DIFFUSION AND USAGE PATTERNS OF THE INTERNET IN KOREA AND JAPAN: A COMPARISON OF POLICY AND CULTURAL FACTORS*

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This study compares two countries, Korea and Japan, in the diffusion and usage of the internet among college students. The two countries exhibit different strategies in adopting new IT, which influence the adoption rate of the internet. Although Korea and Japan are adjacent to each other and share somewhat similar values and culture, there are significant differences in the usage of new media and new technologies.

We attempt to empirically investigate these differences between the two countries. A survey of 977 university students of the two countries reveal that although governmental policy fueled the diffusion of internet services usage, other cultural factors also influence the adoption and usage of internet services. Koreans are more inclined to use the internet as a communication media, whereas the Japanese use the internet for information and entertainment. Individualistic vs. collectivist culture seems to have influenced these differences in usage patterns.

Although Korea and Japan are often regarded as similar in many aspects of socio-economic development and culture, the adoption of the internet is significantly different between the two countries.

Key Words: Information Technology, Internet, Internet Usage Pattern, Adoption of Internet, New Media

INTRODUCTION

A new trend in theoretical and empirical work in diverse areas of the social sciences argues that a fundamental shift in the nature of society was initiated in the 1970s. This is portrayed as the third great shift in human society, from industrial to informational societies. The unifying thought behind various theories of this change is that a move began in the 1970s that took the world's socio-economies away from industrial forms that emerged in the nineteenth century and towards socio-economies in which information plays a central role. This change takes place over time rather than suddenly, and it should be expected that informational societies will retain pockets of industrialism, just as industrial societies have retained pockets of agriculturalism. It can also be expected that different societies with different

policies and cultures will develop different forms of the information society.

   This study compares two Asian countries that have adopted similar Information Technology (IT) policies, albeit differently in regards to government intervention. Policies adopted by the government in introducing new communication technologies have direct effects on the adoption rate and usage patterns. In the case of Korea and Japan, there are also cultural differences that influence the diffusion pattern of new technologies. Korea is one of the fastest growing countries in information technology and communication industries, which is in part fueled by a positive culture towards new technologies among Koreans.

   Policies related to communication technologies are important, since new media technologies often generate network effects and rely on economies of scale. This brings forth the question of when and how early a new technology should be introduced into the market. Economies of scale occur not only on the production side, but also on the consumer end. Thus, the number of early adopters is crucial in the penetration and adoption of new media. Internet, mobile phones, and digital broadcast media all follow a similar pattern in this aspect.

   Regarding its economic status, Japan has been slow in the introduction of broadband services, as compared to other OECD nations. The penetration rate of broadband internet services has been reported to be relatively low. Recently, Japan has introduced an aggressive broadband policy in order to catch up with IT infrastructure and usage.

   Korea, on the other hand, has been very successful in the diffusion of broadband services, ranking first in the 2003 penetration rate among the OECD countries. There have been several alternative explanations for Korea's success in the IT area, ranging from cultural factors, such as the unique nationality of bandwagon effects, to the compatibility and ease of keyboard use of the Korean language. Also, the aggressive strategies of universal access policies of the Korean government must be recognized.

   When explaining why new technologies prevail and why some diminish, several aspects must be examined, including the industry, technology, demand and government policies. Culture plays an important role, especially on the demand side. In this study, we examine differences in the policies of the two countries, as well as cultural differences that influence the diffusion and usage of new technologies. First, we examine the different policies that were introduced by the two governments recently. Then, we look at differences among the two cultures that may have hindered or accelerated the actual adoption of the internet.

THE INTERNET IN JAPAN AND KOREA

Internet Infrastructure and Usage Patterns

Korea is the leading example of a country rising rapidly from a low level of internet access to one of the highest in the world. With the continuing expansion of internet infrastructure, more than half of the Korean population has now become regular internet users. From the beginning of 2001, the number of Korean users above the age of 7 accessing the internet at least once a month increased by 5.34 million (11.9% of total population). The total number of users was 24.38 million (56.6% of the total population) in 2001, increasing from 19.04 million (44.7%) in 2000. By June 2002, the number of internet users was 25.65 million (58%), a 1.27 million (1.4%) increase from 24.38 million (56.6%) in 2001. Internet Sector Index ranked Korea as the 3rd country with the highest number of internet users, with 511 persons per one thousand capita in 2001; the 5th in 2000; the 10th in 1999; and the 23rd in 1998 (NCA, 2003).

According to an OECD report, Korea has the best broadband service distribution rate among the OECD member countries. Korea is in the lead when ranked by the number of broadband subscribers per one hundred capita, with 13.9 persons, far superior to other members: 3.2 persons in the U.S. and 0.9 persons in Japan. The number of broadband service distribution in Korea was 13,801 subscribers in 1998. This number exceeded 7.8 million households in 2001 and reached 8.72 million households as of June 2002 (ITU, 2003).

The Korean mobile communications market is one of the most advanced in the Asia-Pacific region. Mobile service reached 62% of the population in 2001 (Pyramid Research, 2002). In October 2003, Korea had over 33 million mobile phone subscribers out of a population of 48 million, a mobile phone penetration rate of 68.75%. There are 22 million mobile data subscribers, for a 66% mobile data penetration rate.

Japan has followed a slightly different path in the diffusion of internet services. Internet is widely used via mobile devices in Japan. In the mobile area, Japan has managed to keep its forefront, with 63.8 million subscribers as of May 2003. With the hindered diffusion of broadband services, the mobile internet has been the major internet provider in Japan.

According to NUA, in 2002, the internet penetration rate in Japan was 44% and 46.4% in Korea, which includes all access methods (MPHPT, 2002). Internet penetration and usage were relatively poor in Japan compared to

other countries. However, in the area of mobile internet, Japan is by far the largest provider in the world of internet connection services via cell phones. After its launch in 1999, the number of subscribers reached 51.93 million at the end of March 2002. In addition, mobile internet subscribers account for 75.1% of the total number of subscribers to cell phones. This rate is higher than in other major IT countries such as Finland, which has 16.5% of cell phone subscribers also subscribing to mobile internet service, the USA with a subscription rate of 7.9%, and Singapore with a rate of 9.4%. Korea was actually quite high, with 59.1% of cell phone subscribers also subscribing to mobile internet service.

Seventy-five percent of the Japanese people use mobile internet via handsets regularly. Of them, 90% use email. The younger generation is a more rapid adopter of mobile service, with a penetration rate of 88.5% in the age group of under 30. The main services that the Japanese use via mobile are information, entertainment and banking. However, broadband services are less accepted in Japan. In May 2003, Korea had 11 million broadband internet services subscribers and Japan had about 10 million, which was an enormous increase due to the 2001 e-Japan strategy. Of the 10 million, about 8 million was via DSL. According to the World Economics Forum (WEF) and the International Monetary Fund (IMF), Korea ranked 14th in the global competence index of IT usage, 10th in mobile internet and 3rd in broadband services. Overall, Japan ranked 20th, 2nd for mobile and 65th for broadband. In 2001, in terms of the status of personal internet usages according to the type of access, 48.9 million people accessed the internet via PCs, while 25.04 million did so via cell phones, PHS, and hand-held terminals (MPHPT, 2002).

Japan has also been very aggressive in the adoption of new technologies regarding mobile phone services. In October 2001, 2GHz-band third generation mobile communications became available in Japan, and were the first of their kind in the world. According to the survey conducted in 2002, 75,657,000 Japanese people use mobile phones. Of them, 59,260,000 use cellular phones or personal handy phone systems (PHS) for information related use, i.e, mobile internet. Another 2,297,000 use the PDA for information and 33,935,000 use the PC for information services.

The vast majority of people use cellular phones to access the internet. Among the services, sending and receiving email, gathering miscellaneous information such as weather, fortune-telling, etc., and downloading music scored high on mobile usage. In the case of PCs, sending and receiving emails and information searches were the most popular uses (Statistics Bureau, MPHPT, 2001, Information and Communications Policy Bureau,

MPHPT, 2002). In contrast, home PC ownership was 71.7% among all households, while the ratio of households using the internet was 81.4%. This means that people are using other means to access the internet rather than the PC (Information and Communications Policy Bureau, MPHPT, 2002).

OECD (2003) reports that the broadband access per 100 inhabitants in Korea is 23.17%, while it is 8.6% in Japan (DSL, cable and other methods included). The OECD countries' average is 6.06%. Although both countries outnumber the average, there is a gap in the diffusion state of broadband internet services in the two countries. Compared to western countries, both Korea and Japan have aggressively introduced IT technology and infrastructure. Korea has emphasized high-speed telecommunication infrastructure, whereas Japan has emphasized mobile communications.

Socio-Economic Factors

A second set of factors that may influence the adoption of new communication technologies is the traditional socio-economic factors. Studies on the digital divide emphasize these aspects. Most of these studies examine the access and adoption of new internet services by certain members of the society, especially those already privileged in other aspects. When comparing two countries, it becomes more problematic. There is little socio-demographic evidence that Korea is more ready than Japan for new communication technologies.

Korea is not demographically suited to have the highest internet penetration rate in Asia. Korea's population was 47.7 million in 2001, which is less than half of the Japanese population. Korea is also not economically suited to have the highest internet penetration in Asia. The World Bank classifies Korea as an upper-middle income country, one category down from the high-income classification. Therefore, though Korea is not poor, it is not among the world's wealthiest nations. Hence, Korea's high level of internet penetration is not strongly correlated to its income level.

However, Korea excels in education. Its overall 90% school enrollment rate (primary, secondary and tertiary) is the highest among the Asian countries. Korea's high rate of literacy and school enrollment are essential prerequisites for the widespread adoption of the internet. These factors have contributed to the growing impact of internet usage. Another factor is the ease of keyboard use of the Korean language. There is no obstacle in using the Korean language on the PC keyboard. Young children can easily use the PC, whereas the situation in Japan is quite different regarding language bar-

riers (KISDI, 2002).

In contrast, Japan is one of the leading industrial nations in the world. Japan's estimated population was 127 million in 2001, which is approximately 2.5 times the Korean population. The per capita GDP in 2002 was $31,300 US dollars, and total GDP was $5,713 billion. Korea's per capita GDP was $10,000 in the same year, and its GDP was $680 billion dollars. Thus, in regards to population and economic status, Japan has advantages in the diffusion of information technology services. However, the actual trend seems otherwise (OECD, 2004). The ratio of the total population that receives upper secondary education in 2002 was 97%, indicating a high level of literacy and education similar to that of Korea.

Although education levels are similar among the two countries, there is a difference in language proficiency with regards to the internet. Another important factor that influenced the diffusion of internet services in Korea is the compatibility of its language to PCs. The Korean alphabet, known as Hangul, uses a pictographic font that is not ideally suited to computerization. However, Hangul is phonetic, with one character representing a sound, making it easy to learn. Hangul is a simple, scientific language and learning to read and write is fairly easy. Korea has a literacy rate of 97.6%, one of the highest rates in the world. The feasibility of Hangul on PCs is a major advantage in introducing internet services to the Korean people. There can hardly be a digital gap among all educational levels regarding access.

Different IT Policies

In the introduction and penetration of the internet, the active role of the Korean government in the IT area needs attention. The Korean government has taken an aggressive role, creating a vision for the information society. Promoting enabling technologies (e.g., broadband, unlicensed wireless), so as to promote economic competitiveness, was the keyword in the late 1990s.

The government's push in Korea can be explained with several policy areas. First, the Korean government is pursuing a 3-step project targeted at providing universal high-speed internet service to all households, and various e-business environments of corporations, and realization of G2B and G4C in government and public institutions. In addition, by introducing a new IP address system (IPv6) to solve the shortage of IP address resources, it is pushing the physical infrastructure of internet venture management to a higher level. Meanwhile, in order to support mergers and acquisitions between internet businesses by continuously improving laws and systems related to e-businesses, the government has prepared tax support measures

such as a 50% exemption of transfer income tax in the case of exchanging stocks.

Korea needs to develop core technologies that are compatible with international standards in the integrated mobile and wired internet solution market, through joint-efforts with the private sector in these times of new mobile technology and integration of global operations. The Korean government will invest 273.3 billion won in research by 2003 to develop mobile internet technology, information security, and B2B commerce. Second, by introducing electronic transactions in the public sector as early as possible, the spillover effect on the private sector will have a positive impact in developing the e-Commerce market. In 2001, the Public Procurement Service (PPS) made an 80% transition to electronic procurement procedures.

Third, the government aggressively supported IT venture companies. In 2000, the size of the domestic internet market was approximately 40 trillion won, which is about 4.4% of the total amount of business, or 30% of output of the IT industry. In 2001, it was approximately 56 trillion won. As the average rate of sales increase from 1999 to 2001 was very high at 51.4%, and the average rate of employment increase was approximately 26%, internet venture can be seen as an industry that is continuously bringing up the internet industry.

Korea established an ideal internet environment through rapid increase in high-quality information and telecommunications infrastructure and internet users, as well as high venture establishment enthusiasm. Specifically, the Korean government set the capital supply mechanism. Usually, the flow of capital into internet venture companies can generally be divided into investments attraction from angel investors/venture capitalists, or capital raised through an Initial Public Offering (IPO) on the KOSDAQ. By holding an Investment Relation (IR), the government is actively supporting matching internet venture companies and angel investors/venture capitalists, and also assisting corporate management by implementing finance training for operation processes from inauguration to listing on KOSDAQ.

At the same time, the government operated the KOSDAQ market, centered around venture companies, by strengthening KOSDAQ entry conditions (capital encroachment was forbidden, less than 1.5 times the industry average) for regular conglomerates (self capital more than 100 billion won) in order to develop the KOSDAQ market as an essential capital supply market for internet venture companies.

Fourth, a policy for narrowing the digital divide is a major issue. The Korean government is expanding the information super-highway to counties and town areas of agricultural and rural communities to enable the use

of high-speed internet services, without regard to geographic circumstances. It is also operating internet use facilities in post offices and town offices of farming and fishing communities and mid-sized cities, in order to expand the information access possibility of regional residents.

In addition, in June 2001, 10 agencies, including the Ministry of Communication, co-founded the "Internet Education for 10 Million Citizens (2000-2002)," which targeted information alienated individuals, including housewives and the disabled. As a result of these government efforts to narrow the digital divide, much improvement has been achieved by region, income, and gender, but more needs to be done for society across the population by age, occupation, and educational level. In order to advance its ongoing digital divide solution efforts more comprehensively and systematically, the government has prepared legal and systematic devices aimed at solving the information gap, such as establishing the "Act on Solving the Digital Divide" (January 2001), and founding a comprehensive plan for digital divide solutions that 14 agencies, including the MIC, will co-promote for the next 5 years (September 2001).

Meanwhile, ongoing international cooperative projects for solving the information gap between nations have been strengthened, such as the invitation and training of information & telecommunication human resources, and the dispatchment of IT volunteers. The special project for solving the digital divide in East Asia is also actively being promoted.

While the Korean government was the major player in the development of IT industries, in Japan the role of the government is minimized, while private firms play the major role in the development of IT and telecommunications. The government merely sets the principles and direction, while the private sector provides the execution (-KISDI, 2002). Thus, Japan sets a very cautious planning policy in introducing new IT technologies.

With this cautious planning, Japan set out an aggressive broadband policy in 2001, namely the e-Japan strategy, in order to induce a more rapid diffusion of IT services. The Japanese government is introducing various strategic measures to facilitate information and communications technology such as the e-Japan strategy, which was launched by the Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society in 2001. This has resulted in the rapid penetration of IT services recently (MPHPT, 2002).

The Basic Law on the formation of Advanced Information and Communications Network Society (IT Basic Law) was submitted by the government and passed in November, coming into effect in January 2001. IT Strategic Headquarters, which had been set up within the government in

accordance with the IT Basic Law, has established an e-Japan strategy, which aims at making Japan the most advanced IT nation in the world within the next five years. In fiscal year 2002, the e-Japan project budget amounted to 1,953 billion yen. Despite these efforts, Japan is ranked relatively low in the global market of broadband and IT. The evidence of the efficacy of the e-Japan strategy is slowly emerging. In 2002, in Japan, broadband service users were reported to be 69 million, which is 54.5% of the population. This represents a 10% increase from the former year.

These differences in the IT policies of the two countries influenced the diffusion rate of broadband internet services during the past few years. However, the economics and policies alone cannot account for the differences. It can be hypothesized that cultural differences exist in the adoption and use of new technologies.

Cultural Differences

Culture can be defined as a social institution that guides the individuals' behavior, but can also be viewed as the aggregate of individual behavior and attitudes. Thus, culture is a good indicator of what and where the society is, and also the future of where it is going. Until very recently, Japanese and Koreans shared the same value of conformity to the community, as opposed to the value of individual right. This is quite different from western values of emphasizing the self. Conformity to the society is embedded in socialization processes in the family, as well as in social institutions. However, rapid social change, along with industrialization in Asian countries, has consistently changed social values and life-styles.[1]

Studies on Japan have termed this group orientation and conformity as 'collectivism'. In his study of Japan's new middle class, Vogel (1963) observed that the Japanese white collar workers residing in Tokyo prioritized group interests rather than self-interest, aligned individual goals to group goals and conformed voluntarily to the groups' opinion. This behavior and attitude towards the group is fundamentally different from that of Western individualism. There are criticisms of this view of Japanese society. First, this generalization is not based on logical and thorough analyses. Second, the stereotypical image in collectivism of Japanese society may have been overestimated, due to methodological and ideological reasons.

However, experiencing economic development and abundance, the soci-

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[1] There are criticism on the collectivism model suggested here. For the observations are not based on specific reality, his may have exaggerated the reality and taken for granted as a stereotype.

ety has experienced cultural change, especially during the late 1970s and 1980s, when the younger generation shifted their values to individual choice and freedom. New cultural trends emerged along with these changing values, which was not the case in Korea. Historically, Korea's military government imposed excessive oppression on citizens.

Two interesting trends emerged among Japanese youth in this period. They began using general consumer goods as communication tools. This is often termed as the New Generation Culture. A second trend was the formation of a distinct self domain, apart from relationships with others. This trend has evolved into the well known Otaku culture. These two trends seem rather contrary, but in fact share the same context in Japanese history. The New Generation Culture is a phenomenon that differentiates an individual from others by using different products. Pioneers constantly experiment with new products and their uses to express the self, while followers imitate the fashion. This differentiation and imitation of these two groups can be understood within the social context of Otaku. The tendency to maintain a distinct self becomes more significant in the internet age, where information is shared among individuals.

Korea also experienced social changes in the 1990s, along with political democratization and economic prosperity. Cultural diversity and individual freedom enabled a more open communication and self-confidence among individuals. This trend was reinforced by the information revolution of the late 1990s. This increased demand for self-expression was met in cyberspace, where individuals could freely express their desires and opinions. A recent study identifies this generation as the P-generation[2], where the political and social consciousness of the 1980s and the newly emerging consumer patterns of the 1990s have converged into a new generation (Cheil Communications, 2003). This trend is very important in understanding contemporary Korean society, where new technology such as the internet serves as a means of integrating individuals into a new kind of community. Thus, individualization may not be the dominant trend in Korea. Internet is a functional node to connect the individuals into a group network. This is closely related to the Korean emphasis on peer group conformity.

In sum, the new technology and communication means have provided Japan with a more abundant information source, where people pursue new ideas and fashions. In contrast, in Korea, the internet has provided the base for networking and communication necessary for the demand for individual self-expression. There is evidence in previous literature that Japan has a

[2] P stands for participation, passion, and paradigm shifter.

more information and entertainment content oriented use of the internet, whereas in Korea, people use the internet more for communicative needs.

PREVIOUS FINDINGS ON INTERNET USERS

There have been few comparative studies of internet usage among Asian countries. Most studies have focused on differences in Western and Asian countries due to their historical and cultural backgrounds. At a micro level, we attempt to examine why different patterns emerge in the diffusion of a new technology and media. The differences occur not only at the cultural level, but also at the social and economic state of the country. Differences that stand out between the Japanese and Korean samples cannot be directly compared, since the adoption of this new technology was very different from the onset. Thus, we need to consider where the infrastructure and diffusion rate of each country is at the point of study. It may be that Japan is in the early stage of diffusion, whereas Korea is in the saturation stage. This may affect the usage patterns of users, and may not be due to cultural or social differences. The usage pattern of internet users is known to change with time. Users increasingly turn to the internet to perform work-related tasks, to make purchases and to complete other financial transactions, to write emails, and to seek information that is important to their everyday lives. This longitudinal approach shows that over the course of a year, use of the internet gets more serious and functional (Pew Research Center, 2002).

Also, utilitarian internet users-those who need it for work or school-are more likely to increase their time spent on the internet (Pew Research Center, 2001). This suggests that in the long run, heavy users systematically use the internet with different motives as compared to light users. Thus, we need to differentiate among individuals according to their use time, as well as to the point in time when they started to use the internet.

Research trends on the social implications of the internet can be largely classified into five domains-digital divide, community and social capital, political participation, organizations and institutions, and cultural aspects (DiMaggio, et al, 2001). Within these categories, many scholars have raised the issue of inequality in the diffusion of new media such as the internet. The digital divide is mostly discussed within the context of equality within a nation. In this context, college students, individuals with high SES, and urbanites are typically the privileged (Bimber, 2000). The digital divide is also discussed in the context of the divide between nations, which can often be explained by examining the economic status of the country (Hargittai, 1999). However, few studies have looked at the actual difference of penetra-

tion and adoption of the internet as a new medium across different cultures. In this study, we focus on how the differing status of diffusion of two countries can affect usage patterns of internet users.

RESEARCH QUESTIONS AND METHOD

Research Questions

> Research Question 1:
> What are differences in the diffusion and usage of the internet in Japan and Korea?
>
> Research Question 2
> Are there differences between early adopter groups and late adopter groups in usage patterns of the internet?
>
> Research Question 3
> Are there differences between heavy user groups and light user groups in usage of the internet?

We define 'internet use' as the usage time and frequency of various services, preferred content/sites, activeness of use, and perception of dependency on the internet.

Method

This study examines the role of internet policies and culture in the prediction of internet usage for Korea and Japan. For comparison, we conducted a survey, simultaneously using self-administered questionnaires in Korea and Japan. To control for the effect of demographic variables, respondents in this study were confined to students enrolled in basic courses of the department of mass communication at both universities.

A total of 977 respondents from Korea University in Seoul and Waseda University in Tokyo were recruited. The survey was administered from December 2002 to January 2003. The questionnaire contains measures assessing the following major variables — general usage, preferred content type, motivations of use, and internet addiction.

General usage measures

General usage was measured in several ways. The average time used on the internet during both weekdays and weekends was asked. The number of emails sent from home, the number of emails sent outside of home and

the number of people the respondent exchanged emails with on a regular basis were used as indicators of the amount of internet usage. In order to see the habitual usage of communicative sites, the number of community sites visited regularly, the frequency of visits to community sites and the frequency of message posting were also gauged.

Preferred content type

Internet sites were classified into 21 different sites depending on the type of content. Content ranged from simple information and entertainment sites to interactive sites.

Motivations of use

Respondents were asked to rank their agreement with a series of 19 motivations in using the internet. Conventional items used in the uses and gratification literature were adapted to serve as measures for this variable. These measurement items encompass a comprehensive set of gratification-expectations, reflecting five different motivational dimensions-entertainment, companionship, surveillance, informational learning and social identity. A five-point Likert scale, ranging from "very likely" to "very unlikely," was used. After performing principal component factor analyses (with Varimax rotation), two different factors emerged instead of the five that had been anticipated. These two factors are "informative" and "relational" factors.

Internet addiction

A measure for internet addiction was used with a four-point scale, exploring strength of habits and self control. The scale is based on previous studies on addiction (Rozin & Stoess, 1993; Young, 1999; Griffiths, 1999; Greenfield, 1999). Addiction scores were measured with the degree of agreement to the following statements: My school grades have been negatively affected by the time I spend on the internet. I find more pleasure in talking on the internet than talking directly with friends and family. I think life without the internet would be boring and lonely. I feel anxious if I can't access the internet once a day. I have experienced lack of sleep because of the internet.

RESULTS

Diffusion and General Use of the Internet

Among the respondents, 69.4% of the Koreans mainly accessed the internet via DSL based internet services, whereas in Japan only 35.1% accessed

TABLE 1. DESCRIPTION OF RESPONDENTS

	Japan	Korea
# of respondents	464	482
Respondents	Waseda University (Tokyo)	Korea University (Seoul)
Survey dates	Dec 2002/Jan 2003	Dec 2002
Gender	Male 58.3%, female 41.6%	Male 53.8% female 46.2%
Average age	19.7	21.7

the internet via DSL based services. In Japan, 27% still used a dial-up modem, whereas only 2% of the Korean sample used traditional modem services. This illustrates the difference in the environment in accessing the internet in the two countries. Although the respondents in the study were all university students, this pattern is consistent with the penetration and usage reports based on the total population of Japan and Korea. Since these access conditions can exaggerate usage differences between the two countries, we controlled for the type of users within the groups. Internet usage is known to change over time, and when a person becomes a more adept user. Thus we divided the respondents into two groups depending on how long they had been using the internet. The threshold for long usage was 4 years.

The second important criterion that divides the users is how much they use the internet. The distribution of the respondents shows that the average internet usage time per day was distributed between 0 to 1 hour. People who used the internet more than one hour were counted as the 'heavy user group'.

An independent sample t-test was performed to see if there were any differences between Korean and Japanese respondents in usage time, frequency of sending and receiving emails, and the number of persons exchanging emails. Koreans used an average of 126 minutes of their time on weekdays, and 191 minutes on weekends on the internet. In contrast, the Japanese spent 59 minutes on weekdays, and 86 minutes on weekends. Korean students were spending over twice the amount of time that Japanese students spent.

Among the Japanese respondents, a majority of them have started to use the internet only recently, so the sample was divided into two groups depending on when the person starting using the internet. This was to observe if the differences were due to differences in the diffusion point of time of the two countries or if the differences were due to culture. In the case of both Koreans and Japanese, the group that had been using the inter-

TABLE 2. INTERNET AND EMAIL USAGE

		Usage time on weekdays	Usage time on weekends	# emails from home	# emails from other locations	# of people exchanging email with
Korea	Under 4 years	118.86	178.36	4.98	3.06	15.00
	Over 4 yrs	136.50	208.47	5.40	3.64	21.90
	Total	126.11	190.82	5.15	3.30	17.73
Japan	Under 4 years	58.48	85.11	2.97	1.21	4.85
	Over 4 yrs	61.54	88.33	3.68	1.14	5.02
	Total	59.24	85.90	3.15	1.19	4.90

*mean difference significant at p<0.001.

net for more than 4 years had a higher usage time. However, the gap between the two countries was considerably large.

We then looked at the number of emails the respondents sent daily from home and from other locations. Koreans sent out an average of 5.15 emails from home per day, and 3.3 from other locations per day. Daily, the Japanese sent 3.15 emails from home and 1.19 from other locations. The number of people that they regularly exchange email with was 17.73 for Koreans and 4.9 for Japanese. Koreans had a larger pool of people they send email to and receive email from, and use the internet to maintain and develop new relationships. This is consistent with the communicative tendency of Koreans when using the internet.

The communicative tendency of Koreans, as opposed to the information-seeking tendency of Japanese, could be confirmed by examining the usage pattern of community sites. The Korean respondents used internet sites that provide social interaction with other people more frequently than did the Japanese. For the Korean sample, the number of visits, as well as the number of regularly visited sites, was higher for groups that had been using the internet for more than 4 yours. The number of messages posted did not show a consistent pattern.

In the case of the Japanese group, the number of community sites visited regularly was higher for the group with more than 4 years of usage, but the frequency of visits did not make much of a difference. The number of messages posted was higher for the early adopter group in the case of Japanese students.

TABLE 3. USAGE OF COMMUNITY SITES

		Number of sites visiting regularly	Frequency of visit	Frequency of message posting
Korea	Under 4 years	6.55	4.7975	3.6089
	Over 4 yrs	6.87	4.9588	3.6909
	Total	6.69	4.8641	3.6436
Japan	Under 4 years	3.16	3.3652	2.7547
	Over 4 yrs	3.53	3.3117	3.1053
	Total	3.26	3.3518	2.8472

*mean difference sig. at $p<0.001$.
**scale was measured as 1-never use to 6-use several times a day.

Preferred Content and Services

Twenty-one different types of internet sites were listed for respondents to check how frequently they visited those sites on a four point scale, from 'never' to 'almost everyday'. Three factors were extracted from the results. We labeled the factors as general information & entertainment, content downloads and real time information. The average factor scores for the two groups showed a significant difference. Overall, Koreans used all sites more. However, the gap between the two countries was minimized in content download sites and real-time information sites.

For Koreans, being a light user or heavy user, and being a long-time user or starter did not make much difference on the preferred content. However, for the Japanese, being a heavy user and long-time user had significantly higher factor scores for all three content types.

Motivation of Use

For the motivation of internet use, 19 questions on a four-point scale were administered. A factor analysis of these scales extracted two distinct motivation factors. First, individuals use the internet to communicate with others and to maintain social relationships. The scales that were included in this factor were 'for new acquaintances', 'to deepen existing relationships', 'to exhibit my-self to others', 'to express my opinions' and so forth. The second factor was related to the use of the internet to attain knowledge and for entertainment. In this category, people use the internet for news, information and fun. We termed the first set of factors 'communicative factor,' and

TABLE 4. PREFERRED CONTENT BY TYPE OF USER

		general	downloads	Real time information	
Korea	Light users	.5346126	.0421546	.941660	
	Heavy users	.5535360	.521241	.0802579	
	Total	.5395776	.0447703	.0905169	
Japan	Light users	–.6255348	–.0099137	–.728795	
	Heavy users	–.4080438	.1797357	–.1713847	
	Total	–.5981684	.0139495	–.0852742	

TABLE 5. PREFERRED CONTENT BY TYPE OF USER: EARLY USERS VS. RECENT USERS

		general	downloads	Real time information	
Korea	Under 4 years	.5627267	.0489405	.0964281	
	Over 4 yrs	.5057009	.0386677	.0818663	
	Total	.5395776	.0447703	.0905169	
Japan	Under 4 years	–.6393552	–.0236357	–.0901241	
	Over 4 yrs	–.4778171	.1237761	–.0711025	
	Total	–.5981684	.0139495	–.0852742	

the second, 'information/entertainment factor'. *We then used these factor scores to compare the two countries usage patterns. The following table shows the mean differences in the factor scores for the two groups. Communicative factor scores show a significant difference in the two country samples. The Korean sample had an average score of .606, whereas the Japanese had an average of -.518. In the second factor, the differences were minimal.*

One of the advantages of the internet is that one can access new information and knowledge at ease. There were no differences in using the internet for this purpose. However, when using the internet as a means to create and maintain human relations, there was a significant difference. A regression analysis was conducted to examine how these factors directly influence usage patterns of the two groups.

We predicted the use motivation factor scores on the usage time of users, for the Korean and Japanese cases. The results show that there was a positive and significant relation between the communicative factor and information/entertainment factor with internet usage time. Usage time increases as

TABLE 6. MEAN DIFFERENCES IN MOTIVATION FACTOR SCORES

		Average use time	
		beta	s.e
All	constant	234.691**	5.732
	Communicative	82.627**	5.762
	Information/Entertainment	34.895**	5.739
	R^2	.239	
Korea	constant	172.043**	7.491
	Communicative	48.928**	7.969
	Information/Entertainment	33.043**	5.149
	R^2	.205	
Japan	constant	289.751**	10.436
	Communicative	49.700**	10.051
	Information/Entertainment	45.139**	10.177
	R^2	.092	

the communicative factor and information/entertainment factor scores increase. There was a difference in the degree of effect of the two variables in the two countries. For Japanese students, the information/entertainment factor variable had a greater effect on internet usage time, and for Korean students, the communicative factor variable had a greater influence on usage time. This is consistent with the cultural differences that we examined, where in Japan, individualism along with the urge for new information and trends are major cultural traits. In Korea, collectivistic and networking demands are reflected in internet usage patterns.

INTERNET ADDICTION

Comparisons on the addiction propensity of Japanese and Korean students were analyzed. Addiction was measured on a four-point scale with five questions. The addiction scores were calculated by adding up the five scores for each case. The scale was measured so that the lower the score, the higher the likelihood of addiction. The average score for the total sample was 14.4, the standard deviation was 3.6, and the range was between 5 and 20.

Comparison between the means reveal that Korean students have a higher overall average addiction score. The differences among Koreans were smaller than the differences among Japanese students. Koreans showed no

TABLE 7. COMPARISON OF MOTIVATION OF USE IN JAPAN AND KOREA

		N	Mean	Std. Deviation	Std. Error Mean
relational	Korea	438	.5184780	.90372037	.04318143
	Japan	375	−.6055823	.73096316	.03774678
information	Korea	438	−.0364532	.87294551	.04171095
	Japan	375	.0425774	1.13019964	.05836326

* t-test significant at p<0.001.

TABLE 8. REGRESSION RESULTS FOR INTERNET USE OF JAPANESE AND KOREAN STUDENTS
(Dependent Variable: Internet usage time)

	All			Japanese			Korean		
	B	Beta	Sig.	B	Beta	Sig.	B	Beta	Sig.
(Constant)	234.691		.000	289.751		.000	172.043		.000
relational	82.627	.451	.000	49.700	.233	.000	48.928	.293	.000
informational	34.895	.191	.000	45.139	.209	.000	33.043	.306	.000
R Sq		.237			.088			.200	

TABLE 9. MEAN DIFFERENCES OF INTERNET ADDICTION SCORES

		Mean	N	Std. Deviation
Korea	less than 4yrs	12.9587	242	3.05386
	more than 4yrs	12.8443	167	3.09873
	Total	12.9120	409	3.06899
Japan	less than 4yrs	16.1754	228	3.36802
	more than 4yrs	15.3200	75	3.48417
	Total	15.9637	303	3.41141

*t-test significant at p<0.001.

differences between long-time users and new users, and heavy and light users. However, for the Japanese, the longer the respondent had been using the internet, the more dependent he or she was. Also, heavy users were more dependent than light users. Both mean differences were statistically significant.

CONCLUSION

The analysis of time spent on the internet, usage motivations and pre-

TABLE 10. MEAN DIFFERENCES OF INTERNET ADDICTION SCORES BY TYPE OF USER

		Mean	N	Std. Deviation
Korea	light users	12.9203	301	3.13799
	heavy users	12.8889	108	2.88189
	Total	12.9120	409	3.06899
Japan	light users	16.1057	265	3.40178
	heavy users	14.9737	38	3.35702
	Total	15.9637	303	3.41141

*t-test significant at p<0.001.

ferred content show that Koreans are more frequent and avid users of the internet, and that the motivations for using the internet were more relational compared to the Japanese. Also, Koreans use more, and are more dependent on the internet, as compared to the Japanese. The differences can be explained largely by different policies that the two governments adopted in introducing the internet. Korea has heavily emphasized the new information infrastructure over the past 10 years, whereas Japan, until recently, was more focused on mobile communication technologies. Also, the Korean government has a more intervening model when introducing new technologies, while Japan leans towards a more free market model.

Cultural differences influenced the actual usage of the internet. Both countries have experienced dramatic changes in their societies during the past few decades. As a result, in Japan, individuals are more focused on searching for new information and trends on the internet. In Korea, relationships still function as important social capital, and Koreans are geared towards maintaining and developing relationships on the internet, and on other communication media. This trend can also be applied to the rapid diffusion of mobile communication devices in Korea.

The above analysis implies two explanations. First, in Korea, governmental policies were the major trigger in the diffusion of the internet, and this in turn affected the usage amount and pattern. Network externalities came into play since Koreans use the internet for relational functions. However, the differences in Korea and Japan cannot be explained solely by different government policies and diffusion rates. When newly added users were compared, they showed a different usage pattern. This may be explained by cultural factors that are different in the two countries. Innovation traits, social and cultural characteristics, and differences in communication culture all influence the usage pattern of users in the two countries. Further studies

are called for to investigate these differences more specifically. For now, we can conclude that motivational factors and preferred content type differs among the two countries' university students.

This study is meaningful in attempting to explain cultural aspects, as well as socio-economic and policy factors that often influence the adoption of new technologies.

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