marketing and packaging to fit consumer needs and desires.

larly teenage girls. While using a previous generation of social communication devices—pagers—teenagers developed numerical codes with which they could communicate with their friends. Bookstores used to sell manuals teaching such codes. The codes allowed teenagers and others to tap out messages on the pay phone and send these to their friends. Young people were willing to learn this protocol and still use it on their I-Modes. As a result, it was easy to take the pager market and move it into I-Mode.

NTT DoCoMo tapped into the first generation of early adopters—young people—rather than business users, who usually do not like to take risks. In the past few years it has become increasingly clear that in countries where cell phones have been targeted to young people (i.e., Japan and Finland), phone use has exploded. These younger people will carry their technology experiences and habits into their later lives. From these early adopter populations, cell phone use diffused to other groups, including business users.

What's Next?

Next year wideband CDMA, also known as IMT2000 (third-generation, or 3G, wireless) will be rolled out by NTT DoCoMo. What will be the impact of the bigger bandwidth? According to our experts, third-generation wireless will not provide bandwidth of two megabits per second. "If you are lucky and in a perfect situation—that is, standing in the middle to Tokyo and everybody else has their cell phones turned off—you will get 100 kilobits per second, if you don't move" says Ren Kuroda, e-business strategist from Morgan Stanley Dean Whitter. So third generation is just a slow ramp-up to a potential situation of two megabits per second years later.

What third generation will allow technology to do is to solve the problem of overcrowding on the network, which is plaguing Japan today. In peak times, in the middle of Tokyo, there is 150% capacity utilization. You just can't get a phone call even if you are standing in the middle of 500 towers. Third generation is going to open up a lot of bandwidth and a lot of cell channels for people to do voice calls, which will be clearer and of better quality. According to Joi Ito, Founder and CEO of Neoteny, "3G more than anything else was NTT's way of tricking the Ministry of Posts and Telecommunications into giving them more bandwidth which they could use on voice communications."

We will see more really cool handsets with color screens and cameras, but don't expect streaming videos or videoconferencing on wireless handsets. The two reasons for this:

Limited Consumer Demand

Numerous consumer focus groups indicate that there is limited demand for videoconferencing. Most people find it intrusive and unnecessary. People want to exchange information on their phones, not necessarily see each other. If they want to see each other, they will do so.

Operator Costs

Cellular phone operators make a lot of money on one voice call. A video stream is equivalent to 50 or 100 voice calls, so the operators would have to have an incredible technological advantage of video streaming to make the same amount of money equivalent to 50 voice calls. It is likely to take five years to get there.

Thus, voice will remain the "killer app" for cell phone operators. Cell phones, however, will be able to network at potentially larger and larger speeds with all the other devices—a laptop, a PC, an MP3 player. With third-generation wireless, everyone will be selling either wideband CDMA or CDMA 2000 handsets. Japanese consumer electronic companies are going to flood the market with brilliant handsets. They will try to bundle these with

other electronic devices for the home or the car. Right now in Japan you can take your Panasonic cellular phone and connect it to your Panasonic stereo at home, and as you are listening to the radio, you can watch on the digital screen the name of the song and the artist and other information about the song. You can take your Panasonic handset into your car and plug it into your Panasonic DVD-driven car navigation system with a GPS locator. You can say, “I want Italian food in Shibuya” and it will find the restaurant and show you how to get there. Japanese manufacturers definitely are creating bundles of gadgets that can talk to each other.

But will this strategy succeed? In the past, Japanese attempts to bundle devices have failed outside of Japan. For instance, repeated attempts to promote proprietary control architectures for interconnecting consumer audio-video gear have all failed. IFTF research indicates that people want to cluster *features* and not devices; they want clusters or bundles of features, which are often idiosyncratic and quite flexible. In short, consumers want the freedom to connect features which *they* want and *when* they want them. Often this involves physically moving and connecting different devices. For consumers, data is a concrete object embodied in a physical device. If consumers want to get an MP3 file off their PC and into the home stereo system, they will pick up the player and move it rather than putting it into some central device—the sort of thinking that permeates notions of engineered networks. Thus, the winning proposition is that of an ad hoc wireless connectivity, which in Japan will orbit around the cell phone and in the United States, around the PC.

Is the Model Transportable Outside of Japan?

While many aspects of NTT DoCoMo’s strategy provide valuable lessons in terms of the packaging and marketing of wireless data services, there are several reasons why a similar strategy may not work in other parts of the world:

NTT DoCoMo’s near monopoly and high charges for voice communications have allowed the company to subsidize manufacturers of I-Mode phones. The price of I-Mode phones to consumers ranges from near zero to \$200, while the price paid by NTT DoCoMo to manufacturers is close to \$400 per handset. It is unlikely that operators in Europe or the United States would provide such subsidies to manufacturers.

About 80% of NTT DoCoMo’s revenues come from voice traffic; only 15% come from data services. Data services are actually subsidized by revenues from voice services. With U.S. and European operators’ lower revenues from voice services, the model may not be possible in those countries.

Use of I-Mode services is charged on a volume basis—per packet of data transported in the network. In Japan, people are willing to pay for certain content, such as downloading Hello Kitty images or a new song. They also are willing to pay for sending and receiving e-mails, since this is viewed as communication and communication costs have traditionally been high in Japan. Thus, people on average spend \$150 a month on their I-Modes. In the U.S. market where regular telephone services are cheap and where consumers are not used to paying for content over the Internet, this model may not work.

It is easy to transfer to markets outside of Japan the lessons of packaging and marketing extremely consumer-centric communications services to teenagers and young adults (early adopters who ultimately drive the market). However, other parts of NTT DoCoMo's business model may not be easily transportable. It will take a carrier willing to

break ranks with conventional wisdom on market segmentation and pricing strategies to achieve similarly successful results in the West. As for NTT DoCoMo, it does not really need to succeed anywhere else. Today it is the most profitable company in the world. It can continue to hold that lofty title by excelling in its home market alone.



Part III: Scenarios of Household Life in 2010



Forecast: Alternative Household Scenarios

What will people's daily lives look like in Japan in 2010? How will they integrate various technology devices and services into their lives? What will be key drivers, pains and desires behind their adoption and use? In this section, we present three scenarios (or vignettes) illustrating lives of three people at different life stages and living in different household arrangements. Scenarios are provocative yet plausible, internally consistent depictions of the possible futures. These scenarios vividly illustrate how the larger macroeconomic, social, and technology changes will be reflected in everyday lives of people in Japan. At the end of each scenario, we also highlight key implications of each scenario for our clients.

Scenario I

Jamming to a Different Beat: Tokyo Style

Assumption

Youth cohorts will create new lifestyles and household patterns distinct from previous generations. Predetermined life stages with predetermined social expectations will give way to social differentiation and diverse lifestyles. The household and family moves to the background as social networks (both real and virtual) become more prominent in daily activities.

Drivers

- **Continued economic slowdown and corporate restructuring** make adherence to previously rigid life stages and household arrangements unattainable.
- **Youth desire** to improve on parent's quality of life.
- **Transparent wireless infrastructure** facilitates rich and seamless interaction in social networks across geography and time—increasing global awareness and identity.
- **New Economy** creates new ways to work and facilitates diversification of lifestyles.
- **New social patterns**—rejection of previous generations' lifestyles and work patterns.
- **Growth of microcommunities** broadens circles of influence, diversifying interests, lifestyles, and desires.
- **Nostalgia for the good old days** leads to renewed interest in retro music and popular culture—consuming the past becomes a fad in Japan.



SCENARIO

“Next stop—Tokyo Station,” blares the speaker on the JR line train.

Kai tells himself, “Hmmm...several more stations before Shinjuku.” He buries his head deeper in the new manga book he just picked up. Called *The Diffusion of Manufactured Dreams*, it’s a new issue in a series about lifestyles and fantasy in the 21st century.

“Beep, Beep, Beep...” Kai’s personalized melody for incoming e-mails sounds off. He recognizes the sound—it’s from Boris in Moscow. “I hope he got something interesting,” thinks Kai as he opens his Chameleon—a new cool device from NTT DoCoMo.

“Yo, man,” floats across the screen as the screen saver (a picture of Bob Marley) fades away. “Prof. Molchanov, former rector of Patrice Lumumba University, has died. They are selling his estate. The children are desperate for cash. Big collection

of old Juan Gonzales vinyls in mint condition from the 1950s. Interested?”

“Interested! Are you serious?” Kai dictates into the Chameleon. “I didn’t even know he recorded anything before 1990. Get them ASAP. I assume the price is okay.”

“Wow!” he thinks as another message, this time from Santiago in Buenos Aires, floats in: “Found a big collection of original Dead tapes recorded at the Greek Theatre in Berkeley in 1980. Amazing stuff. Want it? \$1,000 for the whole collection—10 tapes. Good condition. Get back ASAP as they are hot and might be snapped up. Santie.”

“Get them,” Kai quickly responds “Will transfer cash at the end of the month. Is that okay?”

Ever since the search engine on his computer connected Kai to this microcommunity of retro music buffs, his collection of old music sounds had grown

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by leaps and bounds. His friends who thought that old things, particularly old formats such as vinyl records and tapes, would never sell in Japan, were now begging him for “antiqua musica.”

“Why do you want them?” Kai often teased. “You don’t even know any of these bands or care for their music. All you want them for is to show off to your friends. Most will just be cute jingles for your phones. You just need to be with the trend.”

On the other hand, this “retro music” trend is really working for him. Kai has been sort of a celebrity ever since they featured him on the new Interactive TV program “Sounds of Long Ago.” He also was written up in several trendy 20-something magazines and photographed with his collection of colorfully packaged vinyls. Now, rediscovering old sounds—

including old Japanese enka music—is sort of a craze. Although Kai still has to work at the HMV record store in Shinjuku during the day to support his hobby, the “Oldies” music club which he started with a few friends from school is beginning to make money. Now he and his friends have a big dream—they want to franchise the club around Asia and integrate it with an online retro music site and interactive TV show.

“I don’t know about this JAFCO guy,” Kai reflects. “He seemed genuinely taken by the concept but is JAFCO hip enough to really get it? Will they be able to provide me connections around Asia and with the right crowd? Maybe I should check out some other sources...maybe the Web community? With this retro craze, if we don’t move fast, someone else will run with the idea.”



IMPLICATIONS

- Need for new products and services to address the needs of a growing number of independent agents, from providing necessary office space to financial planning, placement, accounting, and healthcare services.
- Product and services need to be flexible for individual values. Need for greater customization and targeting of products, services and marketing messages to increasingly smaller market niches.
- Look at social networks (both real and virtual) as a vehicle for customer segmentation.

Scenario 2 Lunch @Mitsukoshi's

Assumption

Japan's rapidly aging society drives households to seek out solutions to the common yet daunting dilemma many households face in 2010: being the sandwiched generation (i.e., households with dependent adult children, demanding jobs that consume most of their time, and elderly parents who need daily assistance). Advances in technology make it possible to outsource care for older parents to devices and outside services.

Drivers

- **Aging population** with increasing proportion of people with chronic diseases which need regular monitoring and care.
- **Family fragmentation** makes outsourcing of care for the elderly desirable.
- **Transparent wireless infrastructure** facilitates seamless interactions—person-to-person, person-to-device, device-to-person, and device-to-device.
- **Diagnostic technologies and disease management applications** make outsourcing of such care possible.
- **Convenience stores proliferate** and with their advanced logistics and distribution capabilities assume increasing role in people's lives.
- **Women** maintain their position of responsibility for arranging, if not providing, care to the elderly.



SCENARIO

“Hi Mariko. I am so glad you are home. I really wanted to talk to you.”

“What’s the matter, Kari? You sound bad. Are you sick? Did something happen?”

“Oh, no, no. I am okay. It’s just that I am tired and very stressed. But it’s too much to discuss on the phone. You want to meet for lunch?”

“Okay. I got your e-mail yesterday... Let’s go to Mitsukoshi’s for sushi. Besides, I want to buy some of that chocolate they’re promoting in their *MitsuTrend Magazine*. It’ll make you feel good, I guarantee.”

“Sounds good. I am on the JR near Shibuya. I can meet you at Mitsukoshi’s in about 15-20 minutes. Can you make it there that quickly? If not, I can just shop around before meeting you. But, I’ll need to leave around 2:00. I need to get back on the train and go see my mother-in-law, Ms. Takahada in Kamakura.”

“I can definitely be there in 20 minutes. You sound like you need a friend.”

Later, at the restaurant in Mitsukoshi’s Department Store... “So, what’s going on, Kari? I am worried about you.”

“It’s nothing serious really, but I am getting so tired having to take care of my own family and my mother-in-law. I know it is my obligation, but she’s never been good to me and I’ve never really liked her. It was not a big issue before. I didn’t have to see her that much before.”

“But it’s getting worse?”

“Yes. Now she’s 85 and needs help doing everything—grocery shopping, paying bills, picking up prescriptions, whatever. She gets frailer every day but she’s as mean as ever. Never a word of thanks. She takes it for granted that I will be at her call any time during the day. Actually, I just turned off my phone so she can’t get me while we’re having lunch. I’m sure she’s already called five times and I will not hear the end of it when I get to Kamakura.”

“And the kids, of course, don’t want to help one bit. Right?”

“Well, you know I wouldn’t expect them to. They are so busy. Osamu completes medical school next year and Yumi just started. They shouldn’t bother about taking care of their grandmother. And you know, they don’t feel that it is their

responsibility to take care of anybody, particularly their grandmother whom they never liked anyway.”

“You know Kari, you don’t have to do everything by yourself. Just have someone else do it.”

“I wish I could find someone—but who? Where can I find help? And how would we pay for it? It’s not like we have so much money to spend since Hitoshi was laid off. My mother-in-law has money but she just thinks it’s my responsibility to take care of her.”

“Kari, you remember Mrs. Kataoka from our tea ceremony class? She was in the same situation as you and she found a perfect solution—the Lawson’s Convenience stores.”

“Convenience stores for mother-in-law? How do they help?”

“They have a program for the elderly. They hire former office ladies and train them to provide services for old people in their neighborhoods. The ladies bring them food, deliver prescriptions, and even check basic health indicators, such as blood pressure, temperature, and nutrition. They

chat with the older people and give them personal contact and attention.”

“Are you serious—someone would actually talk to my mother-in-law? I guess people will do anything for money!”

“Oh, come on, Kari. She is not that bad.”

“Easy for you to say, you have the best mother-in-law in the world; she is always helping you. But you know I am concerned when mine is alone without anyone to assist her. What if something goes wrong?”

“In Mrs. Kataoka’s case, the health agency is subsidizing a new health alert program for the elderly. You enroll your mother-in-law in the program and they give her a Genki.”

“Genki? What’s that?”

“It’s a health assistant device that monitors everything in your body, from blood pressure to sugar and hormone levels. If there is anything wrong, it sends a message alert to you, her physician or whoever you want. Actually, my mother-in-law got one recently, just in case. She doesn’t really need it but she saw a friend wear one and thought it looked good. It’s a small





bracelet that comes in different colors and it does look nice.”

“Now that you mention it, I’ve seen the ads. How does it work with the convenience stores?”

“If anything were wrong, it would alert you on your mobile and send a message to your mother-in-law’s Lawson Lady. Most of these ladies live right in the neighborhood and they would know her health profile.”

“Mariko, this sounds great. I could outsource my mother-in-law to Lawson’s! I feel better already.”

“That’s right. With a Lawson Lady and a Genki, you won’t have to go to her house much at all. You can get your life back.”

“This sounds too good to be true. You know, I was even considering taking her to a home for the elderly but I don’t think

Hitoshi would’ve agreed. He wouldn’t be able to show his face at family gatherings. The other option was to turn the tatami room into a space for her. Then I really would have gone mad.”

“Well Kari, now you don’t have to do any of those things. Let’s go get some chocolate and check out this class sponsored by Mitsukoshi’s.”

“What class is that?”

“The one Mrs. Kataoka told me about. This is where she learned about all these new services and technologies for the elderly. We could take the class together; I might as well learn about this stuff so I will be prepared when the time comes.”

“No one can prepare you for *my* mother-in-law.”

IMPLICATIONS

- Grey market will become a major market for companies in Japan, defining needs not only of that population group but also those of their extended families.
- Need to define different cohorts in the elderly population, i.e. healthy elderly living independently, those with chronic needs that can be met in their homes, those requiring constant care, etc.
- As the population ages, we will see the emergence of new life stages and lifestyles. Don't look to the past to provide models and guide strategies.
- Japanese households will increasingly outsource a variety of services which were previously performed by family members, thus creating new product and service niches.
- Look to interpreters of trends—department stores, trend magazines, large manufacturers and service providers—to define and package appropriate products and services for providing care to the elderly.
- Growing need for residential, financial, health, and insurance products and services to serve the needs of the older populations and their extended families.
- Look to health management as a key application for mobile devices and services. As with other devices, technology devices for the elderly will have to serve fashion and plumage, as well as functional needs.

Scenario 3 Being There

Assumption

As women enter the labor force in larger numbers, they turn to a variety of technology devices and services to manage multiple tasks, from childcare to household management and work obligations. This turns out to be more daunting than expected. Technology may not be the solution after all as the task of managing various devices adds to the already complicated list of existing responsibilities.

Drivers

- ***Women enter the labor force*** in substantial numbers—not only as workers in lower paid occupations but increasingly in professional positions, creating other demands on their time.
- ***Household roles***—women retain the primary responsibility as “mission controllers” and “master schedulers” within households.
- ***Scarcity of time***, face-to-face time, especially, is an increasingly scarce resource that is carefully allocated and managed.
- ***Proliferation of personal devices*** with different forms and features increases demands on time for learning feature integration and management.
- ***Aware urban environment***—trains, kiosks, etc., transform the urban landscape into an aware environment as they evolve rich information processing and interaction capabilities.



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SCENARIO

The door slammed shut as Kyoko squeezed into the subway train, which immediately sped off into the darkness. "In about an hour I will be in Zushi," she thought, "a whole hour to kill." Kyoko gazed at the dizzying array of pictures and signs around her and for a moment wondered which device to pull out of her purse. "Mother Board," she decided, "I really need to program it for the trip to China." Mother Board is a personal organizer specifically targeted to working moms, which she got a year ago when she started working as a reporter for *Asia Interactive*. As she pushed the start button a familiar voice greeted her.

"Hello, Kyoko. What can I do for you?"

"Find template menu."

Kyoko scrolled down the template menu to find the option she needed.

"That's it. Mom's away." Kyoko put the dates of her trip into the Board. As she started programming it to deliver reminders, greetings, personalized messages—even songs—to various members of her household while she was away, Kyoko tried to figure out whether this new device was making her life easier or harder. One

of the things she used to like about being away was just that—being away. For a few days, she did not have to pick up anyone's clothes, pack lunches, synchronize schedules, make sure the rice cooker was on, and get Yumi to soccer practice on time... The only person she needed to take care of was herself.

With Mother Board, she had to lead a life on two levels. Her Mother Board would buzz her at 7 a.m. in China so she could send a good morning greeting to David and Yumi as they were starting breakfast in Tokyo. She felt it was important to be in touch and be "together" even while she was away. And Yumi liked to wake up and see her mother on the screen telling her about different things she saw and did in China. She also liked to see what the kids in China looked like and what uniforms they wore to school. Kyoko felt that was very good for Yumi's education.

"Now...what bedtime stories should I program on Yumi's R500, the adorable domestic robot?" Kyoko pondered. Mother Board came equipped with a col-

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lection of Japanese and American children's classics.

How The Elephant Got His Tusk was Kyoko's choice for Monday night. She programmed it to be read in a soft woman's voice strikingly similar to her own. This was one of the options Kyoko really liked. She also scanned in pictures of Yumi, David, and herself, plus a few friends, so she could cast them as characters in stories of her choice.

Mother Board had tons of useful features, but somehow Kyoko never had enough time to fill in the whole template and to pre-set it for needed times. Instead, the Mother Board was always buzzing her when she was away, reminding her to activate the alarm system, to call David with instructions, to send stories to Yumi's R500, to send a message to her mother-in-law, and on and on. It seemed like she was never truly away. But isn't that what she wanted?

"Okay. I absolutely promise," Kyoko vowed to herself as she folded the Mother Board. "For the next trip, I will fill in the template well in advance and set it so that

all the devices will be activated by themselves, not by me. Let them buzz each other. I will really be away next time."

"Kyoko... I thought it was you!" Kyoko's friend Masako dropped into the seat beside her. Masako's daughter was on the soccer team with Yumi. "How are you? I did not see you at the last soccer practice," Masako said pointedly, then added, "This Mother Board looks really cool and professional. Are you going away again?" Kyoko did not know if she sensed admiration or reproach in Masako's voice. Masako continued, "Don't worry, we will take the camera so you can watch the next soccer game in real time if you want. Oh, look, isn't it cute—they are showing ads for natural cosmetics and you and I are in them!"

Kyoko saw herself and Masako on a plasma display above the door. "Oh, great" she thought, "now the whole train knows I buy cosmetics. Next, they will be showing underwear ads with me in them. On the other hand," she thought, noticing that most of the passengers were women, "they also must be into this."



IMPLICATIONS

- Design devices, content, and services to fit into appropriate niches of time in consumers' daily lives. Niches of "dead" time (on the train, in waiting rooms, etc.) will increasingly become opportunities to employ various mobile devices and continue household work or your "day job," even away from the workplace.
- As people become more connected and reachable, moments of silence and being truly alone become more precious. Expect new products and services to emerge that appeal to the desire for silence and time alone. Also watch for new patterns of dropping out—people deciding to disconnect technologies or reject them altogether. These may evolve into new social status symbols.
- Increasingly sophisticated data mining and wireless technologies will allow increasing personalization of marketing. Advertising will move away from a few mass communication channels to multiple highly individualized channels. This will raise privacy concerns that might be resolved differently in different markets using different regulatory frameworks.



Conclusion: 2010 Will Herald a New Wave of Innovation

Crisis has been intricately linked with innovation and revitalization in Japan. Under substantial pressure (both internal and external), a country which often frustrates outsiders with its slow pace of change, under the threat of crisis, suddenly and virtually overnight seems to reinvent itself. Out go old established, previously sacrosanct ways of doing things, as Japan embraces new practices, often borrowed from outside but reinvented internally to give them a unique Japanese flavor.

Several times in history Japan has undergone such reinvention. The first was in 1863, under the threat of Commodore Matthew Perry's gunboats stationed in Tokyo Bay. This ended three centuries of isolation and resulted in the overthrow of the military government, restoration of the Meiji regime, and rapid industrialization and opening up of trade with the outside world. Second, after World War II, poor and humiliated, Japan abandoned all the vestiges of its military past and built a modern democracy, in the process quickly emerging as an economic powerhouse.

The next crisis, according to Ren Kuroda of Morgan Stanley, "is 10 to 15 years out. Because right now, you've got a lot of kids who grew up in the 80s and 90s. They know money is good; things are good... Their parents are 40 years to 50 years old. In 10 to 15 years, Japan—the oldest society in the world—will have a whole bunch of people it is unable to take care of, either economically or physically. There will be old people who are not working, who need home care, hospitals and welfare. The welfare system in Japan is a lot worse than the Social Security System in America. There's no physical place to put these old people. There's no medical care for them; there's no money in the coffers to deal with them. And their kids, who will be 30 and 40 and working, aren't going to care because that's the way they were brought up."

Almost two hundred years ago the pressure for change came from Commodore Perry's gunboats; in 2010 it will come from a combination of two factors—a highly skewed population pyramid topped by a large proportion of older non-working people, and a significant gap in values and lifestyles between the older generation and the young

adults who grew up in the prosperous 1980s and 1990s. Our research, including ethnographic interviews with household members, indicates that Japan is nearing the end of an era, an era in which a dominant and desirable model of a family and household life was established and faithfully followed.

The young generation, for whom the model is no longer attainable or appealing, will create multiple new lifestyles and household patterns. They will, in fact, lead the reinvention of Japan in 2010–2015 as they exercise an increasing role in political, economic, and social spheres. While the doomsday scenario is that the dual pressures of the elderly population and the more individualistic values of the younger cohort will lead to inevitable economic and political decline after several decades of stagnation, we believe that the demographic crisis will prove as yet another opportunity for reinvention. Just as the oil crisis opened up a window for Japan to corner a world market for smaller, more fuel-efficient cars, Japan's demographic crisis will give it an opportunity to introduce a new generation of technologies and services for the elderly, to experiment with new work and living arrangements, and to reinvent its political and economic institutions, which are indeed more suited to the industrial rather than a post-industrial world.

In our view, the demographic crisis will result in a "third opening" of Japan, akin to the ones accomplished by Commodore Perry's gunboats or General Douglas MacArthur's occupational forces. This third opening will bring in a new wave of innovation just as the previous openings did years ago. Except this time the pressure will come from within.



Appendix

Ethnographic Interviews with Japanese Households

The Global Innovations Forum conducted in-depth interviews with Japanese households (in Japanese) to understand underlying patterns of consumer behavior (needs and desires) and identify conditions for adoption of new products, brands, and services. These ethnographic interviews were part of a larger research process examining the innovation climate in Japan—including emerging new economy businesses, consumer behavior, technology adoption and reinvention, diffusion of the Internet and the wireless technology landscape. The interviews provided qualitative data to inform this forecast.

RESEARCH OBJECTIVES

- Understand technology and communication devices in the Japanese household environment, including the physical and social context in which they are used, how family members learn to use and customize technologies in relation to other tools, the social dynamics of the household and the larger technology infrastructure around them.
- Understand the conditions necessary for new product and service brands to be adopted in the household environment—including packaged food, cosmetics and beauty products, major household appliances, household products, information technology and electronics.
- Understand how household member roles and activities shape the desire for new product and service brands and how family members use technology and communication devices and services to acquire information about new product and service brands.

INTRODUCTION—RESEARCH AND INTERVIEW EXPLANATION

This interview is part of a study of how various products and services, including information and communications technologies, are used in Japanese households. We're interested in how you see these products and services fitting into your daily lives as a household and as individuals in the family—that is, as mother, father, and teenage children. The interview will be conducted with all members of the household, and followed by “tours” of key spaces within the home, such as the living room, kitchen, bedrooms, etc. The household group interview will be followed by individual interviews immediately after the group interview or at a later scheduled time. Overall, the interview process will take anywhere from two to three hours. There are no right answers. Each household is different. We want to hear your point of view.

I. HOUSEHOLD COMPOSITION: TOOL ECOLOGY AND USE

Household Composition

1. Who are the members of this household?
By "household" we mean "a person or group of people occupying a single dwelling."

Probe: Names and ages

2. Has membership in the household changed in the past two years? If so, how?

Probe: Details and circumstances

3. Are there any people you consider to be members of the household who are living elsewhere?

Probe: Details and circumstances

4. Are there any important changes that you expect in the make-up of the household in the next several years? What will be different and how will it change the household?

Probe: People leaving, entering, changing jobs, etc.

5. How long has the household lived at this location?

Probe: How many times did the household move before coming to this location? Why this location? Proximity to work, family, friends; need more space, etc.?

6. What are the typical daily activities of each of the individuals who are part of the household? (Facilitator: make sure you ask each individual in the interview, including children.)

Probe: Work, recreation, hobbies, shopping, friends, education, meals? Any other? How does this compare with two years ago?

Probe: Have household activities changed? Why? How?

Probe: When are your typical daily activities different? Weekends? Certain times during the year such as holidays (gift-giving seasons)? Give examples.

7. Describe the jobs of each person who works.

- a. Industry and employer?
- b. Title/job description/paid or unpaid?
- c. Tasks/responsibilities?
- d. Length of time at present job?

8. Do you consider this a household rather than a collection of individuals? Why?

Probe: Are there certain activities that you perform as a household rather than as individuals? Example? What defines this as a "household" activity?

Toolkit Description

1. Look at this list of communication technologies. (Hand each person a "toolkit" sheet.)

2. Look over the sheet carefully. Which of these tools/technologies do you have access to and use regularly? Please cross out the ones you do not have access to, and write down where you have access to and use the others. As you are doing that, please:

- a. Describe out loud how you use the things on the list.
- b. Who is using it, for what?
- c. How did you acquire it?
- d. Is it new? What brand? What did you like about this particular brand?

(Let one person lead the discussion and the others can comment as the conversation proceeds.)

Add anything that is not on the list.

Probe: Are some tools individual tools (proprietary) and others shared? Which ones? (Suggest as examples mobile phones as individual devices, personal computers as shared devices, etc.)

Probe: Do different members in your household have different preferences when it comes to communication tools? Give examples. (Make sure to ask about teenagers' preferences.)

3. Which device would you give up last? Why? (Go around and ask each member of the household.)

4. What's the next device you will buy? For whom? Why? What information will you use to make your decision? Where will you get the information?

5. Do your tools reflect your sense of who you are? Do they affect/influence how others view you?

II. THE JAPANESE HOME: SPACES AND BOUNDARIES

We are interested in how you define and use the spaces of your home. We're interested in the activities or functions each space facilitates. We're also interested in the types of products and services you use in the various spaces of your home, and the key considerations you make when considering purchasing those products or services.

For example, the living room: do you think of family interaction, relaxing, entertainment, stereo system, Sony Playstation, TV and portable computer? Does the kitchen bring forth concepts such as, eating, radio, online grocery service, Coca-Cola, taste, international brands, etc.?

1. Sketch out the general layout of your home. (On a sheet of paper ask one of the respondents to sketch out the layout. They should label all of the spaces of the home. Make sure they use their own categorizations/labels.)

Great. Now let's begin. Let's stand up and begin the tour, during which I'll ask you several questions. (Anyone can participate or answer.) Let's start with this space. You call it <<insert space>>. (Use the following question set for each room tour.)

For each space ask the following questions:

2. What is this space for? What do you do here? Who uses it? Who are you interacting with in this room? Has the use of the space changed in the last two years? Do you expect to use it differently in the next year? How?

3. What types of products and services do you have or use in this space? Get household members to talk about several examples. (Note: not all need to be technology products or services.)

Probe: Ask about the following product and service categories in each space. Note: depending on time, concentrate on space-appropriate categories, such as food and kitchen.

Packaged food (examples: milk, breads, cereals, etc.); cosmetics and beauty products (examples: shampoo, soap, perfume, makeup); major household appliances (examples: dishwasher, stove); household products (examples: laundry detergent, cleaner, etc.); information technology (examples: computer, printer, cell phone, etc.); and electronics (examples: VCR, TV, radio, etc.).

Ask who decides to purchase those products and services? How did you acquire information about that product or service? (Point to some examples.) Is the product or service personal or shared? Why is it used in this room? Is the product or service used in any of the other spaces of your home?

4. What was the last product or service you bought that you use in this room? Why? Who

uses it? Who decided? What information did you use to make your decision? From where? (Suggest ads, friends, magazines, Internet or other technology, etc.)

Probe: Be sure to ask teens about products or services.

5. What were the key considerations in your decision to purchase it?

Probe: Considerations in the decision to purchase: lifestyle fit, children/family preference, design packaging, environmental concerns, health reasons, brand, comfort/convenience, latest trend or fashion, latest model or version, recommendations from friends and acquaintances, price, quality, time savings, desire to experiment, etc.

Ask these after touring the home spaces.

6. What was the last product or service you bought that you use outside the home? How do you use it? Why? Who decided? What information did you use to make your decision? From where? (ads, friends, magazines, Internet or other technology, etc.)

7. What is the last product or service you bought for others? (Someone not in this household.) Why? Who decided? What information did you use to make your decision? From where? (ads, friends, magazines, Internet or other technology, etc.)

8. Do you consider certain spaces more private than others? Which ones? Why?

Probe: Activities or persons using space.

III. HOUSEHOLD MEMBER FOCUS: ACTIVITIES AND USE OF TECHNOLOGY OUTSIDE THE HOME

Now, we'll start the individual interviews. These interviews are designed to explore individual household members' daily routines of activities outside the home and their use of information and communications technology. They should take no more than twenty to thirty minutes each.

Men—Information Technology Use and Work

1. What is your typical day like outside your home? What do you do? Who do you interact with? Walk me through one of your days.

Probe: Does this routine change? What causes it to change? (Suggest unexpected events, weekends, etc.)

2. What communications devices do you carry or use? Give me an example. What were the circumstances when you last used your tools outside your home?

Probe: Does technology help you in your daily routine or make it more difficult to manage? How? Why? Example when this happened? Which features do you like best? Why?

3. How do you use your tools for work?

Probe: When you are mobile? Do you bring work home? What are the circumstances when you do? Which space in your home do you do work in?

Women—Information Technology Use “Doing Family” or “Work”

1. What is your typical day like outside your home? What do you do? Who do you interact with? Walk me through one of your days (hobbies, shopping, working, etc.)

Probe: Does this routine change? What causes it to change? (Suggest unexpected events, weekends, etc.)

2. What communications devices do you carry or use? Why? Give me an example. What were the circumstances around the last time you used your tools outside your home?

Probe: Does technology help you in your daily routine or make it more difficult to manage? How? Why? Example when this happened? Which features do you like best? Why?

3. How do you use your tools for work? (Here, work also refers to doing “family business”—the various household activities and management done while outside the home.)

Probe: When you are mobile? What are the circumstances around this occurring?

Teenagers—Information Technology and Social Networks

1. What is your typical day like outside your home? What do you do? Who do you interact with? Walk me through one of your days (including hobbies, shopping, school, etc.).

Probe: Does this routine change? What causes it to change? (Suggest unexpected events, weekends, etc.)

2. What communications devices do you carry or use? Why? Give me an example. What were the circumstances around the last time you used your tools outside your home?

Probe: Does technology help you in your daily routine or make it more difficult to manage? How? Why? Example when this happened?

3. How do you use your tools with your friends? Give me an example of a time when you used your communications tools to interact with your friends? At school or outside schools at a social function, party, shopping, etc.? Which features do you like best? Why?

Probe: How would your life be affected if you did not have these tools? How would it affect your interactions with friends, at schools, with parents?

Ethnographic Study Communication Tool List

Which of the following tools do you have access to and use regularly for household/personal purposes? Where?

- Pager/beeper
- Voice mail (voice messaging service)
- Answering machine
- Advanced phone service (call waiting, call forwarding, caller ID, etc.)
- A second telephone line
- A DSL connection
- Cable modem
- Fax machine
- Scanner
- Basic cable television
- Premium cable television (HBO, Show-Time, ESPN)
- Satellite television (DIRECTV, DSS)
- Video camera/camcorder
- Video cassette recorder (VCR)
- CD player (music)
- DVD player
- Digital camera (still pictures)
- Digital video camera
- Video game player handheld (Nintendo Gameboy, etc.)
- Video game player attached to TV (Sega, Nintendo, etc.)
- Electronic pet (Tamagotchi, Furby, ActiMate Barney, etc.)
- Personal computer
- Laptop computer
- Personal digital assistant (Palm Pilot, electronic organizer, etc.)
- Printer (color or black and white?)
- Internet/World Wide Web access
- Electronic mail
- Cellular phone/I-Mode

**For Screener:
Ethnographic Household Study
Participant Requirements**

1. We want to interview 12 households according to the following requirements:

- 4—households with teens (ages 14–19)
- 3—households with young children (under age 12)
- 3—households (young professionals with no children)
- 2—households (empty nesters with grown children, all living outside the home)
- At least two of the households should be dual-income families, with husband and wife working outside the home for pay.

2. Households must have:

- I-Mode
- Internet access from the home
- And at least 4 of the following:
 - Personal computer
 - Laptop computer
 - Personal digital assistant (Palm Pilot, electronic organizer, etc.)
 - Printer (color or black and white)
 - Pager/beeper

- Answering machine or voicemail
- Fax machine
- Scanner
- TV
- Video camera/camcorder
- Video cassette recorder (VCR)
- CD player (music)
- DVD player
- Digital camera (still pictures)
- Digital video camera
- Video game player handheld (Nintendo Gameboy, etc.)
- Video game player attached to TV (Sega, Nintendo, etc.)
- Electronic pet (Tamagotchi, Furby, ActiMate Barney, etc.)

3. Households must be willing to give tours of their homes. The ethnographic interview process will involve a tour of the home during each actual interview.

4. Interview time: households must be willing to be interviewed for up to three hours. The initial whole-household interview will take one to one-and-a-half hours; followed by half-hour talks with up to three household members (husband, wife, and one teenage child). For those households with young children or no children, total interview time will be two-and-a-half hours.