III. Salient Features of the ICT/ICTE Industry

III.1 Introduction

There are major variations in the size, composition, dynamism and market orientation of the ICT/ICTE industries in the ten countries surveyed. Therefore, for analytical purposes, it is useful to group these countries along a few key dimensions, such as the size, diversification and innovativeness of ICT/ICTE activities. In terms of turnover, exports and employment, India is in a league apart, followed at considerable distance by Brazil. The least developed economies, such as Senegal and Kenya, display a concentration on a few, basic lines of business. In the more advanced countries, virtually all ICT/ICTE activities are present. There is often a strong correlation between diversification and innovativeness. In India, and to a lesser extent Brazil, the ICT/ICTE industry is characterized by the massive presence of knowledge-intensive activities, which often go beyond the outsourcing logic that initially triggered the growth of the ICT industry. By contrast, in countries with an infant ICT/ICTE sector, the bulk of activities are of a relatively simple nature, such as sales and maintenance, IT consultancy, basic Internet services, basic software customization, and sometimes telemarketing services. Based on the above factors, the ten countries surveyed can be grouped into three categories. The first category is established players, and includes India and Brazil. The second is emerging players, and includes the Philippines, Morocco, Argentina, Vietnam, Ukraine and Peru. The third is marginal players, and includes Kenya and Senegal.

III.2 Established Players

India

Over the last two decades, India has become a world leader in the ICT/ICTE industry. Multi-national corporations spearheaded the process, by establishing ‘captive’ operations in the early 1990s. This was quickly followed by the emergence of a vibrant domestic industry. Today, the Indian ICT industry can compete with the world giants, and Indian high tech clusters are home to advanced R&D centers serving several global industry leaders. In 2006, total sales reached US$37.4 billion, which represented a 31% growth over the previous year—total employment was in the order of 1.3 million. The software development and IT services segment dominate the Indian ICT industry. In 2006 there were about US$17 billion worth of exports, mostly to the US and other western countries. The 4,000–5,000 companies active in this segment are mostly SME, but they also include world leaders such as HCL, Infosys, TCS and Wipro, all of which are in the billion-dollar club. India is also home of a powerful ICTE sector. This includes a number of captive operations, resulting from the relocation of labor and skill intensive activities from Western countries, as well as no less than 200 medium-sized Indian-owned companies, active in the provision of customer care, account management, and financial processing for international clients. The manufacture and assembling of hardware is comparatively less developed. MNC investments tended to privilege other Asian countries, and the bulk of production is destined to the growing internal market. An estimated 150 Internet service providers and 100,000 public internet points (cybercafés) provide connectivity services.

Brazil

Brazil is the leading player in Latin America, with a large domestic market, good research facilities and manufacturing capabilities. The leading hardware producers started operating in the 1980s. This acted as a catalyst for further investments and nurtured the start-up of new suppliers of components, distributors and service providers. The birth
of the software development segment is a more recent phenomenon, mainly linked to the diffusion of the Internet. In 2005, the Brazilian ICT/ICTE industry reached a total turnover of some US$15.5 billion—this included US$5.7 billion for hardware, US$7.4 billion for software and ICT services, and US$2.4 for ICTE activities. Total employment is estimated at about 900,000. The software and IT services segment encompasses some 3,500 enterprises, including a dozen large payers. Foreign-developed applications still account for the bulk of sales, but domestic products are progressively gaining ground. The ICTE sector includes about 1,000 call centers, and a few hundred other BPO operations. They mostly serve the domestic market. Less than 10% of turnover is generated by overseas contracts, mostly with US clients. Sizeable agglomerations have emerged, such as the Sao Paulo/ Campinas cluster, which combines hardware manufacturing and software development, and the Recife cluster, which specializes in ICT/ICTE services.

III.3 EMERGING PLAYERS

The Philippines
The importance of the Philippines’ ICT/ICTE industry on a regional and global scale is rapidly growing. In fact, the country offers a unique business environment, combining cost-efficiency with a good quality infrastructure and, most notably, excellent linguistic capabilities. The Philippines are primarily a manufacturing base for large producers of hardware and components. In 2005, exports of semiconductors were around US$15 billion. Gradually, the country has also become an important competitor in the field of outsourced ICT and ICTE services. In 2005, total turnover (excluding hardware) was in the order of US$3.5–4 billion, while employment was about 200,000. The ICT/ICTE industry includes about 1,000 enterprises, including the following: (i) 300 ISP and value-added providers; (ii) 300 software developers; (iii) 100 call centers; (iv) 70 transcription services providers; (v) 60 BPO operations; (vi) 40 animation and 3D graphics studios; and (vi) 100 firms involved in the sale and installation of IT equipment and software. The vast majority of Filipino ICT/ICTE enterprises have fewer than 50 employees.

Argentina
In Argentina, the ICT/ICTE industry was severely hit by the financial crisis of 2001 and by the end of ‘dot com’ bubble, but it is now showing encouraging signs of recovery. At present, the industry includes some 700 companies. The majority are micro and small businesses, many of which have been recently established. The main lines of business are the distribution of IT equipment and the provision of ‘basic’ IT services, but software development and value-added services are gaining ground. In 2005, the overall turnover was around US$2.5 billion, of which around US$1.3 billion related to software development and ICT/ICTE activities. Sales are predominantly in the domestic market, where the devaluation triggered a major trend towards import substitution. However, recently there has been an increasing trend toward exports of ICT applications. The ICTE industry is also in a growing phase. It has been estimated that call centers have reached a total capacity of some 40,000 seats, and that total employment is 160,000–190,000.

Morocco
Morocco has a relatively small but lively ICT sector, comprised of about 200 société de services d’ingénierie en informatique. Most Moroccan ICT firms are involved in the provision of relatively basic services, such as customized software and web applications, but in certain segments they have reached a remarkable position and gained a good international reputation. This is especially true of payment solutions and ERP systems, where Moroccan companies have won important contracts in other francophone countries. Morocco also boasts a fast growing ICTE sector, including about 150 call centers and other BPO companies, which employ no less than 25,000 people. These include foreign as well as locally-owned firms, which serve the French and, to a lesser extent, Spanish markets. Connectivity services are provided by a few ISP and by a network of more than 10,000 cybercafés, which employ about 15,000–20,000 workers. In 2006, the Moroccan ICT/ICTE industry reached a total turnover of US$700–900 million, with an employment in excess of 50,000.

Ukraine
Ukraine is becoming an increasingly important player in the ICT/ICTE industry. Over the past few years, Ukrainian ICT/ICTE firms have been able to acquire important clients in the international
outsourcing market for advanced R&D and software engineering, thanks to the availability of a large pool of highly qualified people. The manufacturing/assembling of hardware is also expanding, but in this case, most sales are in the domestic market. Total turnover is in the order of US$2 billion, of which some US$500–600 million relate to IT outsourcing activities. It is estimated that employment is around 40,000–50,000. The industry includes an estimated 2,000 firms, with a number of foreign-owned operations, about 50 medium-sized locally-owned companies, and a plethora of small and micro enterprises. It is estimated that the number of ISP in operation is 250–400. The subsidiaries of the main telecom operators are in a dominant position. There are also about 3,000 small cyber cafés.

**Vietnam**

The core of Vietnam’s ICT industry is represented by the manufacture and assembling of hardware, which accounts for an estimated 85% of the total ICT/ICTE turnover of US$1.8–2.0 billion. This is due to the presence of manufacturing plants operated by multinational companies, such as Intel, Fujitsu and Canon. Software and ICT/ICTE services generate more modest revenues—about US$250–300 million. Total employment is grossly estimated to be about 40,000–60,000, with the hardware industry accounting for most. The Vietnamese ICT/ICTE industry consists of about 1,400 enterprises. These include the following: (i) a few subsidiaries of foreign IT equipment manufacturers; (ii) a dozen medium-sized to large state-owned companies; and (iii) a large number of small and micro enterprises, whose activities range from simple ‘sale & maintenance’ to more sophisticated processes in the field of software development and IT services. The development of BPO services is constrained by linguistic barriers, and existing operations are limited to testing and transcription services. Internet access is provided by 15 ISP, but the share’s lion is controlled by three state-owned operators.

**Peru**

In Peru, the ICT/ICTE industry is still in the early stages of development. The sector is dominated by small and micro enterprises, mostly established in the 2000s. The approximately 300 enterprises in operation are mainly active in the following activities: (i) the sale and maintenance of IT equipment and imported software; (ii) the development of customized software applications; and (iii) the provision of fairly basic IT consulting services. There are also a handful of companies involved in the assembly of PC. Total turnover is around US$1 billion, including about US$50 million for locally developed software solutions, and US$300 million for IT services. The level of employment in the ICT/ICTE sector is unknown, but it is unlikely to exceed the 10,000 benchmark.

### III.4 MARGINAL PLAYERS

**Senegal**

Senegal’s ICT/ICTE sector is very small and has little diversity. It includes about 50 software developers and IT service providers, a dozen call centers, and a handful of BPO service providers. In addition, there are an estimated 200 small retailers and installers of IT equipment. Connectivity services are provided by a couple of main ISP and by about 400 cybercafés, mainly based in Dakar. Total turnover is not known, but it is unlikely to exceed US$150–200 million. Total employment is probably in the order of 6,000–8,000, of which 2,000 work in the call centers sub-sector. This appears to be the most promising line of business in the near future, thanks to the availability of good international broadband connections and of a well-educated, French-speaking, and cost-effective workforce.

**Kenya**

Kenya’s ICT/ICTE sector is extremely modest. It consists mostly of vendors and installers of hardware and software, with only a few firms involved in the provision of basic IT services (web designing, development of customized solutions, and translation of standard packages in Swahili). The development of call centers and other BPO activities is hampered by the lack of adequate infrastructure. Recently, a handful of assembling operations were established, following the removal of import duties on components. The Kenyan ICT/ICTE industry includes about 300 small and micro enterprises, of which less than 50 are involved in software development and IT services. There are also a handful of BPO providers and call centers. Connectivity services are provided by 16 ISP and about 500 cybercafés. Total turnover is unknown, but probably in the range of US$150–200 million. Employment is in the order of 5,000.