The Offshore Services Global Value Chain

March 1, 2010

Gary Gereffi & Karina Fernandez-Stark

Contributing CGGC researchers:
Penny Bamber, Yuber Romero & Anuradha Phulekar

Center on Globalization, Governance & Competitiveness,
Duke University

*This paper was comissioned by the the Chilean Agency for Economic Development (CORFO)

CONTENTS

Executive Summary **3**

I. Introduction **6**

II. The Offshore Services Industry in the World **7**

A. Definition and Importance 7

B. Global Services Models 10

III. Offshore Services Global Value Chain **13**

A. Upgrading in the Offshore Services Industry 18

B. The Current State of the Global Offshore Services Industry 23

1. Size of the Industry 23

2. Supply and Demand 26

3. The Most Dynamic Offshore Services Sectors 37

IV. Country Cases **39**

A. India 39

B. Ireland 43

C. Eastern Europe 46

Policy Interventions in the Czech Republic 51

V. Industry Trends and Conclusions **52**

Appendix **54**

A. Acronyms 54

B. Glossary 55

C. Description of Activities in the Offshore Services Industry 57

1. Information Technology Outsourcing (ITO) 57

2. Business Process Outsourcing (BPO) 58

3. Knowledge Process Outsourcing (KPO) 60

D. KPO Definitions 61

FIGURES

Figure 1. Actual Adoption of Offshore Practices 9
Figure 2. Business Models in the Outsourcing and Offshore Services Industry 11
Figure 3. Offshore Services Value Chain 14
Figure 4. Offshore Services in the Pharmaceutical Value Chain 17
Figure 5. Global Demand of Offshore Services by Activity 25
Figure 6. Industry Participation in the Offshoring Market 28
Figure 7. The Global Supply and Demand for Offshore Services 31
Figure 8. Business Model of an Indian Offshore Services Provider 33
Figure 9. Distribution of Functions by Company Size 38
Figure 10. Indian Service Provision in 2000-2006 39
Figure 11. Total Employment by Sector 1997-2007 44
Figure 12. Selected Business Service Exports as Share of Third Party Sales to the EU Available Countries, 2004 46
Figure 13. The Supply of Offshore Talent in Services in Eastern Europe 49

TABLES

Table 1. Offshore Services Horizontal Activities 16
Table 2. Offshore Service Companies by Vertical Activities 22
Table 3. Global Offshore Services Market Size 24
Table 4. Top 20 Offshore Services Providers 30
Table 5. Top 10 Indian Offshore Services Companies 32
Table 6. Companies offering KPO Services 35
Table 7. Companies by Activity 36
Table 8. Factors of Attraction for Offshoring in India 40
Table 9. Factors of Attraction for Offshoring in Ireland 45
Table 10. Factors of Attraction for Offshoring in Selected Eastern European Countries 48

Executive Summary

This report analyzes the evolving offshore services industry employing the Global Value Chain framework. Offshore services emerged as a dynamic global sector in the past two decades. The information and communication technology (ICT) revolution that began in the early 1990s transformed the way companies do business by allowing for the separation of the production and consumption of services. In the search for efficiencies and economies of scale, firms began offshoring and outsourcing a variety of corporate functions. Driven by the need to lower costs and access talent, firms look beyond the boundaries of the developed world. This provides important opportunities for growth and employment in the developing world. Firms are attracted to developing countries as offshore destinations for their competitive advantages, such as low human resources costs, technological skills, language proficiency, similar time zones, and geographic and cultural proximity to major markets. As more sophisticated work such as new product development, research and development (R&D), and other knowledge-intensive activities are performed abroad, the supply of scientific, engineering and analytical talent offered by developing countries also becomes key in attracting firms.

The global value chain for offshore services provides policy makers with a tool to support decision-making with respect to market entry. The chain incorporates all services that are currently being provided in the industry and value is correlated to employee education level. The lower value segments are basic services in information technology outsourcing (ITO) and business process outsourcing (BPO). At the higher end of the value chain are services in knowledge process outsourcing (KPO) segment, including market research and business intelligence that require highly specialized expertise. Industry-specific services that cannot be easily applied in other industries are referred to as verticals. Vertical chains include lower value ITO and BPO services, with research and development (R&D) at the high end. In order to develop this global value chain, the industry is analyzed at both the firm and country levels. Lead firms are identified and their key activities are categorized, including the evolution or *upgrading* of the firms´ key service offerings.

The industry has grown rapidly during the past decade and estimates for its size at a global level range widely from US$ 101 to US$157 billion for 2008. Demand in the industry is analyzed at three levels: geographic, firm type and industry. Geographically, demand continues to be led by the United States and Canada, which together account for 51.1% of industry demand, followed by Europe (30.6%) and Asia (16.2%) (Datamonitor, 2009). At a firm level, multinational corporations and large firms receive the largest proportion of business services,

particularly in the ITO and BPO segments of the value chain. At an industry level, the financial and manufacturing sectors use the most offshore services at 32% and 20% respectively, followed by Telecom (12%) and Energy (11%).

Supply in offshore services is highly concentrated, the top five firms are, IBM, Accenture, EDS (today HP Enterprise Services), Computer Science Corporation and Capgemini. Lead firms tend to operate in more than one segment of the value chain and all have a strong presence in both ITO and BPO sectors. The most common upgrading trajectories include the movement of firms from IT hardware provision into software and IT services, from IT services to BPO services, and IT services to specialized vertical R&D functions. The knowledge-process outsourcing (KPO) segment has shown some upgrading from ITO and BPO firms, but it also includes a large proportion of new market entrants, particularly small and medium sized suppliers.

Supply firms in all segments of the value chain operate at a global scale with a similar business model generally referred to as the Global Delivery Model (Sako, 2009b; Tata Consultancy Services, 2009a; William F. Achtmeyer Center for Global Leadership, 2008). This consists of a global network of customer support offices and specialized delivery centers in lower cost countries and the headquarters. India and the Philippines are the most mature providers of offshore services with the highest number of these delivery centers, followed by a group of 11 emerging nations including Chile, Poland and Malaysia and finally the new comers to the industry include South Africa, Morocco and Egypt. The Global Delivery Model allows global services companies to be close to their clients and, at the same time, to undertake projects with multidisciplinary experts from different parts of the world. The model is facilitated by high concentration in the early segments of the supply chain, which has led to global standardization of both operating systems and telecommunications infrastructure platforms.

The most dynamic activities are in the knowledge process outsourcing (KPO) segment and advanced industry-specific vertical activities. In R&D, offshoring to emerging markets is expected to reach $20 billion in 2009, showing a strong increase from earlier years despite the economic crisis. High value added services require a relatively high degree of interaction between the client and the supplier because activities are complex and require a high degree of customization, and thus this segment provides greater opportunities for knowledge transfer to the host country than ITO and BPO segments that have become largely commoditized with little interaction between the client and provider. Industries leading demand in this segment include the high-tech, automotive, aerospace and health care sectors.

As the offshore services industry continues to evolve, the following trends are expected to shape growth. Firstly, the substantial industry growth achieved in the past decades will continue to grow as an increasing number of firms realize the advantages of offshoring and incorporate the practice into their global business strategy. Secondly, the economic geography of the industry will continue to evolve with new countries entering the market. This can be seen in the recent advent of South Africa and Egypt to the BPO segment. Thirdly, the market is becoming increasingly consolidated. Lead firms are expanding globally making it more and more difficult for local and regional firms to compete. Firms with captive centers are also recognizing the advantages of outsourcing services to these lead firms, such as reducing the burden of high recruitment costs and underutilized capacity, and are looking to create joint ventures. Captive centers are thus on the decline. Fourth, the KPO segment and advanced activities in specific industries will continue to grow rapidly as firms outsource their R&D functions to exploit pools of skilled labor at reduced costs, while at the same time reducing time to market for innovations and the ability to tailor goods and services to a particular market. Finally, niche markets will emerge to serve R&D requirements in different industries, offering unique opportunities for developing countries with existing industry expertise.

I. Introduction

Prior to the turn of the century, the provision of services was restricted to on-site or face-to-face interactions. However, the information and communication technologies (ICT) revolution of the early 21st century has dramatically reshaped the industry. The traditional service model has been replaced by remote, coordinated systems and trade liberalization around the world has meant that the ensuing fragmentation of supply has occurred not only within countries but also across borders. Marking a new stage in the evolution of the world economy, the shift of service jobs from the developed countries provides an important opportunity for developing nations to drive growth and improve both social and economic conditions.

Forced to lower costs by growing global competition, firms have been attracted to the tremendous untapped labor pools in developing countries. The considerable cost arbitrage provided by this cheap labor has propelled the offshoring of services in much the same way as it did in the manufacturing sector. The developing world has thus begun to play a significant role in providing business services to advanced industrial nations, and the industry has become a tremendous source of employment around the globe.

Furthermore, the offshore services industry has shown important resilience to economic downturns. During the 2008-9 economic crisis, the industry maintained positive annual growth rates above 15% in different regions, despite the recession in all major industrialized nations. This contra-cyclical characteristic of the industry is the result of companies having to redesign processes and emigrate to new models of lean and efficient operations as world markets cool. If a country can maintain competitive labor costs, the industry will continue to provide a stable source of employment and income.

Given the growing importance of the industry for developing nations, this paper seeks to provide a clear understanding of offshore services in order for policy makers to effectively promote their development. First, the paper provides a general characterization of the industry, with an overview of the main segments and business models. This is followed by an analysis of the supply and demand for offshore services, focused on identifying the leading firms and economic sectors driving the industry's growth. The final section includes an analysis of the evolution of the industry in three leading countries (India, Ireland and Eastern Europe) to identify best practices and new opportunities.

II. The Offshore Services Industry in the World

A. Definition and Importance

Offshoring services is a new and growing phenomenon. It began in the last decade, characterized by a dynamism rarely seen in other economic activities. In 2006, estimates of CAGR (Compound Annual Growth Rate) for the years 2005-2010 were as high as 43.2%, while estimates of global revenues in the industry ranged from $101 to $157 billion in 2008 (NASSCOM, 2009b; OECD, 2008; The Boston Consulting Group, 2007). Buoyed by demand from client firms looking to further reduce their costs in order to survive, the industry has demonstrated tremendous resilience during the 2008-9 economic crisis. While the more mature supplier markets such as India saw growth fall to half of its previous levels (NASSCOM, 2009b), emerging suppliers including Brazil[1] have experienced only marginal declines in growth rates.

Defined by a McKinsey Institute's report as "a company's decision process of performing functions or activities anywhere in the world" (McKinsey Global Institute, 2005, p. 454), the offshore services industry specifically refers to services c*onducted* in one country and c*onsumed* in another. Generally, the suppliers are developing countries and the buyers are developed economies. During the 20th century, these service activities were reserved for the developed world; however, over the past decade, developing economies have emerged as strong competitors with increasingly complex service offerings.

Offshoring as a business practice is not as new as it seems to be. International trade over the past two decades has been marked by the fragmentation of production processes across many countries. Specifically, this began with the relocation of production in the manufacturing sector in the mid-1980s from the United States and Europe across the US-Mexico border and to East Asia (Baldwin & Robert-Nicoud, 2008). Hence prior to the turn of the century, offshoring was characterized by the interconnection of manufacturing processes between developed and developing countries resulting from the firm's search for lower costs.

However, the offshoring phenomenon is no longer confined to the manufacturing sector. Today, services are increasingly tradable, fueled by the information and communication technologies (ICT) revolution of the early 21th century (Kenney & Dossani, 2006). The remarkable developments in this sector have resulted in lower transaction costs. By significantly reducing the cost and time required to generate, process, store and transmit information from remote locations

[1] The Brazilian offshore services industry is estimated to grow by 36% during 2009 (Global Services, 2009).

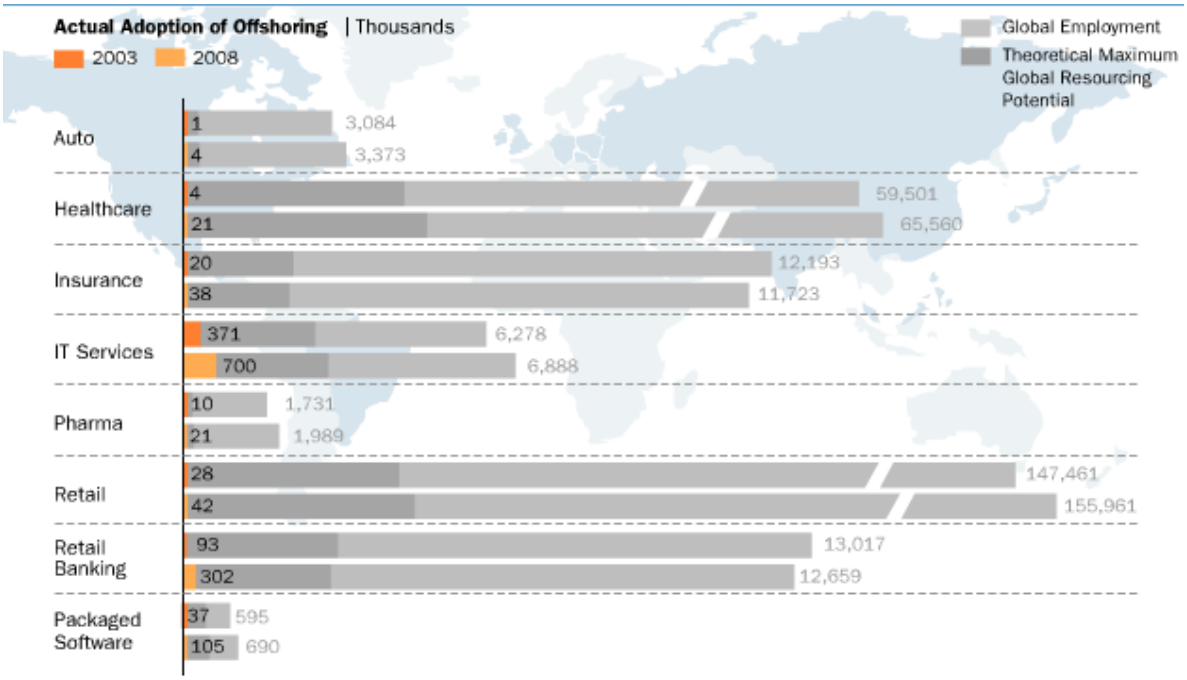
(Lopez et al., 2008), this has enabled the separation of service production and consumption (Sako, 2005).

Given the extraordinary growth rates of the industry, the offshoring of services has been the subject of numerous studies in recent years (AT Kearney, 2004; Dossani, 2005; Lopez et al., 2008; McKinsey Global Institute, 2005; Mullan et al., 2008; Sako, 2005; The Boston Consulting Group, 2007). In particular, its potential socio-economic impact in developed as well as developing countries has attracted the attention of both analysts and the media around the world. In this new knowledge era, developing countries can play a significant role in the international division of labor as they supply a cheaper, yet talented workforce to provide offshore services to customers in developed countries. This allows these countries to increase their employment and also improve social conditions in the service sector (Barrientos et al., 2008).

This positive impact can be seen in India. The offshore services industry created 2.2 million jobs in 2008 (NASSCOM, 2009b). However, the vast majority of this potential is still largely untapped. The McKinsey Global Institute Labor Supply Report estimates that up to 161 million jobs can be performed remotely. It states that "any task that requires no physical or complex interaction between an employee and customers or colleagues, and requires little or no local knowledge, could be performed anywhere in the world by a suitable qualified person" (McKinsey Global Institute, 2009).

Figure 1 illustrates the significant growth prospects of the offshore services industry. The orange bars represent the adoption of offshore practices in the years 2003 (dark orange) and 2008 (light orange). In just 5 years (2003-2008), this industry has demonstrated rapid growth; however, the dark grey line presents the vast opportunities that still exist to offshore activities across different industries.

Figure 1. Actual Adoption of Offshore Practices



Source: (McKinsey Global Institute, 2009)
* Adoption of offshoring assesses the current and projected level of offshoring to low-wage countries within a sector.
* *Theoretical Maximum Global Resourcing Potential* describes the percentage of a sector or function may be performed remotely.

While the industry is still in its nascent stages, global employment in offshore services reached 4.1 million by 2008 (McKinsey Global Institute, 2009). This growth is driven by an increasing number of businesses procuring services abroad to improve their efficiency levels in the global economy, enter new markets and gain access to "strategic assets" in other countries (Lopez et al., 2008). They are attracted to developing countries by competitive advantages, such as low human resources costs, technological skills and language proficiency (AT Kearney, 2007), as well as similar time zones and geographical and cultural proximity to major markets (ECLAC, 2008). For example, demand for delivery centers from Indian firms in Mexico has grown due to its proximity to U.S customers, while Eastern European delivery centers support the offshoring needs of a multitude of languages and cultures across Western Europe. This permits these companies to offer *nearshore* services (Mullan et al., 2008). Operating in the same time zone helps to facilitate connections between countries, optimizing time and accelerating decision-making. In addition, as more sophisticated work such as new product development, R&D, and other knowledge-intensive activities are being performed abroad the supply of scientific, engineering and analytical talent

offered by developing countries becomes much more important (Duke Offshoring Reserach Network & Booz&Co., 2007).

This has important implications for countries seeking to establish themselves as destinations in the offshore services industry, especially developing countries with the adequate infrastructure and human capital. However, in order to capture significant gains from the growth of this new industry, policy makers and firms alike require a clear understanding of its dynamics. The industry is global and the scale and complexity of the activities involved require an analytical framework that disaggregates the market in a useful way. It must identify industry drivers, relations between clients and suppliers, and the power of lead firms to influence the market demand. For this reason, the following sections introduce the Global Value Chains framework, which uses firm-level analysis to determine the different stages of production of a good or service and the value level of each component. In this way, it provides decision makers with an instrument to determine where they may be best suited to enter the value chain in order to achieve their desired outcomes.

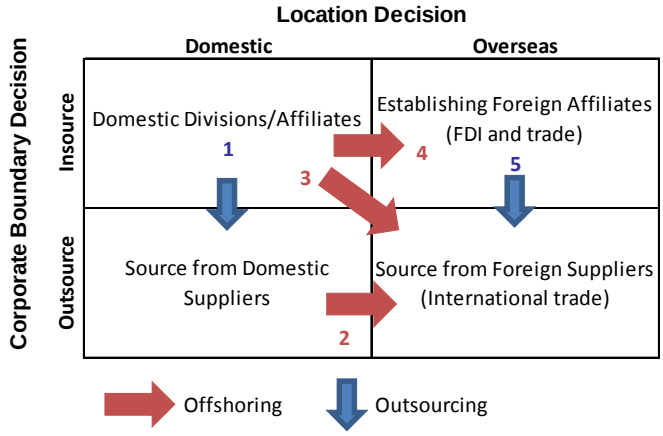
B. Global Services Models

The first stage in disaggregating the global services market is to categorize services provided in a number of different scenarios based on the two dimensions of *offshoring* and *outsourcing*. These dimensions distinguish location and control over the organization contracted to perform the tasks. The first dimension, *outsourcing,* is the action of contracting a special function or service from a legally separate unit (outside the boundaries of the company) rather than using the company's own internal resources and capabilities (in-house provision). The second dimension is *offshoring,* which is the provision of a function or service beyond the national, rather than firm, boundaries. It is this dimension that is of particular importance for policy makers and firms in developing countries.[2]

Figure 2 shows different business models or trajectories that may develop in the outsourcing and offshore services industry (Sako, 2005).

[2] While outsourcing contributes significantly to gross domestic product in developed countries, it requires internal or domestic demand to drive it. Most developing countries do not have sufficient demand for these internal services to be relevant factors in economic development.

Figure 2. Business Models in the Outsourcing and Offshore Services Industry



Source: (Sako, 2005)

The first scenario (**Arrow 1**) describes a firm's decision to outsource services locally. For example, in November 2005, the Brazilian airplane manufacturer, Embraer, contracted the country´s leading IT outsourcing firm, CPM Braxis, to implement and provide on-going support of the SAP Netweaver application integration platform, the key for all IT processes within the company (CPM Braxis, 2007). This is called *outsourcing*.

Arrow 2 shows the firm's decision to outsource a service to a foreign provider instead of a domestic supplier as in Arrow 1. For example, British Communications (BT) located in the UK contracted Tech Mahindra from India to provide ITO services in application maintenance and support services (Computer Business Review Magazine, 2009). This is called *offshoring*.

Arrow 3 shows the trajectory for firms that make the decision to outsource services to a foreign supplier. An example is the 2008 deal between the French industrial group, Saint-Gobain, and IBM that in effect sends all of the French giant's IT infrastructure services to IBM Brazil (Triangle Business Journal, 2008). This is called *offshore outsourcing* [3].

Arrow 4 describes the firm's decision to move its service provision to a foreign affiliate. This is often referred to as '*captive offshoring*', [4] which means that the firm is sourcing from an overseas location but maintains full control of the provision of the service. For example, Australian mining giant BHP Billiton has established a shared services center in Kuala Lumpur that will provide all BPO services to the company's global operations (Infante, 2009).

[3] This term is frequently shortened to "offshoring", as compared to "captive offshoring".
[4] "Captive offshoring" is also referred to as "shared services centers" in the literature.

The final scenario is mapped by **Arrow 5**. This shows the shift from service provision by a foreign affiliate to provision by a foreign supplier. Generally, this may occur with the sale of foreign affiliates to a third party provider. In the process of changing from '*captive offshoring*' to '*offshoring*' "host economies are likely to benefit from greater beneficial spillovers in terms of technology and higher skilled jobs" (Sako, 2005, p. 6). One of the best known examples of this is the spinoff of General Electric's captive center, Gecis, in India in 2004 in a sale to two private equity firms (McDougall, 2004). The firm, now known as Genpact, is one of India's leading suppliers in the offshoring industry.

The process of choosing a business model, that is, determining a firm's geographic location and level of control, is not a simple decision and depends on several factors, including the nature of the service, size of investment required, entrepreneurship, local knowledge of the firm and internal experience, among others (The Boston Consulting Group, 2007). The following sections of this paper will refer to the offshoring categories of global services model.

III. Offshore Services Global Value Chain

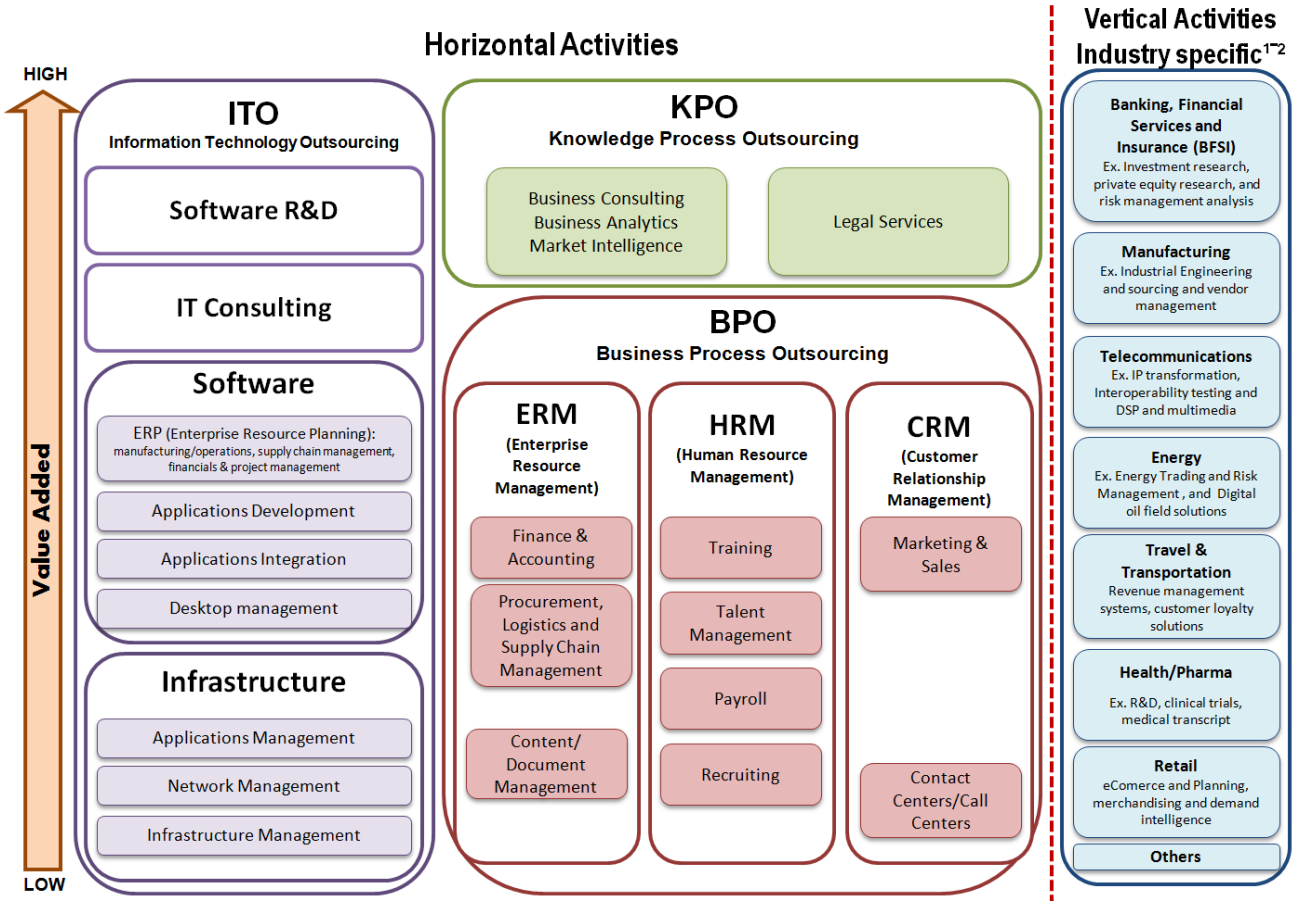
A global value chain identifies all aspects of the production of a good or service and measures the different values at each stage. Once this has been established, it is possible to identify which firms participate in the industry, understand the relationship between supply and demand, and in turn, determine the most important regions of the world in the industry's development.

While the offshore services industry has evolved substantially over the past decade, and continues to do so today, three main segments can be identified: Information Technology Outsourcing (ITO), Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO). However, establishing a global value chain for the industry is challenging not only due its rapid evolution but also the wide variety of services that it has come to include as companies become more comfortable with and recognize the benefits of vertical disintegration. In order to establish meaningful categories of economic activity, the industry is first subdivided into services that can be provided across all industries (horizontal services) and those services that are industry specific (verticals). Firms operating in the horizontal services must be process experts, while those in the vertical chains must have industry expertise and their services may have limited applicability in other industries.

Within the horizontal services, all activities are related to supporting generic business functions such as network management, application integration, payroll, call centers, accounting and human resources. In addition, they include higher value services such as, market intelligence, business analytics and legal services. For the purposes of this paper, these higher value horizontal services are referred to as Knowledge Process Outsourcing[5]. Figure 3 shows the main segments and activities of the offshore services value chain.

[5] The term KPO was introduced by certain companies such as Evalueserve to describe activities that are more advanced than BPO (Sako 2009a). Higher value added activities in specific industries (vertical activities) will be referred to as advanced activities. For a further discussion about the KPO term, please see Appendix D.

Figure 3. Offshore Services Value Chain



Source: CGGC

[1] Vertical Activities- Industry specific: Each industry has its own value chain. Within each of these chains, there are associated services that can be offshored. This diagram captures the industries with the highest demand for offshore services.

[2] This graphical depiction of vertical activities does not imply value levels. Each industry may include ITO, BPO and advanced activities.

Note: For in-depth descriptions of each category, please see Appendix C.

Within horizontal services, ITO make up the low, mid and high segments of the offshore services value chain, BPO activities are in the low and mid segments while KPO are considered the highest segment of the chain. The value of each activity is correlated with human capital (education level), that is to say, lower value-add services are performed by people with fewer years of formal education. Call centers or routine BPO activities, for example, are performed by employees with just a high school diploma. Market research or business intelligence is typically carried out by employees with a minimum of a Bachelor's degree if not a more advanced one, while the highest-level research and analysis is carried out by employees holding specialized masters degrees or PhDs.

Table 1 introduces a detailed explanation of the different activities in each segment of horizontal services in the value chain. The ITO segment is made up of four categories. The first category is software R&D, the second is IT consulting, the third is software and includes activities such as ERP (Enterprise Resource Planning -software development for Enterprise Resource Management activities), applications development, applications integration and desktop management, while the infrastructure category is composed of applications management, network management and infrastructure management. The BPO segment contains three main categories. The first category is Enterprise Resource Management (ERM) consisting of: finance & accounting; procurement, logistics and supply chain management; and content and document management. The second category is Human Resource Management (HRM) made up of training, talent management, payroll and recruiting. Customer Relationship Management (CRM) is the last category, being composed of marketing & sales, contact centers and call centers. Finally, the KPO segment includes business consulting, business analytics, market intelligence and legal services. For in-depth descriptions of each category, please see Appendix C.

Table 1. Offshore Services Horizontal Activities

SEGMENT	CATEGORY	SERVICES	ACTIVITIES
ITO	Software R&D		Application development tools, new design, programming languages and models for business architects and embedded software development, performance engineering, enterprise mobility and Information virtualization projects
	IT Consulting		Includes services like Information Risk Management, Infrastructure Services, IT Process and Service Management, IT Strategy and Governance, Master Data Management, Performance Engineering Solutions, and Quality Assurance and Testing, which help in transforming enterprises by aligning IT strategy and priorities to their business objectives.
	Software	ERP	Sales and customization of Enterprise Resource Planning software and systems. A market dominated by SAP, ORACLE, The Sage Group and Microsoft Business Solutions.
		Applications Development	Software development (design, write and install applications such as a program to be run in cell phones, a program for the manufacturing and services sectors. Additionally, provision of software testing, verification and validation.
		Applications Integration	Development or adaptation of software packages to integrate or connect legacy applications with modern computers, platforms and software.
		Desktop Management	Desktop Management Outsourcing covers activities such as installing-updating and maintaining software. The support is provided online through email support, chat, and voice (on-call) support.
	Infrastructure	Applications Management	Network support to companies: keeping the network up and running efficiently, monitoring the network and correcting any possible or present threat for the system. Additionally network upgrading services.
		Network Management	Application management: Activities such as administering networks, controlling security (managing firewalls against spam, viruses and spying), providing content management (managing, storage and retrieving information for clients), supplying application migration, deploying and managing software applications on a network.
		IT infrastructure management	Technical support for computer networks (voice, no voice), management of system's upgrading activities (acquisition, configuration and maintenance of IT systems), administration of policies, equipment and human resources within the IT requirements of a corporation to secure cost effectiveness and corporate efficiency.
BPO	ERM (Enterprise Resource Management)	Finance & Accounting	Outsourcing finance services in activities such as account receivable and account payable processing - invoice processing, real-time payment auditing, collection management and processing, and real time record of transactions. Outsourcing accounting, services like reconciliations, ledger keeping, balance, income and cash statement preparation.
		Procurement, Logistics and Supply Chain Management	Achieve premium efficiency in the purchasing of goods and services. Additionally, outsourcing of supply chain management activities such as planning, controlling the flow from raw materials to final products.
		Content and Document Mang.	Automation of papers, intensive work flow and document management systems. Complementary, content management comprises the translation of documents, brochures, company's webpage and its constant updating.
	HRM (Human Resource Management)	Training	Design training and development programs.
		Talent Mang.	Outsourcing in performance, compensation, work atmosphere management, and create systems of promotion.
		Payroll	Outsourcing of payroll activities such as data maintenance, pay calculation, payroll payment, deduction and taxes and payroll accounting.
		Recruiting	Outsourcing of activities such as Sourcing resumes, screening, scheduling interviews, and selecting personnel.
	CRM (Customer Relationship Management)	Marketing & Sales	Outsourcing design and development on marketing projects. Support on inbound and outbound sales, sales order process, customer monitoring – Product life cycle support. This segment if often known as Comprehensive CRM.
		Contact Centers	Outsourcing voice (inbound and outbound) services on activities such as marketing activities, customer satisfaction inquiry, customer retention and customer acquisition among many others.
		Call Centers	Outsourcing voice (inbound) services on customer support, business partners, or company associates.
KPO	Business Consulting, Business Analytics and Market Intelligence		Research activities and advice strategies in topics such as business opportunity assessment, market research and customer retention and growth, operations improvement or business optimization.
	Legal Services		Outsourcing legal corporate activities such as managing contracts, leases or licenses to more specific activities such as intellectual property services, legal research and litigation support services.

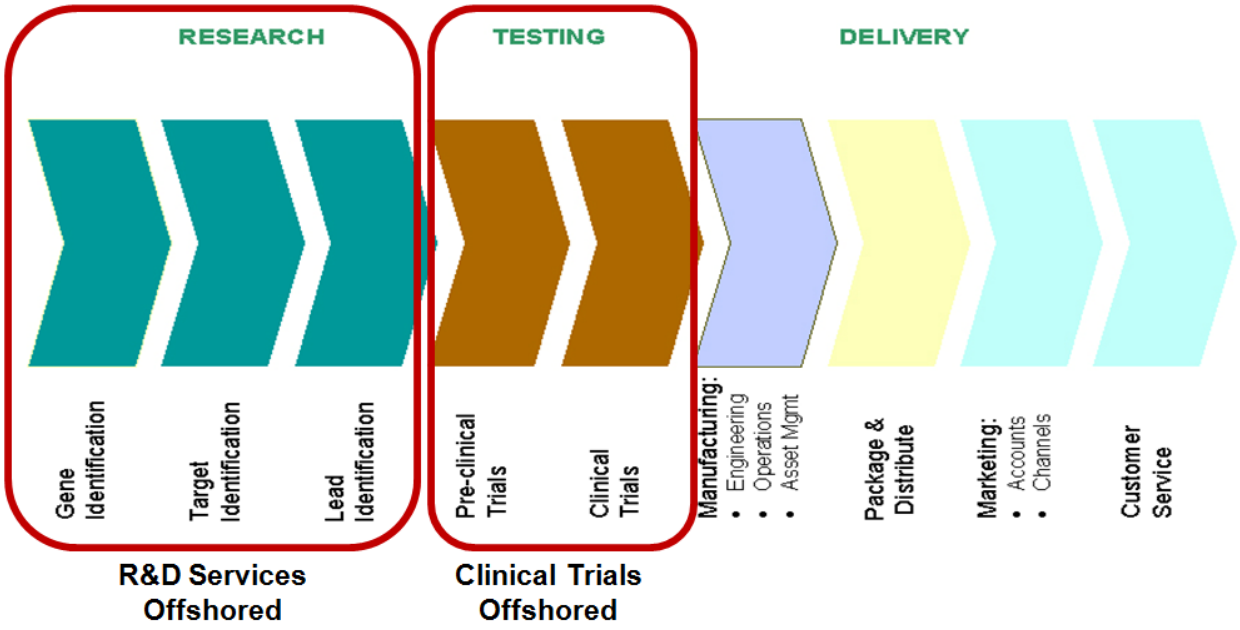
Source: CGGC
Note: For in-depth descriptions of each category, please see Appendix C.
Due to the broad range of activities that can be offshored in different vertical industries, vertical services have not been included in this table.

In contrast, vertical services include a variety of activities that are offshored by different industries but are not related to general business functions and require specific industry knowledge. Examples of these services include functions performed for the pharmaceutical industry such as clinical trials, or R&D for new consumer products. These services are currently provided along the length of value chains and, as with firms searching to lower costs in non-core

business activities, firms are seeking out low cost locations for low value services and high talent locations for high value services.

The relative value of vertical services is determined using the same human capital proxy as those for horizontal services. Activities lower in the value chain, such as check processing in the financial services chain, only require employees with high school education and a minimal training on the software required for processing (Mongillo & Tasner, 2009). In the pharmaceutical value chain, clinical trials monitoring requires both qualified nurses and doctors (Rigotti et al., 2009); however, the highest level of activities in this chain which involves the identification of the molecules to be used in medications is carried out by scientists with doctoral degrees and years of experience. These vertical higher value added activities are not consistently referred to as KPO activities and so in this report they are advanced activities. Figure 4 illustrates the offshore opportunities for the pharmaceutical value chain. A similar chain should be established for each vertical industry in order to fully identify opportunities for to exploit.

Figure 4. Offshore Services in the Pharmaceutical Value Chain



Source: C-Partners with CGGC modifications

A further challenge in the analysis of the offshoring of vertical services is the differing pace and scale of the practice across industries. The financial services and banking sector have led the demand for vertical services to date, followed by manufacturing, telecom, health care, transportation and energy.[6] The high demand from these industries means that some supply firms provide both horizontal services as well as services specific to certain industries.[7] Examples include Tata Consultancy Services that offers check processing services for the banking sector in addition to ITO services in all industries, or Evaluserve that provides equities research and other analytics for investment banks while at same time offering intellectual property and patent application services in all market sectors (Srivastava & Ortiz, 2009).

Furthermore, a recent trend has seen growth in the area of offshoring in the highest portion of many different industry value chains – that is in research and new product development. Research and development offshoring was initially driven by the need to reduce both cost and risk from the R&D activities while increasing company flexibility and addressing resource challenges. However these drivers have changed over the years. Companies now consider R&D outsourcing a value adding activity that will generate revenue with access to the worldwide skills and capabilities to improve existing products and services and accelerate new R&D, rather than simply reducing costs (Jaruzelski & Dehoff, 2008).

A. Upgrading in the Offshore Services Industry

The evolution of this industry has been highly dynamic as client firms have become increasingly comfortable with vertical disintegration, demanding more services from their suppliers while supply firms have been able to develop new competencies to meet those demands (Mulder et al., 2007). Within the global value chain framework, this evolution is referred to as *upgrading*. Four types of upgrading can be expected to develop: functional, process, product, and inter-sectoral (Humphrey & Schmitz, 2002).

First, *functional upgrading* is acquiring new functions to create higher value-added services (higher skill content in the activities). Examples of this moving up the value chain are included below:

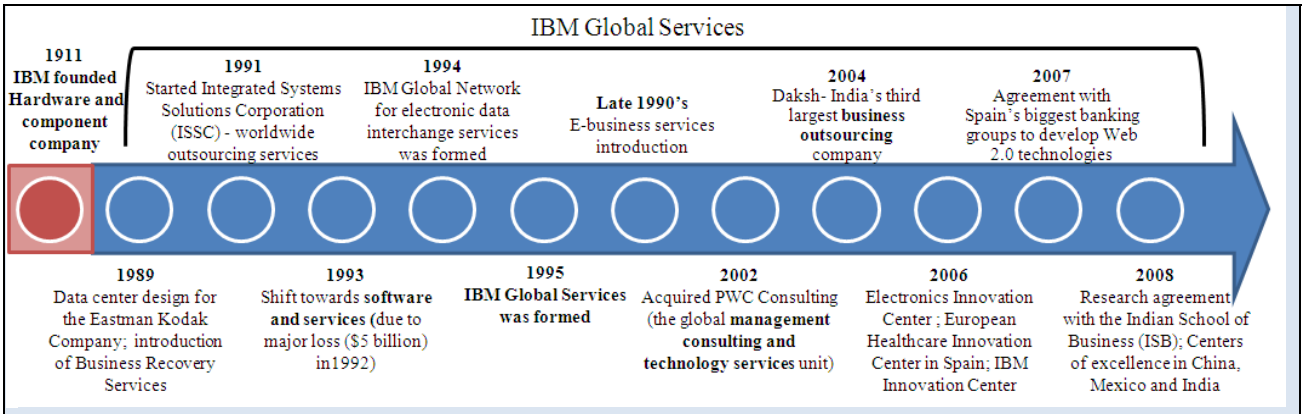
- **The shift of large IT manufacturing companies to the IT services industry.** In a clear example of functional upgrading, a number of the world's leading offshore services firms

[6] See section on Supply and Demand for a further discussion of the demand by industry for offshoring services.
[7] As is explained later in this report, as firms gain experience exporting services through a Global Delivery Model, they are able to apply the same approach to services in other industries.

including IBM, Tata Consultancy Services (TCS) and WIPRO began as large computer manufacturers before shifting into the services industry (see Box 1, IBM Evolution). Another example is the firm ADP that upgrade it activities from computer manufacturing (mainframe computers and check printing machines) to become a leading provider of human resources outsourcing including benefits and payroll administration (ADP, 2009; IBM, 2009).

- **Evolution of Indian firms from ITO to BPO and several have now embarked into KPO.** For example, having consolidated the company as a leading BPO service provider with 21,000 employees and annual sales of $460 million, WNS launched their Knowledge Services division in 2003, hiring 300 MBAs and PhDs in response to demands from clients (PR Newswire, 2003). Genpact is another example of an Indian firm moving upwards from BPO to KPO. Initially the BPO operation of GE in India, the company expanded aggressively and today has 1,500 analysts with advanced degrees providing Risk Analysis, Customer Analytics, Market Research and Business Intelligence services from delivery centers in India. Finally, Indian ITO firm, Patni set up a joint venture, Bohdi Global, with prestigious Indian law firm, AZB, in order to provide legal processes support services for both corporations and law firms (Sako, 2009b).
- **Specialization of offshore services companies.** Top offshore services companies started providing simple and generic activities evolving to offering advanced activities - highly specialized services for specific industries. For example Tata Consultancy Services (TCS) has six R&D labs (Engineering & Industrial solutions, Insurance, Telecom, Travel& Hospitality, Retail, and IT). TCS has 40 patents and more than 200 applications pending (Tata Consultancy Services, 2009b).

Box 1. Evolution of IBM



Originally, a hardware and components manufacturer, IBM has evolved continuously over the last 100 years. In 2008, revenue from its hardware division accounted for only 9%, while the software accounted for 40% and services 42% of the total revenue. During the 1990s IBM started offering services; not only after-sales activities, but services to assist customers in their ongoing business operations, and in the early 2000s, IBM launched its management consulting and business process outsourcing services unit. In 2006, IBM opened its first Electronics Innovation Center as an extension of Tokyo Research Lab. It also opened centers of excellence in China, Mexico and India in 2008 and started collaborative research programs with many top schools in the world.

Source: (Datamonitor, 2008a; IBM, 2002, 2009)

Secondly, *process upgrading* is either the introduction of new technologies in the production system or the restructuring of the existing system to generate services more efficiently.

- Citibank has improved its customer services by creating a 'service equation' "where processes, organizational initiatives and operational and technological tactics are aimed at integrating technology development with improvements in customer service" (Mathe & Dagi, 1996, p. 454).
- When Infosys launched its consulting firm, Infosys Consulting, in 2004, they applied the global delivery model that they had refined in the ITO sector to improve upon the traditional consulting company model, essentially allowing them to deliver their projects at a much lower cost than the competition (William F. Achtmeyer Center for Global Leadership, 2008).
- The Capability Maturity Model (CMM) certification was created in 1989 with the purpose of developing and refining software development processes. However, CMM evolved,

being replaced by CMMI (Capability Maturity Model Integration) in 2007. Software development companies throughout the world adopted CMM as a quality certification. Alternatively, CMMI is a process improvement approach that aims to increase efficiency and quality of processes and functions applied to any sector, as opposed to just software (Software Engineering Institute, 2009).

- Softtek has introduced the Six Sigma Program, a customer-focused and data-driven management method, to improve business processes and problem resolution (Softtek, 2009).

Third, *product upgrading* is increasing the complexity of the product or service offered, moving into more sophisticated services.

- Capgemini encourages new clients to adopt their standardized BPO services rather than creating new teams specialized in the clients' former model. This allows the client to benefit from the economies of scale of the firm as well as a more highly refined process that has evolved through countless iterations with previous clients (Mongillo & Tasner, 2009).

Finally, *inter-sectoral upgrading* is acquiring knowledge or competence from a particular function to implement them in another sector (Humphrey & Schmitz, 2002).

- **ITO firms leverage Global Delivery Model to provide R&D services to different industries.** Software companies in India have transformed their supply of low-skill software services to providing high-skill R&D services. This movement shifted them from a low value added activity in ITO to a higher value-added function in vertical chains. Examples include: TCS -- building on the strengths of sister companies in the TATA Holding Group, the company has established Innovation Centers focused on the automotive and aeronautical industries (Tata Consultancy Services, 2009b); KPIT Infosystems was acquired by Cummins in 2002 in order to leverage their success as a ITO provider for the high-tech and auto industry (KPIT Cummins Infosystems, 2009); and Wipro, which through the acquisition of Ericsson´s R&D unit in 2002 established a Center of Excellence in Innovation and R&D specifically for the telecommunications industry (Wipro Limited, 2008).
- **The expansion of firms across vertical chains.** Computer Science Corporation began providing software for the aerospace industry; it then expanded into financial services and manufacturing in the 1990s and today services a broad range of industries such as communications, media and entertainment, retail, transportation, manufacturing and

government (CSC, 2009). Infosys began as a specialist in the financial sector and today, like CSC, has clients in all industries. Table 2 shows a list of providers offering services in different industries.

Table 2. Offshore Service Companies by Vertical Activities

Company Name	Banking, Financial Services and Insurance (BFSI)	Manufacturing	Telecommunications	Energy	Travel & Transportation	Health/Pharma	Retail	Others
Electronic Data Systems	x	x		x	x	x	x	x
Accenture	x		x	x	x	x	x	x
IBM Global Business Services	x		x	x	x	x	x	x
Computer Sciences Corp	x	x	x	x	x	x	x	x
Automatic Data Processing						x		x
Capgemini	x	x	x	x		x	x	x
Logica	x	x	x	x	x	x		x
Affiliated Computer Services	x	x		x	x	x	x	x
Tata Consultancy Services	x	x	x	x	x	x	x	x
Wipro Technologies	x	x	x	x	x	x	x	x
Infosys Technologies	x	x		x		x	x	x
CGI Group	x	x	x			x	x	x
Hewitt Associates	x	x	x	x	x	x	x	x
Cognizant Technology Solutions	x	x		x	x	x	x	x
Convergys Corporation	x	x	x		x	x	x	x
Perot Systems	x	x	x			x		x
Teleperformance Group	x	x	x	x	x	x	x	x
Satyam Computer Services	x	x	x	x	x	x	x	x
HCL Technologies	x	x	x	x	x	x	x	x
SITEL	x	x			x	x	x	x

Source: CGGC based on companies' websites

B. The Current State of the Global Offshore Services Industry

1. Size of the Industry

The global offshore services industry is growing substantially. However, there is no consensus on how to collect data that corresponds to appropriate definitions of services in this industry (Sako, 2005). Measuring offshore services is not a simple task because official statistics do not provide accurate or comprehensive quantitative information (ECLAC, 2009; Sturgeon & Gereffi, 2009).

While the market estimates for this industry may vary because of the different methodologies adopted, there are a number of different institutions that have published their estimates. Table 3 provides a list of estimates from private consulting firms, business associations and international organizations. These figures vary significantly due to the lack of the official data available. Generally, countries do not have data for these types of service exports and there are no detailed trade categories to track this information. Additionally, companies have little incentive to disclose this information.

Two clarifications must be made at this stage:

1. **Outsourcing vs. offshoring:** Some organizations, such as Gartner, have measured the entire outsourcing industry; this refers to both domestic outsourcing and offshore outsourcing. The numbers for outsourcing are generally higher as they include offshoring services. Another set of organizations, such as OECD, BCG, and NASSCOM-Everest, have measured only offshore services.
2. **Activities included:** This paper presents three types of industry segments: ITO, BPO and KPO plus industry-specific higher value activities. The estimates in the table may refer to one, two or all of the categories. Some provide estimates for just the ITO and BPO segments (i.e., the McKinsey estimate), while the other estimates include KPO in the BPO category. (This is the case of the Gartner and BCG estimates.) Generally, the KPO segment and advanced activities industry specific are the most difficult to quantify and it may be underrepresented since some relevant activities may not be included.
   This paper focuses specifically on offshore services; the estimates for this particular industry are from NASSCOM, Boston Consulting Group (BCG) and OECD, ranging from a low of US$ 101 billion (NASSCOM) to a high of $157 billion (OECD) in 2008.

Table 3. Global Offshore Services Market Size

Source			Revenues (US$ Billions) Year						Comments
			2005	2006	2007	2008	2009	2010	
OECD (2008)	Global **offshore** services market		81.4	100.8	125.6	**157.4**	198.6	252.4	Includes ITO, BPO, KPO and some industry specific advanced activities.
NASSCOM (2009)	Global **offshore** services market		44.25	59	78.3	**101**	117.5		Includes ITO, BPO, KPO and some industry specific advanced activities. "Derived from a 40% share of market from India"[1].
BCG (2007) Based on IDC data	Global **offshore** services market	ITO	19.2	22.7	26.9	31.9	37.3	43.2	BPO includes KPO and some industry specific advanced activities.
		BPO	27.4	42.3	65.1	100.3	154.5	238.1	
		Total	46.6	65.0	92.0	**132.2**	191.8	281.3	
GARTNER (2009)	Global **outsourcing** and offshoring services market	ITO					268		BPO includes KPO and some industry specific advanced activities.
		BPO					156		
		Total					424		
NASSCOM and EVEREST (2008)	Global **offshoring** BPO market	BPO				26-29			
McKinsey & Company (2006)	Global **Offshoring** ITO-BPO market	ITO	16.7-19.6						McKinsey calculates the offshoring market potential with a range. They states that the market has captured only 10% of its full potential. ITO: 147-178 (captured only 11%) BPO: 122-154 (captured only 8%) From these estimates we have calculated the real market in 2005.
		BPO	9.8-12.3						
		Total	26.5-31.9						
A. T. Kearny (2009)	Global **offshoring** BPO market	BPO				30			22% of the Global BPO market is offshore

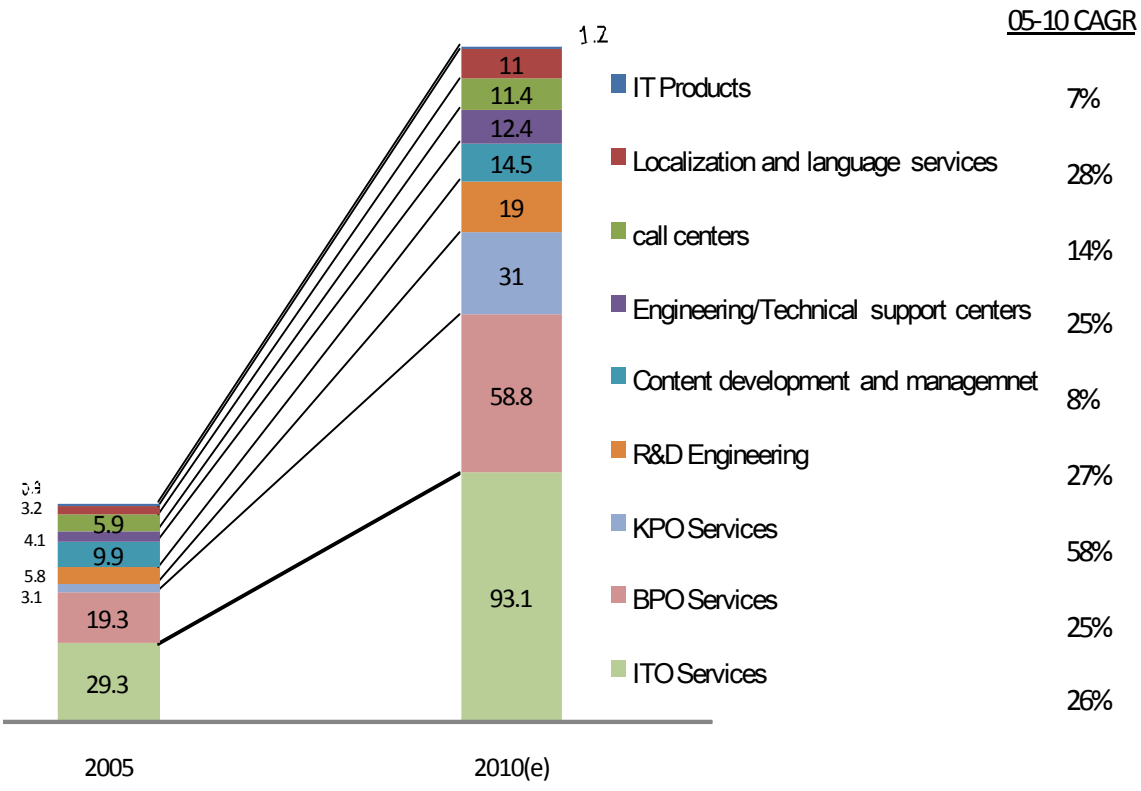
Source: CGGC based on OECD 2008, NASSCOM 2009, Boston Consulting Group 2007, Gartner 2009, NASSCOM-Everest 2008, McKinsey & Company 2006, A.T. Kearney 2009.

[1]Based on the reports from Boston Consulting Group (2007) and the Nasscom-Everest study in 2009. BCG estimated that Indian market share was 46% in 2007, while Nasscom-Everest estimate lies between 41% and 46% (Nasscom, 2008).

According to OECD estimates (2008), the size of the offshore services market will reach $252 billion in 2010. They stress, however, that growth rates will be different in each segment

(See Figure 5). The study projected that the global demand for BPO services, especially those related to call centers and the financial services industry, is expected to triple between 2005 and 2010 and IT services are expected to continue growing at a similar pace. The KPO segment and industry specific advanced activities are expected to reach $31 billion by 2010. This growth translates into a compound annual growth rate of 58% between 2005 and 2010, much more than what is expected for the demand of the BPO (25%) and ITO (26%) segments. However, the 2008-2009 global economic crisis has impacted the industry, slowing growth and making it increasingly difficult to quantify potential growth moving forward. The effect on the industry has been uneven with a CAGR of 16% for 2009 in India (NASSCOM, 2009b), while countries such as Brazil did not present any negative outcome from the crisis with a CAGR of 36% for 2009 (Global Services, 2009).

Figure 5. Global Demand of Offshore Services by Activity



Source: (OECD, 2008)
Notes: (e) Global offshore services market, 2005-2010 ($bn)

2. Supply and Demand

Demand

As can be seen by the varied growth in the different service segments in Figure 5, demand in the industry is being driven in a number of different ways that are evolving over time. This demand can be analyzed at three levels: geographic, firm and industry.

Geographic Level:

The industry to date has been led by the United States and Canada, the first region to offshore services. While estimates of the region's market share vary from over 70% of global demand (The Boston Consulting Group, 2007) to 51.1%, it is clear that North America still the industry leader. North America is followed by Europe (30.6%), Asia (16.2%) and the rest of the world (2.1%) (Datamonitor, 2009)[8].

Emerging Trends:

- Demand patterns in the rest of the world (2.1%) tend to follow the geographic distribution of multinational firms looking to support regional operations. Time zone constraints, language requirements and cultural affinity with their clients and subsidiaries favor regional centers rather than one global center. Examples of this include Unilever's decision to initially set up BPO shared centers in Brazil and Chile to provide finance and accounting support services for operations in 19 Latin American countries (Mongillo & Tasner, 2009).
- There is growing demand for services from the new southern multinational corporations (MNCs). These firms, headquartered in the developing world, account for 26% of the Forbes Global 2000 firms (The Forbes Global 2000, 2009). Many consultants, academics, and IT and BPO outsourcing firms have overlooked these in the past, seeing the developed world as their natural market. However, the developing country market is beginning to grow. Examples include a new BPO center established by WIPRO in Curitiba, Brazil in November 2008 to provide finance and accounting, procurement and HR services to its new client AmBev, Latin America's largest brewery company. The delivery center will go on to provide services for other clients around Latin America (Business Line, 2008).

[8] See Figure 7 for a graphical representation of the distribution of demand.

Firm-Level Demand:

Demand for offshore services is led by large firms and MNCs with burgeoning global operations. The magnitude of their activities and the complexity of their infrastructure and systems led to significant operational costs, which, in turn, impacted their competitiveness. These high overhead expenses pushed the MNCs to look for strategies to reduce costs, including establishing captive centers in low-cost countries or alliances with outsourcing providers (third party contractors) ((Dossani, 2005; Mullan et al., 2008). This demand is reflected by the fact that most of the leading ITO and BPO companies in the world have those large corporations as their natural market.

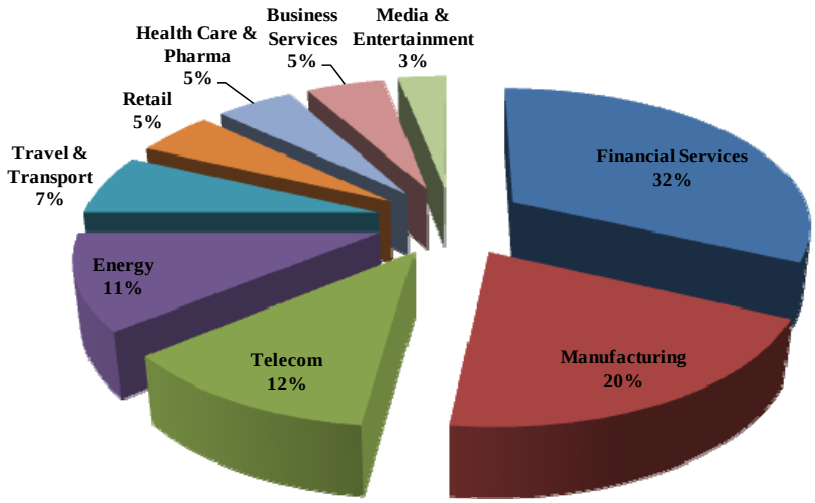
Emerging Trends:

- Small and medium-sized firms are beginning to offshore certain services. By 2006, small firms accounted for more than 30% of companies initiating outsourcing processes, while in 2000 less than 10% of small companies offshored services (Duke Offshoring Research Network & Booz&Co., 2006). Partly due to requirements from venture capital firms that they include offshoring in their business models, these small firms are beginning to see the value in offshore practices. Given that many service providers have set up operations around the world to support large clients, small firms are thus able to find providers in locations that are convenient for their businesses. These firms make up the largest share of clients for higher value added services; 24% of the services they outsource are for new product development compared with 16% of large corporations (Lewin & Cuoto, 2007). Small and medium-sized tend to be more flexible than large firms, and can make the most of new technologies being developed by the offshore providers as they are not hindered by large legacy systems as are many MNCs.

Industry-Level Demand:

Demand levels differ by industry. The financial services industry and the manufacturing sector lead the demand for offshore services, representing 32% and 20% respectively. These are followed by telecom (12%) and energy[9] (11%). Figure 6 below shows industry participation in the outsourcing market based on a survey by contracts for over $25 million (Technology Partners International, 2008).

Figure 6. Industry Participation in the Offshoring Market



Source: (Technology Partners International, 2008).

Emerging Trends:

- As costs rise for the pharmaceutical industry in developed countries, they are exploring Latin America, Eastern Europe and Asia as offshore locations for clinical trials and R&D. Offshore clinical trials expenses in the developing world are about one-tenth of western levels, while R&D costs are about one-eighth of U.S. costs (Rao, 2008). Other advantages include extensive native patient populations, trained scientists and a large pharmaceutical presence. Spending in research and development reached $97.8 billion in 2006 while in 2007 this figure increased to $109 billion, representing a growth of 12.8%. (Jaruzelski & Dehoff, 2008). Innovation activities are beginning to move to the developing world. According to McKinsey & Co, the major global pharmaceutical companies will invest around $1.5 billion in India alone by 2010 (Maiti & M, 2007).

[9] This includes utilities.

- In 2006, R&D spending in all industries increased with the exception of the automotive industry. Along with health care, software and the internet sector are the fastest growing industries in R&D spending, maintaining a strong year-on-year growth rate since 2001. Although growth has slowed slightly in the computer and electronics sector, it remains the largest R&D sector spending $142 billion on innovation in 2007(Jaruzelski & Dehoff, 2008).

Supply

The supply of global services is highly concentrated amongst a small group of firms from a handful of countries. As shown in Table 4, thirteen of these firms are headquartered in North America, four are headquartered in India and three are based in Europe.

Table 4. Top 20 Offshore Services Providers

#	Company	Total Sales 2008 (US$ Mil)[1]	Total Employees[2]	Total Services Sales 2008 (US$ Mil)	Main Services Activities
1	**IBM –** US	103,630	398,455	58,892	Consulting, IT services, application and outsourcing services
2	**Accenture** – US	23,171	177,000	23,171	Consulting, IT and outsourcing services
3	**Electronic Data Systems Corporation** (EDS, now HP Enterprise Services) -**US**	22,100	139,500	22,100	IT, applications and BPO services
4	**Computer Sciences Corporation (CSC) -** US	16,740	92,000	16,740	ITO (software management) BPO in CRM, supply chain management and KPO in legal matters
5	**Capgemini**- France	12,740	89,453	12,740	Consulting, IT and outsourcing services
6	**Automatic Data Processing (ADP) -** US	8,867	45,000	8,867	BPO (human resource, payroll, tax and benefits outsourcing)
7	**Affiliated Computer Services** – US	6,523	76,000	6,523	ITO and BPO in CRM and HRM. Also e-Government
8	**Logica (Formerly LogicaCMG**) – UK	6,577	39,525	6,320	Business consulting, IT and BPO services
9	**Tata Consultancy Services** – India	6,048	111,407	5,824	Consulting, IT, engineering and BPO (includes KPO) services
10	**Infosys Technologies** - India	4,717	105,453	4,533	IT, engineering, consulting and BPO services (knowledge and legal services)
11	**Wipro Technologies** - India	5,645	98,521	4,234	Consulting, IT and BPO services
12	**CGI Group** - Canada	3,673	25,500	3,673	Consulting, IT, BPO and systems integration services
13	**Hewitt Associates** - US	3,228	23,000	3,228	Human resource consulting and outsourcing
14	**Cognizant Technology Solutions** - US	2,816	68,000	2,816	Consulting, IT and BPO services
15	**Convergys Corporation** – US	2,786	75,000	2,786	BPO (Customer Care - Call Centers)
16	**Perot Systems** –US	2,779	23,100	2,779	Consulting, IT and BPO services
17	**Teleperformance Group** – France	2,605	102,186	2,605	BPO (Customer Care - Call Centers)
18	**SITEL** – US	1,700	66,000	1,700	BPO (Customer Care - Call Centers)
19	**Ceridian Corporation -** US	1,695	8,776	1,695	Payroll services & Human Resources management solutions
20	**Genpact Ltd. -** India	1,041	36,200	1,041	IT and BPO services
TOTAL		240,210	1,815,519	192,267	--

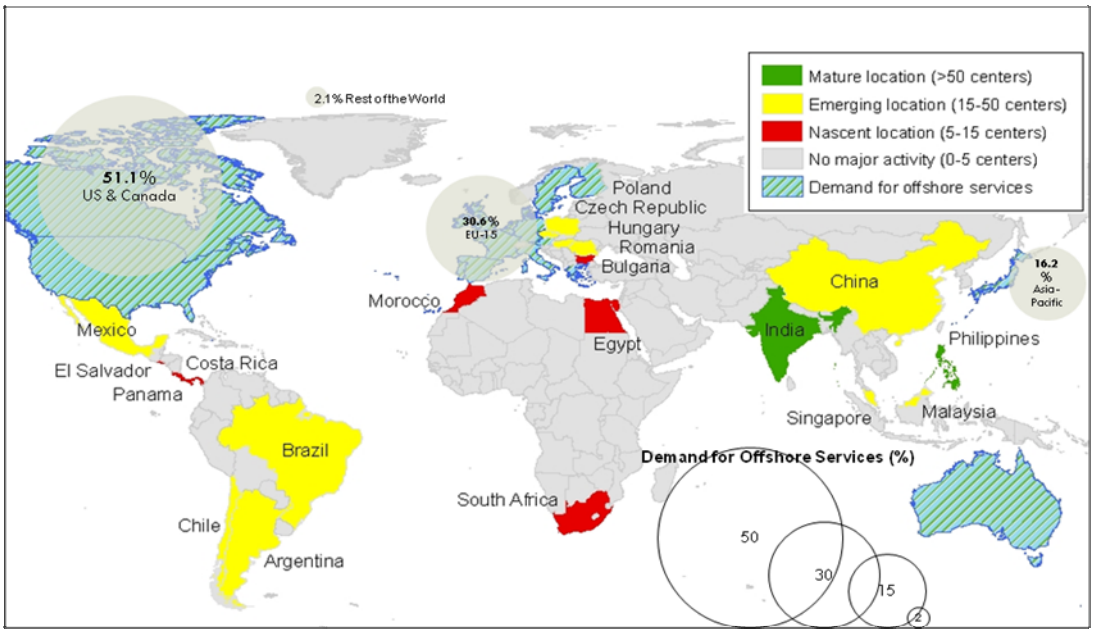
Source: CGGC based on OneSource, companies' websites and companies' annual reports.

The large global service providers operating in the offshore industry include IBM, , Accenture, EDS (HP Enterprise Services) CSC and Capgemini, which are principally dedicated to serving large multinational corporations and governments (Datamonitor, 2009). All of these firms have operations in developing countries that serve as platforms for services exports. In 2007,

Accenture employed more persons in India than anywhere else in the world. IBM had 60,000 employees in India in 2006 while CapGemini had 12,000 in the same year (Dossani & Kenney, 2007).

At a country level, it can be seen in Figure 7 below, the most mature providers of offshore services (in green) are India and the Philippines, with over 50 centers in each country, followed by emerging nations (in yellow) including Chile, Poland and Malaysia. In addition, there are new locations that are beginning to compete in the industry (in red), such as South Africa, Morocco and Egypt.

Figure 7. The Global Supply and Demand for Offshore Services



Source: CGGC based on data from Everest and Datamonitor.

India continues to be the global leader in the offshore services industry. Total offshore services sales were US$46.3 billion (NASSCOM, 2009c), and the largest 10 Indian suppliers reported US$26.1 billion in total sales. Table 5 provides more detailed information about each company. Remaining sales in India are driven principally by the other lead companies with large delivery centers in the country including IBM, Accenture, EDS and Computer Science Corporation

as well as smaller indigenous companies such as MindTree, NIIT Technologies and KPIT Cummins Infosystems[10].

Table 5. Top 10 Indian Offshore Services Companies

Company	Sales – 08 (USD mil)	Employees	Total Services Sales 2008 (US$ Mil)
Tata Consultancy Services (TCS)	6,048	111,407	5,824
Infosys Technologies	4,717	105,453	4,533
Wipro Technologies	5,645	98,521	4,234
HCL Technologies	1,879	54,026	1,879
Genpact Ltd.	1,041	36,200	1,041
Tech Mahindra	963	24,972	963
Patni Computer Systems	746	14,894	746
WNS Global Services (India	539	21,494	539
MphasiS Ltd.(A Hewlett Packard Company)	455	28,795	416
Polaris Software Lab Limited	300	9,238	300
TOTAL	22,923	520,443	21,604

Source: CGGC based on OneSource, NASSCOM, companies' websites and companies' annual reports.

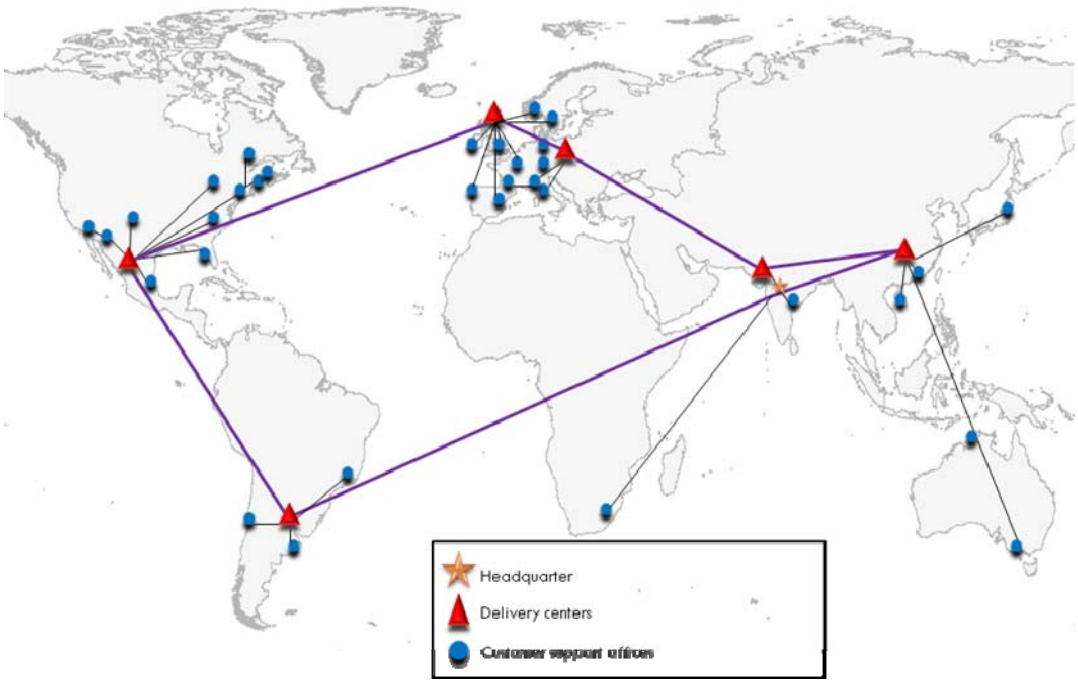
Lead Firm Characteristics

Most lead firms are present in both the ITO and BPO segments and operate at a global scale with a similar business model generally referred to as the "global delivery model" (Sako, 2009b; Tata Consultancy Services, 2009a; William F. Achtmeyer Center for Global Leadership, 2008) This consists of a global network of customer support offices, specialized delivery centers in lower cost countries and the headquarters . This structure allows global service companies to be close to their clients and understand what they need, and at the same time to undertake projects with multidisciplinary experts from different parts of the world. For example, Tata Consultancy Services has established global delivery centers in Beijing, Mexico and Hungary amongst other places; WIPRO, the next largest Indian provider, serves clients in different markets by connecting and coordinating activities between more than 60 delivery centers in the world with the help of customer support offices and the headquarter in India. The more traditional companies such as

[10] Analysis of the Indian offshore services industry is based on information gathered from NASSCOM, Hoovers, Onesource as well as in-depth analysis of company websites and annual reports.

IBM and Accenture have adjusted their business models in order to compete with the new firms emerging from India. IBM now has delivery centers in over 50 countries, including China, India and Mexico (IBM Global Business Services, 2009). Figure 8 below provides an example of how these companies operate.

Figure 8. Business Model of an Indian Offshore Services Provider



- **Headquarter:** Corporate offices where most of the important administrative functions of the organization are carried out. It is not uncommon for offshore services providers from developing countries to have delivery centers attached to their headquarters.
- **Delivery center**: The facility where services are developed tailored for each client and executed. These offices are almost always located in developing countries.
- **Customer support offices**: These are principally sales and customer service offices. They provide a direct point of contact with the client to develop an understanding of client needs.

Source: CGGC based on Indian offshore service company delivery models.

The customer support offices play a central role in the daily operations of a global services company. Specialists develop close ties with their customers, giving support for current service offerings as well as identifying and codifying future needs. This information is then sent to the delivery centers (sometimes referred to as centers of development), where services are further tailored and executed. Standardized operating and telecommunications systems aroud the globe

facilitate the transfer of the information.[11] This system allows companies to be close to their customers while taking advantage of the economies of scale generated by dedicated delivery centers.

Beyond these large firms, the market is divided into medium to small providers competing for local and regional clients (Datamonitor, 2009). These firms specialize in providing BPO services to vertical chains such as health care, the insurance industry or the financial sector. Promantra Synergy Solutions, for example, has less than 500 employees. The company serves the vertical BPO market (BPO in Health Care) delivering services such as billing and revenue cycle management and BPO services in finance and accounting, as well as some advanced services such as cost report analysis and financial decision support (Promantra, 2009).

KPO Segment

Still very much a nascent part of industry, the KPO segment is more evenly balanced between small to medium providers and large firms.[12] While the firm size is typically a fraction of that of the BPO firms, these companies have leveraged the success of the same global delivery model. The leading firms have customer support offices in the US (New York and Boston), Europe (Germany and the UK) and Asia (Singapore and Hong Kong), with delivery centers in India (Bangalore, Mumbai, and New Delhi) and the Philippines (Sako, 2009a) .Evalueserve, one of the first firms to begin to provide KPO activities, now has delivery centers in India, China, Chile and Romania (Gupta, 2009), suggesting that these firms may eventually follow the same expansion pattern as BPO providers model in order to offer services 24/5 days a week.

[11] Global operating and telecommunications systems are dominated by Cisco, Microsoft, SAP and Oracle.
[12] The top 10 companies have on average, over 50,000 employees; the larger KPO firms have 1,500-2,000 employees.

Table 6. Companies offering KPO Services

Company	Revenue/Sales (US$ million)	Employees	Business Services
Gartner, Inc.	1,270	4,000	Research services, consulting services and executive education programs
Genpact	1000	36,000	Business analytics and finance research services
WNS	460	21,000	Business analytics, financial research and industry research services
Forrester Research, Inc.	240	1000	Proprietary research, consumer insight, consulting, events and peer-to-peer executive programs to clients
Evalueserve	68	2431	Business research, IP and legal services, market research, investment research and data analytics
Integreon Managed Services	36	2000	Research and analytics, legal and financial document services, legal and discovery services, and finance and accounting services
CPA Global	33.5	1,200	Document management solutions, patent research or intellectual property support services, and litigation services like legal research and preparation of standard litigation documents and deposition summaries
Pangea3	*5*	270	Patent drafting and litigation services, contract drafting and management systems, document review services and legal research and support services
Fractal Analytics	NA	120	Advanced analytics, CRM analytics, risk analytics and marketing optimization
Boston Analytics	NA	50	Business analytics, focusing on providing consulting and financial services

Source: (Sako, 2009a and companies' websites)

Table 7 shows a list of major companies and the offered activities. As can be seen, firms are providing a variety of activities in each segment leveraging the global delivery model.

Table 7. Companies by Activity

Company Name	1. ITO							2. BPO									3. KPO	
			Software			Hardware		ERM Enterprise Resource Management			HRM Human Resources Management			CRM Customer Relationship Management				
	Software R&D	IT Consulting	Applications Development	Applications Integration	Desktop Management Infrastructure Management	Applications Management	Network Management	Content and Document Management	Comprehensive F&A[1]	Procurement and Supply Chain Management	Payroll and Benefit Administration	Recruiting	Training and Comprehensive Human Resources	Call Center	Contact Center	Comprehensive CRM[2]	Business Consulting; Business Analytics; Market Intelligence	Legal Services
Electronic Data Systems	X		X		X	X	X	X	X	X	X				X	X		
Accenture	X	X	X			X	X		X	X							X	
IBM Global Business Services	X	X	X	X	X	X	X	X		X	X	X		X			X	X	
Computer Sciences Corp			X	X	X	X	X	X										X	X
Automatic Data Processing									X			X		X					
Capgemini		X		X	X	X	X			X	X							X	
Logica			X	X	X	X	X					X		X				X	
Affiliated Computer Services					X	X	X	X		X		X		X		X			
Tata Consultancy Services	X	X	X	X	X	X	X	X	X					X				X	X
Wipro Technologies	X	X	X	X	X	X	X	X	X	X	X							X	X
Infosys Technologies	X	X	X	X	X	X	X	X	X	X	X							X	X
CGI Group		X		X	X		X												
Hewitt Associates												X		X				X	
Cognizant Technology Solutions	X	X	X	X	X		X	X										X	
Convergys Corporation	X													X	X	X	X	X	
Perot Systems		X			X	X	X	X	X									X	
Teleperformance Group															X	X			
Satyam Computer Services		X				X		X	X										
HCL Technologies	X	X	X		X	X	X			X								X	X
SITEL														X	X	X			
Ceridian Corporation											X		X						
Genpact					X					X	X							X	
Hov Services									X	X									
Manpower												X						X	
TalentFusion												X							
24/7														X				X	
WNS Global Services																		X	X
Epitome																			X
Smart Cube																		X	
Evalueserve																		X	X
KPIT Cummins Infosystems		X																X	

Source: CGGC based on OneSource, Hoovers, Annual Company Reports, Global Services reports, Gartner, the Black Book of Outsourcing reports and companies' websites.

[1] Comprehensive F&A: Provision into the same contract of activities such as accounts payable, accounts receivable, general ledger, tax management and cash management.

[2] Comprehensive CRM: Blends sales, marketing, customer service and other supporting activities.

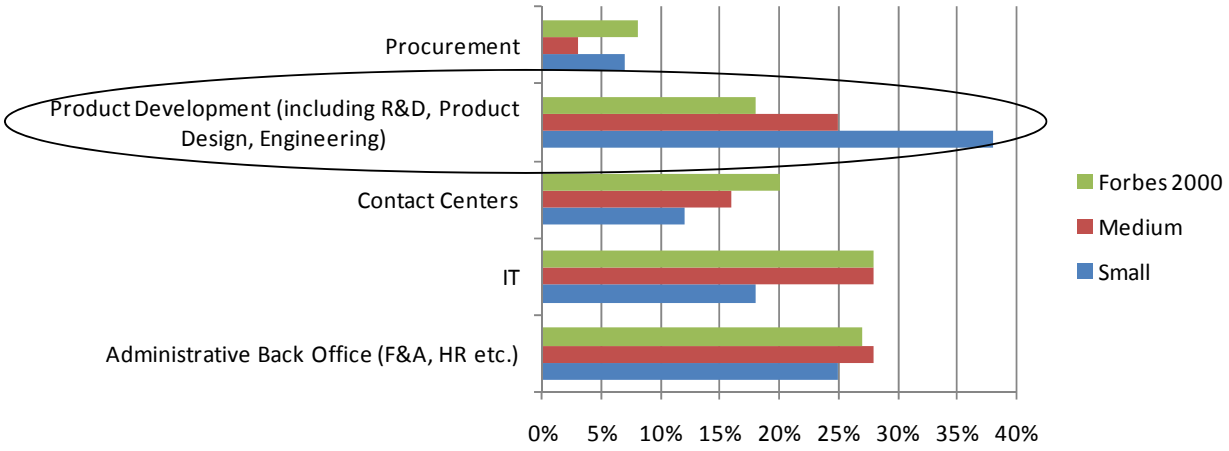
3. The Most Dynamic Offshore Services Sectors

During the last five years, the KPO segment and the equivalent highest segments of individual industry value chains have grown at a faster pace than activities related to lower value services. Some analysts predict that this segment may increase up to 58% in 2010 in relation to 2005, while ITO and BPO services would increase 26% and 25%, respectively (OECD, 2008). The expansion of these advanced activities is largely due to the increasing supply of high levels skills as developing countries enter the global marketplace (Gereffi & Fernandez-Stark, 2008).

These high value segments are characterized by the lack of standard solutions to solve problems, and services are highly specialized and customized according to the client's needs. Indeed, in order to better carry out activities in this domain, it is vital to have in-depth knowledge and information of the client firm. This makes this industry segment highly demanding on strong analytical and technical skills, and success depends on key parameters such as quality, precision, confidentiality and project management expertise (Aggarwal & Pandey, 2004).

Unlike in ITO and BPO, market demand in this segment is characterized by small and medium-sized firms. According to a survey conducted by the Offshoring Research Network, Duke University (see Figure 9) a great number of small and medium-sized companies in vertical industries are offshoring more functions, in particular product development, including R&D, product design and engineering, as an opportunity "to increase speed to the market for their new products or processes and to better access Science & Engineering (S&E) talent" (Manning et al., 2008, p. 3). Indeed, 38% of the total offshore implementations by small companies are related to product development functions, as can be seen in Figure 9.

Figure 9. Distribution of Functions by Company Size



Source: CGGC based on (Manning et al., 2008)

Total R&D offshoring to emerging markets is expected to be around $19.7 -20.3 billion in 2009, a 6-7% increase from 2008 (Zinnov, 2009). Between 2004 and 2007, global multinationals increased their total number of R&D sites by 6%, of which 83% were set up in China and India (Jaruzelski & Dehoff, 2008). The offshoring of engineering services is also expected to grow to $150-225 billion by 2020 from only $10-15 billion in 2004 (NASSCOM & Booz Allen Hamilton, 2006). Dominant sectors in both R&D and engineering are the high-tech, automotive and aerospace industries. Offshoring in the pharmaceutical industry is also continuing to grow and according to McKinsey & Co. the major global pharmaceutical companies will invest around $1.5 billion in India by 2010 (Maiti & M, 2007).

The highly competitive environment forces these firms to change their procedures and be ready to meet new demands (these demands refer to more complex activities at lower prices). For this reason, as knowledge workers become the main source for creating value, the focus of business strategies is to gain advantage through talented workforce (Sen & Shiel, 2006). Thus, while India and China currently lead supply in these segments, the fact that demand is being led by small and medium-sized companies offers a great opportunity for smaller countries with a pool of highly educated workers to begin to export services.

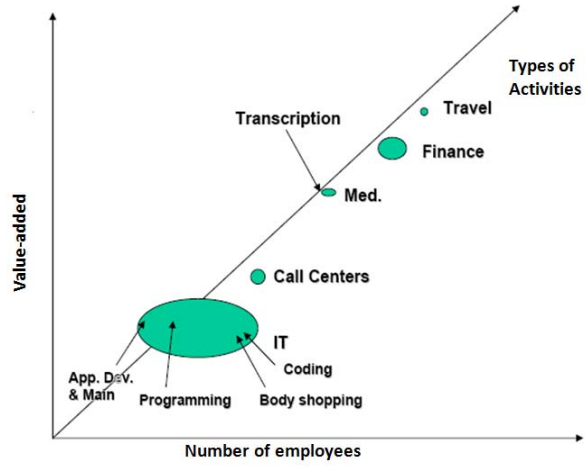
IV. Country Cases

A. India

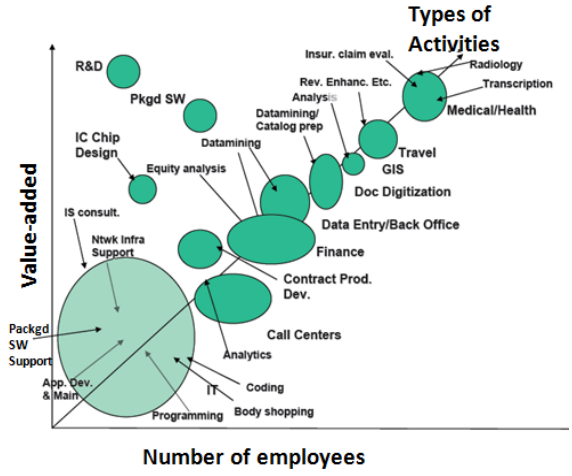
India is the leading global economic actor in the offshore services industry. Behind the rapid evolution of the industry in India is its first mover advantage gained through the early development of an export platform for software services.[13] Figure 10 describes the growth of the Indian industry from its early stages in 2000 when its strengths lay only in the ITO sector to its emergence as one of the leading global players across all segments in 2006. In 2000, the IT sector was highly developed, while some activities within the BPO and higher value added activities were just beginning to emerge (particularly call centers and financial activities). However, by 2006, a broadening and deepening of IT activities was combined with greater emphasis on higher value-added services in the financial and health care industries, amongst others.

Figure 10. Indian Service Provision in 2000-2006

Indian Service Provision in 2000



Indian Service Provision in 2006



Source: (Dossani & Kenney, 2007)

A number of factors have contributed to the Indian success, including: low costs, strong technical and language skills and vendor maturity. These have all helped India maintain a strong

[13] Software services are different from software products. The former means "custom software" where the software is designed according to the special needs of the client, while the latter is standard and can be replicated for general use.

leadership position in the global services industry (AT Kearney, 2007). A key underlying element to these factors is the tremendous depth of India's educated labor pool. The number of IT-BPO professionals employed in all sectors in India grew more than four times in just seven years, with aggregate employment reaching 1.25 million in 2007[14] (Dossani & Kenney, 2007). This talent pool has allowed Indian firms to take on higher value-added services, and from 2000 to 2006 the Indian service provision became increasingly sophisticated. Table 8 describes the main factors for locating offshore services in India.

Table 8. Factors of Attraction for Offshoring in India

Factors/Countries	India	
Cost		Even with salary escalation, India still has a sound cost differential.
Political and economic scenario		Despite some political barriers, the stability of the economic agenda is a stimulating sign for the country.
Government incentives to support IT-related activities		The Indian government is very supportive of IT and IT-enabled services. The government permits 100% foreign direct investment in IT and fiscal concessions are offered to attract investors.
Cultural compatibility		There is a cultural affinity with the US and UK but lacks cultural compatibility with markets in the non-English speaking world, particularly, Western Europe and Japan.
Language		India has the world's second-largest English-speaking population. However, the quality of English, especially regarding accents, varies across regions significantly.
Education system		The predominance for choosing technical disciplines reinforces the Indian position in this domain. However, although literacy levels are increasing, universal education is far from being achieved, especially in rural areas.
Infrastructure		There is a need for roads, transportation system and power networks which exceed the increasing demand, thus leading to a poorer quality of life.

Source: Based on (Iyengar et al., 2008)

The industry has since grown significantly since the 1980s when the government began liberalizing the economy and improving telecommunications infrastructure. The most significant policy was the establishment of Software Technology Parks in 1988 that in addition to tax benefits, office space and satellite uplinks, provided support for related items such as import certifications and market analysis (Athreye, 2005). The overall improved conditions for foreign

[14] NASSCOM estimates the number of people employed in this sector reached nearly 2 million in 2007.

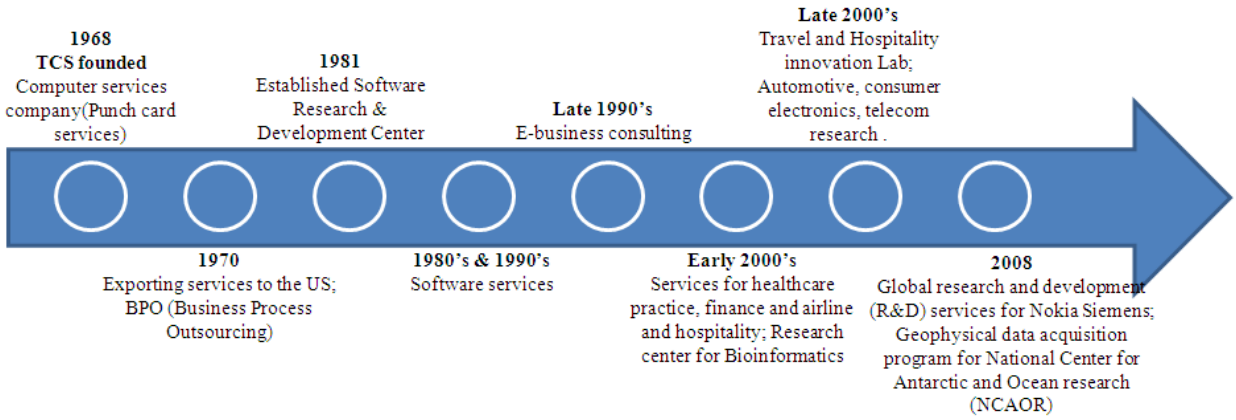
direct investment also encouraged many foreign firms to establish their businesses in India (Mullan et al., 2008). The influx of multinational subsidiaries in turn resulted in rapid knowledge transfer, improving the availability of qualified human capital in the country. As a result both new and existing companies began to offer remote software services (Athreye, 2005; Mullan et al., 2008).

Indian IT professionals who had worked in the US under the innovative "body-shopping"[15] solution during the protectionist years in India returned home having gained considerable domain expertise and began to establish new Indian firms. These include many of India's leading firms, such as TCS, Infosys and WIPRO (Dossani, 2005). These local companies benefited from the growing presence of foreign firms, and supported by their business relationships, they acquired quality certifications and captured a wide range of skills beyond programming, such as quality assurance, project scheduling, among others (Parthasarathy & Aoyama, 2006).

Over time, the Indian IT industry has evolved significantly and has upgraded along the value chain. Initially a provider of low-skill software services, it then moved into more complex business services (BPO) and more recently, Indian providers have begun to offer high-skill R&D services in vertical industries. As software generalists in the 1990s, the Indian firms were unable to differentiate their products and competed largely on cost (Arora & Athreye, 2002). These lower costs fueled demand for Indian software products, driving growth and competency development of the labor force. Already well positioned due to their well-educated, English speaking labor force, Indian firms began to grow, focusing their business models on the offshore services industry. The slowdown in the demand of software products caused by the burst of the dot.com bubble and the subsequent recession in the US in 2001 led to the consolidation of the offshore service industry. In turn, the leading Indian firms such as Tata Consultancy Services, Wipro and Infosys, began to diversify shifting from simple programming services to providing solutions to business problems.

[15] Body-shopping was the name given to the practice of sending IT programmers from India to the US to work directly on client sites. This practice was common during the 1970s and 1980s.

Box 2. Evolution of Tata Consultancy Services (TCS)



Tata Consultancy Services (TCS), one of India's largest IT services providers, was established in 1968, with the aim of providing computer services to the other group companies. In the early 1970s it started exporting its services to clients in the United States, and also started its first BPO services. In 1981, it set up the Tata Research Development and Design Center (TRDDC), India's first software research and development center. Throughout the 1980s and 1990s TCS concentrated on software services, and in the late 1990's TCS started specializing in e-business consulting. In 2008, TCS started the global R&D services unit for Nokia Siemens and geophysical data acquisition program for National Center for Antarctic and Ocean research (NCAOR). Of its total revenue, 44% comes form the banking and financial services industry (BFSI), 12% from telecom, 12 % from retail & distribution, and the rest is made of manufacturing, high-tech, life sciences and healthcare, travel & hospitality, energy & utilities and other sectors.

Source: (Datamonitor, 2008b; Tata Consultancy Services, 2008)

By 2006, software services companies in Bangalore had accumulated sufficient knowledge to shift to R&D services, such as the sale and transfer of intellectual property (IP) blocks[16]. Start-up firms specializing exclusively in R&D activities are now benefiting from the maturity of local technological expertise. This new phase of development has been facilitated by local entrepreneurship, supportive institutions, and the local collaboration and networking among Indian firms (Parthasarathy & Aoyama, 2006). NASSCOM in particular has played an important coordinating role. In 2009, it had close to 1,300 affiliates, generating approximately 95% of revenues in the Indian (NASSCOM, 2009a).

[16] An IP block is a core element or chip used in typical consumer goods such as cell phones, transport equipment, electronics, etc, dedicated to perform a specific task without human interventions (Parthasarathy & Aoyama, 2006).

The upgrading of offshore services has translated into important economic growth for the country. The country's gross revenue in the industry was US$ 58.8 billion, with US$ 46.3 billion in exports, over 5% of India's GDP (NASSCOM & Deloitte, 2008), and US$ 12.5 billion in domestic sales. The industry employs around 2.24 million professionals (NASSCOM, 2009c). BPO supply in India is estimated to represent more than 35% of the global market share. about US$ 29 billion for 2007 (NASSCOM, 2008).

However this growth has also created some challenges for the Indian economy. The rapid expansion of the software industry has put high pressure on human capital to serve the software sector's needs and attrition rates are high (D'Costa, 2003). If India is to evolve to higher value-added activities and other areas such as engineering services, the offshore services industry will need more qualified staff with superior technical skills. While companies such as Adobe India and HCL have established new methods for workforce development to meet their growing demand (Wadhwa et al., 2008), the country must also reinforce its education system and strengthen the interaction and communication channels between education institutions and the offshore industry sector.

B. Ireland

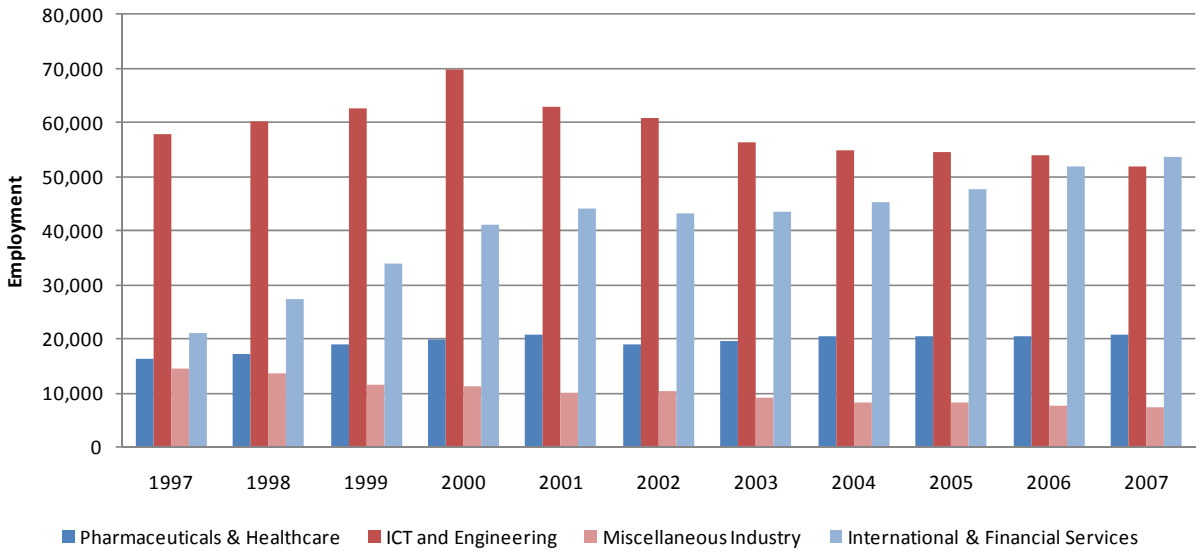
Ireland, along with India, was among the earliest countries to enter the offshore services industry, emerging as an offshore platform principally for the Europe market. The country began offering computer software services before upgrading into advanced activities and services in the financial industry. These services are provided by both local firms and multinational corporations. The local firms tend to focus on software activities such as customer and niche software and business solutions, while multinational corporations concentrate on mass-packaged products and are engaged in the manufacturing, localization and distribution of software packages (Barry & Welsum, 2005).

Government-led changes to the tax regime and low employer social security contributions targeted to foster industry growth (ICT Ireland, 2007) have combined with a stable political and economic environment, cultural compatibility, English-speaking population and strong language skills to make Ireland a leading offshore destination for Europe (Grimes & White, 2005). Major software companies including IBM, Lotus, Microsoft, Oracle, Novell and Sun Microsystems have established their key software development centers there. Others including Dell, Hewlett-Packard and Apple have expanded their Irish operations and tasks into areas such as "e-business

development, client care, supply chain management, and sales and systems integration" (Grimes, 2006, p. 1047). In this respect, as the software market matures in Ireland, more companies are moving up the value chain and implementing more collaborative practices to adapt and respond to changing business needs effectively (Yavuz, 2007).

In fact, while ICT and engineering are major sources of employment in Ireland, employment in offshore services peaked in 2000 and recent years have shown a decline that indicates that the sector may already have reached a mature stage. This is principally due to an increase of labor costs that has made it more difficult for Ireland to compete with developing economies, such as India. As the country's competitiveness in ITO has declined, Ireland has upgraded into advanced activities in the financial industry. As shown in Figure 11, by 2007, the number of people employed in the financial sector more than doubled from the figures registered in 1997; this illustrates Ireland's growing importance in higher value added services for certain industries.

Figure 11. Total Employment by Sector 1997-2007



Source: (IDA Ireland, 2001, 2002, 2007)
Notes: ICT: Information and Communication Technologies

Aggressive liberalization of the economy, upgrading of the country's physical infrastructure, and a joint effort between the educational sector and economic development agencies to upgrade human capital (Teague, 2009) initially provided excellent conditions for multinational companies to invest in the country (Breznitz, 2007) (see Table 9). Pressure from IDA

and Forfas (Ireland's national policy advisory body for enterprise and science) led educational institutes to produce more computing and electronic engineering graduates and it has been suggested the Ireland now has the highest percentage of science and engineering professionals amongst the 24-35 cohort of the labor market (Barry, 2008; White, 2001).

However, as, Ireland is now facing pressure from other competitive low-cost destinations, national strategies have shifted to compete on high productivity and quality rather than cost.. Recognizing this, the government altered the Irish tax regime slightly to attract more R&D investment and to compete in more knowledge-intensive activities. In order to continue on this upgrading trajectory, Ireland's main challenge is to develop management capabilities beyond IT services and move towards business process management (Grimes, 2006). As a pre-requisite to gaining market share in this KPO segment in general – and R&D in vertical chains in particular -- it will be essential for Ireland create a sophisticated national innovation system focused on research and development. In addition, it will need to focus more intensively on developing more professionals and technical staff to perform this new activity (Teague, 2009).

Table 9. Factors of Attraction for Offshoring in Ireland

Factors/Countries	Ireland	
Cost		Software developer salaries are not low and cost of living is especially high in relation to other offshoring or nearshoring destinations in Europe.
Political and economic scenario		Political stability is one the major attributes of this country. In addition, for the past few years, growth rates have remained stable, between 5 to 6%.
Government incentives to support IT-related activities		Low corporate taxes and other tax incentives are great drivers to attract and retain foreign direct investment in the country.
Cultural compatibility		Ireland has the advantage of operating in the same time zone as the UK and has just one hour difference with Western Europe.
Language		English is the official language. However, many of the people who came to live in Ireland are from Eastern Europe allowing the country to offer other languages.
Education system		Literacy rates are almost 100% and the number of people pursuing higher studies is increasing.
Infrastructure		Well-developed telecommunications market. In addition, the government has installed optical networks to attract call centers.

Source: Based on (Tornbohm & Marriott, 2008)

C. Eastern Europe

After the fall of communism, the governments of Eastern Europe[17] strongly promoted foreign direct investment in order to drive economic growth and development. A large percentage of the resulting investments, specifically those from Austria and Germany, were focused on the offshore industry (Marin, 2006) and the region began to grow rapidly as an increasingly attractive destination for offshore services. Today, countries such as Hungary, Poland, Czech Republic, Romania, Bulgaria and Russia have become new members in the international division of labor.

The comparative advantages of the region lie in back-office activities and other complex business services. Figure 12 shows business service exports as a share of total sales to the European Union (EU) in selected Eastern European countries such as Slovakia, Slovenia, Romania, Lithuania and Latvia. The graph shows clear country specializations: Slovakia has specialized in business and management consultancy activities, Lithuania in market research and Latvia in legal activities. This dynamic shows a complementary division of labor among the Eastern European countries rather than a competitive approach.

Figure 12. Selected Business Service Exports as Share of Third Party Sales to the EU Available Countries, 2004

Source: (Alajääskö, 2007)

[17] The countries that compounds this region are: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Republic of Macedonia, Moldova, Poland, Romania, Russia, Serbia, Montenegro, Slovakia, Slovenia and Ukraine.

While economic and political stability, cost, infrastructure and availability of human capital are important factors in explaining the region's success, two key characteristics make Eastern Europe a special destination: cultural affinity and geographical ties to Western Europe (nearshore locations). Indeed, personal contact, common language and cultural understanding facilitate communication and linkages between Eastern and Western Europe. Complex tasks need closer relationships with the client in order to meet their needs, language skills are essential to provide customer care services and knowledge of the culture and customs may avoid misunderstandings.

Table 10. Factors of Attraction for Offshoring in Selected Eastern European Countries

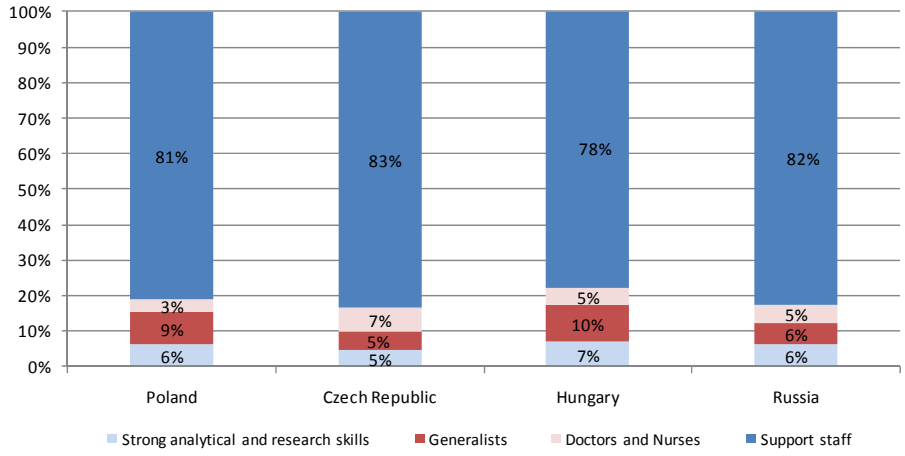
Factors/ Countries	Czech republic	Poland	Hungary
Cost	IT salaries are higher than those in India but salary growth is lower.	Cost of living is much lower compared with some developed nations, especially Western Europe, however wages continue to grow.	IT salaries lower than in Western Europe but higher than some East European countries. Tax rates on individuals are among the highest in the OECD region.
Political and economic scenario	Stability as well as gradual economic growth has been a major attraction for foreign direct investment.	Good record of economic growth, although bureaucratic procedures still impose burdens on investors.	Government commitment in ensuring a friendly environment.
Government incentives to support IT related activities	The government has implemented tax incentives offered to technology centers and support services.	The government provides tax incentives for firms operating in special economic zones.	It still needs to reduce tariffs and costs in communication and IT.
Cultural compatibility	Its central location in Europe facilitates transit corridors.	Connected with major European cities and US cultural and economic centers.	Cultural affinities with Germany and France. Membership in the EU enhances cultural ties with Western countries.
Language	A great diversity of foreign spoken languages; 63% of students learn English and 22% German, while the remaining 15% is Russian, French, Spanish and Italian.	76% of students choose English as a second language, 18% German, 6% Russian and 1% French.	90% of the students learn English and the second most spoken foreign language is German.
Education System	A developed education system. Students engaged in R&D of various technologies.	Well-recognized education system that responds to the realities of the actual labor market.	Well-educated labor force but limited skills availability on IT.
Infrastructure	Advanced transport networks and great internet access and usage of information and communication technologies.	Infrastructure development is fair, internet access is not widespread and telecommunications are not well-developed. However, the country is expecting funds to enhance the infrastructure environment.	Transportation and infrastructure well-developed, especially after the country's entrance to the EU in 2004. However, e-readiness is not well-developed.

Excellent | Very good | Good | Fair | Poor

Source: Based on (Tramacere & Marriott, 2008), (Marriott & Tramacere, 2008b), (Marriott & Tramacere, 2008a)

In recent years, the labor costs have risen considerably, undermining the region's competitiveness; from 1996 to 2004 labor costs in the new EU member states rose by 7.7% on average each year (Meyer, 2006). As companies are forced to upgrade into higher services in order to survive, higher standards of education and a favorable institutional environment are becoming more important factors for offshore service activities. In general, Eastern Europe has a solid, although to some extent limited, pool of skilled workers specializing in complex business tasks. Professionals with strong analytical and research skills (including engineers) account for 6% of the labor force on average, while in the Czech Republic 7% of the workforce are doctors or nurses providing potential for growth in the pharmaceutical services industry. Figure 13 shows the distribution of the total talent pool in Poland, Czech Republic, Hungary and Russia.

Figure 13. The Supply of Offshore Talent in Services in Eastern Europe



Source: (McKinsey Global Institute, 2009)

While there is limited skills availability in IT in Eastern Europe (Meyer, 2006), this is not expected to affect the development of offshore services as the comparative strength of this region lies in more complex back-office processes (Meyer, 2006) rather than ITO. Above all, close cultural and geographical ties make Eastern Europe an attractive location for Western Europe as they make communication easier. Figures 12 and 13 reveal that the challenge for the future is to reinforce skills in life science researching capabilities, market research, software R&D and back-office functions, especially if the region continues to be a nearshoring location in BPO and KPO segments for the European market (See Box 3 for an overview on measures being taken in the Czech Republic to improve the country's participation in higher value service activities).

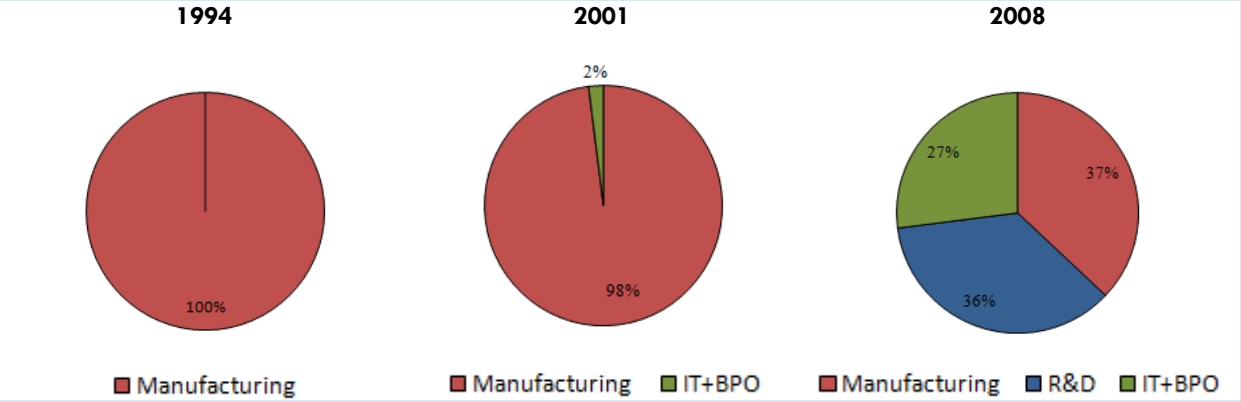
Box 3. The Czech Republic: Upgrading and Institutional Support

The Czech Republic is transitioning from a manufacturing-based economy to a greater emphasis on services. In the 1990s, the main driver of foreign direct investment (FDI) in the Czech Republic was the manufacturing sector; during the last 10 years, however, there has been a shift to offshore services. In 2008, investments in offshore services surpassed those in manufacturing projects by a ratio of 2:1. New investors, as well as established manufacturing companies that initially set up only production centers, are now transferring their higher-value added development activities (technology centers or business support services) to the Czech Republic.

The Czech Republic entered into the offshore services industry through the establishment of shared services but it has quickly upgraded into R&D segments of vertical industries, particularly in the automotive, aerospace and IT areas. Inflationary pressure, caused by the high demand for labor from a small workforce quickly forced the country to change its approach to offshoring to focus on higher value activities. While this upgrading move into offshore innovation services is still relatively new for the Czech Republic, there is an impressive number of companies that have already established centers there, and spending on R&D has increased dramatically. The automotive industry has shown strong progress with Valco, Bosch, Volkswagan and Mercedez Benz all opening centers; machine engineering has also established a presence in most regions of the country. Other areas of expertise are in electronics, scientific instrumentation and optics; and ecological engineering, renewable energy and natural resources.

As can be seen below, in 2008, out of 213 new projects implemented with CzechInvest's assistance, 76 focused on R&D and 58 on services.

Figure 1. Projects Supported by CzechInvest, 1994, 2001, and 2008



Source: CzechInvest

The government has selected priority areas for FDI in R&D, such as nanotechnology, lifesciences, IT, electronics industry, renewable and alternative sources of energy, mechanical engineering, aviation and space industry and automotive industry. But the broad range of industry sectors that are represented in R&D offshoring reflects innovation policy in the Czech Republic prior to 2005 that focused on supporting the "best" research projecs that were presented by local universities rather than any specific sector. This freedom allowed for the growth of research skills in divergent industries.

The country has been investing heavily in education to support upgrading into higher value services. The country leveraged its strong secondary education by expanding university and technical programs at the tertiary level. Enrollment increased by 43% in just five years between 2000 and 2005, and by 2005, Masters students accounted for 40% of the university student population. Today there are more than 73,000 technical university students engaged in R&D in different areas. In addition, thanks to rigorous language training in secondary schools, where most students study two or three languages, the country offers strong multilingual skills; Czech is the official language, but many people speak Russian and German as a second language.

Policy Interventions in the Czech Republic

In 1992 the Ministry of Industry and Trade of the Czech Republic established CzechInvest, an Investment and Business Development Agency that has been essential in attracting offshore services projects to the country.

The government has created different programs to position the Czech Republic as a technology and information hub. The ICT sector has received more than €12 million in subsidies. Additionally, in order to strengthen the Czech Republic's position as a technology hub in Central Europe, the Czech government has granted more than €50 million to 57 technology centers projects. [18]

Innovation has been the key government priority. Government institutions support R&D activities through the use of various tools:

- Deduction of all R&D costs – companies can deduct R&D costs from their tax base and, at the same time, include them in eligible costs.
- Grants from the National Research Program
- Investment incentives to support companies setting up or expanding technology centers and centers for industrial R&D
- Grants provided from EU Structural Funds covering the development of educational systems for R&D, development and upgrading of R&D infrastructure, and support provided to small and medium-sized enterprises for innovation projects.

To further promote the Czech Republic's investments in offshore services, the government has supported the creation of different organizations. 1) *The Office for Personal Data Protection (ÚOOÚ)* was established by the government in 2000 as an independent agency, which supervises the observance of legally mandated responsibilities in the processing of personal data, and it maintains a registry of instances of permitted personal data processing. All mentioned services are regulated by several laws. 2) *The Czech ICT Alliance* is the official export alliance of the government agency, Czech Trade (National Trade Promotion Agency of the Ministry of Industry and Trade of the Czech Republic). It was formerly established in September 2005, and since then it has implemented several key foreign activities to support Czech ICT exports. The alliance's main goal is to exploit the Czech Republic's advantages and to build a strong brand of quality Czech ICT, as well as to help firms establish solid contacts with potential customers resulting in successfully implemented projects.

Sources: CzechInvest 2007-2008-2009; Gartner, 2009; Business and Innovation Center-Brno, 2009; Economic Intelligence Unit, 2008; Goglio, 2006; Government of Czech Republic, 2005;; Květoslav et al. 2002.

[18] Technology centers are defined as centers engaged in research, development and innovation of high-tech products and technologies.

V. Industry Trends and Conclusions

Looking ahead, there are some clear trends indicating how companies may decide to offshore their functions in the future.

- **The industry has grown rapidly over the past two decades and continues to do so.** While global estimates of the industry size vary, the data clearly shows tremendous growth even within the past five years (See Table 3). More companies are adopting offshoring as part of their global strategy (Lewin & Heijmen, 2008), leveraging the global delivery model rather than one-off offshoring opportunities (AT Kearney, 2007). The success of this strategy continues to attract more clients to the industry.
- **The economic geography of the industry continues to change with new countries entering the market.** Since its inception, the industry has expanded around the globe including a wide range of new country locations. Both service providers and firms with captive centers continue to seek out locations that can offer cost advantages in labor and talent. Tata Consultancy Services expanded to Chile, Hungary and China; Wipro in China and Romania; Convergys in Budapest and the Arab Emirates; IBM Global Services is adding staff in China, Hungary, the Czech Republic and Brazil; and Accenture setup centers in the Philippines, China, Slovakia and the Czech Republic.
- **The market is becoming increasingly consolidated on the supply side.** Leading firms continue to expand their global networks, simultaneously improving their service provision, tapping into local talent pools and entering new markets. This makes it increasingly difficult for local or regional firms to compete against the enormous economies of scale of the offshore service giants. In addition, the advantages offered by these new global firms are leading companies with captive centers to redesign their offshoring strategies and many are looking to create joint ventures with these service providers. Captive centers are thus on the decline.
- **The growing participation in higher-value added services** noted in recent years is expected to continue. Booz Allen estimated the size of the global innovation industry as $492 billion for 2007, with India and China showing the highest CAGR at 25.4% for the past 5 years.[19] Companies are attracted to outsource their R&D functions to exploit pools of skilled labor at reduced costs, while at the same time reducing time to market for

[19] During this same time period, CAGR in the US was 8% while in Japan and Europe it was just 4%.

innovations and the ability to customize goods and services to a particular market. The increasing liberalization of economies and the ratification of the World Intellectual Property Organization agreement supporting the protection of intellectual property have also helped to catalyze this transition (Booz&Co., 2008) (Wipro Limited, 2009).

- In addition to R&D services, **the KPO segment and industry specific higher value added activities has one of the most promising growth rates** of around 58% (CAGR) (OECD, 2008). However, these services require high analytical skills and are less suitable to commoditization due to difficulties in scaling up operations. The nature of this market also requires a high degree of interaction between the service provider and the customer, as well as a high degree of flexibility compared to the BPO model. Smaller providers can operate more competitively in the provision of these services than in ITO or BPO segments (Lewin & Mani, 2008). These services offer both the highest margins for the providers and the highest returns of global services to the clients based on value creation. KPMG estimates a billing rate in India of around US$ 4 to US$ 15 for BPO per hour, whilst the billing rate for higher value added services is between US$ 10 to US$ 45 per hour (KPMG International, 2008).

Appendix

A. Acronyms

BPO	Business Process Outsourcing
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
CAGR	Compound Annual Growth Rate
CRM	Customer Relation Management
ECLAC	Economic Commission for Latin America and the Caribbean
ERP	Enterprise Resource Planning
ERM	Enterprise Resource Management
EU	European Union
FDI	Foreign Direct Investment
FDISTAT	Foreign Direct Investment Statistics
GDP	Gross Domestic Product
GVC	Global Value Chain
HRM	Human Resources Management
ICT	Information and Communication Technologies
IDA	Industrial Development Authority
IP	Intellectual Property
IT	Information and Technology
ITO	Information Technology Outsourcing
KPO	Knowledge Process Outsourcing
NASSCOM	The National Association of Software and Services Companies
OECD	Organization for Economic Co-operation and Development
OBS	Offshoring Business Services
ORN	Offshoring Research Network
R&D	Research and Development
S & E	Science and Engineering
TCS	Tata Consultancy Services
TNC	Transnational corporations
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	United States

B. Glossary

Concept	Definition
Advanced Activities	Activities with a great level of complexity that require high level of education and judgment. These are Industry-specific vertical activities such as R&D/innovation, design and testing among others. KPO refers to horizontal higher value added activities. For an extensive discussion on the KPO term, see the definition below and appendix D.
Body shopping	"Exports" of labor force that overcome trading restrictions and allow countries to benefit from the exchange of knowledge and skills.
Business Process Outsourcing (BPO)	1. **Enterprise Resource Planning (ERP**): finance & accounting, logistics, procurement and operations. 2. **Human Resource Management (HRM):** training, talent management, payroll and recruiting. 3. **Customer Relationship Management (CRM):** marketing & sales, contact centers and call centers.
Captive offshoring	A firm's decision to move its service provision to a foreign affiliate.
Capability Maturity Model (CMM)	Term used in the software engineering jargon to refer to models of the maturity of the capability of certain business processes.
Capability Maturity Model Integration (CMMI)	Term used in the software engineering and organizational development jargon to refer to a process improvement approach.
Commoditization	Standardization; transformation of goods and services into a commodity.
CRM (Customer Relationship Management)	Processes a company uses to track and manage its contacts with its customers (both current and prospective).
Custom software	Software designed according to the special needs of the client.
ERP (Enterprise Resources Planning)	Company-wide computer software packages used to manage all the resources, information, and functions of a business.
Global Value Chains	The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas. GVC analysis is particularly interested in understanding value chains that are divided among multiple firms and spread across wide swaths of geographic space, hence the term "global value chain."
HRM (Human Resources Management)	Strategic approach to the management of an organization's employees.
Information and Communication Technology (ICT)/ Information Technology (IT)	Includes but is not limited to; computers (such as desktops, laptops, PDAs), computer systems, storage devices (such as USB and flash memory devices, CDs, DVDs, floppy disks, iPods, MP3 players), cameras (such as video, digital, webcams), all types of mobile phones, video and audio players/receivers (such as portable CD and DVD players), telecommunication equipment, networks, databases and any other similar technologies as they come into use. ICT is the lifeline for IT services/ Global Services
Information Technology Outsourcing (ITO)	1. Software R&D 2. IT Consulting 3. Software including activities such as applications development, applications integration and desktop management. 3. Infrastructure composed of applications management and network management.
KPO	Activities with a great level of complexity that require high level of education and judgment. KPO refers to horizontal activities such as: Business consulting, business analytics, market intelligence and legal services.
Nearshore	Proposition closely related to offshore but uses similarities to client location and

	convenience to compensate for relatively high cost.
New product development	Process of bringing a new product or service to the market.
Outsourcing	Action of contracting a special function or service from a legally separate unit (outside the company) rather than using the company's own resources (in-house provision).
Research and development (R&D)	Creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (OECD, 2008).
Software products	Standard software that can be replicated for general use.
Software services	Same as "custom software".
Software and Technology Parks of India	Government agency in India that manages the Software Technology Park scheme. It is an export oriented scheme for the development and export of computer software and professional services.
Soft skills	Term related to a person's cluster of personality traits, social graces, communication, language, personal habits, friendliness, and optimism.
Upgrading	Making better products or services, making them more efficiently, or moving into more skilled activities (Humphrey & Schmitz, 2002).

C. Description of Activities in the Offshore Services Industry

1. Information Technology Outsourcing (ITO)

a. ITO in Software

1. Software R&D

Software R&D includes application development tools, new design, programming languages and models for business architects and embedded software development, performance engineering, enterprise mobility and Information virtualization projects.

2. IT Consulting

Includes services like Information Risk Management, Infrastructure Services, IT Process and Service Management, IT Strategy and Governance, Master Data Management, Performance Engineering Solutions, and Quality Assurance and Testing, which help in transforming enterprises by aligning IT strategy and priorities to their business objectives.

3. ERP (Enterprise Resource Planning) Development

The development of information systems to support all processes in a given company. Most offshore services companies provide a wide portfolio of services around sales and customization of ERP (Enterprise Resource Planning) software and systems. ERP software and systems development is a market dominated by SAP, ORACLE, The Sage Group and Microsoft Business Solutions.

4. Application Development

Software or application development including design, programming and installation of applications. These applications are applied in almost all industries from telecommunications to manufacturing. Additionally, firms in this segment provide software testing, verification and validation services, to verify the adequate performance of software and systems.

Note: Although software is a component of IT infrastructure outsourcing companies differentiate IT Infrastructure Services from Software Services.

5. Applications Integration

Development and deployment of applications integration tools (developing software packages to integrate or connect legacy applications[20] with modern computers and software).

Modernization and optimization are the main objectives of this market, the outsourcing of legacy applications also considers the complete retirement of old applications. The main activities covered in these services range from

[20] Legacy applications or legacy systems are old computer systems or applications that firms continue using because they find those tools useful. These must be integrated with new up-to-date systems and software.

maintenance and support of old applications and migration of the information developed in such systems to new applications.

6. Desktop Management

Desktop Management Outsourcing covers activities such as installing-updating and maintaining software. The support is provided online through email support, chat, and voice (on-call) support.

b. ITO in Infrastructure

1. Infrastructure Management

The goal of IT Infrastructure Management is to maximize the efficiency of IT systems within an organization, enhance the flow of information and to plan and develop updating efforts in order to keep the efficiency in line with technological changes and the new demands of the company.

Note: Hardware maintenance comprises activities such as predictive and corrective maintenance of information equipment and network devices. The nature of the activity requires physical presence of the service provider. This activity is generally outsourced but not offshored.

2. Network Management Outsourcing

Network support involves keeping the network operating efficiently, network monitoring, correcting any possible or present threat for the system and network upgrading. The assistance is provided by online monitoring, voice and no-voice support.

WLAN outsourcing (Wireless Local Area Network): Today large companies outsource the design, installation and management of their information networks and broadcasting. Instead of learning and managing the complexity of company's information broadcast systems, today companies outsource these activities to specialized companies.

3. Applications Management

Application management consists of activities such as controlling security (managing firewalls against spam, viruses and spying), data administration (data center management and enterprise server management) protecting firm's information from outsiders through 24/7 monitoring, providing content management (managing, storage and retrieving information for clients), supplying application migration, deploying and managing software applications on a network.

2. Business Process Outsourcing (BPO)

a. Enterprise Resource Management (ERM)

This is the provision of operational business processes, often known as back office processes. This segment encompasses a wide range of activities performed within the operational area of an organization. Some services are generic and are offered across a broad range of companies, while others are very specific for each vertical industry.

b. Comprehensive Finance & Accounting

The finance and accounting segment includes an extensive portfolio of services. The most common financial services are accounts receivable and accounts payable processing - invoice processing, real-time payment auditing, collection management and processing and real time transaction recording. In accounting, activities include reconciliations, ledger keeping and balancing, income and cash statement preparation.

c. Procurement – Logistics, Supply Chain Management

These services focus on increasing efficiency in the purchasing of goods and services. Procurement includes the acquisition of raw materials and supplies at the right moment, in the right quantity, with the adequate quality and in the right place. Outsourcing companies achieve economies of scale by concentrating similar supply needs of their clients.

Supply Chain Management activities include planning and controlling the flow from raw materials to final products. The outsourcing industry has developed very specific solutions on logistics for inventory management, purchasing and transportation. Supply Chain Management services and solutions is a growth industry and will soon be distinguished from the Enterprise Resource Planning segment of the BPO industry.

Other services provided in this segment include shop floor control and programming , production flow control, cost control management software, product lifecycle management and constraints management. These services are directly subcontracted or optimized-through-software processes implementation.

d. Content and Document Management

Automation of papers, intensive work flow and document management systems. Complementary, content management includes the translation of documents, brochures and company web pages as well as constant updating. Content management services allow companies to customize activities such as marketing and communication with customers to match each cultural setting.

e. Human Resource Management (HRM)

1. **Talent Management Services (Training and Comprehensive Human Resources)**

Outsourcing HR performance, compensation, work atmosphere management, evaluation and improvement of employee relations and creation of advancement systems. Other services include relocation of personnel (Global Mobility), health and welfare management as well as designing training and development programs.

2. **Payroll and Benefit Administration**

Payroll activities including data maintenance, pay calculation, payroll payment, deductions, taxes and payroll accounting. Some companies provide both domestic and international payroll processing.

Outsourcing payroll activities companies lower costs and increase efficiencies while meeting compliance regulations, the payroll management is deployed in the delivery centers and centrally administered in the companies' headquarters, achieving economies of scale.

Finally benefit administration comprises activities such as healthcare and retirement counseling, as well as retirement management.

3. Recruiting

Outsourcing of activities such as sourcing resumes, screening, scheduling interviews, and selecting personnel. The capacity to develop a pool of talented human resources reduces costs and speed candidate delivery.

f. Customer Relationship Management (CRM)

1. Comprehensive CRM (Marketing & Sales)

Design and development of marketing projects, support on inbound and outbound sales, sales order process, customer monitoring and product life cycle support. Comprehensive CRM goes beyond simple tele-marketing activities to provide customer data analysis and marketing strategy design.

2. Contact Centers

Voice (inbound and outbound by telephone, chat and email) activities such as marketing activities, customer satisfaction inquiry, customer retention and customer acquisition.

3. Call Centers

Outsourcing voice (inbound) services on customer support, business partners, or company associates

Note for Vertical BPO services typical offshored activities in specific industries are back office processes on core banking, card processing, mortgage origination, billing for telecom, life insurance closed book, health care Revenue Cycle Management, teleradiology outsourcing and North America health care insurance.

3. Knowledge Process Outsourcing (KPO)

a. Business Consulting, Business Analytics and Market Intelligence

This segment comprises the development of research activities and advice strategies in topics such as business opportunity assessment, market research and customer retention and growth, operations improvement or business optimization.

Business Analytics include services such as restructuring processes and business, corporate-organization strategy. This includes process improvement including the application of Six Sigma processes.

March Intelligence includes market research analysis, market segmentation and customer behavior predictive analysis.

Specific Advanced Activities Outsourcing niches are capital markets, finance and accounting support, and legal advice. All of them exist to provide specialized and specific services to individual industries.

b. Legal Services

Legal Services include legal activities at the corporate level such as managing contracts, leases or licenses as well as more specific activities such as intellectual property services or litigation support services.

D. KPO Definitions

Institution/ Company	Comments on KPO
IBM	Their services segment does not include KPO
Capgemini	KPO is one of the segments under BPO Activities under KPO: • Research and advisory services • Reference data management • Engineering services
TCS	KPO is one of the segments under BPO Activities under KPO: • Customer Analytics (Retail) • Spend/Procurement Analytics (Manufacturing) • Equity Research (Banking and Financial Services) • Statistical Analysis (Pharma, Actuarial)
Wipro Limited	KPO is one of the segments under BPO/Specialized services Activities under KPO: • Business Research • Analytics • Reporting Planning and Analysis • Communication and Publishing Services (Another BPO specialized services is Legal Process Outsourcing not part of KPO)
Evalueserve	The term KPO was coined by them and all their services are listed as KPO activities: • Market Research • Business Research • Investment Research • Sales Support • Data Analytics • Knowledge Technology • Legal Support Services
Gartner	"KPO emerged as a marketing term to highlight many unique aspects of specific niche types of enhancement-oriented BPO: business processes involving skill sets that require knowledge workers who have deeper functional or domain expertise than an average transaction process and can be trained in a few weeks or months." Gartner generally does not include engineering or other services in their estimates as these are considered subsets of most of the world´s service industries and not highly dependent on IT.
Forrester	"KPO is different from other forms of offshore BPO, in that it is not rules-based like most conventional BPO activities (e.g., contact center, finance, and accounting). The potential opportunities for knowledge-based outsourcing are virtually unlimited, but early emphasis has been on research and analytics. Not surprisingly, much of the activity has been in the financial services industry, including equity research, but opportunities are also springing up in other industries, such as pharmaceutical and consumer packaged goods, for tasks that include business intelligence, desktop

	publishing, clinical trials, mortgage processing, and many others. Knowledge process outsourcing (KPO), as it is known in offshore outsourcing circles, was originally pursued primarily within the captive context, but it has now emerged as a major category for third-party providers."
Mari Sako	"In the 2000s, with India's reputation rising, global corporations and financial institutions began to consider offshoring more complex and knowledge-intensive professional services, in business and market research, financial data analytics, engineering design, radiology, and R&D. This phenomenon came to be known as knowledge process outsourcing (KPO). Legal process outsourcing (LPO) is regarded as part of KPO."
NASSCOM	Industry Sectors classification (Does not use the term KPO): • IT Services • ITES-BPO • Engineering Services and R&D, • Software Products
Dossani, Kenney and Mullan	The authors do not use the term KPO or any category for higher value added services: they refer to the activities by their own name.

Source: Companies and institutions websites.

References

ADP. (2009). A Brief Timeline of ADP History. Retrieved November 9, 2009 from http://www.adp.com/global/globalview/docs/adp-timeline.pdf.

Aggarwal, Alok and Abhishek Pandey. (2004). The Next Big Opportunity – Moving up the Value Chain – From BPO to KPO: Evalueserve. http://www.evalueserve.cl/Spanish/..%5CMedia-And-Reports%5CWhitePapers%5CNextBigOpportunityMovinguptheValueChainFromBPOtoKPO.pdf.

Alajääskö, Pekka. (2007). Statistics in Focus: Industry, Trade and Services. Exports of Business Services. Luxembourg: EUROSTAT, European Commission.

Arora, Ashish and Suma Athreye. (2002). "The Software Industry and India's Economic Development." *Information Economics and Policy, 14*(2): 253-273.

AT Kearney. (2004). Offshoring Atractiveness Index. Chicago, IL: A.T. Kearney.

---. (2007). Offshoring for Long-Term Advantage. The 2007 A.T. Kearney Global Services Location Index. Chicago, IL: A.T. Kearney.

Athreye, Suma S. (2005). "The Indian Software Industry and Its Evolving Service Capability." *Industrial and Corporate Change, 14*(3): 393-418.

Baldwin, Richard and Fréderic Robert-Nicoud. (2008). Offshoring: General Equilibrium Effects on Wages, Production and Trade. Milan: Centro Studi Luca D'Agliano. http://ssrn.com/abstract=1368792.

Barrientos, Stephanie, Gary Gereffi and Arianna Rossi. (2008). "Concept Note 'Capturing the Gains': What Are the Challenges and Opportunities for Economic and Social Upgrading?". Paper presented at the Manchester Workshop. December 8-9.

Barry, Frank. (2008). "Third-level Education, Foreign Direct Investment and Economic Boom in Ireland." *International Journal of Technology Management, 38*(3): 198-219.

Barry, Frank and Desiree van Welsum. (2005). Services FDI and Offshoring into Ireland. Conference: OECD Working Party on the Information Economy, Paris. June.

Booz&Co. (2008). Beyond Borders: The Global Innovation 1000: Booz&Co.

Breznitz, Dan. (2007). *Innovation and the State: Political Choice and Strategies for Growth in Israel, Taiwan, and Ireland*. New Haven, CT: Yale University Press.

Business Line. (2008). Wipro BPO Centre for AmBev. Retrieved September 17, 2009 from http://www.thehindubusinessline.com/2008/11/03/stories/2008110350690200.htm.

Computer Business Review Magazine. (2009). Tech Mahindra signs $1bn BT deal. Retrieved October 8, 2009 from http://www.cbronline.com/news/tech_mahindra_signs_1bn_bt_deal.

CPM Braxis (2007). SAP Practice. Retrieved September 1, 2009, from http://www.braxis.com.br/apresentacao/cpm_braxissap_offerings.pdf

CSC. (2009). Our History, 50 Years Strong. Retrieved October 9, 2009 from http://www.csc.com/fifty/flex/23506-the_story_of_csc.

D'Costa, Anthony P. (2003). "Uneven and Combined Development: Understanding India's Software Exports." *World Development, 31*(1): 211-226.

Datamonitor. (2008a). IBM Global Services: Datamonitor. http://www.marketlineinfo.com/library/DisplayContent.aspx?R=F4EFC8D9-A1D9-412E-AFE2-554F4A036D7F&N=4294833765.

---. (2008b). Software in India - Industry & Tata Consultancy Profile: Datamonitor.

---. (2009). Global IT Services. London: Datamonitor.

Dossani, Rafiq. (2005). Origins and Growth of the Software Industry in India. Stanford, CA: Asia-Pacific Research Center, Stanford University.

Dossani, Rafiq and Martin Kenney. (2007). The Evolving Indian Offshore Services Environment: Greater Scale, Scope and Sophistication: Sloan Industry Studies Working Papers. http://www.industry.sloan.org/industrystudies/workingpapers/.

Duke Offshoring Research Network & Booz&Co. (2006). Offshoring Research Network 2006 Survey.

Duke Offshoring Reserach Network & Booz&Co. (2007). Offshoring 2.0: Contracting Knowledge and Innovation to Expand Global Capabilities.

ECLAC. (2008). "Offshore Corporate Services in Latin America and the Caribbean". Paper presented at the Offshore Corporate Services in Latin America and the Caribbean. Santiago, Chile. November 18, 2008.

---. (2009). Foreign Direct Investment in Latin American and the Caribbean. Santiago, Chile: Economic Commission for Latin America and the Caribbean.

Gereffi, Gary and Karina Fernandez-Stark. (2008). Global Services Offshoring: Trends and Impact in Latin America and the Caribbean. Conference: Inversión Extranjera en Servicios Corporativos Offshore en América Latina, Santiago, Chile. November 18.

Global Services. (2009). Brazil IT Outsourcing to Grow at CAGR of 36%, says Report. Retrieved October 30, 2009 from http://www.globalservicesmedia.com/Content/general200910237590.asp.

Grimes, Seamus. (2006). "Ireland's Emergence as a Centre for Internationally Traded Services." *Regional Studies, 40*(9): 1041-1054.

Grimes, Seamus and Mark White. (2005). "The Transition to Internationally Traded Services and Ireland's Emergence as a 'Successful' European Region." *Environment and Planning A, 37*(12): 2169-2188.

Gupta, Ashish. (2009). Evalueserve Presentation. Conference: Servicios Globales: Una Nueva Industria Exportadora para Chile, Santiago, Chile. August 28.

Humphrey, John and Hubert Schmitz. (2002). "How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters?". *Regional Studies, 36*(9): 1017-1027.

IBM. (2002). IBM Global Services: A Brief History: IBM.

---. (2009). IBM Archives, Our History of Progress. Retrieved October 7, 2009 from http://www-03.ibm.com/ibm/history/.

IBM Global Business Services. (2009). Global Location Trends: IBM. ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/gbl03009usen/GBL03009USEN.PDF.

ICT Ireland. (2007). Why Ireland Should be Your Location of Choice. http://www.ictireland.ie/Sectors/ICT/ICTDoclib4.nsf/58157743faf5c23e802570fc00446d26/f99c0dc64b94f4c9802570fc004dd092/$FILE/Ireland%20as%20a%20location_2007.pdf.

IDA Ireland. (2001). Annual Report 2001 Statistics. Dublin: IDA Ireland.

---. (2002). Annual Report 2002 Statistics. Dublin: IDA Ireland.

---. (2007). Annual Report 2007 Statistics. Dublin: IDA Ireland.

Infante, José Ignacio. (2009). Chile Interview Series: BHP Billiton Shared Services. Personal communication with P. Bamber & K. Fernandez-Stark. September 22.

Jaruzelski, Barry and Kevin Dehoff. (2008). Beyond Borders: The Global Innovation 1000: Booz & Company Inc.

Kenney, Martin and Rafiq Dossani. (2006). Digitizing Services: What Stays Where and Why. In S. Bagchi-sen & H. L. Smith (Eds.), *Economic Geography: Past, Present and Future* (pp. 136-144). London, New York Routledge.

KPIT Cummins Infosystems. (2009). Vision & Values. Retrieved September 14, 2009 from http://www.kpitcummins.com/corporate/index.htm.

KPMG International. (2008). Knowledge Process Outsourcing: Unlocking Top-Line Growth by Outsouricng "The Core": IT Advisory. February.

Lewin, Arie and Vinay Cuoto. (2007). Next Generation Offshoring: The Globalization of Innovation. Durham, NC: Duke Offshoring Research Network.

Lewin, Arie and Antonius (Ton) C.M. Heijmen. (2008). Offshoring: An Intermediary Step to New Transformational Global Capabilities: Findings from the 2007-08 Offshoring Research Survey. Conference: The Conference Board Strategic Outsourcing Webcast Achieving the Next Evolution of Success. July 15.

Lewin, Arie and Mahadeva Matt Mani. (2008). Next Generation Outsourcing: The Service Provider's Perspective. Results from the 2007 Service Provider Survey. Conference: IAOP Outsourcing World Summit, Orlando, Florida. February 18.

Lopez, Andres, Daniela Ramos and Ivan Torre. (2008). Las Exportaciones de Servicios de América Latina y su Integración en las Cadenas de Valor. Buenos Aires: CENIT: Documento realizado para la Comisión Económica para América Latina y el Caribe (CEPAL). Marzo, 2008.

Maiti, Rituparna and Raghavendra M. (2007). "Clinical Trials in India." *Pharmacological Research, 56*(1): 1-10.

Manning, Stephan, Silvia Massini and Arie Y. Lewin. (2008). A Dynamic Perspective on Next-Generation Offshoring: The Global Sourcing of Science and Engineering Skills.

Marin, Dalia. (2006). "A New International Division of Labor in Europe: Outsourcing and Offshoring to Eastern Europe." *Journal of the European Economic Association, 4*(2-3): 612-622.

Marriott, Ian and Gianluca Tramacere. (2008a). Analysis of Hungary as an Offshore Services Location. Stamford, CT: Gartner, Inc. October 31.

---. (2008b). Analysis of the Czech Republic as an Offshore Services Location. Stamford, CT: Gartner, Inc. October 30.

Mathe, Hervé and Teo Forcht Dagi. (1996). "Harnessing Technology in Global Service Businesses." *Long Range Planning, 29*(4): 449-461.

McDougall, Paul (2004). GE Spins Off Indian Unit. Retrieved October 1, 2009, from http://www.informationweek.com/news/global-cio/outsourcing/showArticle.jhtml?articleID=52601245

McKinsey Global Institute. (2005). The Emerging Global Labor Market. San Francisco, CA: McKinsey & Company. June.

---. (2009). The Emerging Global Labor Market. Retrieved July 17, 2009, from http://www.mckinsey.com/mgi/publications/emerginggloballabormarket/Part2/supply.asp.

Meyer, Thomas. (2006). Offshoring to New Shores: Nearshoring to Central and Eastern Europe. Frankfurt, Germany: Munich Personal RePEc Archive. August 14. http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD//PROD0000000000201757.pdf.

Mongillo, Leonardo and Gustavo Tasner. (2009). Chile Interview Series: Capgemini S.A. Personal communication with K. Fernandez-Stark & P. Bamber. October 6.

Mulder, Nanno, Sebastián Sáez, Claudia de Camino, and Alfonso Finot. (2007). Trade in Services in Latin America and the Caribbean: An Analysis of Recent Trends. Santiago: Division of International Trade and Integration, Economic Commission for Latin America and the Caribbean. http://www.eclac.cl/comercio/publicaciones/xml/9/32449/Trade_in_services_in_Latin_America_serie_84_dcii.pdf.

Mullan, Jessica, Martin Kenney and Rafiq Dossani. (2008). Offshoring IT-Based Services to Latin America: The Current State and Future Prospects. Report for the Inter-American Development Bank.

NASSCOM. (2008). NASSCOM-Everest India BPO Study.

---. (2009a). Annual Report 2008 - 2009.

---. (2009b). Indian IT-BPO Industry Factsheet. Retrieved July 17, 2009, from http://www.nasscom.in/upload/5216/IT_Industry_Factsheet-Mar_2009.pdf.

---. (2009c). NASSCOM Outlook ITO and BPO YR08-09. Retrieved August 4, 2009 from http://www.nasscom.org/Nasscom/templates/NormalPage.aspx?id=57224.

NASSCOM and Booz Allen Hamilton. (2006). Globalization of Engineering Services - The Next Frontier for India: NASSCOM & Booz Allen Hamilton.

NASSCOM and Deloitte. (2008). Indian IT/ITES Industry: Impacting Economy and Society 2007-08. New Delhi: NASSCOM Foundation. February 2008.

OECD. (2008). Europe Regional Investment Strategy Key Findings of the Sector Specific Study. Sarajevo: OECD Private Sector Development Division. July 3.

Parthasarathy, Balaji and Yuko Aoyama. (2006). "From Software Services to R&D Services: Local Entrepreneurship in the Software Industry in Bangalore, India." *Environment and Planning A, 38*(7): 1269-1285.

PR Newswire. (2003). WNS Global Services Launch High-End Research and Analytics Services; New Division will Induct 200 to 300 MBAs to Meet Growing Demand for Greater Efficiences in Research. New York. July 21, 2003. http://www.accessmylibrary.com/coms2/summary_0286-23879592_ITM.

Promantra. (2009). About Promantra. Retrieved September 14, 2009 from http://www.promantra.net/.
Rao, P.M. (2008). The Emergence of the Pharmaceutical Industry in the Developing World and its Implications for Multinational Enterprise Strategies. http://www.emeraldinsight.com/Insight/viewPDF.jsp?contentType=Article&Filename=html/Output/Published/EmeraldFullTextArticle/Pdf/3240020202.pdf.
Rigotti, Attilio, Alejandro Soza, Ramón Corbalán, and Sebastian Irarrázaval. (2009). Chile Interview Series: Universidad Católica Centro de Investigaciones Clínicas. Personal communication with P. Bamber. August 25.
Sako, Mari. (2005). "Outsourcing and Offshoring: Key Trends and Issues". Paper presented at the Emerging Markets Forum. Oxford, UK. Retrieved July 6, 2009, from http://www.sbs.ox.ac.uk/NR/rdonlyres/99F135D4-E982-4580-9BF0-8515C7B1D40B/1752/EMFOutsourcingNov05.pdf.
---. (2009a). Evalueserve: Globalizing the Business of Giving Insight? : Said Business School, University of Oxford. July 8, 2009.
---. (2009b). "Global Strategies in the Legal Services Marketplace: Institutional Impacts on Value Chain Dynamics". Paper presented at the SASE Conference. Paris, France. 16-18 July.
Sen, Falguni and Michael Shiel. (2006). "From Business Process Outsourcing (BPO) to Knowledge Process Outsourcing (KPO): Some Issues." *Human Systems Management, 25*(2): 145-155.
Softtek. (2009). Softtek's Value Model. Retrieved November 10, 2009 from http://www.softtek.com/en/about_value_model.php.
Software Engineering Institute, Carnegie Mellon University. (2009). What is CMMI? Retrieved July 14, 2009, from http://www.sei.cmu.edu/cmmi/general/index.html.
Srivastava, Mohit and Jairo Ortiz. (2009). Chile Interview Series: Evalueserve Chile S.A. Personal communication with G. Gereffi & K. Fernandez-Stark. January 23.
Sturgeon, Timothy and Gary Gereffi. (2009). "Measuring Success in the Global Economy: International Trade, Industrial Upgrading, and Business Function Outsourcing in Global Value Chains." *Transnational Corporations, 18*(2): 1-35.
Tata Consultancy Services. (2008). Results for Quarter I FY 2008-09: Tata Consultancy Services. http://www.tcs.com/sitecollectiondocuments/investors/presentations/TCS_Analysts_Q1_09.pdf.
---. (2009a). Global Network Delivery Model. Retrieved September 13, 2009, from http://www.tcs.com/about/tcs_difference/global_delivery/Pages/default.aspx.
---. (2009b). TCS Innovation Labs. Retrieved November 10, 2009 from http://www.tcs.com/about/tcs_difference/innovation/tcs_labs/Pages/default.aspx.
Teague, Paul. (2009). Developing Ireland Committing to Economic Openness and Building Domestic Institutional Capabilities: UNU-WIDER.
Technology Partners International. (2008). The TPI Index.
The Boston Consulting Group. (2007). Estudios de Competitividad en Clusters de la Economía Chilena. Documento de Referencia Offshoring. May 18.
The Forbes Global 2000. (2009). The Forbes Global 2000. Retrieved August 4, 2009 from http://www.forbes.com/2005/03/30/05f2000land.html.
Tramacere, Gianluca and Ian Marriott. (2008). Analysis of Poland as an Offshore Services Location. Stamford, CT: Gartner, Inc. October 10.
Triangle Business Journal. (2008). IBM Wins Latin American Outsourcing Contract. Retrieved August 11 2009, from http://www.bizjournals.com/triangle/stories/2008/08/04/daily50.html.
Wadhwa, Vivek, Una Kim De Vitton and Gary Gereffi. (2008). How the Disciple Became the Guru: Is it Time for the U.S. to Learn Workforce Development from Former Discipline India? : This research was funded in part by the Kauffman Foundation. http://www.soc.duke.edu/GlobalEngineering/papers_disciple.php.
White, Tony. (2001). *Investing in People: Higher Education in Ireland from 1960 to 2000*: Institute of Public Administration.
William F. Achtmeyer Center for Global Leadership. (2008). Infosys Consulting: Tuck School of Business at Dartmouth. http://mba.tuck.dartmouth.edu/cgl/downloads/Infosys_Consulting_2-0022-11.2007.pdf.

Wipro Limited. (2008). Annual Report 2007-08: Wipro Limited.
---. (2009). The Journey. Retrieved November 11, 2009, from http://www.wiproapplyingthoughtinschools.com/aboutwipro/our_journey.htm.
Yavuz, Omer. (2007). Outsourcing to Ireland. In M. Helfert, T. T. P. Thi & H. Duncan (Eds.), *Cases and Projects in Business Informatics* (pp. 277-295). Dublin: International Business Informatics Challenge and Conference.
Zinnov. (2009). R&D Service Providers Rating. http://zinnov.com/pdfFiles/1253178619Microsoft_PowerPoint_-_Zinnov-GSPR-Ranking.ppt__Compatibility_Mode_.pdf.