Volume 7, Number 2, 2000, pp. 37-52

Competitiveness of the Internet Industry in Korea and Japan: Case Studies of Korea Telecom Freetel and NTT DoCoMo*

Hwy-Chang Moon

Korea's well-developed mobile telephony network infrastructure makes it a globally competitive country in the field of wireless Internet. Korea Telecom Freetel has enjoyed the 'early-mover' advantage in the wireless Internet industry in Korea, although it was a 'late-comer' in the mobile telephony industry. The competition, however, is becoming harsher than ever, and the company is now seeking a breakthrough. For benchmarking, Japan's NTT DoCoMo was chosen for its tremendous success in the world's first commercialization of the wireless Internet. Using the diamond model (Porter 1990; Moon, Rugman and Verbeke 1998), the variables are analyzed and strategic recommendations are provided. One important conclusion is that Korea Telecom Freetel is taking advantage of its E-business implementation, but can be more competitive if its business environment is less restrictive. The results of this research will help policymakers as well as business people in making decisions to enhance the competitiveness of the Internet industry.

1. INTRODUCTION

Recently, the Internet has been expanding its territory from wired network into wireless network. Some analysts firmly believe that the use of the wireless Internet will surpass that of the wired Internet by the year 2003. Although both Korea and Japan are the early movers in the wireless Internet industry in the global market, Korea is not yet as competitive as Japan. The main purpose of this research is to compare and contrast the Internet industries of Korea and Japan, and to suggest some strategic guidelines for Korea to enhance its international competitiveness in the Internet industry.

As Korea began to recover from its economic crisis in 1999, it experienced a significant spread of the Internet usage supported by the change with Korea's informational infrastructure. The number of subscribers of high-speed access lines has increased sharply, and the line speed has also evolved from the ISDN lines (up to 128Kb/sec) to the ADSL or CATV lines (up to 10Mb/sec). The number of PC rooms or cyber cafés, which are equipped with high-speed access line service, has also increased. Despite some structural imbalance problems, the wired network infrastructure of Korea dramatically improved in a very short time frame. However, the usage of wired Internet has certain physical limitations. Items such as high speed access lines and PCs with connecting devices are necessary preconditions for access to wired Internet.

* Acknowledgement

This is a revised version of a part of the research project that was originally conducted, under my guidance, by a group of researchers - Jeong-Lan An, Sun-Jong Bu, Seong-Mo Hong, Min-Keun Junn, Eun-Hee Kim, Hyung-Joon Kim, Joon Lee, and Kyoung-Dong Lee (in alphabetical order). All of these researchers are experts in the Internet and Information Technology. I acknowledge their tremendous efforts in the preparation of this paper.

On the other hand, Korea has been one of the leading countries with increasing wireless telephone users since mid 1990s. As evidence, almost half the population possessed their own cellular phones in the year 2000. However, people who were already acquainted with the variety and convenience of the wired Internet, were not satisfied with the simple technological functions of their cellular phones such as voice transfer and limited text. Therefore, the fusion of two favorite information technologies was inevitable. Now, the two axes of the informational revolution met – The wireless Internet is on the market.

Korea Telecom Freetel (hereinafter KTF), an affiliate of Korea Telecom (hereinafter KT) for wireless telecommunication, was first in starting wireless Internet service in Korea in October 1999. The company has clearly enjoyed the 'early-mover' advantage and soon boasted the greatest number of wireless Internet subscribers in Korea. However, there is still room for enhancing its competitiveness to achieve further success. Appropriate strategies for this purpose will be addressed later in this paper.

In February 1999, Japan's first attempt at commercializing the wireless Internet was a huge success. NTT DoCoMo, an affiliation of NTT (Nippon Telegraph and Telephone Corporation), was the early entrant in the Japanese wireless Internet market. In many ways, KTF and NTT DoCoMo are quite comparable. Their parent companies share similar characteristics and their host countries, Korea and Japan, share close geographical proximity as well as similar economic structures. For these reasons NTT DoCoMo was selected as the benchmark for enhancing the competitiveness of KTF's wireless Internet service.

2. METHODOLOGIES

We will use the diamond model to analyze the competitiveness of KTF and NTT DoCoMo. This model was originally developed by Porter (1990), and improved by other scholars (Moon, Rugman and Verbeke 1998). The model is very useful and widely used in analyzing the international competitiveness of nations, industries, and firms. The diamond model is particularly useful when several competing firms need to be simultaneously contrasted along different dimensions of business operations. Sun Tzu (1986), the famous ancient Chinese military strategist, said in *The Art of War*: "One who knows the enemy and knows himself will not be in danger in a hundred battles." The diamond model is a very versatile and powerful tool for this purpose.

Originally, the diamond model was the result of a series of analyses of a nation's competitiveness (Porter 1990). However, its insufficient insight about internationality, governmental impact and cultural background was criticized by scholars including Rugman (1991), and Moon, Rugman, and Verbeke (1998). After some improvements, the diamond model was modified to fit an analysis of an industry's competitiveness (Moon and Kim 1999).

In this paper, the diamond model will be used for analyzing business strategies at both industry and firm levels. In the wireless Internet industry, NTT DoCoMo's current situation represents the future trend that KTF may want to benchmark. Therefore, we collected the data of both companies and compiled them into two groups – before and after the wireless Internet business, and indexed them to fit into the model. There are some restrictions on the use of the data in this paper. Most of the KTF's data were from its internal reports, so we changed and modified some figures within the boundary that does not change the result of the research to avoid any undesirable impact. The 'before' time period for KTF is December

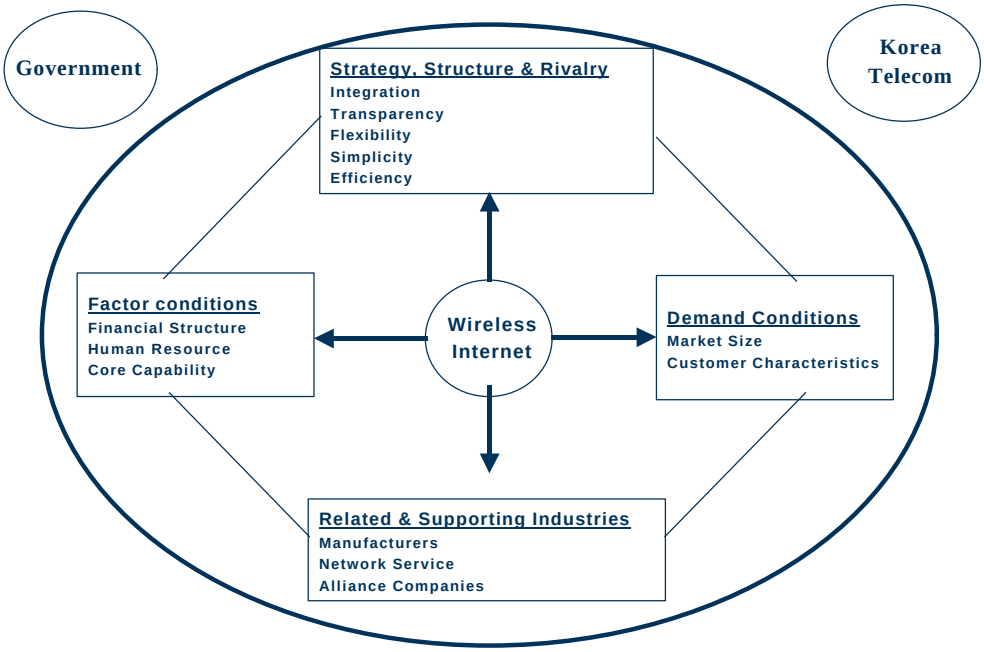
31, 1999, and 'after' is May 31, 2000, while February 28, 1999 and May 31, 2000 are the respective before and after periods for NTT DoCoMo.

We then categorized all the data into four dimensions following the typical diamond model: factor conditions; demand conditions; related and supporting industry; and firm structure, strategy, and rivalry. We then added two more dimensions, which were not independently referred to in the original diamond model: the governmental effect and parent company' effect.

To draw the diamond figure, we set NTT DoCoMo's data as a calculation basis of having a fixed scale of 5, using a maximum scale of 10 for each dimension. We also gave numerical values on qualitative determinants to draw quantitative figures.

We will begin with a brief history of KTF and then analyze its current situation of wireless Internet service using the diamond model. Next, we will compare all the dimensions of KTF with those of NTT DoCoMo and suggest strategic recommendations for KTF.

Figure 1. The diamond model for KTF's wireless Internet service



3. ANALYSIS AND DISCUSSIONS

When KTF, as an affiliation of KT, started its business in October 1997, there were four other competitors in the wireless telephony industry led by SK Telecom. Despite the disadvantage of "late entry," KTF succeeded in increasing subscribers within a relatively short period of time and inducing investments from foreign companies including Microsoft and Qualcomm.

KTF started its wireless Internet service (named PersNet) in September 1999, only seven

months after NTT DoCoMo's wireless Internet service (named i-mode) was launched. But the number of the PersNet subscribers did not significantly increase until December 1999, while i-mode enjoyed immediate success. However, by the beginning of the year 2000, the number of PersNet subscribers exploded and KTF won first place among its competitors. However, the competition is becoming tougher, and KTF needs to consider new strategies to stay competitive in the market. We will now analyze the competitiveness determinants in detail.

3.1. Factor Conditions

We divided the determinants of factor conditions into three groups: financial structure, human resources, and core capabilities. Financial structure is a basic condition while human resources and core capabilities are the advanced conditions. All the data values are presented in table 1.

Table 1. Factor Conditions

Variables		KTF		NTT DoCoMo	
		Before	After	Before	After
Financial Structure	Sales Structure (Data/Voice)	0.00%	0.08%	0.00%	1.60%
	Credit Rate of Corporate Bond	A	A	A	A
	R&D Expense in the wireless Internet	0.00%	22.46%	0.00%	35.29%
Human Resources	Total Number of Regular Employees	844	987	13,720	15,100
	Subscribers per Employee	5,056	5,123	1,742	2,013
	Sales per Employee (in Million Won)	2,663	2,577	2,386	2,586

Core Capabilities	Public Recognition	High	High	High	High
	Image and Brand Preference	High	Mid	High	High

Source: KTF Financial Report - Fiscal year of 1999 (2000), Internal Report (2000), NTT DoCoMo Financial Report - Fiscal year of 1998 (1999), 1999 (2000)

To analyze the financial structure of KTF and NTT DoCoMo, we selected three variables. The first variable is the changing situation of the industry (sales portion of data transmission vs. voice transmission). The second variable is the factor that attracts foreign investors (credit rate of corporate bond). The last variable is the intention to develop more advanced technology needed for the wireless Internet (R&D expenses on the wireless Internet).

NTT DoCoMo's sales portion of data transmission is larger than KTF's due to the time gap of starting the service. The absolute numbers, however, are fairly small, compared with the voice transmission sales. The credit rates of both companies are extremely good. It is partly because both companies are the affiliates of the two nations' telecommunication monopolies. With the booming environment of the Internet industry's expectations and prospects, KTF has succeeded in drawing some foreign investment. R&D expenses on the wireless Internet are smaller than we expected. Both companies are preparing the IMT-2000 service and the portion of that R&D expense is increasing faster than that of the wireless Internet itself. However, the expenses are still large, reflecting their interests in maintaining a continuous and stable network with a fast development speed.

As a matter of fact, a company like KTF – the network provider – need not have its own special technologies except for its network stabilization and customer billing system, which are related to the demand conditions for customer services. Most of the technologies used are in cooperation with the related and supporting industries such as handset manufacturers, content providers, portal service providers, and some financiers for non-cash payment through strategic alliances.

One of the main determinants of the advanced conditions is human resources. In KTF's case, the government controlled recruiting restriction is the most serious and urgent problem that has to be solved. The governmental restriction is an out-dated example of red-tape bureaucracy. In this industry, human resources are the most powerful factor for survival and prosperity in the severely competitive environment. Despite the problem, each of KTF's regular employees has been succeeding in enrolling more customers than other domestic competitors and KTF has also been a leader in the number of sales per employee.

Although a network provider like KTF does not need any specific technology, the company has its own core capabilities. The inborn merit of being an affiliate of KT can be a core capability – the public recognition and the reliability of the parent company. KTF succeeded in capturing the lion's share in the domestic wireless Internet market despite the inferiority of the existing wireless voice telecommunications market. This was basically attributable to the "early mover advantage" strategy in the market. But continuous success in the wireless Internet needs innovative images that can meet the market trend (young, fast, easily accepting, etc). However, current company images of KT (conservative, big and slow, old, stubborn, etc) can harm or cannibalize the innovative image and the brand recognition of KTF. KTF realizes that it must accommodate its customers more through advertising. In

contrast, NTT DoCoMo is in a better position because it faces less intervention by its parent company and the government compared to KTF.

3.2. Demand Conditions

KTF is in a transition period from voice services to data services. In analyzing demand conditions, we also segregated the variables into two distinct areas - before and after the wireless Internet. By comparing the market shares of KTF before and after the wireless Internet service, we will show the impact of the E-business on KTF.

The total number of mobile phone subscribers in Korea is 20 million. The number of KTF's mobile phone subscribers was 4.2 million at the end of the year 1999. As of May 31, 2000, there were 5 million KTF mobile phone subscribers. During the five-month period, mobile phone subscribers increased by 19 percent. The total number of KTF subscribers who were using the wireless Internet increased from zero to 500,000 during the same period of time. Although the growth rate is remarkable, the market shows that the voice service market is getting saturated and very competitive. KTF's current growth rate is becoming moderate compared to the growth rate KTF has achieved in the past.

Table 2. Demand Conditions

Variables	KTF		NTT DoCoMo	
	Before	After	Before	After
Number of Total Subscribers	4.2 Million	5.0 Million	23.9 Million	30.4 Million
Market Share in Mobile Telephony	18.20%	18.60%	57.50%	57.40%
Number of Subscribers Using the Wireless Internet	0 Million	0.5 Million	3.3 Million	7.3 Million

Source: KTF Internal Report (2000), The Electronic Times (July 2000), NTT DoCoMo Homepage – http://www.nttdocomo.com

After KTF began its wireless Internet service, 500,000 of KTF's customers were using the Internet via mobile phones. Currently, about 10 percent of the KTF mobile phone subscribers are using the wireless Internet. Most of the wireless Internet users are under the age of 40. Users in their 20s and 30s are the major users, but teenage users spend the most time in using a variety of the wireless Internet services. It has not been measured quantitatively, but it appears that the interests of the teenage users are closely related to the Internet environment. Considering the growth rate of market penetration, these results show that customers want different types of services.

KTF will have to provide new services through E-business, including the wireless Internet. There are 5 million KTF mobile phone subscribers and among them 500,000 use the

Internet through a mobile phone. This means that KTF has another 4.5 million potential subscribers who may want to use PersNet. KTF's mobile phone subscribers are the company's important asset and should be kept loyal to the company.

For benchmarking, we compared KTF with NTT DoCoMo. We studied NTT DoCoMo's market share before and after E-business. NTT DoCoMo began to provide data services through i-mode in February 1999. The company has had an incredible growth rate since it started i-mode, which provides data services through mobile phone. NTT DoCoMo's market share is currently 57.4 percent. KTF has improved its demand conditions since it launched E-business. However, KTF has not been as successful as NTT DoCoMo. The comparison of the two companies' competitiveness figures (Table 2) will provide KTF with strategic guidelines for enhancing its competitiveness on various dimensions.

3.3. Firm Structure, Strategy, and Rivalry

We studied the competitiveness of firm strategy, structure, and rivalry (SSR) of KTF comparing before and after E-business. E-business can be categorized into two dimensions: E-commerce as an external transaction and E-management as an internal activity. This last dimension, SSR, is mainly related to the internal managing and strategic activities that can be categorized as E-management dimension.

The variables of SSR are divided into six categories: integration, transparency, efficiency, simplicity, flexibility, and rivalry. Each category has its own measurement, which is used in the questionnaire for the empirical fieldwork.

-Integration: Ease of company data sharing, Company-wide vision sharing, Integration of departmental strategies

-Transparency: Non-existence of company corruption, Ease of leadership estimation, Management transparency

-Flexibility: Ease of strategic correction, Outsourcing

-Simplicity: Ease of decision-making, Slim structure, Ease of process standardization

-Efficiency: Increase in job efficiency

-Rivalry: Increase in the number of competitors

For the empirical study, we interviewed 40 middle management positions employees in KTF. We distributed a questionnaire and analyzed the responses into 6 categories. The questionnaire is presented in Table 3, and the responses are presented in Table 4.

Table 3. Survey Questionnaire for SSR
Do you think following items improved after implementing E-business?

	No			So-So				Yes		
Q1. Ease of decision-making	1	2	3	4	5	6	7	8	9	10
Q2. Ease of company data sharing	1	2	3	4	5	6	7	8	9	10
Q3. Company-wide vision sharing	1	2	3	4	5	6	7	8	9	10
Q4. Decrease of company corruption	1	2	3	4	5	6	7	8	9	10
Q5. Management Transparency	1	2	3	4	5	6	7	8	9	10
Q6. Integration of Dept strategies	1	2	3	4	5	6	7	8	9	10
Q7. Increase of job efficiency	1	2	3	4	5	6	7	8	9	10
Q8. Ease of leadership estimation	1	2	3	4	5	6	7	8	9	10
Q9. Ease of process standardzation	1	2	3	4	5	6	7	8	9	10
Q10. Slim structure	1	2	3	4	5	6	7	8	9	10
Q11. Outsourcing	1	2	3	4	5	6	7	8	9	10
Q12. Ease of strategic correction.	1	2	3	4	5	6	7	8	9	10
Q13. Increase in number of rivalries	1	2	3	4	5	6	7	8	9	10

Table 4. Survey Results for SSR

Interviewee	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
1	5	7	8	5	5	7	7	7	8	8	7	3	8
2	6	4	4	7	7	5	5	4	7	7	7	4	7
3	4	6	3	2	4	6	5	5	8	5	8	4	8
4	7	8	8	8	9	7	8	6	5	5	7	9	7
5	6	5	7	9	9	7	7	8	7	5	10	5	10
6	8	6	6	8	8	5	8	7	8	6	8	8	5
7	8	6	3	3	5	5	8	7	5	5	5	3	5
8	8	7	5	7	8	9	9	4	5	6	6	4	6
9	6	7	8	8	8	7	8	9	9	9	9	8	8
10	8	8	7	7	9	5	7	7	8	4	6	6	6
11	4	7	5	3	3	3	8	3	3	5	3	3	9
12	8	8	7	5	8	9	8	8	9	9	9	7	8
13	6	5	5	5	5	8	8	6	7	6	6	7	6
14	4	4	5	4	4	5	4	3	3	3	2	4	3
15	8	8	3	5	7	9	8	8	7	5	7	5	9
16	7	6	3	4	4	4	8	6	8	8	7	4	6
17	8	8	7	6	8	7	7	8	8	5	5	6	9
18	4	8	3	7	3	3	8	5	5	9	8	6	9
19	4	3	7	6	6	6	7	6	3	2	3	3	9
20	8	7	7	7	8	7	9	8	6	5	6	8	9
21	5	3	3	8	10	7	7	3	8	5	7	3	3
22	8	9	6	6	6	9	8	7	8	9	8	8	8
23	6	5	5	5	5	4	7	6	7	4	6	5	5
24	8	5	3	6	8	7	8	5	6	3	8	5	5
25	8	8	8	8	8	7	8	8	7	9	9	7	9
26	8	8	7	7	8	8	9	7	8	8	7	7	9
27	6	4	7	4	4	3	7	5	6	5	6	3	3
28	6	5	7	8	8	5	4	8	5	3	3	8	8
29	6	6	6	7	6	5	7	5	7	5	5	5	5
30	8	8	5	5	7	9	9	5	8	6	5	6	6
31	8	7	3	6	6	6	7	7	8	7	8	3	8
32	8	7	7	7	8	8	9	9	9	6	6	8	8
33	8	5	5	5	5	7	8	6	8	7	5	5	5
34	9	6	6	4	5	7	8	7	7	7	4	6	4
35	5	4	6	6	6	4	6	4	5	4	5	5	5
36	6	7	7	5	4	6	6	5	5	6	9	7	5
37	8	9	7	4	3	3	8	4	3	3	7	3	10
38	5	5	5	6	4	4	8	4	3	5	5	3	6
39	5	8	6	8	8	7	8	5	8	6	7	7	8

40	8	8	9	5	6	8	8	7	8	7	9	8	6
Sum	266	255	229	236	253	248	297	242	263	232	258	219	273
Avg	6.7	6.4	5.7	5.9	6.3	6.2	7.4	6.1	6.6	5.8	6.5	5.5	6.8
Increase %	33.0	27.5	14.5	18.0	26.5	24.0	48.5	21.0	31.5	16.0	29.0	9.5	36.5
Avg Increase	24.9												

As shown in Table 4, the survey results show that the competitiveness of KTF in SSR has increased 24.9% after E-business. We can see specific findings for each category as follows:

-Simplicity: Slim structure has not been fully completed although the decision-making process has been simplified from five to three steps

-Integration: Thanks to process standardization and ease of communication, strategy integration has been enhanced

-Efficiency: It has benefitted the most after the introduction of E-business

-Transparency: Management transparency has sharply been enhanced

-Flexibility: Outsourcing has been very active in KTF due to the government regulation on the number of employees, although timely strategic correction has not been made

-Rivalry: The number of competitors has increased sharply by 36.5 percent. However, unlike the competitiveness analysis of nations using the diamond model, an increased number of competitors may be controversial as to whether it should be regarded as a competitive gain or not.

To sum up the competitiveness changes in SSR, KTF has experienced dramatic changes in every SSR area with the implementation of E-business, especially in outsourcing and decision-making steps. Unfortunately, the benefits of improved outsourcing and decision-making have not yet led to the full-scale realization of flexible and slim structure of the company. There is room for improvement.

3.4. Related and Supporting Sectors

The mobile Internet has influenced it Is related and supporting (R&S) sectors in various ways. In some cases, the start of mobile Internet service began new businesses such as wireless portal services, mobile Internet games, and mobile Internet content providers. New business through mobile Internet also activates other service areas such as payment by digital cash.

Traditional and typical R&S sectors of wireless carriers are manufacturers of mobile handsets and mobile systems. The service of wireless carriers has been heavily dependent on the technical evolution of handset and system vendors. This tendency continues in the E-business era. In order to provide mobile Internet service, wireless carriers need to set up a new system or change their network system for Internet access. The development of Inter Working Function (IWF) that provides modem and router functions in wireless networks and wireless internet terminals such as Internet phones and smart phones is a good example of how other industries support wireless carriers. Handset and system vendors are trying to meet the wireless carrier’s needs and requirements arising from the change from voice based service to data based service.

However, there is a big difference in the scope of R&S sectors between "before E-business" and "after E-business." After E-business, new R&S sectors are emerging from the E-business area. Wireless portal, which is a new concept of business starting from mobile Internet, is being served in the mobile Internet environment. Contents, entertainments and

games are available with wireless portals, and these portals are trying to evolve to M-commerce activation. The emergence of wireless portal shows how E-business stimulates the creation of new businesses. The number of wireless portal service providers is drastically on the rise, supplying various services with various contents.

In addition to wireless portals, E-business makes wireless carriers forge a relationship with existing industries. Banks, stock companies, and credit card companies seek to make alliances with wireless carriers for the development of new services in the mobile Internet environment. A new way of payment, digital cash, is becoming an essential part of M-commerce and wireless carriers should determine which digital cash company is suitable for strategic alliance. Therefore, the number of strategic alliance partners in each R&S sector is increasing. The scope of wireless carriers' R&S sector is getting wider and wider in the E-business era.

To compare KTF and NTT DoCoMo, the selected variables for analysis are the number of handset manufacturers, the number of produced handsets, the number of wireless portals, and the growth rate of advertisement in the Internet. The number of strategic alliance partners is also considered to compare the competitiveness of KTF and NTT DoCoMo. The result is shown in Table 5. One interesting finding is that KTF has more handset vendors than NTT DoCoMo, although NTT DoCoMo produces more handsets than KTF.

Table 5. R&S*

Variables		KTF		NTT DoCoMo	
		Before	After	Before	After
Indirect	No. of wireless portal service	0	14	6	20
	No. of Handset Manufacturer	12	17	11	12
	No. of Handsets Manufactured	10 Million	3 Million	27 Million	15 Million
	% Change in Promotion Expenses	200%	600%	211%	329%
Direct	No. of Alliance Companies	3	3	5	12

Source: KTF Internal Report (2000),
NTT DoCoMo Homepage – http://www.nttdocomo.com,
Korea Internet Marketing Center – http://www.marketcast.co.kr
The Electronic Times, Korea Economic Daily, Maeil Business Newspaper,
The Chosun Ilbo, The Donga Ilbo, Businessweek, Fortune Magazine

* The data values on this table are reasonably estimated, because there are significant differences in data gathered from a variety of sources.

3.5. The Government

The Korean government has a great impact on KTF in various ways. However, the government's influence on KTF has had more negative effects on its business activities than positive effects. First, the Ministry of Information and Communications (MIC) appoints the auditor of KTF, who can have an internal influence on managerial decisions at the board of director's meetings.

Second, several government agencies such as the Ministry of Planning and Budget (MPB) and the Board of Audit and Inspection (BAI) implement audits that require much time and energy for KTF. Although KTF is a private corporation that is composed of many individual shareholders, government agencies control KTF.

Third, the MPB limits the number of employees. As a result, KTF cannot recruit enough employees to implement its key businesses such as the wireless Internet. Due to an insufficient number of employees, KTF employees have an increased workload. As a result, some capable people may want to leave the company.

Fourth, the MPB directs KTF policies. Budget and employees' fringe benefit plans are among those areas. Furthermore, KTF cannot unilaterally raise the employees' salary nor can it implement stock options or fringe benefit plans that improve employees' welfare. The government's intervention in KTF makes KTF less competitive and unable to effectively compete with other service providers that can freely recruit capable manpower. If KTF is not flexible in recruiting capable people, it will face serious problems in implementing its wireless Internet business and other new businesses.

Fifth, the government is influencing the parent company KT, in deciding future technologies such as IMT-2000. The governmental influence on KT's selection of technology will, in turn, have a significant influence on KTF's selection of technology.

Finally, the government policy changes disturb the market mechanism. For example, the government policy on handset subsidies attracted a number of customers. When the government abolished the lock-in period, many customers moved to other service providers. As a result, KTF had to spend a huge amount of money to retain its customers. Later, the government eliminated the handset subsidy. Due to that change, not only KTF, but other mobile carriers experienced a decline in subscribers.

Unlike KTF, which has been heavily regulated by the Korean government, NTT DoCoMo is very flexible in doing business. NTT DoCoMo has autonomy in recruiting and budgeting. The Japanese government decides neither the handset subsidy policy nor technology standard. In Japan, six to seven mobile carriers (including PHS) are competing in each market block. The government's pro-competition policy results in lower airtime rates and monthly basic charges. The higher competitiveness of NTT DoCoMo is partly due to less intervention by the Japanese government in the Internet market.

3.6. The Parent Company

KT contributed to KTF's success in several ways. In the beginning stage, KT did not intervene much in KTF's business activities or managerial decisions. KT's reliable brand image gave KTF a positive image in attracting a number of new customers. KT also guaranteed KTF's loan so that KTF didn't have any difficulties in drawing outside capital. In the marketing area, KT was also supportive, allowing KTF to have an integrated billing system with KT.

However, since 1999, the situation has changed. KT has been strengthening its influence on the management of KTF. For example, at the beginning of 2000 KT appointed two boards of directors. The two non-standing boards of directors in charge of important positions are currently working for KT. Somehow, they may negatively affect KTF when there are conflicting interests between KT and KTF. KT's intervention will weaken KTF's competitiveness in fast decision-making and exploration of new businesses. In addition, KT's intervention on KTF's technology selection will negatively influence KTF's R&D staff members.

The business areas of KT and KTF are overlapping. For example, KT and KTF both entered business areas such as wireline portal sites, Internet broadcasting, and IMT-2000 (a next-generation mobile communication service). Although KT and KTF have been working together to obtain the IMT-2000 license, each company insists that it should become the leader of this project.

In contrast, NTT DoCoMo is enjoying its autonomy in various ways. The company recently received approval from the Ministry of Posts and Telecommunications to launch IMT-2000. Whereas KT and KTF fight over primary leadership, NTT does not enter its subsidiary's business area. NTT DoCoMo selected its technology for IMT-2000 without intervention by NTT. NTT DoCoMo will begin its initial service in May, 2001.

We have found that the parent company's influence is substantial to its subsidiary. KTF was more competitive than other mobile carriers in terms of drawing a number of customers and exploring new businesses such as the wireless Internet. However, KTF will lose its competitiveness if KT continues to influence KTF's business activities. The E-business era requires fast decision-making and active business implementation. KT's intervention will delay KTF's business activities and thus weaken KTF's competitiveness.

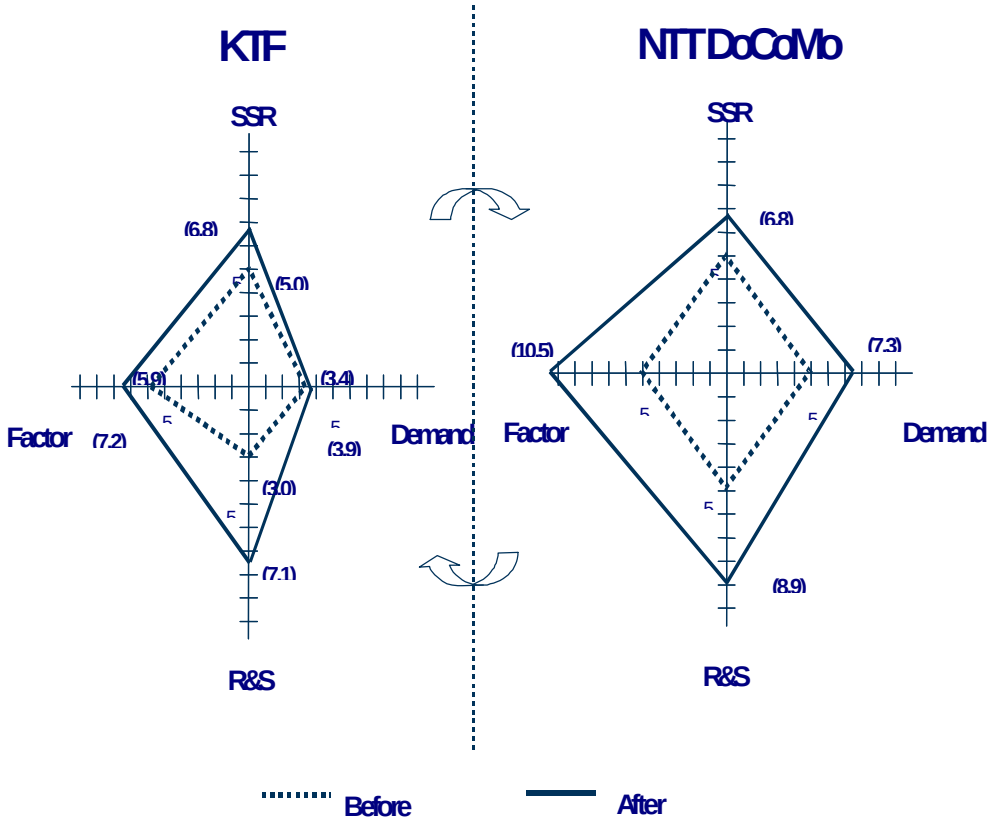
4. RECOMMENDATIONS

The new mobile multimedia, coming from the wireless Internet, has its own value chain. It consists of content providers, service packages, gateway/transport operations, software/hardware interface manufacturers, and customer management. Through this value chain, with thorough understanding and analysis of the current competitiveness, companies can set up their strategies for the future.

Figure 2 illustrates the diamonds of KTF and NTT DoCoMo before and after the introduction of the wireless Internet. As shown, KTF's current diamond is smaller than NTT DoCoMo's, meaning that the current competitiveness of KTF is weaker than NTT DoCoMo's.

Then, how can KTF become more competitive in the wireless Internet industry? Here we offer some strategic tips with the analysis of the current situation at KTF.

Figure 2. The Dimonds of KTF and and NTT DoCoMo before and after the wireless Internet



KTF's factor conditions and demand conditions have more room for improvement to be more competitive, rather than R&S and SSR. As for factor conditions, KTF must:

-increase the business portion of the wireless Internet

-spend more on the wireless Internet's R&D

-recruit more regular employees to implement a variety of new businesses

-enhance the corporate brand image

-implement a promotional plan that is suitable to the wireless Internet.

Fortunately, however, the company's employee productivity is the highest among domestic mobile carriers, and should be maintained as such.

There is also a large room for improving KTF's demand conditions. The market size of the wireless Internet will rapidly increase, so that KTF should induce more mobile-phone-only users into PersNet. In addition, KTF has to develop a variety of services for young users in their 20s, who are the majority of KTF subscribers of PersNet. It should also consider teenage-users, whose portions are small but whose penetration rates are high.

There is not a significant gap in R&S and SSR sectors between KTF and NTT DoCoMo. For R&S sector, KTF should maintain its 'early-mover advantage' in the domestic market by developing a variety of handsets that are suitable for wireless Internet service. In addition, it needs more strategically allied companies like content providers.

KTF's SSR has the narrowest gap compared with NTT DoCoMo's, although it does not

mean that the company needs no improvements or enhancements. There is still some room for improvement. First, KTF should develop a check and balance system to implement transparent management. Second, KTF needs to develop or modify its corporate vision so that it fits better with the mobile multimedia business in the 21st century. Third, KTF needs to restructure its corporation to maintain a slim structure. Finally, it has to expand outsourcing for more flexibility and develop timely ad-hoc strategies in case the business environment dramatically changes.

We need to consider two more external dimensions of the typical diamond model: governmental impact, and parent company's impact. As for the governmental impact, KTF needs to make an effort to be freed from governmental red-tape restrictions such as recruiting and budgeting. In addition, the current issue of the handset subsidy should be solved through cooperation with other service providers. KTF also needs to persuade its parent company, KT, to allow more autonomy and flexibility.

5. CONCLUSION

The future of the wireless Internet is wide open and promising. The whole extent of the industry – networks, handsets, and contents – is being developed more rapidly than ever. The competition, however, will be harsher than ever, too. All the players in this industry will compete for the lion's share, even though they are not all 'early movers'. KTF has been the 'early mover' by providing the wireless Internet service for the first time in the domestic market, and it has been very successful in the industry. However, KTF is facing strategic issues such as how to maintain its early mover advantage and how to direct its future path in the area of the wireless Internet service.

The diamond model is a very useful tool in analyzing the current KTF's competitiveness in the wireless Internet service and to show how to increase the firm's competitiveness in that area. Our analysis has shown that KTF needs to improve its factor conditions and demand conditions more than its R&S and SSR, in order to maintain and enhance its competitiveness. We have also found that outside determinants such as the government and the parent company can make a great impact on KTF's competitiveness. The less external intervention KTF has, the more competitiveness KTF will acquire.

REFERENCES

Dodd, Annabel Z. , 2000, *The Essential Guide to Telecommunications* – 2nd edition, Upper Saddle River: Prentice-Hall Inc.

Fortune Magazine, http://www.fortune.com

Korea Internet Marketing Center, http://www.marketcast.co.kr

Korea Telecom Freetel, 2000, *Internal Report,* Seoul: Korea Telecom Freetel

Korea Telecom Freetel, http://www.n016.co.kr

Maeil Business Newspaper, http://www.mk.co.kr

Moon, H. Chang & Kim, Seon-Sik, 1999, "Location advantages of Korea for the telecommunication industry: The generalized double diamond approach," *International Business Journal* 10(1): 107-127.

Moon, H. Chang, Rugman, Alan N. & Verbeke, Alain, 1998, "A generalized double diamond approach to the global competitiveness of Korea and Singapore," *International Business Review* 7: 135-150.

NTT DoCoMo, 1998, *Financial Report of NTT DoCoMo – Fiscal year of 1998.*

NTT DoCoMo, 1999, *Financial Report of NTT DoCoMo – Fiscal year of 1999.*

NTT DoCoMo, 1999, *Financial Report of Korea Telecom Freetel – Fiscal year of 1999.*

NTT DoCoMo (English version), http://www.nttdocomo.com

Porter, Michael. E., 1990, *The Competitive Advantage of Nations,* New York: Free Press.

Rugman, Alan M., 1991, 'Diamond in the rough', *Business Quarterly* Winter 55(3): 61-64.

Sun, Tzu & Samuel B. Griffith (English translator), 1986, *The Art of War,* Oxford: Oxford University Press.

The Electronic Times, http://www.etnews.co.kr

The Korea Economic Daily, http://www.hankyung.com

Hwy-Chang Moon. The School of International and Area Studies, Seoul National University, San 56-1, Shilim-dong, Kwanak-ku, Seoul, Korea. Tel: +82(2)880-8518.
E-mail: hcmoon@sias.snu.ac.kr