The Role of Universal Design:
Closing the Gap of Digital Divide in Japan

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I Background of Digital Divide in Japan

According to the "Internet White Paper of 2001," there are 32,636,000 Internet users in Japan as of February of this year. This number has increased by 13,260,000 users since February of 2000. In an international study conducted in October of 2000, the Japanese population was calculated to be 126,920,000. 26% of this population currently accesses the Internet. A distinct characteristic of Japanese Internet use is, access not only from the PC, but a strong following of cellular phone Internet users. Although this may sound promising, there are still many obstacles that prevent a large population from accessing and using the Internet, stifling the promise of equal access to a powerful information source. This report introduces the research by the MPHPT(Ministry of Public Management, Home Affairs, Posts and Telecommunications). Participants for this study were chosen through the RDD system, and contacted to participate in answering a questionnaire; the number of valid replies collected for this study was 4038 (57.7%).
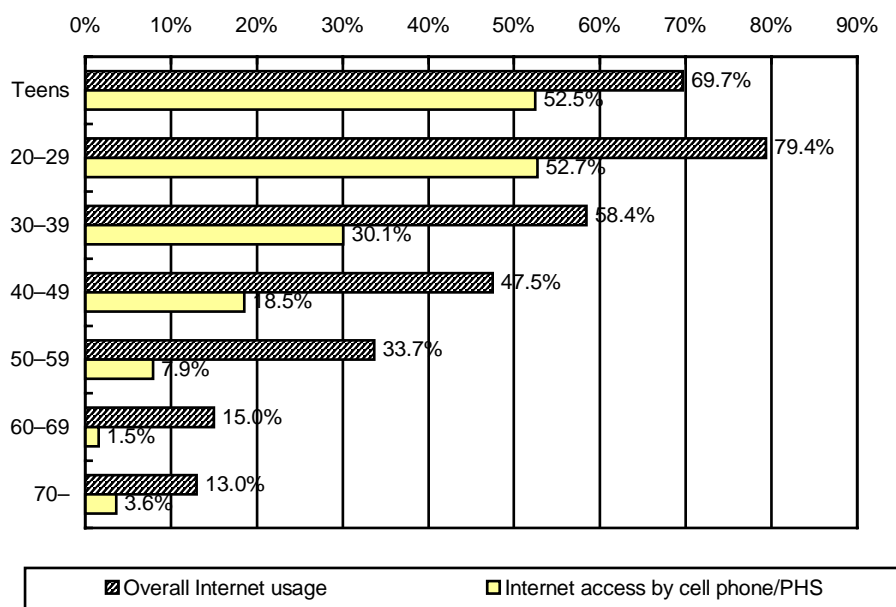
I-1. Age

In a society where almost 80% of the population between the ages of 20 and 30 is accessing the Internet, the senior population of users is severely low. Only a mere 15% of citizens age 60 and over are Internet users. Considering that the Japanese adult population has reached close to 50% of the total population, there is still a large number of Japanese who have not become PC or cellular phone users.

Problems most cited by the elderly with regards to cellular phones is the difficulty of seeing the numbers and letters on the screen, the size of the buttons, and comprehending how to fully operate the device. In many cases, these obstacles ultimately keep them away from cellular phones.

There has recently been a slight emergence of increased senior PC users, but this number is still poor. The lack of typewriting skill, the frequent use of English technical terms, and few opportunities to come in contact with PCs are main reasons often given for their avoidance of IT altogether. Product development that has continued to ignore a wide range of users is preventing a more sophisticated development of IT products in this country – a country with the highest senior population in the world.

Diagram 1) Comparison of Total Internet Use, PC Internet Use, and Cellular Phone/PHS Internet Use Among Different Age Groups.

	Overall Internet usage	Internet access by cell phone/PHS
Teens	69.7%	52.5%
20–29	79.4%	52.7%
30–39	58.4%	30.1%
40–49	47.5%	18.5%
50–59	33.7%	7.9%
60–69	15.0%	1.5%
70–	13.0%	3.6%

I-2. Income

While close to 50% of households with an annual income exceeding 8,000,000 yen (=67000US$) are Internet users, the use of the Internet by households with an annual income less than 4,000,000 yen is a low 20%. In the case of cellular phones usage however, this trend was not noticeable among households with an annual income of over 6,000,000 yen. In a country with a "middle class" mindset, it can be said that the Internet has become a conventional part of the lifestyles of most middle to upper middle class households in Japan.

I-3. Regional Differences

Most Internet users in Japan come from large metropolitan regions with a sophisticated information infrastructure. In a private survey conducted in June of 2000, the highest number of Internet accesses was reported in Kanagawa Prefecture (23.4%) and the lowest in Okinawa Prefecture with a rate of 1.2%. (Netrating Survey: Digital Divide) The pattern of cellular phone and mobile technology usage however is unique in Japan. In many cases, the access of such hand-held technology is more prevalent in regions outside of the metropolitan core. Consequently, little correlation is found between regions and cellular phone Internet access.

I-4. Occupation

There is a marked difference in the use of the Internet by students and the working force versus the population of the elderly and housewives. Most of the working population under the age of 50 is obligated to use the Internet and therefore learn to use the computer. The housewife and the senior citizen who neither have incentives nor such opportunities are left behind, never fully experiencing the wealth of information that lies beyond their present situation.

I-5. Gender

Little correlation between gender and PC / Cellular Phone use has been found; the ratio is close to an equal number of women and men. Among female users, the young generation of women has fast become heavy users of the cellular phone Internet. Contrary to this movement, an increasing number of women in their late 30s and over are continuing to refrain from both PC and cellular phone usage. It is believed that most housewives simply do not find it necessary to access the Internet.

I-6. Disabilities

There are many persons with disabilities who desire to access the Internet but do not have the required assistive technology or support. A scarce 10% of persons with visual impairments are Internet users today. The use of cellular phones however has shown an increasing number of users with hearing impairments. Surprisingly, there are more cellular phone users with disabilities than users without disabilities in Japan. In general, the digital divide among users with disabilities is widespread and oppressive. To slowly and effectively relieve this current situation, Japan has begun to develop more assistive technology and accessible web sites.

II Reasons Not to Access the Internet

According to 60% of non-Internet users, the following are some of the main reasons for not accessing the Internet: "Do not understand, have no interest"; "The Internet is not necessary and the services and/or contents are not interesting"; " There is no incentive to start"; "The hurdle to learn how to use cellular phones and computers is too high."
A lack of incentive to begin, and the tremendous effort necessary to understand and operate the technology are the two most frequently mentioned obstacles faced by non-Internet users. In reality, many young people are also struggling to use computers and the Internet. It is not solely a literacy problem. It is believed that the problem lies within the human machine interface itself; there is a dire need for more products to be designed under Universal Design consideration (same as the concept of 'Design for All').

There are continued requests by users who wish to learn the computer in a more accessible manner such as, "If only there were someone to casually teach me"(41.1%), "If there were more free seminars" (32.4%). There were many requests such as these for more affordable and casual venues to learn. There are also continued requests for a more easy-to-operate computer such as, "if it were easy as using a television remote

control"(28.9%) and "if it were as easy as using a telephone" (27.6%). From monitoring current non-IT user needs, it can be said that continued volunteer IT seminars and the fight for more accessible information technology may eliminate the digital divide. Only 10% of the researched population answered that they would not use a computer or access the Internet under any circumstance. This was most prevalent in the senior population (17.2%); this age group feels a strong sense of rejection towards the Internet. It can be said that this is a result of (1) negative information about the Internet circulated by the press (2) product development ignoring features accommodating needs of the elderly population and (3) lack of support for new technology.

III Future Development

There are two main strata of the digital divide in Japan. One layer consists of senior citizens and housewives. They are a population with very little interest and or few incentives to become involved with information technology. It is necessary to communicate the importance of the Internet, and increase opportunities to come in touch with IT by (1) creating more "usable" forms of information technology and (2) lowering the threshold for learning. By realizing these improvements, we may activate a strong new market.

The second layer consists of persons with disabilities, which also includes a significant portion of the senior population. Many citizens with disabilities recognize the importance of the Internet and desire to learn more about the available technology. This is a population that cannot access the Internet for reasons of "accessibility." Where there are rehabilitation engineers and regulations to ensure the development of assistive technology in the United States, there are few such supportive structures in Japan. This population is simply denied of the "digital opportunity."

There are two measures that should be enacted in order to improve this current situation. One measure is to continue the regional IT seminars that are taking place to support IT development. These seminars offer an environment where housewives and the elderly can drop by casually to learn and to ask questions about IT. These IT sanctuaries are required to be accessible at all times, whether it be by a pregnant woman with a baby car, or by a person in a wheelchair. The content of the seminars must also be accessible to a wide range of participants – words must be made larger for persons with visual disabilities, key-touch software must be available for persons who find it difficult to use a regular keyboard, and the staff must be able to accommodate a versatile world of needs. It is when all of these elements are realized that regional IT seminars can begin to make a notable difference.

A second measure that needs immediate attention is the cultivation of a deeper understanding towards Universal Design by production industries. Compared to most countries, the average age of Japan's population is undeniably high. We must realize that Japan is a tremendously digitally divided country, with a large population that has not had much contact with a typewriting culture or IT, and are carrying a slight or heavy disability. In a country where many universities are finding a decrease in the enrollment of 18-year-old students, manufacturing products solely targeting this young population

is not promising. It is necessary to recognize that fairly well to do and active seniors are a majority market. More products that are accessible to this market, that suit their aesthetic tastes, and incorporate universal design principles must be developed. The realization of these measures and a steady effort to support these new needs will eventually become important knowledge for countries that are also facing an increasing elderly population.

1) MPHPT http://www.joho.soumu.go.jp/eng/index.html
    Ministry of Public Management, Home Affairs, Posts and Telecommunications
2) Impress http://www.impress.co.jp/info_e/
3) Nielsen/Netrating http://www.netratings.co.jp/
4) UDIT http://www.udit-jp.com/