

A Web of Stakeholders and Strategies: A Case of Broadband Diffusion in South Korea

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Abstract

When a new technology is launched, its diffusion becomes an issue of importance. There are various stakeholders that influence diffusion. The question that remains to be determined is their identification and roles. In this paper we outline how the strategies pursued by the government acting as the key stakeholder affected the diffusion of the technology. We base our analysis on a theoretical framework derived from innovation diffusion and stakeholder theories. The empirical evidence comes from a study of the broadband development in South Korea. A web of stakeholders and strategies is drawn to identify the major stakeholders involved and highlight their relations. The case of South Korea offers implications to other countries which pursue broadband diffusion strategies.

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1. INTRODUCTION

South Korea has the highest penetration of broadband in the world. To date, there are 10 million broadband users in the country (ITU, 2003a). Broadband services were launched in South Korea in July 1998 and the 1 million-user milestone was reached in April 2000. This marked the real take-off point in the South Korean broadband market with operators witnessing explosive growths in subscribers over the next two years (Yang, 2002). The South Korean government expects the market for the current generation of broadband services (between 2 and 8 Mbps) to reach a point of saturation by the second quarter of 2003 (Ministry of Information and Communication, 2002). In its *Internet White Paper* (MIC and NCA, 2002), the Ministry of Information and Communication (MIC hereafter) has now set a new broadband objective of the provision of 20Mbps to home consumers by 2005.

South Korea is a useful example with implications for information technology diffusion and for country-level diffusion policies. The case shows that the government intervention is an important element in the application of IT diffusion policies. Apart from the government a number of other private and public organisations played an important role in the process. Although the agendas of those stakeholders were diverse, they all contributed to a success story. According to Lee and Choudrie (2002), the rapid roll-out and take-up of broadband services in South Korea has been achieved through a combination of six factors (see Table 1).

Table 1. Key factors of the broadband development in South Korea

Factors	Descriptions
Competition	The broadband market in South Korea is characterised by strong facilities-based competition.
Government vision and commitment	By showing a clear vision and commitment, the government ensured a high degree of confidence and certainty for private sector companies.
‘PC Bang’ phenomenon	The rapid emergence of more than 21,000 PC Bangs (or PC rooms, similar to Internet cafes) between 1998 and 2001 was a major demand driver for broadband content and services in the early phase of broadband deployment. These privately run facilities provided the public with access to high speed connections offering first hand experience of the benefits of broadband.
Price	It was recognised among the government and industry that to be successful, broadband access would need to be priced at affordable levels for middle-income households, and the initial price was set accordingly. Later competition pushed prices lower.
Clear perceived user benefits	The users of broadband refer to education and entertainment as the foremost ways of using broadband. Both government and commercial players deliberately promoted the educational benefits of broadband, which were perceived as such by users.
Geography and demographics	Dense housing patterns deliver significant economies of scale for broadband network deployment. 80% of South Koreans live in densely populated urban areas and 49% live in large apartment complexes.

All these factors portray an interesting picture of the South Korea case and its success. Among them, the role of the government emerges as a key aspect of the success (Kelly, 2001; ITU, 2003b). This leads to a need to examine the strategies used by the government in relation to other actors in the market, and their impacts upon the actors. This examination has a potential to offer another perspective through which we see the South Korea case.

Previous work by Lee and Choudrie (2002) presented a pragmatic examination of the deployment of broadband in South Korea. In this paper we examine the impact of various strategies upon stakeholders using a framework formed by the stakeholder analysis (Mitroff, 1983; Freeman, 1984) and developed by Papazafeiropoulou & Pouloudi (2000). Our aim is to provide another perspective for the understanding of the broadband diffusion process in an exemplary country. By doing so, we can offer recommendations for the development of national information technology strategies.

The rest of the paper is structured as follows. In the next section the supporting theoretical framework of our analysis consisting of the stakeholder and innovation diffusion theories is presented. Section three includes the research approach used for the collection of the empirical evidence during the field study, which took place in South Korea in July 2002. In section four we investigate how the South Korean government took various actions to apply its vision for *Cyber Korea* (MIC, 1999). Section five identifies the groups of stakeholders participating in the South Korean market, and a web of stakeholders and strategies is drawn in order to describe the impact of the government strategies on key stakeholder groups. The paper concludes with implications for other countries.

2. OUR FRAMEWORK

Damsgaard (1996), in his study on the diffusion of Electronic Data Interchange (EDI), defines three layers of the diffusion process. These are the organisational, industry and environment layers. The *organisational layer* consists of individual users and organisational bodies using the information technology. The *industry layer* consists of organisations and institutions sharing a stake in the same function, market area, or part of the value system. The *environmental layer* is divided into two elements: the institutional layer and the regulatory layer. The *institutional layer* consists of entities such as international agencies, trade associations and higher education institutions. These affect diffusion by shaping the interaction between actors such as technology providers and potential users and thereby promoting the use of the technology. The *regulatory layer* is related to telecommunication, business and privacy regulations applied by government regimes in order to set the normative boundaries for interactions between the trading partners.

One approach for examining the environmental layer of information technology diffusion was made by King et al. (1994) in their study to understand the role of the government and other institutions in IT innovation. They observed that, although the objectives of IT-related programmatic statements issued by various government agents are clear, the mechanisms used for the mobilisation of government leadership appear to be inefficient. They argued that difficulties in the application of IT diffusion policies are related to inefficient analysis of the role of institutions involved in the IT diffusion process.

King et al. (1994) used the demand-pull and supply-push theory in government intervention for information technology diffusion. Supply push force comes from the production of the innovative product or process itself. Demand pull force arises from the willingness of potential users to use the innovation. They also argued that governments can either be influential or regulatory. Influence is the persuasive power that an institution exerts over the practices, rules and belief systems of those under its sway. Regulation is the direct or indirect intervention in behavior of those under the institution's influence. Combining the two modes of intervention with the two types of driving forces, they then defined six main institutional actions: knowledge building, knowledge deployment, subsidy, mobilisation, standard setting and innovation directive (see Figure 1 and Table 2).

	SUPPLY PUSH	DEMAND PULL
INFLUENCE	Knowledge building Knowledge deployment Subsidy Innovation directive I	Knowledge deployment Subsidy Mobilisation II
REGULATION	Knowledge deployment Subsidy Standard setting Innovation directive III	Subsidy Standard setting Innovation directive IV

Figure 1. Dimensions of Institutional Intervention (Source: King, et al., 1994)

Table 2. Institutional actions for IT-diffusion (adopted from King et al., 1994)

Action	Explanation
1. Knowledge building	It is undertaken to provide the base of scientific and technical knowledge for the production and exploitation of innovations. This typically takes the form of sponsored research to universities and other research institutions. <i>It often takes place in the form of influence in the supply side (Cell I).</i>
2. Knowledge deployment	It stimulates the dissemination of new knowledge. The most obvious form of knowledge deployment is the general provision of education to the population either through the official educational system (e.g. schools, universities) or through temporary training of the working force. <i>(Cells I, II, III)</i>
3. Subsidy	It is financial support offered to innovators in order to help them defray the costs or risks related to IT adoption. <i>(Cells I, II, III, IV)</i>
4. Mobilisation	It encourages decentralised actors and organisations to think in a positive way about the innovation. The main institutional instruments for mobilization are promotional and awareness campaigns. <i>(Cell II)</i>
5. Standard setting	As a form of regulation it aims at constraining options of decentralised actors and organisations in line with larger social or institutional objectives. It can be completely voluntary or it can have the force of law. <i>(Cells III, IV)</i>
6. Innovation directive	It is a command to produce innovations, to use them, or to engage in some activity that will specifically facilitate production and/or use. <i>(Cells I, III, IV)</i>

According to the categorisation of the environment layer made by Damsgaard (1996), the institutional layer is mostly related to interactions of stakeholders involved in the IT diffusion process. These interactions have an influential rather than regulatory character; the

institutional layer corresponds to influential actions. Similarly the regulatory layer deals with the application of laws and restrictions by government regimes and is related to regulatory actions.

Building on this, Papazafeiropoulou & Pouloudi (2000) used the stakeholder analysis (Mitroff, 1983; Freeman, 1984) to further investigate the institutional layer of innovation diffusion in the case of electronic commerce. The stakeholder theory can contribute to an understanding of the institutional layer of the innovation diffusion process by examining stakeholders' roles, interests and hidden agendas (Papazafeiropoulou, 2002; Pouloudi, 1999; Papazafeiropoulou et al., 2001). Papazafeiropoulou & Pouloudi (2000) focused on the role of the government and argued that in order to be effective in the application of their strategies, governments should have a holistic view of the stakeholders operating in the market and act proactively in a rapidly technologically changing environment.

They identified five groups of stakeholders: the national government, international organisations, policy intermediaries, companies and consumers/citizens. Figure 2 depicts what measures the government has in relation to other stakeholder groups. The numbers in the figure represent the diffusion strategies such as knowledge building, knowledge deployment, subsidy, mobilisation, standard setting and innovation directive as defined by King et al. (1984). They called it a web of stakeholders and strategies. It offers a structured way to investigate issues related to the participation and role of various stakeholders involved in the innovation diffusion process. The examination of diffusion strategies leads to the identification of key stakeholders, which in turn helps in the investigation of existing strategies.

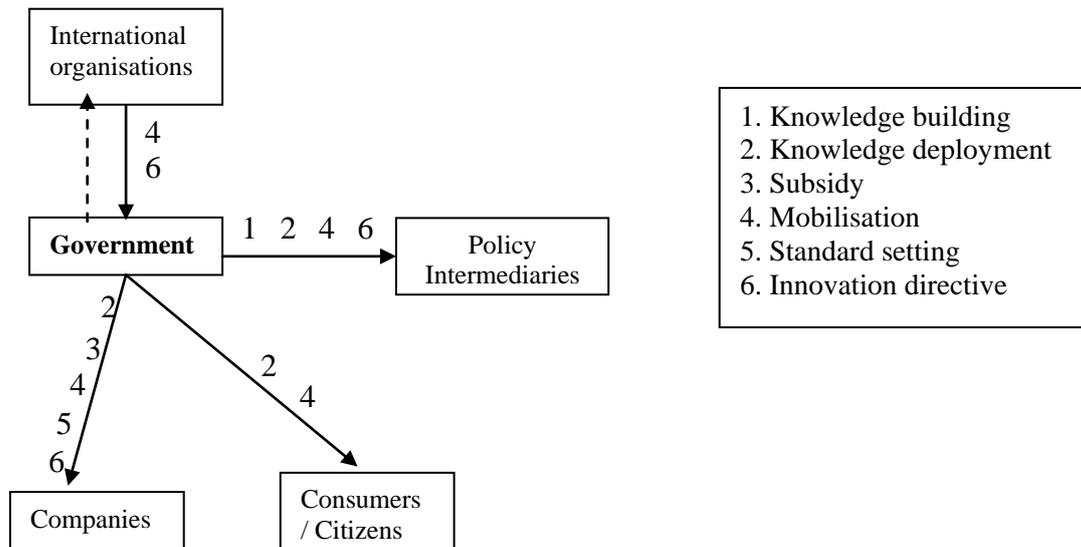


Figure 2. A web of stakeholders and strategies

In this paper, we have used the web of stakeholders and strategies to describe the diffusion strategies which the South Korean government implemented and to show how these strategies were used in relation to other stakeholder groups. The research approach used in this research follows in section 3.

3. RESEARCH APPROACH

Previous research (Lee et al., 2003) on the broadband development in South Korea investigated success factors using mainly secondary data to ascertain the issues. Here we use primary data from face-to-face interviews¹. Thereafter, secondary data in the form of archival documents, newspaper articles and government statistics were used to verify and triangulate the findings of the primary data. The interview meetings were arranged with nine

¹ The Overseas Mission to Korea, supported by the International Technology Service, Department of Trade and Industry, the United Kingdom, was conducted to study its broadband development (Lee and Choudrie, 2002). The mission delegates, including two of the authors of this paper, visited and stayed in Seoul from 21st to 27th July 2002.

organisations which are involved in the broadband related area from private and public sectors ranging from equipment manufacturer, service provider to research institute and a government department. The list of the organisations and reasons for selection is described in Table 3.

Table 3. List of the organisations visited

Hanaro Telecom, Inc.	The second largest broadband provider www.hanaro.com
NHN Corporation	Online game portal www.nhncorp.com
NCsoft Corporation	Online game company of the most popular game called Lineage www.ncsoft.net
KT	The incumbent operator with the biggest market share of broadband www.kt.co.kr
SBSi	A relatively new broadcast company, which is running a video-on-demand business www.sbs.co.kr
Samsung Electronics	Equipment vendor. www.samsungelectronics.com
Korea Information Society Development Institute (KISDI)	Think-tank specialising the telecommunications sector and information society issues www.kisdi.re.kr
Korea Education & Research Information Service (KERIS)	Research institute for information services in education www.keris.or.kr
Ministry of Information and Communication (MIC)	www.nic.go.kr

The interviews were conducted in the form of a meeting between the mission team and participants from each organisation. The mission team consisted of two academics, 5 industry people from telecommunication companies such as BT and Cable & Wireless, and a representative from the government advisory body on broadband (Broadband Stakeholder Group). They had various backgrounds: technologists, academics, business managers and consultants. This approach was adopted to prevent a biased opinion from emerging; we form a research team whose members have a variety of backgrounds similar to those of the group being studied (Wax, 1983). This reasoning was prescribed at the time of selecting the team members.

The objectives and questions of the mission team were delivered in advance in the form of a standard topic list to the host organisations. This included four main topic areas: Users

(characteristics, online behaviour), Industry (main players, motives, operations), Government (regulation, role in the provision of broadband), Others (infrastructure, impacts of broadband on the economy, payment methods). In a typical meeting, the host organisation initially gave a presentation that intended to answer those questions, followed by questions/answers and discussion. The meetings lasted typically for two hours; the meeting at KT took four hours. Participants from each host company were considered within the host organisations as experts in the areas under discussion. They ranged from rank and file employees to top management, and were directly involved in the broadband business and research activities. For example, participants were usually involved in the formation of the broadband strategies of their companies. Government officials who were interviewed had hands-on knowledge about the way that broadband was deployed and in certain instances were part of the policy making process. During the interview process, open-ended questions were used in order to promote discussions into the topics of interest. The number of participants in each meeting varied from two to six. Although most of them spoke English, a professional interpreter was used when necessary.

The minute of each meeting was note-taken by one of the team members, and it was re-written afterwards and distributed to the team to verify the details. An extra measure was adopted to ensure that bias be prevented when the report was written. Pairs of individuals from diverse backgrounds were formed. For instance, while the representative from the government advisory body focused upon policy issues of his interest, another member of the team from a different area, say from industry, joined him to add a different perspective.

4. DIFFUSION STRATEGIES PURSUED IN SOUTH KOREA

In this section we examine how policy measures as described in section two were applied in South Korea for the diffusion of the broadband.

<I> Knowledge Deployment and mobilization

The South Korean government used a variety of promotion policies designed to boost Internet use amongst the population. These measures included IT literacy and Internet literacy programmes targeted at particular populations such as housewives, the elderly, military personnel, farmers and socially excluded sectors such as low-income families, the disabled and even prisoners. The government set up the “Ten Million People Internet Education” project in June 2000 to provide Internet education to 10 million people through a range of programmes. This promotion activity contributed to the nationwide Internet boom, with 3.4 million people including one million housewives being provided with basic Internet skills by December 2000 (MIC, 2000).

Amongst the programmes for computer and Internet literacy, the one for housewives is an interesting example for its success and impacts. The MIC set housewives (married females not in employment) as one of its main targets. Government subsidies were granted to private IT/Internet training institutes for training housewives, which allowed the housewives to undertake Internet courses at an affordable price. The programme was a success and created an Internet boom among housewives. The rationale for targeting housewives was that they controlled the household budget and had an influence upon the purchasing decisions made by the families. Policy makers believed that without the housewives’ commitment to the Internet, its diffusion among households could be retarded. Most importantly, the programme identified the shared feeling amongst the housewives of “being left behind” or “being ignored

by their own children”, and thereby stimulated a hidden demand for the Internet, particularly for its use in their children’s learning (Lee et al., 2003).

<2> *Subsidy*

Recognising that the high cost of deploying new local access networks was a barrier to broadband roll-out, the government provided initial funding to facilities service providers (FSP) through the provision of loans at preferential rates (worth US\$77m in 1999). A further US\$77 million was provided in 2000 for less densely populated areas, small cities, towns and regional industrial complexes. This funding has been extended to include supplying broadband to rural areas and will continue until 2005 with additional investments amounting to US\$926 million (MIC, 2002).

<3> *Knowledge building*

The government as part of the Korean Information Infrastructure (KII) project has supported research and development undertaken by research institutes and universities in the broadband area. Additionally, the government demonstrated the uses of broadband by utilising initiatives such as the construction of test beds connecting 5 GigaPoPs in major cities and providing support for the research of next generation Internet technologies (MIC, 2002).

<4> *Standard setting*

By 1995 the South Korean government had established a comprehensive strategy that planned how broadband would be disseminated to the public (MIC, 2002). For instance, the plan detailed how networks of a high capacity would be obtained through market competition. In order to ensure that the consumers were obtaining a suitable quality of bandwidth, a certification system was introduced. Under the system called ‘Cyber Building Certificate’, the

authority concerned issued a certificate to a building with high-speed telecommunications capacity. Three levels of standards on domestic and business premises were established, and the certificates were granted to qualified buildings². This certification gave builders the motivation to enhance the broadband access platform of apartments and buildings being constructed, since most residents wanted to live in high capacity cyber apartments. This system has worked particularly well in the South Korean housing pattern in which apartments account for half of the total housing.

In the development of broadband, the Korean government implemented several policy measures. They are categorised above using institutional actions developed by King et al. (1994). Then the next question is how other stakeholders were related to these measures. The following section identifies their roles and relationships.

5. A WEB OF STAKEHOLDERS AND STRATEGIES IN THE DIFFUSION OF THE BROADBAND IN SOUTH KOREA

Here we present how the stakeholders identified by Papazafeiropoulou & Pouloudi (2000) were related in the broadband development in South Korean. This description enables us to draw a web of stakeholders and strategies which will in turn shows how the strategies described in section four were implemented in concert with these stakeholder.

<1> The government

The South Korean government has played a key role in the development and implementation of a detailed and sophisticated strategy for broadband deployment by focusing on both supply and demand side issues. For example in 1995 the MIC set out a vision for the transformation

² The first class certificate is granted on buildings with traffic capacity of more than 100 Mbps; the second on those with 10-100 Mbps; the third with up to 10 Mbps.

of South Korea into a knowledge-based economy where there would be ‘one PC for everyone’. This vision accompanied the development of the first Korea Information Infrastructure (KII) action plan in 1995, which quickly recognised the scale of the required financial investment and the need to motivate operators, including the incumbent. The financial crisis of 1997 reinforced the government’s commitment to transforming the South Korean economy. Connectivity and informatisation became a top priority. For this purpose, since the beginning of KII, public investment has been made particularly for the backbone infrastructure.

Not only has the government helped to build the network infrastructure, they have also provided demand-side stimulants such as Internet literacy programmes as described in the previous section. Following the explosive growth of broadband uptake, the government policy is now focused on ‘digital divide’ issues, with government funding being targeted towards extending coverage to rural areas and ensuring digital inclusion of less developed and poorer areas of the country. By setting out a clear vision and strategy, the government ensured a high degree of confidence and certainty for private sector companies.

<2> International organisations

From our current analysis, it seems that international organisations did not have direct impacts on the development of broadband in South Korea. However, foreign equipment vendors were the main supplier of equipment at the early stage; global competition was one of the main motivations of the country’s strategic emphasis on the growth through IT, particularly as an exit out of the financial crisis in 1997; the acronym, KII, is similar to NII in the US. Taking these into account, international organisations have played an indirect role in the development.

<3> *Consumers / citizens*

Education is a high priority in contemporary Korean society (PCER, 1997). Parents are very committed to providing the best education possible for their children, and spend a significant proportion of their disposable income for educational purposes such as extracurricular tutoring. This strong emphasis on education and academic performance has prompted parents to turn to the Internet for educational goods and services. Both the government and commercial players deliberately promoted the educational benefits of broadband and utilised them as a means for driving demand.

Meanwhile, the growing strength of the on-line gaming market meant that children and teenagers had their own strong motivations – beyond their educational requirements – to encourage their parents to provide them with broadband access at home.

Anecdotal evidence suggests that when asked, Koreans do not hesitate to explain the benefits and value they gain from broadband. To them the benefits are clear and obvious. Education and entertainment (particularly on-line games) are almost always referred to by the users. Other major benefits include access to information, financial transactions and viewing time-shifted TV content.

<4> *Companies*

The government was keen to recover from the financial crisis of 1997 and foresaw broadband as an enabler of recovering from that. Therefore, companies that used broadband in various ways, for instance, content (online gaming) providers were encouraged and also allowed to grow.

Broadband has helped facilitate continued growth in electronic commerce. In particular there has been very high take-up of on-line banking and other financial transactions. Online stock trading witnessed sustained growth throughout the period of broadband diffusion. In July 2001, the ratio of online stock trading to the total trading accounted for 66.4%; it was 3.7% in December 1998 (Korea Securities Dealers Association, 2001). The number of online securities accounts has also risen considerably. In July 2001 there were more than 4 million online accounts, and over half of them were securities accounts. Internet banking is another area that has seen a huge growth. The number of internet banking users was 11.3 million in December 2001, a 2.8 times increase from 4.1 million at the end of 2000 (Bank of Korea, 2002). In terms of the percentage of users among the total population, South Korea is 24.2% with only two countries ahead (Sweden, 29.4%; Norway, 28% (Bank of Korea, 2002). It seems this is partly due to the fact that transactions have been made easier and faster by broadband and are therefore much more attractive to users.

The on-line gaming and entertainment sector has been another major beneficiary of the deployment of broadband. South Korea is now home to some of the world's leading on-line games companies. Strong competition in this sector has driven innovation in both products and business models and several of these companies are now focused on exporting their products, skills and expertise overseas.

<5> *Policy intermediaries*

Policy intermediaries (Papazafeiropoulou et al., 2001) are organisations that act between the government and citizens. They are not the users of the information technology, but the providers of it. As such they are termed as change agents (Rogers, 1995). They represent the supply side of the diffusion process.

According to OECD (2001), healthy competition between infrastructure networks and within each network technology (e.g. ADSL) plays a pivotal role in the deployment of broadband Internet. In South Korea there was, and is, vigorous infrastructure competition within and between ADSL and cable modem networks. While the government provided an environment for competition, the key momentum was given when new entrants like Thrunet and Hanaro started an aggressive launch of their services even though the incumbent was reluctant to enter the new area of DSL service. In particular, although Hanaro was licensed as a local carrier, the company saw no chance of winning over KT, the incumbent, in local calls. Therefore, they decided on concentrating on the new service area of broadband Internet to preempt the market. This aggressive strategy was so successful that it forced KT to offer its own DSL service. Therefore, the business strategies taken by industry affected decisively both the development and diffusion of broadband in Korea.

Apart from the key players in the broadband market, other entities can play a supportive role in the implementation of a national strategy. The *media* (press, radio and television), for example, can influence at a great scale the consumers about the use of new technologies and promote the opportunities of the new medium to companies and individuals. Referring to daily newspapers published in South Korea, it can be noted that the status of Internet use, the number of broadband subscribers and so on are regularly reported. For instance at the time of the writing of this paper, newspapers were emphasising the development of e-government in South Korea and its potential (Kim, J., 2002).

In this section we have analysed the strategies pursued by the major stakeholder, in this instance, the South Korean government, and their impacts upon other groups of stakeholders

in the broadband market. Figure 3 depicts a web of stakeholders and strategies in the broadband market in South Korea. This illustrates how policy measures were implemented in relation to the stakeholders. We have made some modifications on the original framework (Figure 2). Instead of consumers/citizens, companies and policy intermediaries, we use domestic users, user companies and service providers respectively because they better represent the real players in the case under study. We have also added another stakeholder group of R&D institutes. Table 4 describes what strategy or policy measure each number in Figure 3 represents in the broadband development in South Korea.

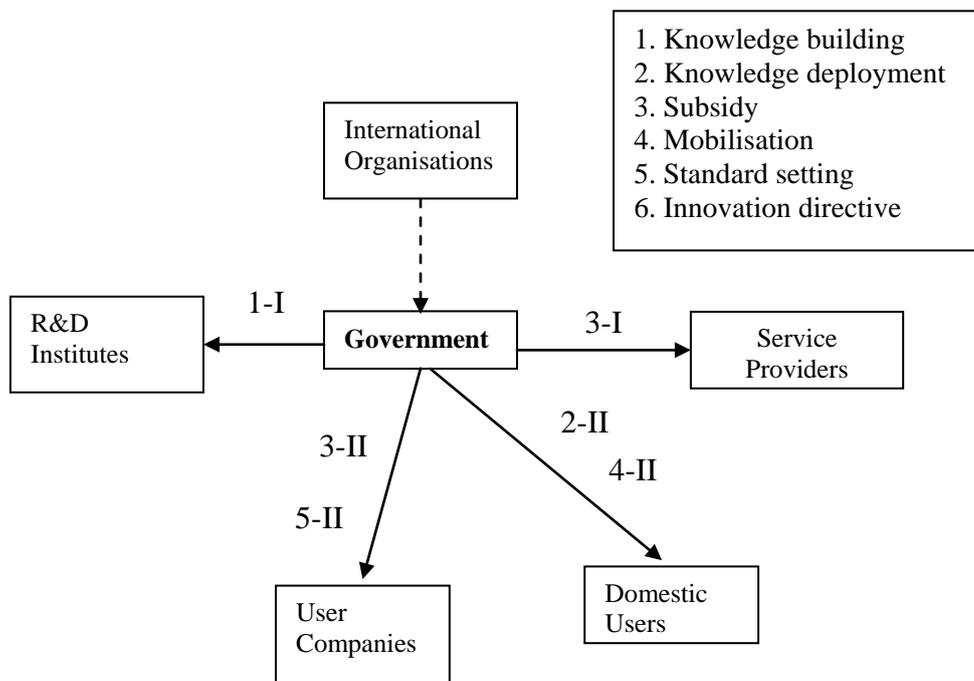


Figure 3. A web of stakeholders and strategies in the broadband market in South Korea

Table 4. Descriptions of the strategies

Relations	Strategies
Government-International Organisations	Only indirect influence observed
Government-Service Providers	Loans to FSP (3-I)
Government-User Companies	Certification (5-II)
Government-Domestic Users	Internet literacy programmes (2-II, 4-II, 3-II)
Government-R&D Institutes	R&D in KII (1-I)

6. CONCLUSION: IMPLICATIONS

We have examined the broadband development in South Korea from the perspective of stakeholder analysis and drawn a web of stakeholders and strategies. The web helps us identify how diverse groups of stakeholders are affected by various actions taken by the leading stakeholder, in this case, the government. We conclude the paper by discussing implications from two perspectives: those for other countries and one for the improvement of the framework.

As broadband is listed on top of the agenda for the growth of electronic commerce and IT development in many countries, government policies and roles in broadband deployment are increasingly seen as important (Umino, 2002). Three are three different approaches identified: light touch regulation, where the government takes on a minimal regulatory role (New Zealand and Switzerland), cooperative model, where the government focuses attention on policies aimed at specific areas and social groups that might otherwise suffer exclusion (Australia, Germany, UK, and USA), and comprehensive national plans, where the government makes a conscious policy decision to nurture and develop broadband through a variety of national initiatives (Korea, Norway and Singapore) (ITU, 2003b; Kelly, 2001). As each country has its own priorities on the policy agenda, a different approach is taken. In

1990s' Korea, where overcoming the financial crisis was on the top of the national agenda, government-led actions contributed to the fast development of the broadband. Furthermore, when it comes to government's investments on the broadband infrastructure, debates still go on in many countries. Whilst some are of the view that direct investment by the government is the key success factor in the Korean story, others disagree (Paltridge, 2003). However, there is a consensus that government investment certainly played a role - that of a catalyst. This investment in turn induced private companies to follow by ensuring the government's commitment to industry.

Although the Korean government played a leading role in setting a national vision and agenda for broadband, its measures to accomplish the vision relied on influence rather than regulations. Figure 3 shows that all the policy measures draw on influence (that is, cells I and II). The Korean government has consistently pursued telecommunication policies for competition, based on deregulation and market principles, since early 1980s. South Korea is an example of a steadily privatized and liberalized market (Singh, 2000). The Internet market was led by the same principle of deregulation and competition. There was little entry regulation for Internet services. The government's "hands-off policy" (Park & Lee, 2002) allowed any businesses which wanted to provide high speed Internet access to start and provide a variety of services following a simple registration procedure. This resulted in promoting high-speed Internet access infrastructure, and facilitated open competition in the high speed Internet market. The intense competition led to a low price, and subsequently a rapid increase in demand.

Figure 3 also shows that both supply-side (cell I) and demand-side (cell II) measures are fairly evenly used. At the planning stage of the KII, there were concerns over whether there would

be sufficient actual demand for the services the KII would provide. These concerns came from the government experience of the preceding project of the National Basic Information System (NBIS) which had focused mainly on the supply side, and some services were not used as anticipated (Jeong and King, 1997). Policy makers believed from the KBIS experience that KII's success depended on the creation of application services which would be highly demanded and widely used. The public must be prepared to use the new technologies and services so that they can benefit from the enhanced capabilities. Therefore, the government pursued a variety of policy measures to create Internet demands as well as networks. One example was the "Ten Million Internet Education" programme described above. This focus on the demand side contributed to the nation-wide Internet booming in Korea altogether with PC Bangs, online games, online stock trading, and so on (Kim, C., 2001).

Although the web of stakeholders and strategies is useful in highlighting the relationships between them, it gives only a restricted view, that is, a government-centred one. In the web model, the government is placed in the centre and the arrows only go out from the government to other stakeholders. No interactions between them are represented. It does not afford the possibility of a dynamic interplay between the stakeholders concerned. The framework tends to overemphasize the role of government, and thereby, loses sight of contributions possibly made by industry and private sectors. In the web model, we only see a well-orchestrated fleet commanded by the government. There is no room for dispute, rivalry and dynamics, which are often observed in the diffusion of an innovation. We close the paper calling for further research which can accommodate this other side of the story.

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