

## **IT in Korea: Current Situation and Policy Direction**

Dong-Seok Kim  
Research Fellow  
Korea Development Institute, Seoul

The ICT sector is a principal growth enabler of the knowledge economy, and it will be critically important to Korea's endeavor to become a knowledge-based nation powered by creativity and innovation. The ICT sector performs a dual role. It provides the platforms and infrastructure for processes and transactions in the knowledge economy, and at the same time the output of the ICT sector accounts for a large part of the knowledge economy. The Korean Government and people have been quick to recognize the importance of the global ICT revolution and to formulate a strategy to ensure that the country moves ahead to gain all possible benefits from that revolution. For instance, Korea's new 'Development Plan for a Knowledge-Based Economy,' articulated and implemented in 2000, emphatically points to ICT as a 'core' policy area alongside education-human resource development, the R&D-innovation system, the social safety net, and industrial upgrading. In parallel, the Ministry of Information and Communications has prepared a blueprint for an information society, called 'Cyber Korea 21,' which sets out a vision, goals, and actions aimed at securing a leadership position for Korea in the global knowledge economy.

Indeed, a large part of the rapid growth in Korea's ICT sector has come from the hardware side, especially the mobile telecommunication market. However, the future challenges and opportunities lie in the service side of the ICT sector. ICT services, such as programming and software service and ICT-enabled services, such as e-commerce, call centers, and remote-engineering services, are expected to be the growth engines in the global ICT and knowledge economy. Relative to its performance in the hardware sector and relative to competitors such as Singapore and Ireland, Korea has not been as successful in the service side of the ICT sector. A number of policy initiatives and laws have been and are being put in place. But the present public policy framework and business environments are not good enough to induce the desired forms and level of private initiative in the highly risky and uncertain ICT service sector.

The purpose of this paper is to provide a concise preview of the ICT sector in Korea and to search for a set of policy recommendations to vitalize the sector so that it can be a productive engine in Korea's efforts to move toward a knowledge-based economy. For that purpose, the paper deals with three aspects of the ICT sector, the ICT industry, electronic commerce, and the digital divide in Korea. The paper concludes with a policy recommendations, followed by a brief summary of the 'Development Plan for Knowledge-Based Economy.'

### **The ICT Industry in Korea**

The ICT industry in Korea has shown high growth in the 1990s, even during the economic crisis in the late 1990s, with an average annual growth rate above 20% during 1995-99. The ICT industry's share rose from 5.7% of GDP in 1995 to 13.1% in 1999, and its contribution to GDP growth was about 40% in 1999. This was possible by the rapid growth of mobile telecommunication service and the expansion of the Internet in Korea, and PCs, mobile telephones, and information and communication services played a main role in the growth of the ICT industry.

In addition, the ICT industry has played a positive role in the Korean economy for the past several years through its effect on inflation, investment, the trade balance, and so on. For example, the producer's price index for the ICT industry has declined steadily, contributing significantly to price stabilization. The ICT industry has been a major factor in machinery and equipment investment with its share increasing from 36.6% in 1999 to 43.1% in 2000. In 1999 the ICT industry's share of total exports was 30% and its contribution to the overall trade balance was about 56%.

Total production of Korea's ICT industry was US\$85 billion in 1999. Seventy-five percent of this (US\$63 billion) was information and communication equipment, 20% (US\$17 billion) was services, and 5% (US\$3.9 billion) was software manufacturing. The number of companies and employees also grew steadily, except during the crisis in 1998, and in 1999 Korea had 12,000 companies and 520,000 employees in ICT industry.

ICT industry exports averaged 5.9% annual growth from 1995 to 1999, and imports grew 12.3% per year. The main export items were wireless communication equipment, computers and electronic components, while the main import items were electronic components, wired communication equipment, and software. Mobile communication terminals, optical disk drives, LCDs, and low-price computers were the items with the largest contribution to export growth.

Many experts agree that the level of technology in Korea's ICT industry is 60-70% of that of developed countries. Although Korea has advanced-level technologies in some fields, e.g., memory chips, TFT-LCD, and CDMA, the overall level is two to three years behind that of advanced countries. As of 1998, Korea ranked fifth in the world in terms of total number of patents, and fourth among foreign countries in the total number of patents acquired in the USA. Most patents were in the field of memory manufacturing (262 cases), followed by TV and optical transmission technology. Korea is weak, in core fields, however, such as data processing, communication and network, which form the base of informatization, and it must urgently acquire generic technologies in this field.

With the recognition of the utmost importance of the ICT industry, in 1998 the Korean Government established the 'Five-Year Plan for ICT Development: 2000~2004' as the basis for most government ICT policies. The Plan concentrates on six core fields, which are next-generation Internet technology, optical communication, digital broadcasting, wireless communication, software technology, and computer technology. According to the Plan, the Korean Government will invest US\$911 million and loan US\$1,457 million, and the private sector will invest US\$393 million as a matching fund, with the total investment amounting to US\$3,289 million. The Korean Government expects that the Plan, when successfully accomplished, will increase production in the ICT industry by US\$38 billion with 220 thousands additional jobs.

### **Electronic Commerce in Korea**

Electronic commerce in Korea has a short history of about 5 years and technology and utilization are still in a basic stage compared to advanced countries. Lotte and Dacom introduced the first B2C sites in 1996 and Dacom started the first B2B site in 1999. Unlike many advanced countries where B2B was the major part, B2C and C2C have been the majority in Korea's electronic commerce.

The year 2000 was a turning point, however, when the share of B2B first exceeded that of B2C. It is expected that B2B commerce will grow rapidly in the coming years. Also, the year 2000 saw the introduction of new technologies in the field such as a virtual reality system for viewing commodities, N-Commerce which combines Internet and mobile communication, various order and payment methods, and so forth. Also, various payment methods introduced teenagers to e-commerce and more fee-based sites began to appear in the content industry. Although there is considerable variation, it is expected that the size of e-commerce in Korea will amount to several billion dollars in the near future.

Most e-marketplaces in Korea are based on a specific industry built by joint ventures established by off-line leaders and e-marketplace solution providers. As of May 2000, there are about 100 e-marketplaces already built or being built in Korea. It should be said, however, that the e-marketplace in Korea is in the infancy stage, with no leaders. The traditional relationship between big companies and subcontractors may be one reason.

The Korean Government is also trying to expand e-commerce in the public sector. For example, the Supply Administration, which is in charge of procurement, plans to computerize the entire procurement processes by 2001, and the Ministry of Construction and Transportation and the

Ministry of National Defense plan to build CALS by 2005 and 2002, respectively. On the other hand, the share of e-commerce by public enterprises is quite low, and the Ministry of Planning and Budget established a plan to increase the share of e-commerce by public enterprises to 50% by 2001.

### **The Digital Divide**

The 'digital divide' refers to a phenomenon in which unequal access and utilization of information deepens, depending on economic, regional and cultural differences, as informatization proceeds. Digital divide occurs not only within a single country ('domestic digital divide') but also across countries ('global digital divide'). Global digital divide refers to a phenomenon in which developing countries' poor access to information leads to lower national competitiveness.

A survey of 3,000 persons by Korea Information and Communication Center in 2000 concerning the possession of PCs, subscription to ISPs, and internet usage found that the digital divide in Korea in terms of educational background, income, age, and residence is surprisingly high and that it has deepened recently.

The government has put forth much effort to alleviate this digital divide in Korea. Much emphasis is given to the issue in budget planning stage, and a considerable amount of funds is allocated to support those with insufficient access to information and computer equipment. The policy direction of the Korean Government can be summarized into the following three categories; (1) building sufficient ICT infrastructure, (2) improving information and communication environment, and (3) providing more ICT education.

### **Policy Recommendations for Development of ICT in Korea**

There is no doubt that the ICT industry will be a main engine for the growth of the Korean economy and for the transition to a true knowledge-based economy in the future. For this reason, Korea has made much effort to develop the ICT industry and thus to improve national competitiveness. It cannot be said, however, that the performance has been successful, and this section provides a set of policy recommendations for the Korean Government.

First, the role of government in the ICT sector, as in other sectors, must be limited to the provision of public goods and infrastructure, for these are the areas where the market does not work properly and the risk of under-investment is high. These areas include (1) information and communication networks, (2) institutional infrastructure such as laws and regulations regarding consumer protection, privacy, intellectual property rights, electronic signature, and so on, (3) standardization, (4) databases of government-produced knowledge, and (5) investment in R&D.

Second, informatization in the public sector yields numerous positive effects, and the government's active role is highly important. Demand from the public sector occupies a substantial portion of the ICT industry in the early stage of informatization, and the public sector can play the role of 'test bed' for the private sector's newly acquired technologies. Also, informatization in the public sector has a demonstration effect, in e-commerce in particular, meaning that it is an effective means to spread and accelerate economy-wide informatization.

Third, it is crucial to take into consideration other countries' strategies and the forecast of future technology development in the investment plan. Development of new technologies usually follows an evolutionary process, and forecasts by various experts, domestic and foreign, must be incorporated in the plans. Also, other countries' development strategies must be given great emphasis, particularly those of Asian countries. For instance, Singapore plans to become an ICT manufacturing and finance hub based on well-equipped communication infrastructure and top-end ICT manufacturing while Hong Kong also has a plan to be a finance, ICT, and distribution hub in East Asia.

Fourth, indirect policies are more efficient than direct industrial policies also in the ICT sector. The economic impact of new technologies largely depends on the economic environment and mechanism. For example, many studies say that the pervasive effect of new technologies can

be maximized when markets are efficient and otherwise it could result in negative outcome, e.g., reduced employment. It is crucial then that the government try to create an environment in which financial resources are allocated according to market principles, free entry and exit is guaranteed, and products, labor, and financial markets are efficient.