

# The Global Opportunity in IT-Based Services

## Assessing and Enhancing Country Competitiveness

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### SECTION I TRENDS AND OPPORTUNITIES FOR DEVELOPING COUNTRIES

#### Introduction

Advances in information technology (IT) and global connectivity, combined with waves of economic liberalization, have given impetus to a new dimension of globalization: cross-border trade in services. The services sector has been growing steadily and already accounts for 70 percent of employment and 73 percent of gross domestic product (GDP) in developed countries and for 35 percent of employment and 51 percent of GDP in developing countries (UNCTAD 2008). As infrastructure and skills improve in developing countries, cross-border trade in services is expected to continue to expand.

This report aims to help policy makers take advantage of the opportunities presented by increased cross-border trade in IT services and IT-enabled services (ITES). It begins by defining the two industries and estimating the potential global market opportunities for trade in each. Then it discusses economic and other benefits for countries that succeed in these areas. It also analyzes factors crucial to the competitiveness of a country or location—including skills, cost advantages, infrastructure, and a hospitable business environment, and examines the potential competitiveness of small countries and of least developed countries specifically. The report concludes by discussing policy options for enabling growth in the IT services and ITES industries.

Much of the analysis and policy advice presented here is based on inputs from consultants, policy experts, and industry leaders, including work conducted by McKinsey & Company under a recent consulting engagement with the World Bank and infoDev. Analysis based on expert knowledge was found to be more useful than efforts to conduct quantitative analysis of various policy options. The large number of potential explanatory variables would require extensive data that are not yet available given the limited number of countries with significant experience in the IT services and ITES industries.

#### IT-Based Services: Global Outlook

##### *Large Markets and Growing Opportunities*

IT services typically include IT applications and engineering services, while ITES involve a wide range of services delivered over electronic networks (Table 1). These are two broad segments, however, and the sophistication of the services in each varies considerably.

**Table 1. A Typology of IT Services and IT-Enabled Services**

IT services	IT-enabled services
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<b>Application services</b>	<b>Engineering services</b>	<b>Business process services</b>
<i>Application development and maintenance</i> <ul style="list-style-type: none"> <li>• Application development</li> <li>• Application development integration and testing</li> <li>• Application maintenance</li> </ul> <i>System integration</i> <ul style="list-style-type: none"> <li>• Analysis</li> <li>• Design</li> <li>• Development</li> <li>• Integration and testing</li> <li>• Package implementation</li> </ul> <i>IT infrastructure services</i> <ul style="list-style-type: none"> <li>• Help desks</li> <li>• Desktop support</li> <li>• Data center services</li> <li>• Mainframe support</li> <li>• Network operations</li> </ul> <i>Consulting</i> <ul style="list-style-type: none"> <li>• IT consulting</li> <li>• Network consulting</li> </ul>	<i>Manufacturing engineering</i> <ul style="list-style-type: none"> <li>• Upstream product engineering <ul style="list-style-type: none"> <li>- Concept design</li> <li>- Simulation</li> <li>- Design engineering</li> </ul> </li> <li>• Downstream product engineering <ul style="list-style-type: none"> <li>- Computer-aided design, manufacture and engineering</li> <li>- Embedded software</li> <li>- Localization</li> </ul> </li> <li>• Plant and process engineering</li> </ul> <i>Software product development</i> <ul style="list-style-type: none"> <li>• Product development</li> <li>• System testing</li> <li>• Porting<sup>1</sup>/variants</li> <li>• Localization</li> <li>• Maintenance and support</li> <li>• Gaming</li> </ul>	<i>Horizontal processes</i> <ul style="list-style-type: none"> <li>• Customer interaction and support (including call centers)</li> <li>• Human resource management</li> <li>• Finance and administration</li> <li>• Supply chain (procurement logistics management)</li> </ul> <i>Vertical processes</i> <ul style="list-style-type: none"> <li>• Banking</li> <li>• Insurance</li> <li>• Travel</li> <li>• Manufacturing</li> <li>• Telecommunications</li> <li>• Pharmaceuticals</li> <li>• Other</li> </ul> <i>Knowledge process outsourcing</i> <ul style="list-style-type: none"> <li>• Business and financial research</li> <li>• Animation</li> <li>• Data analytics</li> <li>• Legal process and patent research</li> <li>• Other high-end processes</li> </ul>

Source: Adapted from Business Processing Association of the Philippines (BPAP) 2007.

Estimating the market size for trade in IT services and ITES is difficult given definitional issues and the relative novelty of the field. Official statistics are often not available or not reliable, and calculations based on balance of payments and trade in services may not accurately isolate IT services and ITES. As a result, much of the data on the size of the current market comes from private surveys, consulting firms, and anecdotal evidence. According to McKinsey estimates, the annual addressable market in 2007 for IT services and ITES was \$475 billion and has grown to about \$500 billion in 2008. Less than 15 percent of that market, however, is being exploited (see Figure 1).

Among the various segments of IT application services, opportunities are largest in traditional services (about \$100 billion),<sup>2</sup> system integration (\$50 billion), application development and maintenance (\$43 billion), and consulting (\$6 billion). For IT engineering services, opportunities are significant in mechanical design and production (about \$45 billion), embedded software (\$40 billion), and plant engineering (\$35 billion).

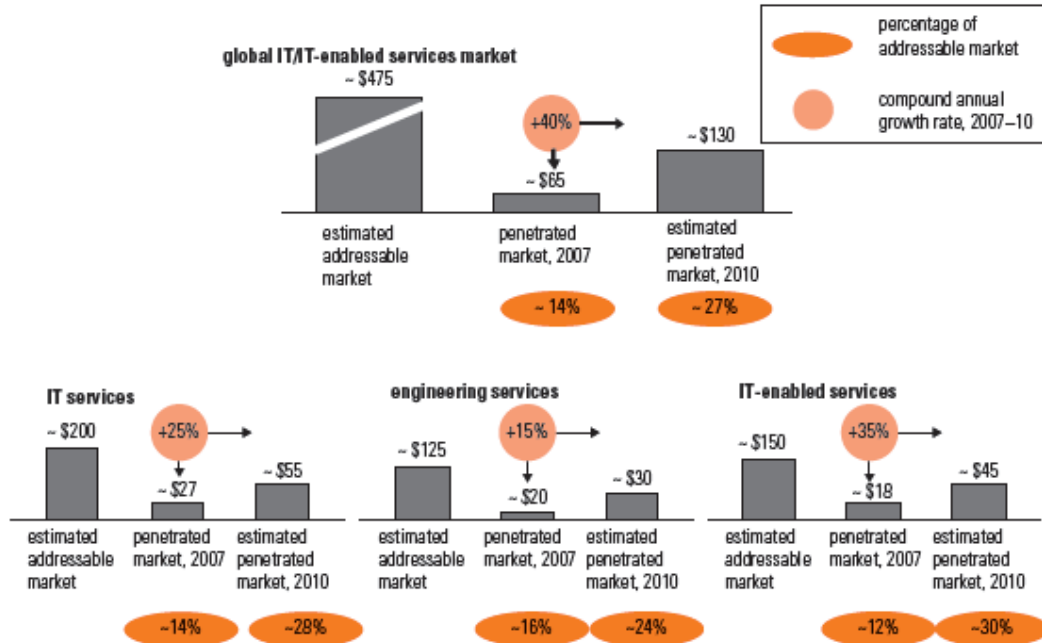
Estimates of the market size of ITES vary significantly. According to Gartner Research (2008a), the global market is expected to grow from \$171 billion in 2008 to \$239 billion in 2011. But estimates by NASSCOM (National Association of Software and Services Companies)-Everest (2008) are more than three times higher, at \$700–800 billion by

<sup>1</sup> Porting is the process of adapting software to run on a different computer and/or operating system.

<sup>2</sup> Traditional services are meant to include hardware and software maintenance, network administration, and help desk services.

2012, out of a total cost base of \$17 trillion for key industry verticals in source markets.<sup>3</sup> Most estimates of the addressable ITES market are derived by estimating spending on a range of business process functions and evaluating the potential for delivering such functions remotely. Figure 2 shows the relative importance of various vertical and horizontal functions in India's ITES industry.

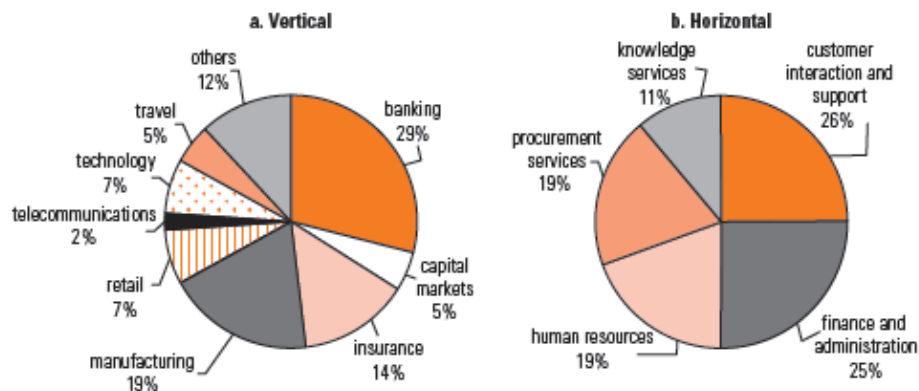
**Figure 1. Global Opportunities for IT Services and ITES**  
(in US\$ billions)



Source: McKinsey & Company.

Note: According to NASSCOM (2009), the addressable market for global sourcing of IT services and ITES was \$500 billion in 2008.

**Figure 2. India's Addressable Market for Vertical and Horizontal ITES Functions**



Source: NASSCOM-Everest 2008

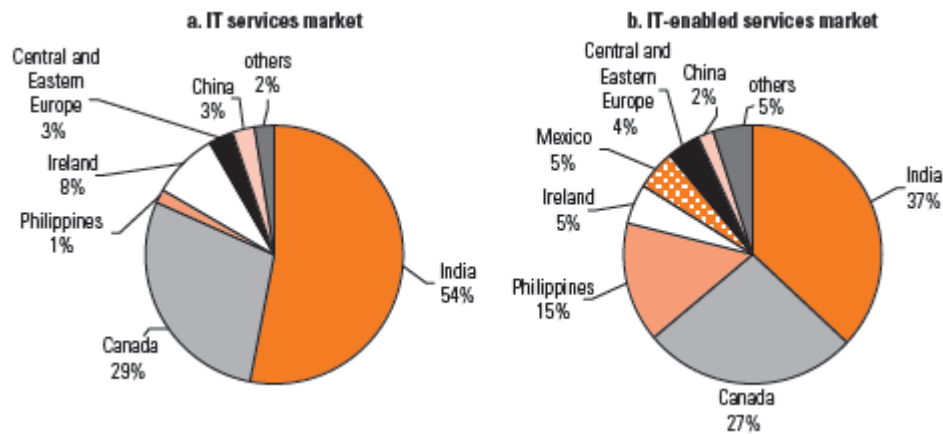
<sup>3</sup> Verticals refer to industries such as banking, insurance, and telecommunications. Horizontals refer to functions common across industries, such as human resource management, finance and administration, and marketing. Verticals account for 60–65 percent of the addressable ITES market, while horizontals account for 35–40 percent.

Despite the variation in estimates, it is clear that the demand for IT services and ITES is very large, and that only a small percentage of the potential has been realized. According to NASSCOM, the global financial crisis is expected to result in reduced technology-related spending for the first two to three quarters of 2009, but it is expected to pick up in 2010; and “greater focus on cost and operational efficiencies in the recessionary environment is expected to enhance global sourcing” (NASSCOM 2009). The limiting factor appears to be on the supply side. Countries that meet the requirements of the untapped market are likely to experience rapid growth in these industries.

**Economic Impacts of Developing IT and ITES Industries**

India is the global leader in the provision of both IT services and ITES (Figure 3). Two developed countries—Canada and Ireland—have also done particularly well in the industry, as have a few developing countries, notably China, Mexico, and the Philippines. Several countries in Central and Eastern Europe (the Czech Republic, Hungary, Poland, Romania, and Russia) have also developed their capacity in IT services and ITES, though on a much smaller scale. The expansion of IT services and ITES has provided these countries with a wide range of economic and social benefits. In India, the Philippines, and Ireland, for example, the industry has created jobs, raised incomes, and increased exports and GDP.

**Figure 3. Global Distribution of Offshore IT Services and ITES Markets**



Source: McKinsey & Co 2008; NASSCOM-Everest 2008; Tholons 2006.

India

The best-known IT services and ITES success story is India. In 2007–08,<sup>4</sup> total exports of IT services and ITES from India stood at \$40.4 billion (\$23.1 billion in IT application services, \$6.4 billion in engineering and research and development (R&D) services, and \$10.9 billion in other ITES). The IT services and ITES industries contributed one-quarter of the country’s total exports and nearly half of service exports in 2007.<sup>5</sup> In addition to the exports, some \$11.6 billion of software services were also produced for domestic consumption. In sum, IT services and ITES represent 5.5 percent of India’s

<sup>4</sup> India’s financial year runs from April 1 to March 31.

<sup>5</sup> According to the *Economic Survey 2007–08* conducted by the Ministry of Finance, India’s total exports in 2006–07 were \$128 billion, of which \$76.2 billion were service exports. (See <http://indiabudget.nic.in/es2007-08/esmain.htm>, accessed on August 2, 2008.) Total IT services and ITES exports during 2006–07 were \$31.3 billion, which represents 41 percent of India’s service exports.

GDP and grew at a remarkable rate of 33.7 percent in 2007 (NASSCOM 2008a). Going forward, India's IT services and ITES exports are forecasted to reach \$60 billion by 2010, when the sector is expected to represent almost 7 percent of GDP (NASSCOM-McKinsey 2005).

A study on the output linkages of India's IT services and ITES sector conducted by Credit Rating Information Services of India Limited (CRISIL) concluded that the total turnover of \$30.3 billion for the sectors in 2005–06 implied spending of \$14.3 billion in the domestic economy, which in turn generated additional output of \$14 billion in sectors linked to IT services and ITES (NASSCOM-CRISIL 2007).<sup>6</sup>

The IT services and ITES industry has an important impact on the labor market in India. The industry directly employs 2.01 million people in jobs that pay 50 to 100 percent more than comparable service sector jobs. Nearly 80 percent of these jobs (1.56 million) cater to exports of IT services and ITES, while another 0.45 million serve the domestic market. In addition, the sector creates indirect employment opportunities in industries such as construction, retail, transport<sup>7</sup>, telecommunications, as well as induced employment due to higher spending on goods and services such as food, transportation, entertainment, health, and medical services. McKinsey estimates that each new job in IT services and ITES in India has led to the creation of between three and four new jobs in other sectors (NASSCOM-McKinsey 2005)<sup>8</sup>. Other estimates put the number of new non-IT/ITES jobs at four for each job created in IT services and ITES (NASSCOM-CRISIL 2007). Altogether, an estimated 8 to 10 million employees directly or indirectly support the IT services and ITES industry in India.

### The Philippines

The Philippines is another important beneficiary of international trade in IT services and ITES, as it is now one of the top destinations for IT services and ITES companies in the world. Growth of the sector in the Philippines has been impressive: total IT services and ITES revenues reached \$6 billion in 2008, up from \$100 million in 2001.<sup>9</sup> As of mid-2008, the industry employed 345,000 people, up from 100,000 in 2004. Moreover, in the Philippines, as in India, workers in this sector are typically paid 50 to 100 percent more than in other service jobs and tend to fall into the top income quintile (Roxas-Chua 2008).

The Business Processing Association of the Philippines (BPAP) projects that it is possible for the IT services and ITES industries in the Philippines to continue its rapid growth, doubling its share of the global market from 5 percent to 10 percent and

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<sup>6</sup> Some 26 percent of gross income spent by employees was housing related, followed by food items, durable goods, and vacation/leisure. In addition, IT services and ITES firms contributed to increased nonwage spending on construction, transportation, communications, and a host of other sectors.

<sup>7</sup> According to the NASSCOM-McKinsey Report 2005, the most important employment generation opportunities will occur in construction (an estimated 1.4 million construction site workers will be employed in FY 2010 to meet the demand to develop additional commercial and residential real estate), retail (1.5–1.75 million employees in FY 2010), and transport (650,000–700,000 drivers and assistants will be required to meet industry requirements in FY 2010).

<sup>8</sup> According to the report, the “two industries (IT and BPO) directly employ nearly 700,000 people and provide indirect employment to approximately 2.5 million workers” (page 15).

<sup>9</sup> Despite the global financial crisis, the Philippines was reportedly still on track to achieve its Roadmap 2010 targets, including capturing 10 percent of the global market for ITES (BPAP 2009).

producing revenues of about \$13 billion and direct employment for close to 1 million people by the end of 2010. Employment on this scale means that the sector would account for 27 percent of all new jobs created in the country by 2010.<sup>10</sup>

The BPAP estimates that for each new job created in IT services and ITES in the Philippines, some two to three new jobs were created in other sectors. An increase in direct employment of 600,000 people by 2010 would therefore create 1.2–1.8 million additional new jobs indirectly as employees consume housing, food, transport, and consumer goods and employers invest in telecommunications, building rentals, water, and other core services. By 2010, the IT services and ITES industry could represent as much as 8.5 percent of GDP (BPAP 2007).

### Ireland

Ireland has built an IT services and ITES sector that is widely regarded as essential to the country's rapid economic growth. Until the late 1980s, Ireland was one of the poorest countries in Western Europe and suffered from deteriorating infrastructure, high unemployment (20 percent), and a well-documented brain drain to the United States, the United Kingdom, and elsewhere.

In the years since, directed efforts by the Industrial Development Agency (IDA) to build the country into an IT services and ITES destination, using corporate tax incentives, enterprise zones, and other incentives, along with European Union (EU) aid and successful marketing efforts, resulted in a high-tech industry that employed 80,000 people by 2000. The call center program, introduced by the IDA in 1992, was particularly successful: by mid-1998, around 50 call centers employed 6,000 people, twice as many as the original plan (Barry and van Welsum 2005).

The direct economic impact of the growth of IT services and ITES in Ireland has been mainly from activity in financial and other ITES services. Following the establishment of the International Financial Services Center (IFSC) in 1987, almost 450 international financial institutions operate in Dublin, including half of the world's top 50 banks and half of the top 20 insurance companies. The IFSC focuses on international wholesale banking and treasury, securitization, fund management, fund administration, and insurance (Economist Intelligence Unit 2008). Financial services companies employ 16,000 people and pay an estimated 15 percent of all corporate tax in Ireland.

### ***Other Impacts: Social Benefits Policy Reforms and Country Brand***

Success in the IT services and ITES sector engenders a number of other positive impacts. An important one is the positive impact on the status of women. Women account for about 65 percent of the total professional and technical workers in the IT services and ITES in the Philippines. In India, women make up 30 percent of the IT services and ITES workforce—a much higher rate of female participation than in the service sector in general—and a share that is expected to grow to 45 percent by 2010. In Ireland, 70 percent of call center employees are women. In all these cases, women account for a greater number of high-paying jobs than in most other sectors of the economy.

In addition to direct economic and social benefits, a focus on developing the IT services and ITES sector can catalyze fiscal, regulatory, and legal reforms. Policy reforms are often easier to enact when a “new” export-oriented sector such as IT services and ITES is targeted, since entrenched special interests are less directly affected than when

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<sup>10</sup> Some commentators find this overly optimistic, for example, Magtibay-Ramos, Estrada, and Felipe (2007).

reforming other sectors. This appears to have been the case in several states in India, where IT services and ITES companies have been exempted from many of the regulations that make doing business in India a slow and uncertain process. As the value of more efficient fiscal, regulatory, and legal regimes becomes increasingly appreciated, innovations and reforms can be extended to other sectors of the economy.

Finally, success in IT services and ITES presents opportunities for repositioning the image of a country, a “branding” effect that can have profound implications. In India, the positive impact of industry leaders such as Genpact, Wipro, TCS, and Infosys points to this effect. As one commentator put it, “*More importantly, [the IT sector’s] impact was psychological. It signaled to the world that India was much more than its old historical stereotypes. It suddenly ... made the world think that every Indian was smart and could fix their computers. That helped entrepreneurs in India from all industry segments because it gave them a more receptive environment in which to do business*” (Masani 2008).

## Country Competitiveness in the Global Market of IT-Based Services

### Assessing Potential Competitiveness

Governments that wish to take advantage of global opportunities in IT services and ITES can benefit from a structured assessment of the strengths and weaknesses of their location. In recent years, a number of consulting firms have developed benchmarking frameworks, locational indices, and rating criteria for determining the e-readiness and attractiveness of different locations for IT services and ITES industries. Among these studies, there is broad agreement that several key factors determine locational competitiveness: such as availability of employable skills (including IT skills), competitive costs, quality of public infrastructure relevant to the IT services and ITES industries, and an overall environment that is conducive to business. Table 2 provides a more detailed list of factors in each of these categories.

**Table 2. Frameworks for Assessment of Locations for IT Services and ITES**

AT Kearney’s Global Services Location Index	Gartner’s 10 criteria	Hewitt’s International Benchmarking Model	McKinsey’s Locational Readiness Index
<p><i>People and skills availability</i></p> <ul style="list-style-type: none"> <li>• Remote service sector experience and quality ratings</li> <li>• Labor force availability</li> <li>• Education and language</li> <li>• Attrition risk</li> </ul> <p><i>Financial attractiveness</i></p> <ul style="list-style-type: none"> <li>• Compensation costs</li> <li>• Infrastructure costs</li> </ul>	<p><i>eInfrastructure</i></p> <ul style="list-style-type: none"> <li>• Power</li> <li>• Telecommunications</li> <li>• Transport</li> </ul> <p><i>Labor pool</i></p> <ul style="list-style-type: none"> <li>• Quality</li> <li>• Quantity</li> <li>• Scalability</li> <li>• Work conditions</li> </ul> <p><i>Educational system</i></p> <ul style="list-style-type: none"> <li>• Quality</li> <li>• Number of institutions</li> <li>• New grads in IT</li> </ul> <p><i>Cost</i></p>	<p><i>Infrastructure</i></p> <ul style="list-style-type: none"> <li>• Real estate</li> <li>• Telecom</li> <li>• Power</li> </ul> <p><i>Connectivity</i></p> <p><i>Talent</i></p> <ul style="list-style-type: none"> <li>• Availability</li> <li>• Quality</li> <li>• Cost</li> </ul> <p><i>General demographics</i></p> <p><i>Environment</i></p> <ul style="list-style-type: none"> <li>• Macroeconomic</li> <li>• Business</li> </ul>	<p><i>Quality of infrastructure</i></p> <ul style="list-style-type: none"> <li>• Telecom and network</li> <li>• Real estate</li> <li>• Transportation</li> <li>• Power</li> </ul> <p><i>Talent</i></p> <ul style="list-style-type: none"> <li>• Availability</li> <li>• Suitability</li> <li>• Willingness</li> <li>• Accessibility</li> <li>• Trainability</li> </ul> <p><i>Cost</i></p> <ul style="list-style-type: none"> <li>• Labor cost</li> </ul>

<ul style="list-style-type: none"> <li>• Tax and regulatory costs</li> </ul> <p><i>Business environment</i></p> <ul style="list-style-type: none"> <li>• Country environment</li> <li>• Infrastructure</li> <li>• Cultural exposure</li> <li>• Security of intellectual property</li> </ul>	<ul style="list-style-type: none"> <li>• Labor</li> <li>• Real estate</li> <li>• Infrastructure</li> <li>• Telecom</li> </ul> <p><i>Political and economic environment</i></p> <ul style="list-style-type: none"> <li>• Stability of government</li> <li>• Corruption</li> <li>• Geopolitical risks</li> <li>• Financial stability</li> </ul> <p><i>Language</i></p> <p><i>Government support</i></p> <ul style="list-style-type: none"> <li>• Promotional</li> <li>• Institutional</li> <li>• Education</li> </ul> <p><i>Cultural compatibility</i></p> <ul style="list-style-type: none"> <li>• Cultural attributes</li> <li>• Adaptability</li> <li>• Proximity</li> <li>• Ease of travel</li> </ul> <p><i>Global and legal maturity</i></p> <p><i>Data and intellectual property security and privacy</i></p>	<p>environment</p> <ul style="list-style-type: none"> <li>• Geopolitical environment</li> </ul> <p><i>Clusters</i></p> <p><i>Incumbent IT/ITES industry</i></p>	<ul style="list-style-type: none"> <li>• Infrastructure cost</li> <li>• Corporate tax</li> </ul> <p><i>Market maturity</i></p> <ul style="list-style-type: none"> <li>• IT/ITES employees as percentage of total service sector employment</li> <li>• IT/ITES as percentage of services GDP</li> <li>• Presence of industry association</li> </ul> <p><i>Risk profile</i></p> <ul style="list-style-type: none"> <li>• Regulatory risks</li> <li>• Country investment risks</li> <li>• Data protection</li> </ul> <p><i>Other incentives</i></p> <p><i>Environment</i></p> <ul style="list-style-type: none"> <li>• Government support</li> <li>• Business and living environment</li> <li>• Accessibility</li> <li>• Living environment</li> </ul>
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Source: Authors' summary.

### Talent pool

Together with the existence of competitive telecommunication markets, especially for broadband services, the availability of employee skills is the single most important factor in the growth of the IT services and ITES sector. In fact, the growth of the industry has created a situation in which skills scarcity creates opportunities for countries new to the industry to offer and develop strong local talent pools. India, which has about 30 percent of the global supply of low-wage labor for the IT/ITES industry (McKinsey Global Institute 2005), is likely to have a talent shortfall of 0.8–1.2 million skilled workers by 2012 (NASSCOM-Everest 2008). In 2007, India's top five IT companies alone hired 120,000 new employees, and many Indian companies have begun recruiting from international talent pools. TCS, for example, now employs more than 10,000 non-Indians, who make up 9.1 percent of its staff (Wadhwa, de Vitton, and Gereffi 2008). Just five years ago, the company employed less than 100 non-Indians.

An assessment of the university graduate talent pool by an IT services or ITES company considers a number of aspects, including:

- Suitability for employment; that is, meeting a quality standard for work in the industry and having the necessary language (not necessarily English) skills. In a study conducted by the McKinsey Global Institute, an assessment of the available talent pool across 28 developing countries found that, on average, only about 13 percent of generalist graduates had the necessary qualifications (including language skills) for being employed in the sector (Farrell 2007). Educational content is often poorly aligned with industry needs.
- Willingness to work in the industry—a function of both the stature of the industry and other job options available.
- Accessibility; that is, proximity of potential staff to a proposed IT/ITES site or a willingness to relocate.
- Trainability — of the non-employable cohort, the number who could potentially become employable following short-term training courses.

An important consideration for many large companies is the scalability of the suitable talent pool; that is, whether it is sufficiently large and growing such that firms can scale up their businesses without having to look for talent in another location. In addition to the above factors, companies considering investment in IT services and ITES also look at parameters such as average retention and turnover rates, maximum number of hours in a work week, average premium for overtime work, minimum wage, conditions of employment mandated by legislation, regulations on severance and termination of employees, restrictions on expatriates working in the country, and ease of travel clearances for visiting executives (Sutherland Global Services 2008).

### Cost

Primary cost considerations, from the point of view of a company making an investment decision, include the cost of labor (from entry-level employees to seasoned managers); infrastructure costs; selling, general, and administrative expenses (SG&A); and facilities costs. Table 3 presents an illustrative example of the share of different cost components for IT services and ITES businesses, and suggests that the most important cost elements are wages, physical infrastructure, and training.

The evaluation of cost also reflects fiscal or other incentives provided by the government to encourage investment, as well as tariff or trade restrictions regarding imports and exports, corporate tax rates, regulations on profit remittances and repatriation of capital, capital gains on assets and other property transfers, and special incentives and tax holidays. Companies assess the different business taxes (value added tax [VAT], withholding tax, excise duties, stock transaction taxes, capital gains tax, documentary stamp tax, customs duty, and local taxes), and also seek information on tax treaties and their effects on tax rates (Sutherland Global Services 2008).

Given the cost advantage of most developing countries compared to developed countries, tax incentives may not be required to enhance the attractiveness of developing country locations. However, they often signal the importance that governments attach to the sector and demonstrate the level of government commitment to nurturing a conducive business environment for the industries.

**Table 3. Relative Percentage of Components in the Total Cost of Offshoring**

<b>Cost component</b>	<b>IT services firm</b>	<b>ITES firm</b>
Wage rate	46	42
Physical infrastructure and support	18	17

Training and productivity	9	10
Transition and governance	7	8
Communications	3	5
Disaster recovery and business continuity	3	5
Resource redeployment	4	3
Travel costs	3	3
Advisory services	4	2
Exchange rate changes	3	2
Resource redundancy	1	2

Source: Vashistha and Vashistha 2006.

### Infrastructure

Infrastructure considerations include the availability, quality, and reliability of services such as telecommunications (including broadband), power, and transportation, along with availability of suitable real estate. Competitive broadband telecommunications markets are a particularly critical factor for the growth of trade in IT services and ITES. In addition to cost and quality, most IT services and ITES companies require redundancy in terms of telecommunication links. It is important, therefore, to ensure that more than one international carrier is available, and that there is more than one international gateway and multiple international cables linking the location to competitive global communication networks.

In countries with unreliable public infrastructure, companies look for the ability to self-provide services or alternatively for customized facilities such as IT parks—with modern office space, high-speed broadband links, reliable power supply (including backup supply), security services, and ancillary infrastructure including banks, travel desks, restaurants, transportation systems, and hotel accommodation for visiting executives. They also look for availability of land and business-friendly procedures such as quick building clearances for real estate development. The availability of international airports with good flight connections near IT/ITES locations is also an important factor.

### Business and Living Environment

The general business and living environment of a country—government policies toward foreign direct investment (FDI), incidence of corruption, labor laws, ease of travel to and from the country, and general quality of life—is also important in a company’s decision about where to invest. Many of these factors can be more easily controlled by focusing on a discrete sector like IT services and ITES, and later expanding efforts to the broader market environment. There are numerous cases of countries offering special status for IT/ITES investors to speed them through the formalities and insulate them from the more difficult aspects of doing business locally. The Agency to Promote and Facilitate Investments in Remote Services and Technology (APFIRST) in Andhra Pradesh and the IDA in Ireland, for example, cut through red tape to help IT services and ITES companies start local operations, while the broader business environment is strengthened more slowly.

The living environment also influences companies’ decisions about where to locate in terms of availability of healthcare facilities, international schools and other high-quality academic institutions, entertainment facilities, civic infrastructure, public safety, and hygiene.

Country risk relates to stability and transparency of law, macroeconomic stability, treatment of foreign capital, and data and intellectual property law protection, to name but a few. Potential investors weigh these risks according to their own history and the risk-taking profile of their management. Companies make decisions on locating IT services and ITES investments based on their assessment of the judicial system, the average duration to resolve disputes, the legal framework for contract enforcement, average time to resolve contractual conflicts, opportunities to arbitrate locally, the legal framework for intellectual property protection, and antitrust laws, among other factors (Sutherland Global Services 2008).

In summary, the elements that make a country an attractive IT services and ITES investment destination are a combination of depth and quality of the talent pool, cost advantage, availability and quality of infrastructure, and other factors that facilitate the smooth and predictable day-to-day running of a business. These factors, with different weightings based on different approaches, tend to be common to the indices and tools used by industry analysts and consulting firms (such as the ones summarized in Table 2) that are active in the IT services and ITES industries.

### ***Location Readiness Index***

A Location Readiness Index (LRI) has been developed as a modeling tool by McKinsey & Co. for The World Bank and infoDev to help countries identify their areas of relative strengths and weaknesses, and direct their efforts to interventions that will have the greatest impact on their likelihood of success. The LRI is a diagnostic tool that measures a country's<sup>11</sup> strengths and weaknesses in six important categories: talent pool size and quality; cost; quality of infrastructure; environment; risk profile; and market maturity. The detailed LRI is presented in Section II. The LRI has been applied to Kenya and Indonesia and the results are presented in Section III.

### ***The Relative Competitiveness of Small Countries***

Given the large addressable market for IT services and ITES, there is an opportunity for many countries to participate and benefit. In recent years, an increasing number of countries have begun to develop their IT services and ITES industries, viewing them as important potential sources of economic growth. South Africa, for example, is emerging as an attractive ITES destination, benefiting from English language abilities (South Africa Online 2005). Similarly, the Arab Republic of Egypt, Morocco, and Tunisia are also developing a range of ITES operations, including call and contact centers, and Israel is starting to emerge as a location for packaged application development.

An important question is whether the opportunities presented by the IT services and ITES sector are possible only for countries with a large talent pool, or whether small economies and least developed countries can benefit as well. Scalability is an important success factor, as many companies prefer locations where scaling up is possible. This is particularly true for large, "commodity" market segments that require a large number of workers with comparable skills, such as telemarketing and consumer support call centers, and providers of standard back-office functions such as accounting and IT support. Countries with large and growing employable labor forces thus may have a competitive advantage in capturing a share of the global IT services and ITES markets.

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<sup>11</sup> The model is intended to be applied at a national level but could, in principle, also be used to compare "micro-climates" such as specific cities or regions within countries.

For a number of niche segments, however, the basis for differentiation may center on factors other than scalability. In R&D, for example, skills quality appears to be a much more important differentiating factor. In addition to the case of Ireland discussed earlier in this report, the following country examples illustrate potential growth opportunities in niche segments.

### Mauritius

With an area of 2,040 square kilometers and a population of 1.27 million, Mauritius employed approximately 7,000 people in IT services and ITES in 2007, compared to only 2,000 in 2003. Mauritius used the competitive advantage of its historical and cultural ties with India to establish Ebene Cybercity, an IT Park. A soft credit from India of \$100 million in 2001, along with a bilateral agreement facilitating travel between India and Mauritius, made it possible to attract investment from a number of Indian companies, including Infosys, which has set up a disaster recovery center on the island (CNET News.com 2003; ITU 2004). Mauritius has successfully attracted leading international players such as Accenture, TNT Group, Teleforma, Ceridian, and EURO CRM (Burton 2007), and has begun transitioning to higher value-added activities such as advisory, design, and legal (MBOI [Mauritius Board of Investments] 2007). As another indication of Mauritius's success, A.T. Kearney (2007) ranked the country ahead of other locations well known for their attractiveness, in spite of Mauritius' smaller size, higher costs, and direct competition with the other countries in the francophone market.

### Malta

Malta, with an area of 316 square kilometers and a population of 0.4 million, is an even smaller country than Mauritius. The World Economic Forum's *Global Information Technology Report 2007–2008* ranks Malta third, after Singapore and Tunisia, in terms of government success in promoting information and communication technology (ICT). Between 2001 and 2004, Malta embarked on the e-Malta strategy. In 2008, it launched a new national ICT strategy that aims to make Malta a "smart island" (IDABC [Interoperable Delivery of European eGovernment Services to Public Administrations, Business and Citizens] 2008). The country has successfully attracted specialized software firms like Crimsonwing, Uniblue, GFI, Anvil, 2i, and RS2, in addition to leading IT players such as Oracle, Microsoft, Hewlett-Packard, and SAP (Malta Enterprise 2008). The call center that HSBC established in Malta for its U.K. operations has grown to over 450 employees (*Times of Malta* 2008). Malta has also become an attractive destination for remote gaming: it now hosts an estimated 10 percent of all remote gaming companies in the world, including Betfair, Expekt, Unibet, Interwetten, and CBM Bookmakers (Malta Enterprise 2008).

In 2007, the government embarked on the SmartCity Malta project with a \$300 million investment from Dubai Internet City's Tecom. Encompassing an area of 360,000 square meters, SmartCity Malta will consist of office, residential, and retail space focused on attracting ICT and media companies (SmartCity Malta 2008). The first phase of the project was inaugurated in June 2008. SmartCity Malta is the largest foreign investment in the island country and the single largest job creation initiative in Malta's history, committed to creating 5,600 jobs over eight years (OANA [Organisation of Asia-Pacific News Agencies] 2008).

The examples of Ireland, Mauritius, and Malta suggest that size is not a binding constraint in the potential for countries to benefit from global IT services and ITES opportunities. Small countries can aim at specific niches, leveraging language skills as in the case of Malta; building on historical and cultural ties as in Mauritius; using

advantages such as a high-quality living environment as in Singapore; or exploiting its membership of a customs union and proximity to a large market, as in Ireland.

### ***Relative Competitiveness of Least Developed Countries***

The question of whether least developed countries have the potential to become players in the global IT services and ITES industries is an engaging issue. Industry experts and current trends suggest that countries with severe constraints in infrastructure, a small employable labor force, and no clear competitive advantage enabling differentiation in high-end markets may not be immediately attractive to investors and companies looking to establish IT services and ITES operations. Such countries may, however, recognize and plan for the longer-term potential that the industry represents assuming these constraints can be addressed over time.

Deliberate investment in human resource and infrastructure development, in a manner that is geared to meeting the skill requirements of the IT services and ITES industries globally, is likely to be a sound policy for least developed countries. In a context where companies around the world are learning to operate in different geographies, it can be expected that locations equipped with employable skills, decent infrastructure, and a stable and conducive business environment will be able to take advantage of the opportunities presented by the IT services and ITES industries.

It is important to note that a relatively small investment and a small number of jobs in the IT services and ITES industries can have a considerable impact on the economy of a country. While the IT services and ITES industries currently employ less than 1 percent of the labor force in India, for example, the sector is responsible for one-quarter of the country's exports. Although India may be viewed as a unique case, evidence suggests that the IT services and ITES sectors may contribute just as much to other, smaller economies. The percentage of population employed in the IT services and ITES industries in Mauritius was nearly four times as high as in India in 2007. Least developed countries may see the case of Mauritius as an example and invest in human resources, infrastructure, and the general business environment in their own countries in order to position themselves for success in the medium and long terms.

### **Policy Options to Enhance Competitiveness**

A fundamental question faced by governments is whether to focus on industry-specific policy, such as the development of the IT services and ITES industries, in addition to working to improve the broader business environment.

#### ***Policies targeted at the IT Services and ITES Industries***

Opponents of industry-specific policy point to the dismal record of governments in supporting specific sectors, and emphasize that the task is best left to markets. Governments should, in their view, focus on macroeconomic stability, ensure property rights and contract enforcement, and improve the general environment for doing business.

Proponents of targeted industry support point out that: (1) Countries that have succeeded have generally seen their governments making deliberate interventions to catalyze growth of the sector; (2) many of the policy enablers needed by the IT services and ITES industries involve “no-regret” interventions that also benefit the rest of the economy; and (3) a broader approach to policy, aimed at the overall business environment and not at the IT services and ITES industries specifically, is likely to miss key interventions and be out of sync with the dynamic needs of these industries.

### Countries Successful in Adopting IT/ITES Industry Policy

Although proactive policies may not be a sufficient condition for building successful IT services and ITES industries in an individual country, all the success cases reviewed here have involved active government support—albeit support not necessarily focused on the needs of the IT services or ITES industries.

In India, long-term investment in world-class technology institutes produced a critical mass of technology leaders able to compete globally. In the state of Andhra Pradesh, education policies in the late 1990s and early 2000s liberalized entry of private technology institutes in the tertiary education market, multiplying the number of engineering graduates available for the IT sector in only a few years. The Software Technology Parks of India (STPI) initiative that was launched by the government in 1991 to overcome infrastructural and procedural constraints by providing data communication facilities, office space, and “single window” statutory services were extremely beneficial. The technology parks proved essential to the growth of the industry given the broader context of deficient infrastructure and bureaucratic red tape. India’s telecommunications policies of 1994 and 1999 allowed private sector investments into the sector and cleared the path for establishment of alternative international gateways that were also critical to development of the IT services and ITES industries.

In Canada, the government offered special incentives to IT and ITES companies that would develop a significant volume of contact center operations in the Atlantic provinces. Ireland’s emergence as an IT and international financial services center is widely recognized as partly the result of proactive government policies that encouraged investment in these industries. In the Philippines, the Board of Investments has actively targeted the IT services and ITES sector and has been credited by the local industry association for its key role in supporting the rapid growth of the sector.

### No-regret interventions

Investments that enable the IT services and ITES industries include those in education, infrastructure, and regulatory reform. All of these in turn contribute to improving the broader business environment. While a less targeted approach may not prioritize these actions in the timeline demanded by the industry, most of the reforms and investments required to develop the IT services and ITES industries can be seen as “no regret” actions. For example, a critical mass of low-cost labor with English language skills, problem-solving abilities, and basic IT proficiency is likely to be useful to other industries in the event that the IT services and ITES industries do not develop. In addition, high-capacity telecommunications infrastructure and modern power infrastructure are likely to benefit other industries. Ancillary investment in IT parks, where the bulk of the development investment is made by private developers does not represent a large, risky public expenditure (other than the land, which is often provided as equity by governments). In this sense, government support for the IT services and ITES sector is a low-risk strategy and is consistent with the argument that public interventions should create positive externalities.

### Institutions and Leadership Following an Adaptive and Engaged Approach to Policy

Locations successful in attracting IT services and ITES companies do more than rely on highly structured strategies—rather, they have leadership and institutions that follow an adaptive and engaged approach to policy. Given the fast-moving nature of the industry globally, the domain of policy and investment promotion is a constantly moving target. Unless the institutional framework is agile, it will be difficult to adapt to changing market conditions and achieve and sustain success. The institutional structures for promoting IT services and ITES ideally should include a level of

government involvement that is sufficiently high to have cross-cutting oversight and should promote close engagement between the public and private sectors in order to adapt policy to evolving opportunities and sources of competitive advantage. A number of examples bear out the efficacy of such an institutional approach.

Ireland's IDA, a government-sponsored development agency funded primarily through government grant-in-aid, has achieved significant success in attracting IT services and ITES investments to the country. The inward investment program launched by the IDA has been a major driving force behind the growth of the Irish economy, contributing to 35 percent of GDP and over 85 percent of manufactured exports (IDA 2006). By its own account, "IDA is a full service national development agency, a so-called 'one-stop shop.' It deals with all aspects of inward investment—the planning, promoting, marketing, negotiating and processing of investment proposals; provision of financial incentives and property solutions; helping new investors get started and working with them to maximize their contribution to the Irish economy" (IDA 2006). Nine of IDA's 13 board members are from the private sector.

Another example of a successful development agency in the context of IT services and ITES is APFIRST (renamed and reconstituted as APInvest in 2005) in Andhra Pradesh in India. Established in 2001 to promote investment and development in key sectors including offshore IT and BPO, APFIRST was set up as a one-stop contact agency, with a dedicated budget for marketing and promotional activities, authorization to grant incentives such as single-window clearances in order to attract investors, and a dedicated account manager for key investors. The agency has been a resounding success.

From 2001 to 2005, when the global ITES industry grew at a cumulative average growth rate of 49 percent, the ITES sector grew at more than twice this rate in Andhra Pradesh (110 percent). Starting from a low base of \$14 million in 1995, Andhra Pradesh's exports of IT services and ITES grew to \$450 million in 2001 and to more than \$6 billion in 2007 (*The Hindu* 2008).

The success of APFIRST illustrates the importance of an investment promotion institution that has cross-cutting oversight. When APFIRST was trying to attract Microsoft to establish a campus in Hyderabad, for example, it had to work with a number of government departments to clinch the investment. APFIRST negotiated with the Indian School of Business (ISB) to provide part of its land to Microsoft (the ISB was compensated with additional land), facilitated funding of roads to the campus, and arranged for an alternative source of electricity at the site. The 54-acre Hyderabad facility<sup>12</sup> is the second-largest Microsoft campus in the world, after the company's headquarters in Redmond, Washington. When courting Dell to make an investment decision, APFIRST worked with the Andhra Pradesh State Council of Higher Education to train students who could be hired by Dell for the company's Hyderabad call center. It also worked with telecommunications companies to provide high-speed bandwidth with redundant links for the Dell facility. Since each major company had its own set of requirements, APFIRST's ability to coordinate across government and existing business institutions was critical to its success in attracting new companies.

A holistic marketing and business development focus was another factor contributing to the success of APFIRST. The organization hired a leading management consultancy to obtain market intelligence and identify competitive advantages while simultaneously

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<sup>12</sup> The facility consists of the India Development Center, Microsoft IT-India, and the Microsoft Global Services Center.

leveraging the firm (in addition to its own and Andhra Pradesh's leadership) to reach out to key decision makers in top global companies.

Development institutions in Chile and Malaysia have pursued similar relationship building initiatives. Chile's economic development agency, CORFO (Corporación de Fomento de la Producción de Chile), established a partnership with the Thunderbird School of Global Management in Glendale, Arizona, USA, to undertake market research and establish contacts with key organizations such as the American Electronics Association and the San Jose Business Incubator (Nelson, 2007). Malaysia set up an International Advisory Committee for its Multimedia Super Corridor to facilitate engagement with leading global players.

In addition to government investment promotion institutions, industry associations can also be effective in carrying out branding and industry promotion initiatives. NASSCOM, for example, has not only played an important advocacy role with policy-makers for the IT services and ITES industries, but also has successfully created an India brand that is now recognized internationally (World Bank, 2008). NASSCOM's success in a branding initiative has been emulated by agencies in other countries, notably the Brazilian Association of Information Technology and Communication Companies (BRASSCOM), the Bulgarian Association of Software Companies (BASSCOM), and the Ghana Association of Software and IT Services Companies (GASSCOM).

Governments need to be proactive in attracting strategic anchor investors in order to gain a critical mass of investors. This critical mass can generate dynamic cluster effects and help raise visibility as a potential destination for IT services and ITES. When Andhra Pradesh succeeded in getting Microsoft to locate a software development center in Hyderabad, it became much easier to attract follow-on investments from other high profile companies such as Oracle, IBM, and Accenture, which in turn triggered a cluster effect that encouraged investment from many more companies.

### ***Policy Options for Nurturing and Expanding the Talent Pool***

After access to high-bandwidth telecommunications infrastructure, the availability of employable talent is the single most important determinant for the growth of the IT services and ITES industries in the long term. As mentioned above, public education content is too often divorced from the needs of industry. When examining policies related to the talent pool, institutional mechanisms for aligning skills development with the needs and requirements of the industry is in our view the most important factor for success. In this regard, the government of Mexico established a new organization in 2008, MexicoFIRST, as a partnership between the Asociación Mexicana de la Industria de Tecnologías de Información, (AMITI) and the Asociación Nacional de Instituciones de Educación en Tecnologías de la Información [ANIEI]. ProSoft, a government agency tasked with promoting the IT services and ITES industries, facilitated and supported the creation of this entity. MexicoFIRST will closely interface with the industry on the one hand and Mexican universities on the other to identify the training needs of the industry and to facilitate training programs at the universities to meet those needs.

Another important policy intervention is to improve the quality of education in order to develop generic skills that are relevant to a broad spectrum of industries. An example of this approach is the NASSCOM assessment of competency (NAC) framework, which the organization developed in consultation with a large number of ITES players. The NAC has emerged as India's national standard for generic skills and recruitment of entry-level talent for the ITES industry (NASSCOM 2007), and NASSCOM has rolled out the framework in partnership with a number of state governments in India. The skill testing themes under NAC are shown in Table 4. The test scores indicate areas for

improvement, allowing customization of further training. NASSCOM has subsequently developed a NAC-Tech certification (NASSCOM 2008b) that is focused on benchmarking engineering skills for the IT industry. This too is being rolled out in partnership with state governments. Applying and enforcing common industry certification not only helps to align skills with industry requirements, but also provides IT services and ITES companies with a more accurate estimate of the talent pool available and reduces their recruitment costs.

**Table 4. NASSCOM ITES Skill Competence Testing Themes**

<b>Test</b>	<b>Competencies assessed</b>
Keyboard skills	Typing speed and accuracy
Spoken English	Voice clarity, fluency, vocabulary, grammar/ sentence construction, accent, and situation comprehension
Writing ability (Multiple choice and essay)	Message clarity and comprehension
Listening	Comprehension and accent comprehension
Numerical and analytical	Numerical ability and logical reasoning

Source: NASSCOM 2007.

Still another important policy intervention aimed at nurturing the talent pool is the establishment of mechanisms to allow just-in-time training for IT services and ITES. A number of countries are providing training grants for this purpose. South Africa offers a training and skills support grant toward the cost of company-specific training up to 12,000 Rand (approximately US\$1,700) per agent. Under its ICT Capacity Building Program, Sri Lanka offers grants to fund a portion of the training costs of IT services and ITES companies. Sri Lanka also offers grants up to US\$10,000 to bring in a specialized trainer from abroad under a “train the trainer” program. In November 2007, the president of the Philippines directed the Technical Education and Skills Development Agency (TESDA) to allocate 350 million Pesos (approximately US\$8 million) to provide scholarships for training 70,000 call center agents (TESDA 2008). Singapore has a national Skills Development Fund for upgrading worker skills and has launched the Initiatives in New Technology scheme to establish new capabilities within companies or industries by encouraging manpower development in the application of new technologies, industrial R&D, and professional know-how (SEDB [Singapore Economic Development Board] 2008).

Given the significant shortage of skills, many large IT services and ITES companies are taking up skills development initiatives, building dedicated training centers, and employing hundreds of training staff. Infosys’s new Global Education Center in Mysore, for example, has more than 300 full-time faculty and is able to train 13,500 employees at a time. The company invested more than \$120 million in this 335-acre, 2-million-square-foot facility. Satyam, after establishing a 240,000-square-foot School of Leadership in India, has announced that it will build a Satyam Technology and Learning Center within Deakin University at Geelong in the State of Victoria, in Australia (Gartner 2008). Given the need to address the shortage of skills, a number of IT services and ITES companies are collaborating with academic institutions. Some examples in India are (Wadhwa, de Vitton, and Gereffi 2008):

- Accenture-Xavier Labor Research Institute (XLRI) Academy;

- VLSI (very-large-scale integration) Finishing School, established as a partnership between Cadence and the University of California Extension at Santa Cruz;
- NIIT Institute of Process Excellence, a joint venture between NIIT and Genpact;
- NIIT Institute of Finance, Banking and Insurance, a joint venture between NIIT and ICICI Bank;
- Infosys's "Campus Connect" program, which brings faculty members from 470 engineering colleges to its training institute for a two-week residential training program;
- Satyam's effort to help 103 universities with faculty training, course design, and implementation of e-learning infrastructure;
- 24/7's partnership with 200 colleges and even with high schools to prepare students for the BPO industry.

In addition to the efforts of IT services and ITES companies to create incentives for training potential employees, some governments and universities have used public funding and public-private partnerships to nurture and expand the talent pool. These initiatives have been designed to expand existing university infrastructure and faculty, develop competencies that are benchmarked globally, and forge linkages for skills development with private sector and best-in-class institutions (see Box 1).

### **Box 1. Government and University Initiatives in Skills Development for IT Services and ITES**

*Public Funding Initiatives.* **Ireland** presents several good examples of publicly-funded initiatives to expand existing infrastructure, faculty, and IT curricula at universities, colleges, and schools in order to ultimately expand the IT talent pool. By end-2001, Ireland had invested IR£40 million (approximately US\$79 million) in its "Schools IT 2000" initiative, which provided IT equipment, infrastructure and training, and curriculum resources to schools. The University of Limerick has established a College of Informatics and Electronics that brings together the disciplines of mathematics, software, computing, communications, and electronics. The Dublin City University is focused on the development of skills in the areas of business, science and electronics, computer technology, communications, and languages. Business and IT skills curricula were also introduced in other universities. Partly as a result of these efforts, Ireland now has among the highest proportion of science and engineering graduates as a percentage of all university graduates (31.9 percent) in the European Union (Eurostat 2004).

*Partnerships with Private Sector and Best-in-Class Institutions.* Various governments have played a critical role in encouraging ICT-related partnerships with the private sector and academic institutions. **Singapore** has been one of the most proactive in this regard, starting with the creation of the Industrial Training Board (ITB) in 1973. The ITB established an extensive system of training advisory committees with industry participation, introduced industry-based training schemes in partnership with companies, and established arrangements for keeping training staff abreast of the latest technological developments. The last of these was done, for example, through memorandums of understanding with companies including Mitsubishi Electric Asia, Robert Bosch (SEA), Siemens, IBM, Cisco, and Sun Microsystems (Lee and others 2008). The SEDB too began working with large companies to set up specialized training facilities, such as the ones for Tata Group's precision engineering plant in Singapore. The InfoComm Development Agency of Singapore has been active in forging global partnerships to improve ICT sector skills. For instance, in 2006 it partnered with Carnegie Mellon University's Entertainment Technology Center and the National University of Singapore's School of Computing in order to develop a degree program in interactive digital media (CMU [Carnegie Mellon University] 2006).

In **Malaysia**, the Penang Skills Development Centre (PSDC) is a joint partnership between the government, academia, and industry.<sup>13</sup> Established in 1989, it has a membership of

<sup>13</sup> See <http://www.psd.com.my/index.cfm> (accessed August 3, 2008).

141 companies and is led by the private sector. The Chittagong Skills Development Center<sup>14</sup> in **Bangladesh** is a similar public-private partnership focused on skills development for the ICT, manufacturing, and services sectors. The Center was established in 2006 in partnership with the PSDC, government agencies, industry associations, and ICT companies such as Alcatel, Ericsson, Huawei, and ZTE.

The state government of **Andhra Pradesh in India** is yet another interesting example of proactive promotion of public-private partnerships (IIIT 2007). The International Institute of Information Technology (IIIT) in Hyderabad was started in 1998 with initial support of buildings and seed funding by the state government. Over time, the IIIT has become an autonomous, self-supporting institution and has developed active relationships with major IT companies including IBM, Signal Tree, Motorola, Oracle, and Satyam, all of which have set up corporate schools on the campus. Recently there has been a move to transition these schools into partnerships focusing on high-end research. Andhra Pradesh has also partnered with Dell and GE to offer company-specific training courses in colleges to prepare students for eventual recruitment by those companies.

Partnerships with leading standards organizations, industry associations, universities, and companies can also prove highly advantageous for developing globally benchmarked skills. Universities in the Philippines, for example, offer courses in finance and accounting similar to those in the United States because accounting principles used in the Philippines are modeled after the US generally accepted accounting principles (GAAP). This has made the Philippines a natural choice for US banks and financial institutions seeking to offshore parts of their operations. Similarly, Sri Lanka has a large number of qualified accountants. (The Chartered Institute of Management Accountants (CIMA), one of the world's largest professional accounting bodies, has its second-largest number of management accountants in Sri Lanka, after the United Kingdom). Consequently, companies engaged in investment research find Sri Lanka to be an attractive offshoring destination.

Examples of other global skills providers related to IT services and ITES include the Customer Operations Performance Center Inc. (COPC), the world's leading authority on operations management and performance improvement for contact centers. Carnegie Mellon's Software Engineering Institute is a world leader in standards such as Capability Maturity Model integration (CMMI) and has developed a range of programs including those relating to improvement of personal and team software processes. Similarly, the Project Management Institute's Project Management Professional credential program is recognized globally.

### ***Policy Options for Reducing Costs***

The biggest component of cost in the IT services and ITES industries is labor. While labor costs are typically difficult for a government to influence, some labor market distortions have the potential to be addressed, such as minimum wage laws, severance requirements, restrictions on women working, or restrictions on nighttime work. The government of the state of Goa in India, for example, exempted the IT industry from application of the Minimum Wages Act of 1948 because wages in the industry were much higher than minimum wage and IT companies were averse to being subjected to frequent inspections, rent seeking, and bureaucratic requirements for compliance with the act.

This report does not advocate indiscriminate use of tax incentives and subsidies, as they may allow inefficient firms and sectors to persist, may result in decreased tax revenue while firms might have invested without the subsidy, and are difficult to withdraw once given (McKinsey Global Institute [2003] elaborates on the convenience

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<sup>14</sup> See <http://www.csd.com.bd/> (accessed August 3, 2008).

and value of tax incentives). Targeted fiscal and other government incentives to catalyze growth of the IT services and ITES industries can, however, be helpful. Toward this end, several governments have decreased net costs experienced by individual firms or lowered the income tax rate for a specific sector. Examples include a reduced income tax rate of 10 percent for key software enterprises identified by the government (China), an income tax holiday on profit from exports (India and Singapore), 100 percent tax exemption for qualifying companies for 10 years (Malaysia) or 7 years (Republic of Korea), 100 percent tax exemption for pioneer status companies (Singapore), and fiscal subsidies linked to the number of jobs created (India). In 2002, the government of India revised Section 10 A of the Income Tax Act to allow for accelerated depreciation of up to 60 percent for hardware and other equipment in the first year after purchase for IT services and ITES companies.

Other fiscal benefits include adjustment of capital expenses and VAT, as well as duty waivers for IT equipment. Malaysia, for example, offers a 100 percent deduction on capital expenditures. China imposes no customs duty or import VAT for software companies importing capital equipment. India exempts software from customs duty, allows duty-free imports into IT parks, makes computer systems freely importable, and exempts second-hand computers donated to state schools from customs duties. The Republic of Korea exempts companies set up with foreign investment from custom duties, VAT, and special excise tax.<sup>15</sup> It also offers a 100 percent exemption from dividend withholding tax for foreign investment in technology.

### ***Policy Options to Address Infrastructure Barriers***

Broadband connectivity at globally competitive prices is a necessary condition for a successful IT services and ITES sector. Governments need to create an enabling environment for establishing competitive and effective markets in order to attract investment, extend infrastructure access, and improve service quality. Some form of public-private partnerships may be used to encourage the development of broadband networks in commercially unattractive areas; such partnerships have been used for underserved areas in India, Malaysia, Spain, Uganda, and elsewhere<sup>16</sup>.

Korea is a well-known leader in broadband, as a result of its policies including full liberalization of the telecommunications market, including unbundling the local loop; leveraging of private investment for rapid rollout of broadband infrastructure; and provision of public funding to facilitate uptake of broadband services by citizens, businesses, and public institutions. Rapid deployment of broadband provided important opportunities for Korea's IT industry, and the sector is growing three times faster than the rest of the economy. Particularly fast-growing subsectors include development of search engines and local content. In addition, Korea has developed competitive advantage in niches of the IT industry, such as online gaming, where Korean companies are the biggest global players. In February 2009, Korea announced that it was upgrading its network to boost broadband speeds for citizens to 1 gigabit per second by 2012.

In countries where overall infrastructure is underdeveloped, practical second-best solutions such as IT parks may be justified in order to cluster businesses and thus ease the provision of efficient, high-quality infrastructure services required for development

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<sup>15</sup> This exemption is applicable to high-technology and large-scale manufacturing industries.

<sup>16</sup> Chapter 4 of the World Bank's report *Information and Communication for Development 2009: Extending Reach and Increasing Impact* contains a detailed discussion on policies for promoting telecommunications backbone networks.

of the IT services and ITES industries. Such an approach may also be helpful in forming a critical mass of investors and attracting a group of support services.

The success of the Stanford Industrial Park (later Stanford Research Park) in California in the United States, which morphed into what is now known as Silicon Valley, has inspired some governments to establish or facilitate the setting up of IT parks with ambitions beyond provision of basic infrastructure. While there are numerous examples of this, the Malaysian government's development of the Multimedia Super Corridor (MSC) has been one of the more prominent initiatives. Conceptualized in 1996, the MSC aspired to make Malaysia a global IT hub. It has generated revenues of more than RM 13 billion (approximately US\$4 billion) and 63,000 knowledge-based jobs (MSC Malaysia 2008). More recently, the Dalian Tiandi Software Hub in China is being developed as the "world's largest software, IT service hub" (Livemint.com 2007). The hub will have an area of over 26.5 square kilometers and is funded by private-sector investments expected to exceed US\$2.5 billion (*China Economic Review* 2008).

In 2005, the government of Morocco built the CasaShore zone with world class infrastructure and services and rental costs in line with the most competitive destinations. Building this IT park not only provided the resources that companies need to do business successfully in Morocco, but also clearly signaled the government's commitment to developing the IT services and ITES industries. Likewise, the government of Kenya announced in 2008 that it will develop a 5,000-seat BPO technology park, with a budget of K Sh 900 million (approximately US\$13 million) already allocated for financing the initial part of the project (Kenya ICT Board 2008). In another case, that of Hitec City in Hyderabad, the government of Andhra Pradesh contributed land as 11 percent equity into the project and provided ancillary infrastructure such as roads, electricity feeders, water, and sewage systems, while Larsen & Toubro was responsible for all other investment in the park.

Competitive incentive packages are often offered for companies to locate to these parks, such as subsidies on the costs of telecommunications (such as in Kenya) and other utilities (such as in the state of Orissa in India). One-stop support services at IT parks range from administration and training to legal and financial services.

### ***Policy Options to Improve the Broader Business Environment***

Beyond general policies addressing the broader business environment, policy options include freeing parts of the IT services and ITES industry from burdensome regulation and in some cases providing support from a state agency that has the mandate and the authority to guide businesses through the bureaucratic labyrinth that remains.

The bureaucratic burden may be decreased by removing some licensing requirements and providing expedited approvals for qualifying companies on remaining requirements. Industrial licensing was abolished in India for the electronics sector except for manufacturing electronic aerospace and defense equipment. ITES was declared an "essential services industry" in some of the states in India, allowing "365 x 24 x 7" operations otherwise prohibited by law. In some states in India, a "deemed approval" system that provides automatic approvals if government agencies did not respond to a company request within a stipulated number of days was initiated, and a self-certification option allowed for qualifying companies to self-certify compliance with legal and statutory requirements.

A number of online connectivity and privacy issues are also important elements of the broader business environment that may need to be addressed. Chief among them are the legal validity of online transactions, data security and data privacy protection,

Internet protocol (IP) protection and safeguards against misuse of computing infrastructure (cyber-crime). The enabling environment for legal recognition of online transactions is essential for the IT services and ITES industry. Examples include China's Electronic Signature Law 2005, the formation of a cyber appellate court and digital certification under India's IT Act 2000, and the Malaysia's Communications & Multimedia Act. Malaysia's Digital Signature Act and Computer Crimes Act, Singapore's Computer Misuse Act and Electronic Transaction Act enacted in 1998 and the Protection of Information Infrastructure Act 2001 in Korea are examples of attempts to provide assurance against the misuse of computers and computing infrastructure. With regard to intellectual property rights, countries can start by bringing patent, copyright, and trademark laws in line with international conventions such as Trade-Related Aspects of Intellectual Property Rights (TRIPS), as China, India, Korea, and Malaysia, and Singapore have done, or the World Intellectual Property Organization (WIPO) Copyright Treaty, which China, Korea, Peru, Senegal, and Singapore (to name but a few) have signed onto. Raising awareness about these issues in the legal community and among police, prosecutors, and judges is also key.

Movement of capital can be made more free and double taxation can be avoided by permitting 100 percent FDI into IT services and ITES companies and IT parks (as China, India, Malaysia, and Singapore have done), working to form tax treaties with jurisdictions to which earnings would be repatriated (as China, India, Korea, and Singapore have done), and by establishing export agencies such as the Malaysia External Trade Development Corporation (MATRADE) to facilitate trade between local producers and foreign buyers.

## **SECTION II THE LOCATION READINESS INDEX AS A DIAGNOSTIC TOOL**

The Location Readiness Index (LRI) is a modeling tool developed by McKinsey & Co. for The World Bank and *infoDev* to help countries identify their areas of relative strengths and weaknesses, and direct their efforts to interventions that will have the greatest impact on their likelihood for success.

The output of the LRI model can help a country determine whether it might be competitive in the IT/ITES offshoring market immediately. The primary data collection for the LRI model also yields valuable insights into what, if anything needs to be addressed to improve a country's competitive position.

### ***Dimensions of the LRI: What is needed to be competitive?***

As mentioned earlier in the report, favorable costs, good human resources and a functional business environment are needed to attract IT/ITES investment. Countries seeking to compete in the IT/ITES offshoring market should imagine themselves in the place of private sector companies and understand first what motivates companies to source services globally and, second, why a company would prefer a particular location over another. The main driver of the former is generally cost: companies that move services offshore or source them from a lower cost transnational location generally do so in order to take advantage of cost arbitrage. The drivers of country preference, once the cost criteria have been met, include the quality of the local talent pool and a host of "doing business" and infrastructure factors. The quality of the local talent pool gives managers confidence that they will be able to hire workers with the right skill sets without difficulty. The other factors reassure managers that they will encounter neither unreasonable barriers nor unaccustomed aggravation in running their businesses. These important factors are discussed below.

#### Talent Pool

The talent pool assessment in the LRI begins simply with the number of university graduates annually in each of several subjects that would be of interest to the IT/ITES business. These tend to be generalists, business specialists, engineers and other technical specialties. This number is then whittled down to understand how many of these graduates (a) are suitable for employment (i.e., meet a quality bar to working in the offshoring industry and have the necessary technical or language skills - which need not necessarily be English), (b) are willing to work in this industry (this is a function of both the standing of the industry and of other job options available), (c) are accessible (i.e. live near a proposed offshoring site or are willing to move there) and (d) are trainable (of the non-suitable cohort, how many can, with a short training course, move to the suitable category).

Calculations are carried out separately for each of the four business lines namely, data processing, voice processing, knowledge services and IT. The IT segmentation encompasses IT and R&D, while the other three business lines in the model all map to ITES. Each business line has its own requirements for employees. The analysis begins with the number of university graduates in each area of interest and analyzes the quality of the graduate pool and the relative attractiveness of the industry compared to other potential destinations for graduates to find the number that are suitable, willing, accessible and trainable.

## Cost

In the LRI, there are two main components to the cost index calculation:

- The “*hourly cost of doing business*” takes into account the hourly cost per full time worker doing a particular job (the output of each such person is a “full time equivalent” or FTE) to keep an IT/ITES business running. This indicator reflects the various staffing levels and requirements of the four business lines described above and takes into account facilities, telecom, broadband (as part of the telecom costs) and SG&A costs.
- The other component of the cost index calculation measures financial incentives, usually fiscal, that are given to decrease costs to companies and hence make a local IT/ITES investment more compelling.

## Infrastructure

Infrastructure is included in the model by analyzing the availability, quality and reliability of (i) telecommunications, (ii) real estate, (iii) the power supply, and (iv) transportation (road and rail). Each of these is given a 25% weighting in performing the index calculations.

## Business and Living Environment

The business and living environment component of the LRI includes four parts, each of which is given a 25% weighting in calculating the index score for this component. The components measured are i) government support of business generally (including bureaucratic burden and corruption), ii) the overall business environment (including a number of World Bank “doing business” indicators), iii) quality of life (including desirability of location, disease burden and crime), and iv) accessibility to the main markets where services are expected to be delivered (including flight time and frequency of flights).

## Country risk

The risk parameter of the model measures three areas: (i) the transparency, stability and predictability of a country’s regulatory environment (regulatory risk); (ii) its macroeconomic and currency stability and capital freedom (country investment risk); and (iii) the adequacy of its intellectual property and data protection (data risk). The model weighs each of these equally but, depending on the business line or type of investors a country targets, the parameters could be weighted differently to reflect more accurately the relevant business priorities, e.g. by increasing the relevance of data risk for businesses that depend on patent integrity or data security. The model does not measure severe disruptions such as civil wars and domestic strife. This was intentionally omitted from the model since events of this magnitude present another “gating” function rather than part of a nuanced calculation of risk<sup>17</sup>.

## Industry Maturity

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<sup>17</sup> An additional measure of risk not included in the model is an execution risk parameter. However, it could be argued that such risk is covered in the market maturity component.

Industry maturity describes how well developed the country's IT/ITES sector already is, how much business is being done, and whether there is an active business association to coordinate private and public sector activity and to promote the industry to investors. While first movers have certain advantages in entering new markets, they also undertake a number of risks. Coming into a market just as it is becoming saturated also carries with it the risk of higher costs, less available infrastructure and an overall decrease in the quality of services (i.e. diseconomies of scale). Between these two points, however, there is a growing ease of doing business that is associated with a declining risk.

**Figure A1.1. Location Readiness Index – Main dimensions and components**

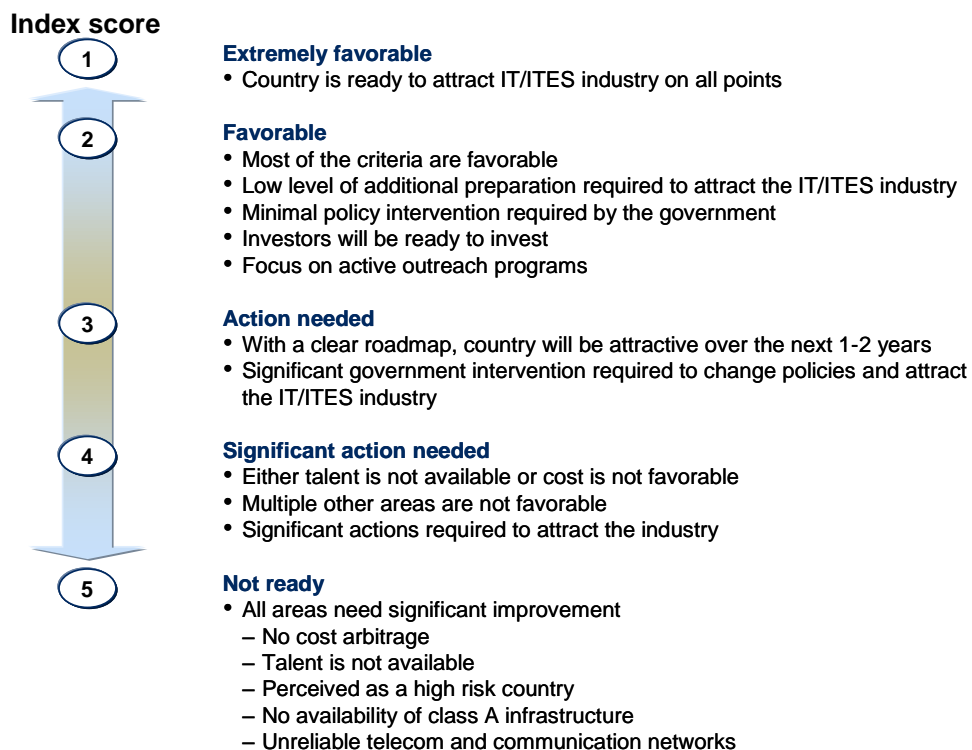
First Level	Second Level	Third Level		
Cost	30%	\$/FTE/Hour	75%	
		Incentives	25%	
Talent	30%	Readiness to Hire	75%	
			Availability	25%
		Suitability	25%	
Accessibility	25%			
Willingness	25%			
Trainability	25%			
Quality of Infrastructure	10%	Quality of Telecom and network service	25%	
			Uptime end-to-end-network	33%
			Mean Time to Restore (MTTR)	33%
		EIU connectivity rating	33%	
Availability of quality real estate	25%	Total inventory of class A spaces	20%	
		Vacancy rate of the class A/B spaces	80%	
Energy	25%	Annual average power outage (days)	50%	
		Peak time shortage (%)	50%	
Transportation	25%	Total road length / per capita	50%	
		Total rail length / per capita	50%	
Risk Profile	10%	Regulatory risks	33%	
			Stability of law/regulation	33%
			Transparency & fairness of legal system	33%
		Bureaucracy	33%	
Country investment risks	33%	Macroeconomic stability	33%	
		Currency fluctuation	33%	
		Capital freedom	33%	
Protection of intellectual property	33%			
Environment	10%	Government support	25%	
			Government policy towards FDI	20%
			Flexibility of labor laws for industry	20%
			Ease of bureaucratic burden	20%
Flexibility of Regulation	20%			
Level of corruption	20%			
Business environment	25%	Overall business environment	33%	
		Employment practices	33%	
		Compatibility of business ethics	33%	
Accessibility	25%	Travel time	33%	
		Frequency	33%	
		Time difference to US	33%	
Attractiveness of living environment	25%	Rating of quality of life	25%	
		HIV/AIDS - adult prevalence rates	25%	
		Number of murders per capita	25%	
		Number of rapes per capita	25%	
Maturity of Industry	10%	Employees in IT/ITES as % of total in non-agriculture	60%	
		Presence of Industry association (yes/no)	20%	
		IT/ITES GDP as % of total services GDP	20%	

In the LRI, the market maturity index measures three factors: i) the contribution of IT/ITES to GDP, ii) the percentage of service sector jobs which are in IT/ITES; and iii) the existence of an industry association. Market maturity is therefore in main a second order metric: of the six dimensions of the LRI, and improves most with successful action on the other five. Figure 4 lists the LRI criteria and sub-criteria.

The data needed to make up the LRI are typically collected from a combination of primary and secondary sources; data collection in less developed countries, where data are not typically published by commercial sources or by international organizations, would require even more dependence on primary sources, through interviews with stakeholders. Data are indexed on a scale of one to five (with one the most attractive), weighted and included in one of the six model categories. Each of the six categories yields a score on a scale of one to five, with one being the best score (indicating that the country is very competitive on that criteria) and five the worst score (indicating that the country will likely need to make a significant commitment to improve). The six categories are then themselves weighted and averaged into a single LRI score. Figure 5 provides guidance on how scores should be interpreted.

An additional feature of the model allows the different categories, the criteria and sub-criteria that go into each category, to be weighted according to the requirements of a particular company or sector. For example, a country that believes it has a reasonable prospect of providing banking or defense-related engineering services may wish to give extra weight in the model to data protection and security over considerations of cost as this more closely approximates how potential customers or investors would view it. In short, from a country's perspective, the possibility to assign differing weights to different criteria is important as it allows the country to assess its competitiveness with respect to the particular segment or segments in which it hopes to compete.

**Figure A1.2. What the Index Scores Mean**



Most importantly, the model permits countries to assess their competitiveness in four different areas of IT/ITES. As discussed above, IT/ITES is actually a complex and varied set of businesses -- including Information Technology (IT), Research and Development (R&D) and Business Process Outsourcing (BPO) -- each of which require different inputs and produce outputs of different value. Countries and companies

therefore need to know which of these can be supported locally in a low-cost country and which cannot. From the most simple to most complex, the model discriminates between data processing, voice processing, knowledge services and IT.

The model segmentation is based primarily on the different talent and cost considerations that go into each of the four business lines and is driven by the fact that these four business lines represent different value propositions to providers. Put differently, whether a multinational company is starting a back office function, a call center, a remote radiology room or a software development affiliate in a developing country, it will probably see the same infrastructure, environment, country risk and local business maturity. But starting a software development operation requires expensive engineers while data processing might only require inexpensive liberal arts graduates and starting a radiology services company requires expensive trained and licensed radiologists. From a country perspective, it is therefore essential to be able to identify what talent is available, what business lines can be supported and what it will cost companies to hire.

Finally, the model allows for projections of future scores to be made by inputting assumptions about salary inflation, exchange rate fluctuation and consumer price inflation.

### ***Applying the LRI model to the US, India, Kenya and Indonesia***

The LRI model was initially applied to the US and India, both to validate model output results<sup>18</sup> and to use these countries' results as benchmarks. The model was then applied to the two case study countries - Indonesia and Kenya. The overall results of the analysis are described in Section III. As expected, comparing between India and the US shows a distinct overall cost advantage for India together with advantages in the talent pool, although the US scores more highly than India on all other factors. Except for the talent pool issue, these results would probably be accepted by any casual observer not familiar with the world of IT/ITES offshoring: India is the lower cost provider, the US provides better facilities. Another important observation in comparing India and the US is that while they score differently on the various parameters, their overall scores on data and voice processing are very close. However, that does not necessarily imply that they are equally attractive to investors because their profiles are so different that investors would choose them for very different reasons (e.g. cost-sensitive investors would be more likely to choose India; risk-averse investors would be more likely to locate or retain services in the US).

Indonesia and Kenya return similar LRI summary scores. Neither country appears *prima facie* to be a particularly attractive offshoring destination when compared to India, which enjoys low costs and a large ready to hire talent pool. The conclusion from the overall score for these countries might well be that neither currently enjoys a particular competitive advantage and that it will require a significant commitment of political will, resources and time to build one. However, closer examination of individual category scores and at the category sub-criteria revealed several subtle but important differences between the two countries, with differing consequences for each: Indonesia has a large labor pool that would allow a nascent offshoring sector room to grow; while Kenya is more talent and population constrained and may need to consider other, less traditional approaches to building a successful offshoring sector. Indonesia appears not to have focused on the offshoring opportunity and so has not grown the sector; Kenya, however, has tried to develop the sector but, in part because of its talent constraints, has not

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<sup>18</sup> Validation was done against the McKinsey LCI and LSD scores for these countries and through discussion with the authors of the McKinsey indices.

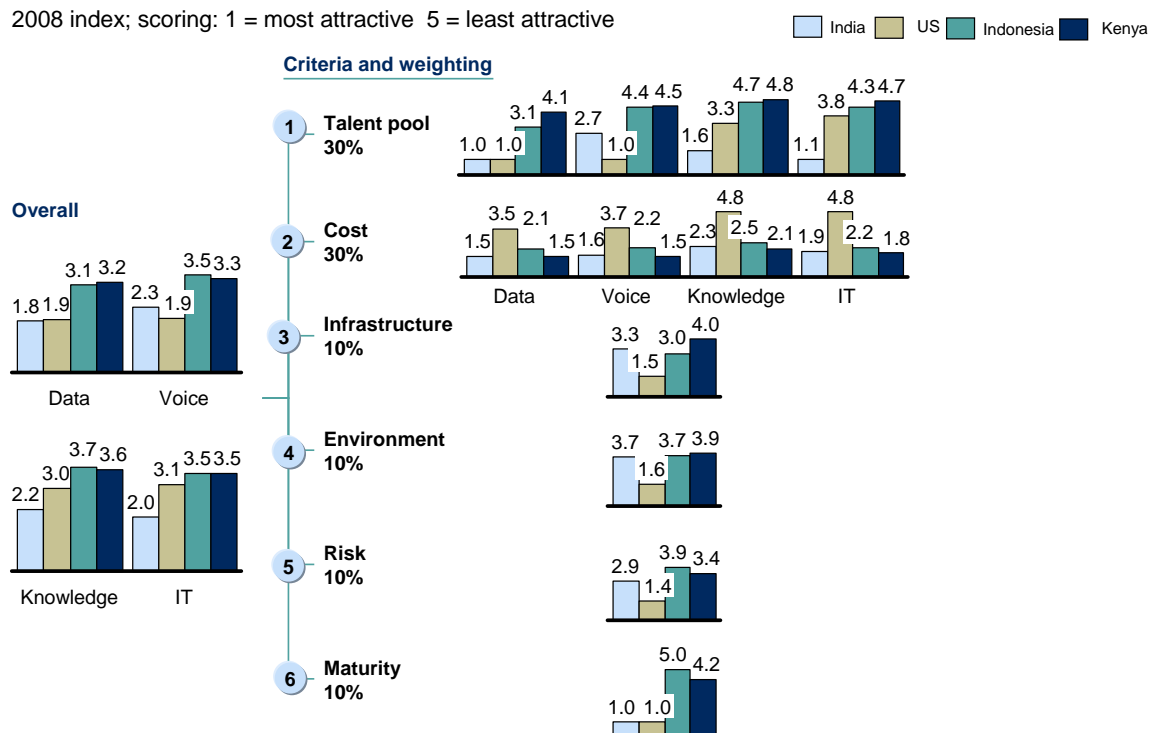
been successful in scaling it up. Section III includes a detailed description of the results for these countries.

## SECTION III APPLICATION OF THE LRI TO INDONESIA AND KENYA

Indonesia and Kenya were analyzed as an illustrative application of the LRI. It was found that both countries need investment and good policies to make themselves hospitable environments for an offshored IT/ITES sector. Presentations with more detailed analysis are available at <http://www.infodev.org/>

As mentioned in the report, neither country appears as a particularly attractive offshoring destination when compared to India, which enjoys low costs and a large ready to hire talent pool. We consider below each country's performance on each of the six dimensions of the LRI.

**Figure A2.1. Indonesia and Kenya compared to with the US and India**



Source: McKinsey & Co.

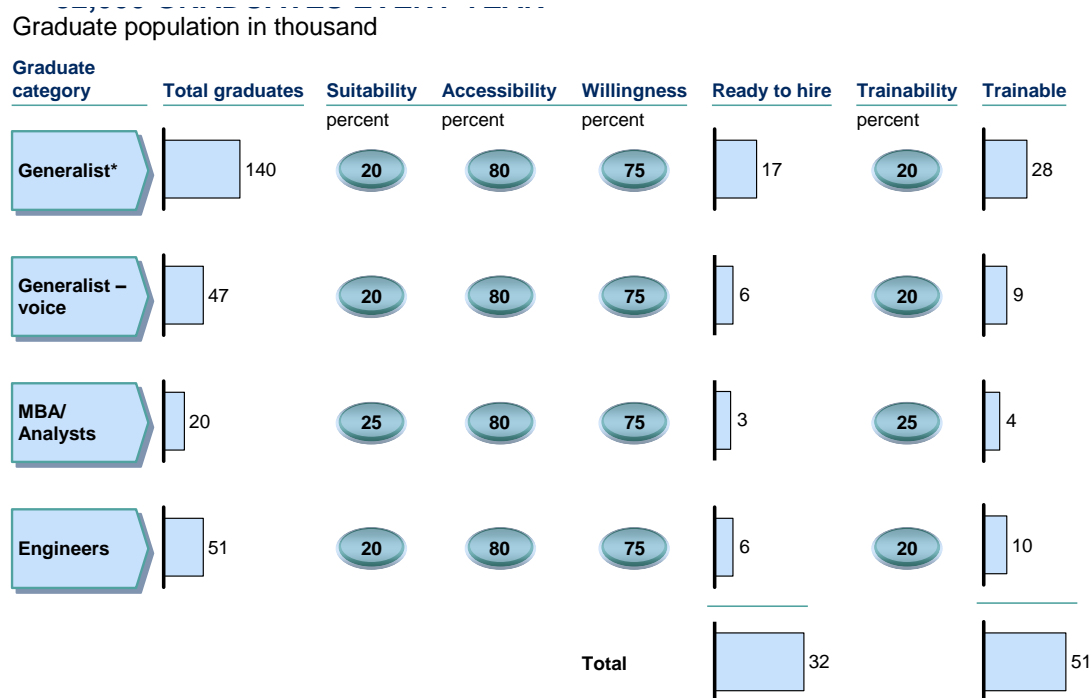
### Detailed Assessments

#### Talent Pool

Neither country boasts a large number of generalist or skilled graduates who could work in the IT/ITES industry. Suitability appears to be a particular issue in Indonesia due to the labor pool's low level of English proficiency, questionable educational quality outside the capital region and an educational system that emphasizes theory over practical problem solving skills. This latter issue was also mentioned in interviews as a problem in Kenya. In both countries, suitable graduates are generally willing to work in the industry and relocate to do so. Both countries are unlikely to be able to develop, at least initially, the higher yield, higher value end of the offshoring business, i.e.

knowledge processing and IT, given that the majority of the small hireable population in each country are generalists without special technical skills. Hence, they could look to develop data and voice processing services as they start to build and scale up the sector.

**Figure A2.2. Indonesia “Ready to Hire” Population**



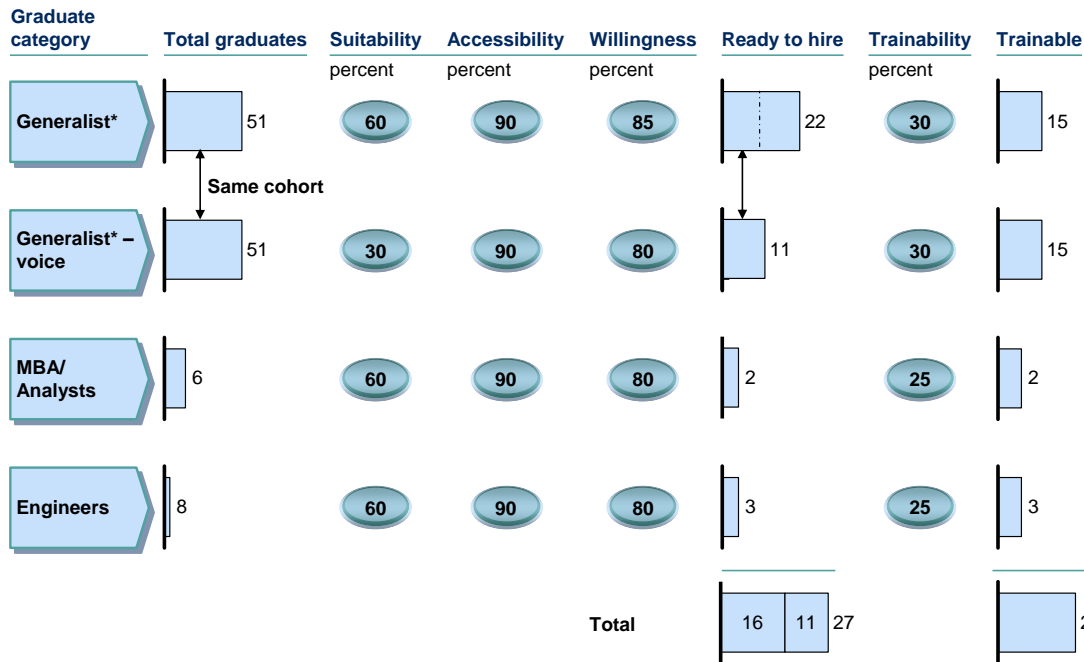
Source: McKinsey & Co.

An important difference between the two countries is in terms of scalability, as shown in Figures A2.2 and A2.3: Indonesia starts with almost 140,000 graduates each year but only 20% of these are qualified to work in the IT/ITES sector due to issues of quality or curriculum. Kenya, on the other hand, starts with a much smaller pool of graduates every year but of these, 60% could work in the sector if they desired to. This implies Indonesia could probably dramatically increase the size of the talent pool if they are given appropriate training and education initiatives. However, the same cannot necessarily be said of Kenya as its 60% suitability rate is very high compared to most developing nations (*cf.* India, Philippines and Russia with 13%, 15% and 10%, respectively<sup>19</sup>). Hence, Indonesia could remedy this shortfall by improving education generally and enrolling more students into university, even though this would be a long term solution that does not address the short to medium term needs of investors to cope with the possibilities of business expansion. To give a sense of the challenge facing each country in order to attain an index score of “1” on talent (using data processing as an example): Indonesia would earn a top score if it increased its suitability to 60% but Kenya would have to graduate five times the number of graduates it currently does. Clearly, neither country would target only quality or quantity of graduates in order to build its talent pool but from the example given, Kenya appears to face the more challenging task.

<sup>19</sup> Cite source - MGI

**Figure A2.3. Kenya “Ready to Hire” Population**

Graduate population in thousand



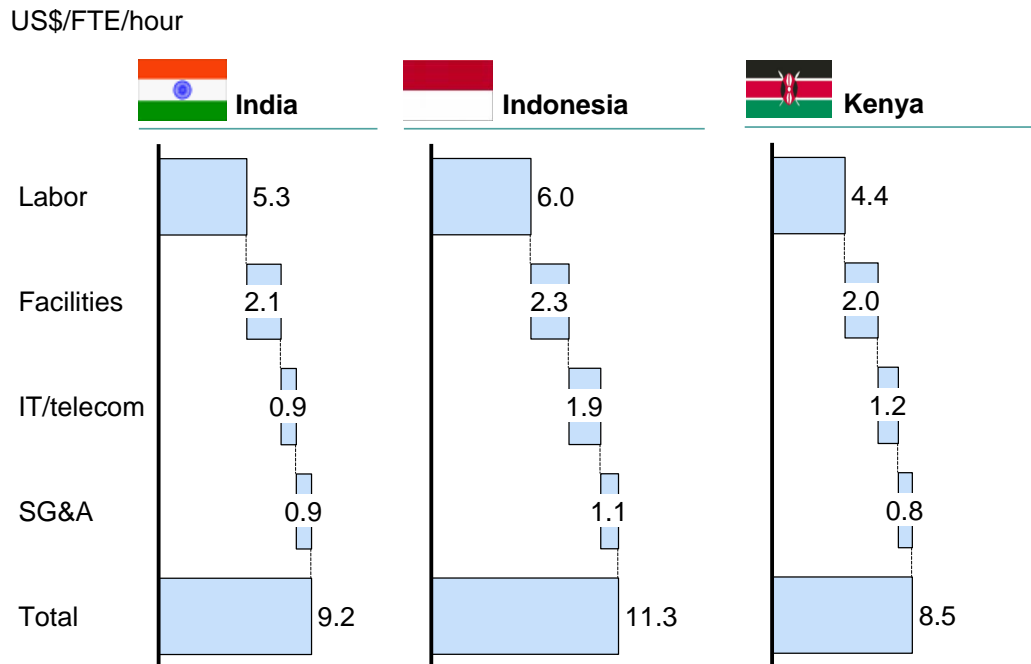
Source: McKinsey & Co.

Cost

Figure A2.4 sets out the results of the cost index for Indonesia and Kenya, and includes India as a benchmark. The analysis indicates that both countries have a cost base sufficient to include it on a short list of possible offshoring locations, largely due to the relatively low wages paid. The model also shows that broadband costs in Indonesia were abnormally high. It is of such significance that simply bringing their broadband costs down to Indian levels would result in an overall decrease of 10% in the total cost for Indonesia. Such cases are rather atypical in general because the cost of broadband tends to be a insignificant proportion of the overall cost. It is also observed that both Indonesia and Kenya could provide a more attractive incentive landscape to investors. Indonesia appears to have taken a particularly “hands off” approach with respect to IT/ITES sector development, as demonstrated by the absence of many of the common incentives used to bring in investors, including software parks, training subsidies, and subsidies for capital expenditures. Kenya, on the other hand, appears to have made a greater effort to support the sector by providing fiscal advantages and capital expenditure subsidies; but there is remains much that could be done to provide an improved starting point for investors<sup>20</sup>.

<sup>20</sup> We do not here advocate the use of government subsidies in all cases. Subsidies need to be considered on a case by case basis taking into account the costs and benefits unique to each particular country, used where the benefit exceeds the cost and discontinued when the cost benefit calculation tips in favor of costs. Generally, however, government should make sure not to (i) distort the playing field in favor of ICT offshoring and against other, potentially equally competitive sector growth; (ii) use public funds to favor one sector over another unless there is clear evidence of larger social benefits; or (iii) waste public funds on subsidies and benefits in areas where they are unnecessary – and lead simply to a transfer of tax income to select group of private companies.

**Figure A2.4. Cost of Operations – Data Processing**



Source: McKinsey & Co.

### Infrastructure

Both countries are roughly comparable in scores, although Indonesia performs better due to higher power and real estate availability. However, both countries suffer from poor connectivity, a lack of good office space, and inadequate roads and railways. For Indonesia, infrastructure is largely in Jakarta and is not dedicated to IT e.g., there are no sizable IT parks or IT special economic zones. Network reliability also appears to be poor and the transport infrastructure is lacking, possibly an artifact of Indonesia's archipelago status or high population density. Even in Java, however, roads appear to be poor. For Kenya, there is a general lack of world class network service levels, and a highly limited supply of Class A 'ready to occupy' infrastructure e.g., IT parks. In addition, its unreliable power distribution system results in higher cost for companies as they need to maintain their in-house power generation systems.

The connectivity issues in both countries are expected to be resolved soon as more bandwidth becomes available to both countries with the laying of submarine fibre optic cables. Roads and railways become an issue if IT parks and business campuses need to be located outside of the main urban centers and so require more convenient access. Finally, investors are unlikely to wait for adequate infrastructure to be built, but the supporting infrastructure such as roads, airports, and broadband has to be in place to enable their IT/ITES operations.

It is important to note that a moderately poor infrastructure score, like a poor score in business environment or country risk, is not an absolute barrier to success in developing a sector. This is because companies may invest in buildings, generators, and satellite connections, for example, to overcome certain infrastructure issues if it is justified from a business perspective. In addition, the national level measures may mask infrastructure advantages at regional, provincial or district levels. For example, India's scores in infrastructure are not stellar, even though it is the market leader in

IT/ITES offshoring services by a clear margin. The important conclusion to draw about index results for infrastructure, environment and risk is that a poor score is an indicator of one or more areas that needs to be addressed by policy and investment in possibly a sector-specific manner, but it does not represent an absolute barrier to entry.

#### Business and living environment

Neither Indonesia nor Kenya does well in terms of the business and residential environment and for similar reasons: both are perceived as bureaucratic, lacking employer-friendly labor laws and are remote from the US (which for this analysis was assumed to be the primary market for services). This last element could be customized for both countries using the model: Kenya is more accessible to the UK, which might be the dominant nexus for its offshoring activity, while Indonesia is closer to Shanghai, Beijing and Tokyo as well as Australia and perhaps more likely to attract investors from these places. Addressing the problems that are addressable for IT/ITES investors, if not for the country at large, could suffice at least to lower the barrier that the business environment currently presents to attracting a reasonable number of investors to both countries.

#### Risk

Neither country does well in the country risk measure. Kenya appears to have the slight edge with an overall risk score of 3.4 (versus the 3.9 score of Indonesia), due to its greater regulatory stability, lower burden of bureaucracy and a greater currency stability, recent events there notwithstanding. Indonesia is perceived to be high in regulatory and economic risk, although the perception appears to be improving, having risen from 133 to 123 this year in the World Bank Group's *Doing Business* survey. It is worthwhile to note that country risk is also not an absolute barrier to entry, given the Philippines' rapid growth in BPO in spite of having a risk ranking comparable to Indonesia's.

Both countries also do poorly with regards to data risk. Software piracy in Kenya and Indonesia is common, with some sources estimating that more than 80% of software use in these countries is in breach of manufacturers' intellectual property<sup>21</sup>. Legislation at the time of this writing is being considered by parliament in both countries to strengthen cyber laws and increase data protection but it is unclear whether the new laws will have adequate enforcement mechanisms and whether there is the local expertise and political will to hold violators to account.

#### Market maturity

Neither Indonesia nor Kenya has a sector of sufficient maturity to be considered an attraction to new investors. Kenya has the advantage of having a functional IT/ITES industry association and several companies working in the sector.

#### ***Findings from the analysis***

It is found that both countries would need investment and sound policies to make themselves hospitable environments for an offshored IT/ITES sector.

Despite the existence of a nascent IT/ITES sector in Kenya, Indonesia may be the better positioned of the two: while both have a number of infrastructure, business

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<sup>21</sup> See Economist Intelligence Unit; Business Software Alliance/IDC Global Piracy Report, May 2007

environment and other issues that need to be addressed, Indonesia with its larger population base, greater number of annual university graduates and relatively low suitability appears to have more growth potential. Indonesia's talent pool is adequate to the needs of a modest sized sector and could likely be scaled up through short term and longer term initiatives.

The LRI indicates that Indonesia would enter the market at the lower end of the value chain, in data processes for example, which requires generalist skills. The lack of analysts and MBAs limits the opportunities in knowledge services, but there appears to be scope for the country to build up its IT services industry as it builds up its pool of engineers over time. Interventions to improve suitability in the short term, combined with longer term educational investment, mean that Indonesia has a very large potential talent pool from which companies may draw and so can avoid the agglomerative effects that come from scaling up a sector beyond the capacity of local labor availability, at least in the short to medium term.

The limited size of Kenya's talent pool, on the other hand, poses a serious challenge to building a sizeable IT/ITES sector. It is not feasible to increase the pool by improving quantity or quality due to an already high literacy rate of 75% and suitability rate of 60%, and the small size of its educated population and relatively limited numbers of university graduates. Based on the LRI, Kenya would only score a 3.5 on the talent pool index even if it were able to raise its suitability to 100%, far below the score of 5 required to earn a top ranking in this category. Hence, the country should either overcome these structural barriers or find a niche market where scalability is of less importance. Possible solutions to increase talent in Kenya in the medium to long term might include improving bridge schools (from high school to college), recruiting talent directly from high schools, promoting immigration to attract regional talent, working with neighboring countries to develop a regional hub model, and building more universities. Alternatively, Kenya can seek to become a niche player, for example, by providing BPO to support local industries such as tourism. In short, Kenya's talent pool issues may not be insurmountable - they do, however, require more creative (and possibly higher risk) solutions than is the case with Indonesia.

Addressing the regulatory, infrastructure and risk issues identified in Kenya and Indonesia has proven possible in a number of other countries, including India. A common approach is to segregate the sector and provide market participants the resources they need in order to conduct business efficiently. Some examples include special IT parks with the required type of office space, power back ups systems and transportation to and from those facilities; or legal status that specifically exempts IT/ITES companies from unnecessary "red tape" in their dealings with officialdom, provides special fiscal provisions and benefits, and allows them easier access to and repatriation of capital; and a dedicated state office to help them navigate or circumvent the bureaucracy. India still does not score well on the LRI in terms of risk, infrastructure and environment; even with almost half of the worldwide annual revenues in offshored IT/ITES services. Its success is attributable at least in part to the targeted deployment of resources rather than the attempt to set the entire country in order before opening for business. Improving infrastructure, regulation and the business environment for isolated sectors can be the "thin end of the wedge" in reform generally: while national reforms might be difficult to push through against entrenched interests in a society, they can be relatively straightforward in an insulated, export-directed sector like IT/ITES offshoring. These reforms could then be applied more rapidly to other sectors of the economy, after they have been implemented and proven to provide results.

## CONCLUSIONS

The global market for IT services and ITES is large and growing despite fears of a temporary setback because of the global financial crisis. Limitations to growth are mostly on the supply side, in particular in terms of employees with skill sets that meet the requirements of the market. The globalizing market for skills, however, allows developing countries to take advantage of their cost advantage in terms of labor and to make investments in expanding the skills of their labor forces in order to make them suitable for employment in the fast-growing global IT and ITES industries. Successful participation in the industries has been shown to have a positive impact on job creation, exports, economic growth, and social development.

Locations with comparatively large talent pools will have an advantage in attracting IT services and ITES companies because large companies prefer to source services from locations where scalability is feasible. This is particularly true for “commodity” services such as contact centers and standard back-office IT and accounting functions. Recent successes of small countries show that opportunities exist in a range of niche and higher value-added segments where small countries may be able to compete successfully. The timing and scale of gains differ, however, according to a country’s skill endowments, infrastructure, cost advantages, and business environment. The Location Readiness Index has been introduced as a tool for policy makers to better assess their opportunities in the IT/ITES space and identify areas that would require further attention. The use of the Index as a diagnostic tool has been demonstrated by applying it to the cases of Kenya and Indonesia. Countries that are severely constrained in terms of infrastructure and skills may need to focus on longer-gestation programs to develop their talent pools and basic infrastructure, and thus will take longer to realize the benefits of hosting IT services and ITES companies.

In countries that have succeeded in the IT services and ITES industries, governments have generally adopted a proactive role in promoting the sector. Such support can often be provided with relatively low levels of public funding by leveraging private sector investments. Most of the public interventions to promote the industries – improving education, providing broadband infrastructure or streamlining government interfaces with businesses etc – are essentially “no regret” moves that carry little risk.

Locations that have successfully developed IT services and ITES appear to have empowered industry development institutions to follow adaptive and engaged approaches to policy. Winning policy development efforts are characterized by adaptation to the rapidly evolving needs of the industries and by ongoing engagement between government leaders and the industries. The private sector can provide governments with invaluable information and insights on available opportunities, market trends, and future skill requirements, and engagement between private and public sectors can also help overcome investment constraints in key areas of infrastructure and human resource development. Given the importance of skills as a driver of growth of the IT services and ITES industries, a focus on quality of education in close alignment with local and global industry needs is essential. Moreover, the paper provides with a discussion of available policy options.

Finally, the importance of leadership for promoting the IT services and ITES industries must be underscored. Extensive commitment and support from the highest echelons of government are essential to make rapid and deliberate policy choices, to implement them effectively, and to overcome bureaucratic resistance.

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