THE KOREAN TELECOMMUNICATION INDUSTRY

by Byung-You Cheon

Korea's telecommunication industry has experienced a recent flurry of activity and is poised for explosive sales and growth in the years ahead, while other Korean manufacturing industries including the electronics industry are experiencing slow growth due to deteriorating competitiveness.

The telecommunication industry is leading Korea's economic growth, recording a 26% growth rate of value-added between 1992 and 1995. Its contribution to economic growth rose from 4.4% in 1992 to 13.6% in 1995, surpassing the 4% contribution of the automobile industry. The share of value-added in the telecommunication industry to GDP is expected to increase from 6.9% in 1996 to 10% in 2001. It will create 430,000 jobs over the next 5 years (1997-2001), which amounts to 14% of the new jobs expected to be created over that period.

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〈Table-1〉 The Production Volume of Korea's Telecom Industry

(Unit:1 million dollars)

	1991	1992	1993	1994	1995	1996	2001 (Est.)	'97-2001 average annual growth rate
telecom equipment	2,650	2,681	2,966	3,678	4,187	4,659	8,775	
growth rate		1.2%	10.6%	24.0%	13.8%	11.3%	13.1%	13.89%
share	10.1%	9.4%	9.4%	9.2%	8.4%	8.2%	6.4%	
information equipment	3,499	3,647	4,212	4,876	5,461	6,062	10,843	
growth rate		4.2%	15.5%	15.8%	12.0%	11.0%	12.1%	12.51%
share	13.4%	12.8%	13.3%	12.2%	10.9%	10.7%	7.9%	
parts and components	11,781	12,793	14,151	19,305	23,882	26,084	65,835	
growth rate		8.6%	10.6%	36.4%	23.7%	9.2%	19.3%	20.77%
share	45.0%	44.9%	44.7%	48.1%	47.8%	45.9%	48.2%	
software	917	1,073	1,401	2,022	2,847	3,780	17,196	
growth rate		17.1%	30.5%	44.3%	40.8%	32.7%	34.9%	36.06%
share	3.5%	3.8%	4.4%	5.0%	5.7%	6.7%	12.6%	
telecom services	7,350	8,306	8,962	0,220	13,591	16,183	33,930	
growth rate		13.0%	7.9%	14.0%	33.0%	19.1%	16.6%	16.07%
share	28.1%	29.1%	28.3%	25.5%	27.2%	28.5%	24.8%	
Total	26,197	28,500	31,692	40,101	49,968	56,767	136,580	
growth rate		8.8%	11.2%	26.5%	24.6%	13.6%	19.3%	19.65%

Sources: Korea Information Society Development Institute

the past, Korea's telecom industry is now at a turning point, facing a new world of liberalization and competition previously unencountered. This could raise a lot of obstacles to the future development of the industry. The Korean telecom industry can overcome these obstacles only by securing sufficient technological capabilities and management skills.

Industry Overview

The total production volume of Korea's telecom industry was 50 billion dollars as of 1995, which ranked it 9th in the world with a 2.86% market share of the total global market. The industry's structure is hardware-oriented, with parts accounting for 67.1% of the industry's production, while the telecom services had 27.2% and software had only 5.7% (See Table 1). The global market share of parts (mainly semiconductor chips) was 9.1%, ranking it 3rd in the world market, while software's share was only 1.16%.

Even though the technology of Korea's telecom industry has advanced fast, the overall level of the technology is still low. The technology gap between Korea and the developed countries is estimated to be 3-4 years, which is not small in the light of the fast-advancing technology of the telecom industry. The technology-related trade-deficit in this industry is almost 20% of the total deficit. Research and development expenditures in this industry amounted to 3.3 trillion won (4.2 billion dollars), 7.27% of total production as of 1995. This percentage is not so low in comparison to Japan's 6.4% and the U.S.'s 9%. In terms of overall amount spent on R&D, however, Korea still falls short of Japan and the U.S.. In particular, basic research is weak in this industry. The share of basic research expenditures to total R&D expenditures in this industry is only 7.8%, which does not measure up to the 12.5% in all industries and the 17-20% in developed countries's telecom industries.

These facts show that even though the telecom industry has grown very fast, the technological and structural base of it is still weak. The Korean government is going to pour 10 billion dollars into this industry, aiming to have it rank fifth in the world in the 21st century.

Introduction of Competition and Domestic Market Opening

As can be seen above, the domestic telecom industry has grown substantially in the 1990s. In particular, the domestic telecom market is undergoing great changes in 1997 with the introduction of competition to the domestic market and the opening of the market to foreign companies. Policymakers have decided to boldly advance the timetable of liberalization by hastening the process of privatizing the monopolistic Korea Telecom and offer the entire promising telecommunications market up for grabs to all eligible investors. The Korean government designated a total of 27 service companies in the personal communications service (PCS), trunked radio system (TRS), wireless data communications, and CT-2 fields. Their services will in turn produce more and tougher competition among local telecommunications service carriers. The competition will induce companies to introduce new services, upgrade service quality and lower rates, which will enlarge the domestic market for telecommuni-cations equipment.

External forces, however, have been exerting tremendous pressure on Korea to open up its telecommunications market, and countries with advanced technology like the U.S. and Japan are eager to tap into the lucrative domestic market. For example, American telecom

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giants such as Motorola and Lucent Technology are challenging local suppliers to win contracts from Korean PCS carriers, and Geotech, Ericsson and Motorola are vying for supply contracts for TRS equipment sales. These companies are said to have promised technology transfers to the buyers of their equipment.

Moreover, as a result of the new agreement on basic telecommunications at the World Trade Organization (WTO) this year, foreign equity participation in the telephone service business will be allowed to increase to up to 33% by 1998. From the year 2001, foreigners will be allowed to invest up to 49% in both wired and wireless telecommunications service businesses.

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Foreign suppliers, which are equipped with superior technology in such high-tech telecom fields, will most likely capture more than their fair share of the nation's telecom equipment market. In particular, foreign investors are showing interest in such telecom service fields as the resale of voice over private leased circuits and personal communications service (PCS) since they require less investment than wired telecom services. Local telecommunications service companies have to be more competitive to fight against foreign firms before the market opening. Of course, notwithstanding the onslaught of more sophisticated foreign companies, their very presence here will spur Korean companies to research, design and develop better equipment in the long run, thus enhancing the competitiveness of Korean companies. Korean companies are required to develop new services as well as to work out new marketing strategies in order to sharpen their competitive edge.

Of course, the agreement provides Korean manufacturers of telecom equipment or telecom service companies with an opportunity to penetrate the global market as well. In particular, the Southeast Asian markets, including the Philippines and Indonesia, will be drastically opened as well, an area where Korean companies are showing keen interest. Korean companies will be able to accelerate their penetration into such promising markets.

The Telecom Equipment Industry

Korea's telecommunications equipment industry started exporting mechanical switching systems and telephone sets in the 1970s. The industry has since achieved an annual average growth rate of over 40%.

Local manufacturers are now exporting locally developed switching systems called "TDX," with their export markets currently being limited to Southeast Asia and countries of the Commonwealth of Independent States (CIS). But some Korean companies are actively exploring new overseas markets. In particular, state-of-the-art products such as telecom equipment based on Code Division Multiple Access (CDMA) are expected to become promising export items as Korea is in the forefront of developing these products.

Despite the fact that Korea's telecom equipment industry still represents a rather small share of the total electronic and info-communication industry, the growth rate of this emerging sector is much higher than those of any other industry, suggesting bright prospects for the years to come. In particular, the introduction of new telecom services such as PCS, TRS and wireless communication services are expected to increase the domestic market volume to 7.5 billion dollars' worth of equipment by 2001. The existing companies such as Korea Telecom and SK Telecom (the changed name of Korea Mobile Telecom since 1997) will order new equipment in order to provide higher quality services to customers. In addition, deregulation as a result of the government's

new telecommunications policies, coupled with the introduction of Public Land Mobile Telecommunication Services (PLMTs), will also further enlarge the booming telecommunications market.

Technology and R&D Investment

This quantitative expansion, however, does not necessarily mean that the nation's telecommunications equipment has world-class stature and competitiveness. The weakest point of Korea's wireless telecommunication industry is the lack of technological ability. Actually, Korean-made wireless mobile telephones are mainly composed of imported foreign parts, except for their outer plastic cases and other simple components. Only about 30-40% of the components in mobile telephones are domestically produced.

Given this situation, the world's first commercialization of CDMA (code division multiple access) in Korea was surprising enough to startle the whole world. While world-famous advanced companies were hesitating to commercialize CDMA technology, Korea selected the CDMA mode as the standard for digital mobile telecommunications. The successful commercialization of CDMA puts Korea in the heart of the global telecommunications competition.

In an effort to grab a bigger slice of the fast-growing telecom-equipment market, Korea's Ministry of Information and Communications (MIC) has worked out a package of comprehensive backup measures which calls for an investment of 1.959 trillion won in telecom R&D activities by the year 2000 (See Table 2).

In terms of technological advancement in the key telecom-equipment fields, however, Korea still remains behind advanced countries by an average of 3.2 years. The new package is aimed at sharply narrowing the technological gap. VIP

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〈Table 2〉 Four Strategic Fields for R&D in the Telecom Industry

Research Field	Research Items
wired communication technology	- ATM (asynchronous transfer mode) switching technology - 10/100 giga-class optical transmission technology - ATM-LAN(local area network)
wireless communication technology and broadcasting technology	- PCS (personal communications service) systems - FPLMTS (future public land mobile telecom service) - digital broadcasting technology
software	- next-generation picture processing technology - high-speed processor and software engineering technologies - high-speed intellectual computers
semiconductors and new materials	- key cellular-phone chips - new telecom-gear materials - optical communications parts

Sources: Ministry of Information and Communications