

# DIFFUSION OF BROADBAND AND ONLINE ADVERTISING IN KOREA

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**ABSTRACT:** The paper reviews various factors that helped and facilitated fast diffusion of broadband in Korea as it describes what made Korea a number one case for broadband Internet diffusion. It also discusses the impact of broadband diffusion on the development of the online advertising market.

This research delves into documenting and describing the path Korea has been through in terms of achieving a high penetration rate of broadband diffusion. The factors contributing to the diffusion consist of policy and market factors where the government and private sector are the main actors, respectively. Each factor is described separately, followed by a general description of the current status, a brief history of the diffusion process, and the characteristics of Korean's Internet usage pattern. The interaction of these various aspects has resulted in a boost in Internet penetration.

The paper also discusses the online advertising practices and market in Korea. Broadband is a necessary condition for advanced online advertising and advertising is a major revenue source for many media companies. With the expansion of broadband service in Korea, it was expected that online advertising would be one of the major sources of revenue to support various content services. However, this expectation was premature, with web site operators depending on the revenue coming from e-commerce in place of advertising. In this, the development of online advertising was too slow to be a major source of revenue for Internet services, at least until now, although the situation seems to be moving in a more optimistic direction.

Although the Korean progress is closely monitored by global industry leaders and policy makers, the authors emphasize that a specific country's pre-existing status has to be considered when a complex process such as the adoption of communication technology is analyzed as a model case.

Amidst a fast changing media environment, with new technologies and applications popping up almost every day, high-speed Internet access draws prime attention. The Internet is a form of multi-media that draws characteristics and functions from a diverse range of communication technologies that have been extant. The revolutionary changes that the Internet brought to the world are pervasive in a way that they affect almost every activity that humans conduct in their everyday lives. People meet, talk, and work, are entertained, and fall in love through the computer terminal and lines connected to the net. They order their favorite CDs, books, and even groceries over the net. They watch TV, listen to the radio, or read digital books downloaded from the Internet. The Internet has literally become the "window" to the world.

High-speed Internet access is crucial for the Internet to realize the potentials that have long been talked about. Content and service providers move to proffer more for the Internet users as high speed Internet access rolls out. Behavioral changes have been detected among the Internet users who get access to broadband at home. The Pew Internet & American Life Project Report (2002) found that users became creators and managers of online content, satisfying a wide range of queries of information, and engaging in multiple activities on a daily

basis. Broadband gives new use and new meaning to the Internet users, enabling them to experience a whole new medium out of the old Internet.

Modem access to the Internet through ordinary phone lines is notorious for its slowness in pushing the data through and the difficulty in sending pictures and other audio-visual materials. Broadband is a fat pipe through which things move easily, speedily, and conveniently, including movies and television broadcasts. Broadband is available through DSL (Digital subscriber line) technology that makes use of phone lines and converts them into high-speed data links, through modems using fiber-optic and coaxial cable of cable television networks, or through satellite and terrestrial systems.

Korea is number one in the world in terms of high-speed Internet adoption (OECD 2001). Such progress is mainly achieved through the use of ADSL or cable modems. OECD (2001) reported that one person out of 100 inhabitants was a subscriber to high-speed Internet access on average in OECD countries. In contrast, Korea has over 11 subscribers per 100 inhabitants as of June 2001. This number one position is followed by the distant second Canada, which has achieved about half as much when compared to Korea.

No wonder that Korean progress is being closely monitored by global industry leaders and policy makers throughout the world. In the United States, as the hype surrounding broadband grows so does the uncertainty relating to the pace of consumer adoption (Pew 2002). Reviewing various factors that helped and facilitated fast diffusion of broadband in Korea would not only make an interesting case in and of itself, but it would also shed light on some of the key aspects that other countries might learn from. Therefore, the goal of this paper is to describe what made Korea a number one case for broadband Internet diffusion and to discuss the development of the online advertising market in Korea. An uneven adoption rate throughout the countries, despite the global attention on the Internet as a multimedia platform, highlights that the adoption of communication technology is a very complex process in which a specific country's pre-existing condition has to be considered.

In this context, this research delves into documenting and describing the path Korea has been through in terms of achieving a high penetration rate of broadband diffusion. The first objective of the study is to describe what made Korea a number one case for broadband Internet diffusion. The factors contributing to the diffusion consist of policy and market factors where the government and private sector are main actors, respectively. Each factor will be described separately, followed by a general description of the current status, a brief history of the diffusion process, and characteristics of Korean's Internet usage pattern.

Second, the study aims to discuss the online advertising practices and market in Korea. Broadband is a necessary condition for advanced online advertising. Advertising is a major revenue source for many media companies. With the expansion of broadband service in Korea, it was expected that online advertising would be one of the major sources of revenue to support various content services. However, this expectation was premature, with web site operators depending on the revenue coming from e-commerce in place of advertising. In this, the development of online advertising was too slow to be a major source of revenue for Internet services, at least until now, although the situation seems to be moving in a more optimistic direction.

The former part of the paper will focus on the diffusion of broadband and the development of online advertising will be discussed in the latter part.

## The current status of broadband diffusion in Korea

### 1. Diffusion of Broadband

The Korean government proclaimed that the number of high-speed Internet subscribers surpassed the 10 million mark as of November 2002 (Korea Leads 2002). Koreans experienced high-speed Internet in 1998 for the first time when Korea Thrunet Co., a private broadband carrier, launched the so-called cable-based online access service. A significant growth spurt followed in April 1999 when Hanaro Telecom Inc., Korea's second largest fixed-line and broadband carrier, introduced its ADSL service (see Table 1). KT Corp., then and current market leader in telecommunications services, had remained relatively complacent about these upstarts and their ventures into the high speed Internet access market. It undervalued this services market partly because it was too comfortable in the number one position in the telecommunications sector and did not regard it as a serious threat to its market position. But Hanaro's marketing for high-speed Internet service was aggressive and successful compared to the initial public expectations. Finally, KT followed suit by launching its own ADSL service, branded as "Megapass," a few months later (Yoon, Lee, and Kwon 2001).

**Table 1: The growth of broadband subscribers in Korea**

Units: 1,000 (Source: MIC 2002)

Method	1998	1999	2000	2001	2002
ADSL	-	74	2,074	4,453	6,386
CATV	13	156	1,386	2,723	3,717
Others	-	6	557	630	936
<b>Total subscriber</b>	13	236	4,017	7,806	11,039
<b>% of the total household</b>	0.1%	1.7%	28.7%	55.8%	73.6%
<b>% of the total population</b>	0.03%	0.5%	8.7%	17.0%	23.5%

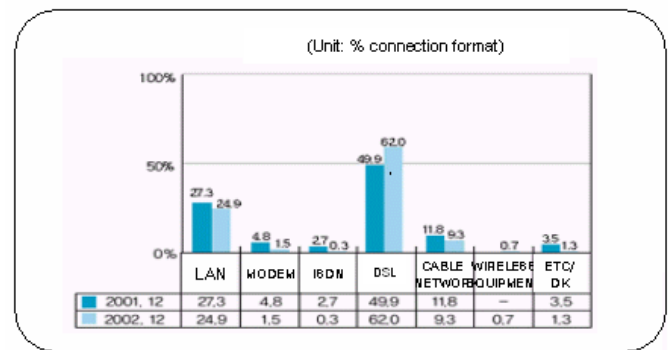
The number of broadband subscribers was 236,000 in 1999, 4.02 million in 2000, and 7.81 million in 2001. As mentioned before, there was a tremendous jump in the number between 1999 and 2000. And the 10 million mark was finally set in November 2002 (Korea Leads 2002). As of December 2001, the broadband subscription rate in Korea was 17.16 per 100 dwellers, the biggest in the world, followed by Canada (8.4), Sweden (4.96), the United States (4.47) and Japan (2.23). The average of OECD (Organization for Economic Cooperation and Development) countries is 2.9, suggesting that Korea has indeed pulled off a faster-than-expected growth in the broadband market (OECD 2001). These cross-country comparisons show that the difference is even more amazing when one considers the large gap between Korea and such countries as Japan and the United States in terms of the size of

the economy and per-capita income. Level of economy does not seem to be a big factor behind the broadband development unlike other technologies, which makes the Korean case even more interesting.

The market is roughly dominated by two competing leaders, KT and Hanaro, and one minor player, the Thrunet Co., which is struggling in the market fiercely divided by the bigger two firms. KT has 4.58 million subscribers, controlling a 45.8 percent of the booming market. Hanaro has 2.86 million users, or 28.6 percent of total. Thrunet's subscribers numbered at 1.3 million, which translates into 13.1 percent share. The remainder goes to small companies (KISDI 2002). Major technical means to provide broadband service in Korea are currently Asynchronous Digital Subscriber Line (ADSL) and cable modems. ADSL has 57.6 percent of the market, followed by cable modems with 34.6 percent, and home-LAN (Local Area Network) with 7.3 percent (KISDI 2002). The relative positions of ADSL vis-a-vis cable modems show the opposite case compared to the United States where cable modems maintain a top market share at 55.2 percent followed by ADSL with 30.9 percent. The United States boasts the highest cable television subscription rate of the world, which is 69.8 percent according to the National Cable Television Association (NCTA) (2002). Many observers have pointed out that Korea's high population density works with the efficiency of wiring the housing units with telecommunications lines. Forty-six and three tenths percent of the total population lives in the capital city and its vicinities (National Statistics Office Population Census, 2000). In addition, close to 60 percent of the total households dwell in apartment and townhouse complexes, which makes it easy and much less costly to wire multiple households.

From 2002, the companies providing the broadband service started marketing their VDSL-service (Very high bit rate Digital Subscriber Line), heralding the next-generation ADSL. VDSL service, although a family member among DSL technologies, can offer even faster service than ADSL, boasting 13Mbps (and maximum speed at 52 Mbps) (NCA 2003). Such infrastructure would be suitable for multimedia applications such as distance education, education-on-demand, and distance health service. KT, the current market leader, offers three tiers of VDSL service depending on the speed a consumer is willing to pay for, thus segmenting the market accordingly. Some early adopters are quick to upgrade their already fast ADSL service to VDSL, as companies offer competitive pricing schemes and other extra incentives to these early-adopters.

Figure 1: Types of Internet connections



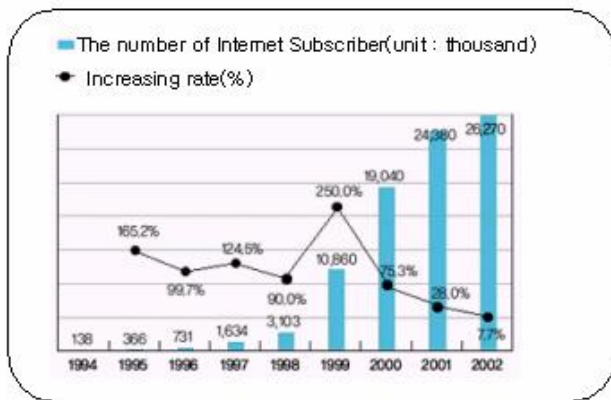
Source : KRNIC, 2002

In the initial stage of the introduction of broadband, companies focused mainly on building up the subscriber base to achieve the level of critical mass. Marketing schemes such as offering a differential rate of discount depending on the duration of the contract and providing subsidy for equipment were used to lure the early adopters. However, as the broadband subscriber count increases at a faster rate, the focus has gradually moved to keeping up the quality of the service. Finally as businesses perceived that the adoption of broadband has reached almost the final stage of the S-curve where the subscriber counts increases but the rate of increase starts to be stagnant or decrease, the service providers have started to diversify their attention to increase the new revenue sources in addition to actively engaging in export opportunities in China and other foreign countries. Whereas the concept of broadband service has so far been mainly limited to providing the access to the telecommunication infrastructure, the companies have moved to the area of value-added service provision; that is, they are interested in moving beyond the level of access. Currently giant corporate players such as KT and Hanaro are competing in the home-networking and security services. They also develop their own premium information content, so that the subscribers not only get access through them but also buy information and entertainment from them.

## 2. Internet use

The high rate of broadband subscription goes hand-in-hand with the increase of Internet users and diversification of information and services offered through the net. Koreans do more than just search for information on the Internet. They frequently watch television, listen to radio, or watch a VOD (video-on-demand) format movie, in addition to banking and shopping.

Figure 2: Internet penetration of Korea

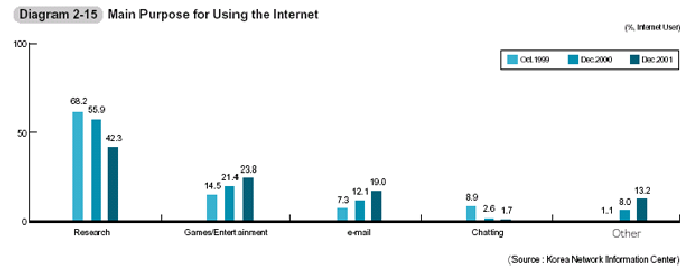


Source : KRNIC, 2002,12

Twenty-four and four tenths million people (56.6% of the total population who are older than 7 years old) use the Internet more than once a month on average as of December 2001, which shows a 12 percent increase compared to the previous year (NCA 2003). Student populations (middle, high school, and college) log on to the Internet regularly and constitute the heaviest user group. An astonishing 93.3 percent of the population age 7-19 is Internet users. Eighty-four and six tenths percent of those ages 20-29 are also Internet users. South Korea has the highest Internet usage rate in East Asia, outpacing Japan, China and Taiwan (ETRI 2003). Korea has an Internet usage rate of 51.1 percent, followed by Japan (45.5 percent) and Taiwan (34.9 percent).

According to the Ministry of Information and Communication (2002), its survey conducted in December 2001 revealed that 61 percent of the respondents used the Internet at home and that the use of PC Bangs (a commercial place for high-speed internet connection, somewhat similar to Internet Cafes) declined as more and more homes were connected with broadband. In general, users seem to prefer to use the Internet at home. The same survey asked respondents their purpose in using the Internet. Although the number one answer was to search for information and to conduct research, there was a notable increase, compared to the previous survey, in the number of responses regarding the entertainment functions of the Internet. More respondents have said that they use the Internet for e-mails, listening to music, watching movies, banking, and other community activities. Increases in such multimedia activities go hand in hand with the diffusion of broadband. Such area requires broadband connections, and, at the same time, such activities create demand for the broadband connection.

Figure 3: Main purpose for using the Internet



(Source : Korea Network Information Center)

Over 100 companies operate on the Internet to offer movies over broadband (as of 2000) and their revenues were around \$18.6 million. Internet gaming is another area that is quickly expanding. The market is expected to be more than \$1.54 billion by 2003 (Yoon 2002). A peculiar characteristic in broadband subscriptions is that residential Internet use exceeds that of business use (MIC 2002).

### Prime success factors for broadband diffusion

Korean success at broadband diffusion is attributed to fierce infrastructure competition leading to quality services at a low fixed price. In addition, it is also recognized that there is a growing trend of government intervention in IT innovation and Internet diffusion so that the market can respond to the policy lead. This section reviews the policy factor first followed by a description of how the market responded to the policy drive.

#### 1. The Policy Factor

In Korea, policy factors played the most significant role in the diffusion of broadband Internet. The Korean government argued: "Although Korea was late in industrialization, the nation should lead the informatization" (MIC 2002). Since the mid 1990s, Korea's economic growth has relied on the IT industry replacing traditional manufacturing industries such as the shipbuilding and the automobile industries. The IT industry (IT equipment, telecommunication services, and software) has played a greater role in the Korean economy. Since the financial crisis in 1997, the Korean government has been promoting further investment in the IT industry. This new industry has been viewed as an area of growth that would serve recovery of the overall economy. The government also set the basic direction for a knowledge-based society with the programme Cyber Korea 21 in 1999 and "e-Korea Vision 2006" in 2002 (MIC 2002), which further accelerated IT development.

As Hong (1998) explained, the Korean telecommunications reform was initiated and led by the State instead of interest

groups (businesses in particular), although Korean telecommunication service providers and IT firms may be viewed as influential enough to challenge the state leadership. The Korean government has tried to provide the necessary information infrastructure appropriate to the advent information society. Since the mid 1990s, the government has pursued a policy of high speed telecommunication infrastructure as a foundation to build a 'knowledge-based society.' The government started work on an initial plan for the Korea Information Infrastructure (KII) in 1993 and set up a comprehensive plan in March 1995 (KISDI 2001). In August 1995, the "The Basic Law for the Promotion of the Information Society" was enacted to drive the nation-wide KII project.

The goal of KII was to construct an advanced nation-wide information infrastructure consisting of communications networks, Internet services, application software, computers, and information products and services. All information and communications services in voice, data and video were to be provided easily, reliably, and cost-effectively in a timely manner (MIC 2002). After enacting the Law, the government published "The Basic Plan for the Promotion of the Information Society" in 1996. Covering the five year period from 1996 to 2000, the Basic Plan proposed several telecommunication reforms. Among them, it expressed the State's willingness to develop the IT industry by the government's initiatives on the technology development, human resources development, and introduction of fair competition in the IT market. The plan emphasized government roles in the process of implementing the programs by emphasizing deregulation (MIC 2003).

The Korean government has consistently pursued telecommunication policies for competition, based on deregulation and market principles. From the early 1990s, Korea has been considered as having one of the most liberalized telecommunication sectors in Asia. The Korean government implemented structural reforms in 1990, when competition was allowed in basic telecommunications services incrementally, and the market for value added services was fully opened (KISDI 2001).

The Internet market also was led by the deregulation and competition policies. As discussed above, the government introduced competition in the local call carrier, giving a license to Hanaro Telecom against the then market leading KT (Korea Telecom). Although Hanaro Telecom was licensed as a local call carrier, the company found it extremely difficult to compete against KT. So the company decided to focus on

broadband Internet access rather than local call service. This resulted in promoting a high speed Internet infrastructure, and facilitated open competition in the broadband Internet market (Yoon, Lee, and Kwon 2001). After Hanaro's launch proved to be a success, KT strengthened its ADSL service and became the first market leader one year later in 2000, exploiting its strong position in the telecommunication industry (NCA 2002).

The government also abolished major regulations for the Internet services. Anyone can start high speed Internet businesses with a variety of services despite the criticism that there were too many service providers for the market size (KISDI 2001).

Cable TV system operators also entered into the broadband Internet market. They used a bundling service strategy by including cable television channels and broadband services together, which resulted in an increase of access to the broadband service by cable TV (KISDI 2002). Currently, ADSL is still the leading broadband infrastructure, but cable TV has narrowed the gap (NCA 2002).

The government lent support to small start-up companies in the IT area by offering subsidies and giving guidance in operations. These support programs helped many small firms be listed in the stock market, particularly KOSDAQ (Korean NASDAQ), which gave them real financial benefits (MIC 2003). The government took an active position by enacting the law to develop the e-Commerce market as well.

In addition, the Korean government went on to create consumers' demands for broadband Internet directly. In 1999, the government made another acceleration policy of so-called "Internet PC" provision, which is cheap and has moderate functions. PC manufacturing companies positively participated in the government's plan. The cheap Internet PC was popular to consumers, which increased access to high speed Internet (NCA 2002).

The government also provided Internet education for all the people, which was called Internet Education for 10 Million Citizens (Year 2000-2002). This project has proposed to reduce the digital gap between information rich people and information poor people including farmers, fisherman, and the handicapped. It was also planned to increase IT popularity in the country. An Internet class for housewives is one of them. This education project was popular to housewives in that they could learn how to use the Internet for free (MIC, 2002). In 2001, the government further established the "Act on

Solving Digital Divide," which was in line with an Internet education.

The government has also provided a special discount for educational connections to the Internet to over 10,000 elementary, middle, and high schools. At the school, teachers and students can use high speed Internet for their teaching and studying at a nearly free charge (MIC 2003). The usage at school provoked diffusion at home as well.

## 2. The Market factor -- Facilities-based competition among the telecommunication service providers

The industry players responded to the government's aggressive step towards broadband Internet services, market liberalization and regulatory reforms, by actively engaging in competition of product quality, pricing, and marketing efforts. OECD (2001) pointed out that the success of Korea in the roll out of high speed Internet access was due to the high level of competition among companies, and among different technologies. Several companies, albeit with varying sizes, compete with their own broadband infrastructure.

The Korean telephone market was monopolized by KT (Korea Telecom) until recently, as is the case in many other countries. The entry of Hanaro Telecom Co. and the consequential breakage of the monopoly provided momentum to accelerate the competition. Hanaro obtained a license in June 1997. Although it was licensed as a local call carrier, the company found it extremely difficult to compete against KT due to KT's high quality of service and low price. As a newcomer, it also faced the problem of number portability, which the established service provider is free from. Meanwhile, Hanaro found out that KT's data services, including the Internet, were generating numerous complaints from its customers due to low access speed and usage-based pricing schemes. Accordingly, Hanaro decided to focus on broadband Internet access as a niche. Hanaro put its marketing emphasis on positioning themselves as a "multimedia services company" rather than a plain "telephone company."

A commercial service using ADSL technology was launched at the monthly flat rate of about \$40 in April 1999. Several months later, the rate was cut to about \$25 to pre-empt the market before KT aggressively started a matching service. Immediately after Hanaro's move proved to be a success, KT strengthened its ADSL service. Hanaro's success in signing up 1.1 million DSL subscribers by the end of 2000 had a major impact on the incumbent. Although starting service later than Hanaro and the cable networks, Korea Telecom had signed up

2 million subscribers to its DSL service by February 2001 "C up from just half a million in mid-2000. KT regained the market leader position in one year, exploiting its strong position in the telecommunication industry. But still Hanaro and the cable networks that provided high speed Internet access through cable modems continued to increase their number of subscribers.

In sum, the major reasons for the rapid growth of ADSL, which has successfully defeated the cable modems companies which initially were the market leader, was Hanaro's preemptive strategy for targeting densely populated apartment complexes and KT's extension of existing copper local loops as a potential reservoir for capturing customers (MIC 2002).

The service providers also compete at pricing. Upon entering the market they immediately started to competitively offer flat-pricing at a low level to induce dial-up users to switch to broadband (MIC 2002). Aizu (2002) pointed out that while there was plenty of supply of bandwidth due to the nationwide construction of fiber-optics network, there was very little demand. He thinks that an abundant supply with little demand led the aggressive price war in the area of data communications and leased line services, critical resources for the start-up ISPs and corporate users of the Internet.

In sum, as pointed out earlier, the success being experienced by Korea in the roll out of high speed Internet access is due to competition between companies, different technologies, and infrastructures. There are multiple companies competing with their own broadband infrastructure (OECD 2001). In addition to that, the Korean government's strong intervention policy resulted in massive diffusion of broadband.

## Development of the online advertising market in Korea

The demand for broadband connection in homes grew as there was more information and diverse contents, such as multimedia entertainments including online games, movies, music, and TV programs, available on the Net. Tremendous investments were being made in web operators who provided something to enjoy for their web audiences. Such massive blind investments were made because the strong government drive gave investors confidence on top of the worldwide dot-com boom throughout the late 1990s. The content providers used advertising as a source of revenue from the beginning, but the portion of the revenue supplied by the advertising was not large. Without the advertising and without the Internet users' willingness to pay for the Internet content, the entrepreneurs were able to provide quality content solely

because of the above-mentioned direct investments that were raised due to the Internet boom that swept through Korea during 1999-2000.

Online advertising started to get recognized as early as 1996 when there was only a dial-up modem connection. Although the market volume for online advertising increased by 247.5 percent compared to 1995, total revenue garnered through online advertising was still very small (Choi 1997). The time was not ripe for major advertising revenue to roll in because Internet usage was more or less limited to the younger population.

In 1997, the total advertising market decreased by 4.2 percent due to an economic recession (Choi 1998). Nevertheless, the online advertising market increased by 173.4 percent compared to that of 1996. The main reason for the increase was the growth of the subscription rate to online services, which were like AOL in its early days. The number of subscribers to online services was about 3 million at that time. In 1998, the total advertising market in Korea decreased by 35.2 percent, due to the economic crisis in Asia and the following recession. Nevertheless, the online advertising market increased to 45 million dollars up 41.3 percent compared to 1997. Advertisers started to perceive online media as a meaningful advertising tool.

The Internet was considered as a good advertising vehicle because it was cheap and could appeal to specific target audiences compared to traditional media. And it would also enable database marketing. Factors that made such a big growth possible were the increased number of subscribers to online services (4.7 million persons), the active marketing schemes by firms providing online services (such as "Netsgo" and "Channel I"), and increased use of Internet media (Kim T. 1999, p. 5). But the size of the market was still small, so it was too early to say that it showed any meaningful promise at that time.

In 1999, the Korean economy began to recover from the foreign exchange crisis and the following recession. As a result, both the total advertising revenue and online advertising revenue increased by large amounts. At this time, the governmental policy to develop the broadband infrastructure and IT industry began to show successful results. Subscription of broadband service increased rapidly and various services and contents, for example audio-visual entertainment options, multimedia chatting services, and online games, were provided through the broadband pipe.

As discussed earlier, by 2000 over 4 million people subscribed to broadband, and alongside the advertising revenue of online media increased at the highest rate. Compared to 1999, it increased by 67.5 percent, up to 113 million dollars. The online advertising market can be divided into Internet and independent online services. In 2000, the Internet market expanded quickly and its market size increased up to two times. The incredible growth was due to three factors: 1) development of major portal sites such as Daum Communication, Yahoo Korea and Naver; 2) development of big Internet shopping malls; and 3) the emphasis on Internet advertising by major advertising agencies. As a result, online service providers were defeated by major internet portal sites (Choi 2001).

In 2001, the total advertising market decreased by 9.5 percent because of an economic recession. Likewise, the online advertising market decreased by 5.8 percent to 107 million dollars. Although the growth rate was much higher than the total advertising growth rate, it was very disappointing. Reasons for the decrease were that big companies generally reduced their advertising revenue due to the economic recession and that they began to doubt the effects of online advertising as dot-com fantasies subsided. Advertising revenue of online services decreased by 30 percent. But the Internet advertising market of 2001 stayed the same as that of the previous year (Choi 2002).

The advertising market of 2002 increased due to the large economic growth and the Worldcup Soccer Game, which was held in Korea (and Japan), with its growth rate of about 20 percent. The online advertising market increased to 154 million dollars up 44.4 percent compared to 2001. People under the age of 40 used the Internet frequently and the Internet usage of those over 40 began to expand; the number of Internet users in Korea was estimated to be over 25 million. Therefore, it was not a big surprise for the online advertising market to be increased by such a large rate.

The major portal sites such as Daum Communication, Yahoo Korea, and Naver led the market while web advertising methods, which could achieve greater attention such as "full page ads" and "audio-visual ads", helped to attract advertisers. Some Internet advertising agencies found niche markets and provided specialized services in areas such as medical clinics, hospitals, banks and so on. Even small shops helped the online advertising market grow. But big companies reduced their advertising money for Internet media; they still thought that

there was some bubble in online advertising market (Choi 2003).

**Table 2: Advertising revenue and its growth by year (unit; million dollars)**

Year	Advertising Revenue		Percent		Growth Rate	
	total	online	total	online	total	online
2002	5,399	154	100%	2.9%	19.8%	44.4%
2001	4,415	107	100%	2.4%	-9.5%	-5.8%
2000	4,878	113	100%	2.3%	26.7%	67.5%
1999	3,851	68	100%	1.8%	32.6%	51.2%
1998	2,903	45	100%	1.5%	-35.2%	41.3%
1997	4,481	32	100%	0.7%	-4.2%	173.4%
1996	4,680	12	100%	0.2%	13.4%	247.5%
1995	4,126	3	100%	0.1%	22.8%	-

Although the market of online advertising in Korea has grown rapidly, major advertising agencies do not seem to lead the trends. Several years ago, major ad agencies were very interested in the online advertising market and invested a lot of money and human resources. But the market did not grow as rapidly as they expected. So they withdrew their money and human resources. Now they are very careful about reinvesting resources into the area. They know the future of online advertising is very promising. But their earlier experiences taught them that investments in it should be balanced with its actual revenue potential.

**Table 3: The online revenues of the Korean top three ad agencies (unit; million dollars)**

year	Cheil		LG Ad		Diamond	
	total	online	total	online	total	online
2002	1,013	10	616	4	374	5
2001	770	11	527	4	407	4

(Kim, S. 2002, 2003)

Recently, major web portal sites began to recognize greater profits from online advertising and their stock prices are surging. The revival of the interests in Internet advertising is largely due to the advent of new types of ads. From the second half of 2001, Internet advertising has used "rich media." Before that, the most popular way of Internet advertising was by banner. There are several methods for these new kinds of advertising. Internet advertising using rich media is thought to have more effect than the original banner type.

1) Full-page ads: A full-page ad is an ad filling one's computer monitor. When a surfer clicks on the site and before the homepage of the site appears, a full-page ad covers the computer monitor for a few seconds. The surfer can do nothing and should see the page. Because it is inconvenient for the user, the exposure to the ad is limited to one time a day or one time during a visit for the same person. Usually, it is more expensive than other kinds of ads. Currently, this type of ad is not frequently used.

2) Top layer ads: The location of this ad is not fixed. Top layer ads float free over a page. Because it does not cover the computer monitor, complaints against it are not as strong as a full-page ad. Like a full-page ad, exposure to the ad is limited to one time a day for the same person. The cost of the ad is usually lower than a full-page ad.

3) Audio-visual ads: These ads use motion frame and sound, much like a small TV commercial movie. Most advertisers use their commercial movie which is slightly changed to fit Internet usage. Sound is played back usually when one scrolls the mouse over the ad.

4) Keyword ads: When a user types a keyword into a search engine, related sites appear on the computer monitor as a result of the search. A keyword ad is when an advertiser pays a fee and his/her site appears among the top lines. At first, search engine sites received registration fees and they became keyword ads. These days, keyword ads are big income for portal and search engine sites. A method used by the leading search engine site Naver is different from that of Overture International, which is a leading multinational company for the keyword ads. Naver uses CPT (cost per thousand page view), while Overture uses CPC (cost per click). Naver argues that CPT is more convenient for Korean advertisers because their budgets are usually fixed. This year, the market size of keyword ads is estimated at 100 million dollars. The revenue of keyword ads of the last year was 58 million dollars (Considerable Money 2003). Naver has used bidding for the keyword ads since this year. The order of prices tendered is the order of the site list provided as a search result. After the introduction of bidding, the price for the most popular keyword was increased three times (Empas 2003).

Last year, the market for email ads increased. For example, the monthly revenue of "TargetMail service" by KT Internet increased from 167 thousand to 417 thousand dollars. Other Internet advertising agencies such as Infoweb and Korean Click said that their revenues also increased (ETnews 2002). But the rapid increase of email advertising made Internet users angry and the regulation against spam mails became more strictly enforced this year. The governmental regulation forces all advertising emails to write the sign of (advertising) in the title. With a huge amount of daily spam mails, most email users use a filter, which puts spam mails directly into the trash folder and therefore makes the email ad useless. This regulation also forces spam mail senders to comply with a "do-not-send" list. Accordingly, the future of email ads is now uncertain.

In the alternative, web site operators have depended on the revenue coming from e-commerce. Unlike the slow growth of the advertising market, however, the e-commerce market has grown rapidly with the expansion of broadband. The Korean e-Commerce market size had already surpassed 47.5 billion US\$ in 2000. The B2B (business to business) market in which corporations purchase and sell products (services) composed 43.6 billion dollars, and the B2C (business to consumer) market such as Internet shopping malls and auctions composed a relatively small 611.4 million dollars (NCA 2003). Diverse innovative payment methods such as credit card payments, wire transfers, e-currency, and mobile payments are also being introduced to brighten the prospect of e-Commerce.

The online stock market's boost is also influenced by the broadband infrastructure. The percentages of online traders and transactions have continuously increased. The proportion of online trading increased from 55.9% of total transactions in 2000 to 66.7% in 2001. In online stock trading, the results of private traders are higher in both the KSE (Korea Stock Exchange) and KOSDAQ (Korean NASDAQ). In terms of transaction amount, online trading makes up over 95% of the KOSDAQ market and approximately 75% of the KSE (NCA 2003).

E-commerce and online stock markets have been promoted by the broadband infrastructure. This phenomenon implies that broadband has deeply affected trade and industry in Korea. Given the positive relationships between e-commerce and online advertising, the possibility of online advertising's development is predicted to grow for some time.

### DISCUSSION

This paper reviewed what happened in Korea in terms of rapid broadband diffusion along with its implications for advertising. We discussed in detail the policy factors and market factors. Although the interaction between the two sides was not the direct focus, we would like to emphasize that the strong policy drive was able to be successful only because the market responded with a high level of enthusiasm in the spirit of competition.

Of course, the high demand shown by people who avidly adopted the broadband services cannot be ignored. People wanted quality information and entertainment on the web, and the web operators met the expectations with quality service. As discussed, web advertising was not a major revenue source to support such quality services, but it is certainly

growing at a faster rate than ever with the diffusion of broadband.

At first, online activities were dominated by online services, which offered a closed service system unlike the WWW. However, as broadband adoption increased, people began to migrate from such independent services to the more open and resourceful WWW. Currently the web advertising market is flourishing with diverse interactive advertising schemes on the WWW, mostly on big portal sites, which could only be possible thanks to the broadband infrastructure. Web advertisements tend to be very entertaining and targeted. As broadband gained access to almost every home, multimedia advertisements began to be prevalent rather than plain text-based banner types. We are on the verge of witnessing a big growth spurt of online advertising just now.

Moreover, as people become more and more dependent on the Internet in everyday life, the value of the Internet as a source of buying information and as an advertising vehicle becomes more precious. The rise of "keyword advertising" in search engine sites proves it. People seek product information on the net and order it on the net; the ideal situation for sale.

As the broadband infrastructure provides superior web experiences, especially in terms of multimedia services, network game and audio-visual services transform from a free service into a paid model. The free services attracted initial user groups to these services and they got accustomed and loyal to such services as time went by. The broadband infrastructure, as well as the experience gained by such entrepreneurs, improved the quality of services. These gradual changes add up to the potential for the paid web services. It may not be very certain but the clear trend in Korea shows that the web can actually be a cash cow despite the doubts that are cast by some web pessimists.

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