

# Chile's Offshore Services Value Chain



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## I. Introduction

In 2001, the Chilean economic development agency, *Corporación de Fomento de la Producción* (CORFO), began promoting Chile as a service platform. Since then, the industry has grown impressively and today, Chile is recognized as a leading offshore services destination. The development of the offshore services sector within Chile has shown a similar trajectory to industry development at a global level. The country began offering services in information technology, followed by the provision of back office business services and is now slowly upgrading and beginning to export knowledge processes and high value added services across different industry segments.

Growth in the past three years has been funded through *el Comité Nacional de Innovación para la Competitividad*, a new institution charged with establishing and governing a national innovation system to transform the Chilean economy from one reliant on natural resources to a knowledge-based one. As this industry has grown in Chile, the institutional and regulatory frameworks have evolved to support it. CORFO has played a key role in channeling incentives and information to potential investors. By 2008, the industry had grown fourfold to close to US\$1 billion, representing almost the same amount in exports as Chile's renowned wine industry.

While the country has been successful to date, there are important limitations to its potential growth moving forward. These are largely due to the limited size of the labor force available in Chile. The total Chilean labor force accounts for approximately 1% of India's and the country simply cannot compete in areas where scale has become a relevant factor. These limits mean that Chile must begin to specialize in segments of the offshore services value chain that correspond to the available human capital and experience of the country, while maximizing opportunities for value creation.

In order to do so, policy makers require an analytical framework to identify high value segments, opportunities for long-term positive spillover effects, and the relative competitiveness of industries in the offshoring of high value services. This framework must disaggregate the market in a useful way; it must identify industry drivers, relations between clients and suppliers, and the power of lead firms to influence market demand. For this the Global Value Chains (GVC) framework offers a useful instrument for analysis by providing policy makers with a method to determine where the country may be best suited to enter the value chain in order to achieve desired outcomes.

This report presents an overview of the global offshore services industry value chain. The chain incorporates all services that are currently being provided in the industry and value is correlated to employee education level. This includes the three key segments: Information Technology Outsourcing (ITO), Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO). These services are referred to as horizontal services since they can be provided across all industries. Industry-specific services that cannot be easily applied in other industries are referred to as verticals. This report provides in-depth analysis of the ITO, BPO and KPO segments, including both the current level of development and challenges for future growth, followed by an analysis of upgrading opportunities for vertical offshore industries in the country.

The information for the analysis in this paper is drawn from research of the offshore services industry at a global level, including in-depth analysis of lead firms and of three leading countries or regions: India, Eastern Europe and Ireland. This broader research is detailed in the accompanying report, **The Offshore Service Industry: A Global Value Chain Approach** (Gereffi & Fernandez-Stark, 2010). Information specific to the Chilean value chain for offshore services was gathered from secondary sources as well as 39 interviews with companies in different market segments and relevant higher education institutions as well as industry associations and government agencies.<sup>1</sup>

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<sup>1</sup> A list of the organizations that participated in this study is included in Appendix F.

## II. Background to the Evolution of the Offshore Services Industry in Chile

Prior to 2000, the offshore services industry in Chile was insignificant yet, by 2008, the country registered close to US\$900 million in service exports (IDC Latin America, 2009). This growth was spurred by concentrated policy efforts to develop the industry through CORFO's High Tech Investment Program (Castillo, 2008).<sup>2</sup> Early efforts were focused on "putting Chile on the offshore services map" by promoting the country's clear competitive advantages within the region, including a stable macroeconomic and political environment, a relatively inexpensive world-class telecommunications infrastructure, high standards of living, low business costs, clear investment rules and the access to an educated workforce (The Economist Intelligence Unit, 2006). In 2004, when AT Kearney published its first Global Services Index identifying the top 50 destinations in the world for offshore service activities, Chile was ranked 9<sup>th</sup> (AT Kearney, 2004).

The publication of Boston Consulting Group's 2007 report (2007a) on Chile's cluster development strategy provided the true impetus for launching the offshore services industry. Identifying global services<sup>3</sup> as one of eight high potential clusters, BCG provided key stakeholders with a strategic agenda to drive the industry. This study highlighted the need to establish a strategy for growth based on the development of high-value added services rather than low-end functions, as Chile has limited labor cost advantages for offshoring with respect to its Latin American peers. They recommended that the country focus on companies working in software development as well as to draw on Chile's tremendous experience in business analytics and financial services (The Boston Consulting Group, 2007a).

A public-private Advisory Board was established to manage the newly created Global Services Cluster representing international companies already present in Chile, industry associations, educational institutions, and representatives from the public sector.<sup>4</sup> Following the establishment of this council, the industry grew tremendously from approximately US\$200 million at the end of 2005 to US\$843 million by mid 2009 (IDC Latin America, 2009; The Boston

<sup>2</sup> In 2000, CORFO created the InvestChile (High Tech Investment) Program to encourage foreign investment. The focus of InvestChile is mainly on technology intensive foreign investment and to assist companies looking to locate in Chile. The program has a series of incentives available for investors ranging from feasibility studies, to training and infrastructure subsidies. In 2008, the Invest Chile program supported 304 projects and provided a total of around US\$16 million in subsidies. The resulting materialized investment amounted to approximately US\$374 million (CORFO, 2009b). For more information regarding these incentives see Appendix C.

<sup>3</sup> Global services (*servicios globales*) is the name given to the industry in Chile. For this report, offshore services and global services should be considered synonymous.

<sup>4</sup> The Ministries of Economy and Education, as well as ProChile and CORFO, were included from the public sector. In addition to the BCG report, a 2007 McKinsey article recommended the need to strengthen knowledge and innovation functions by fostering ties between multinationals corporations and local universities (McKinsey, 2007).

Consulting Group, 2007a). By the end of 2007, companies including BHP Billiton, Delta, J.P.Morgan, Sitel and MSD had established offshore services operations in Chile, principally in ITO and BPO (Agosin, 2009). While efforts were highly successful in attracting offshore service centers, there was no consistent strategy to attract high value services, perhaps due to a lack of a coherent framework to differentiate low and high value services. In 2008, an internal CORFO report by Jeffrey Sinor, drawing on the BCG report and the first value segmentation of the industry provided by Gereffi (Gereffi & Fernandez-Stark, 2008), identified four industry segments – Information Technology Outsourcing, Business Process Outsourcing, Knowledge Process Outsourcing and Innovation Process Outsourcing (Sinor, 2009). This framework was used in the most recent study by the International Data Corporation to quantify the industry in Chile (IDC Latin America, 2009). (These preliminary categories have been further analyzed and redefined as explained in the following section.) These figures estimate that the current market size is approximately US\$844 million and employees just over 20,000 people.

### III. Methodology

#### A. Offshore Services Global Value Chain

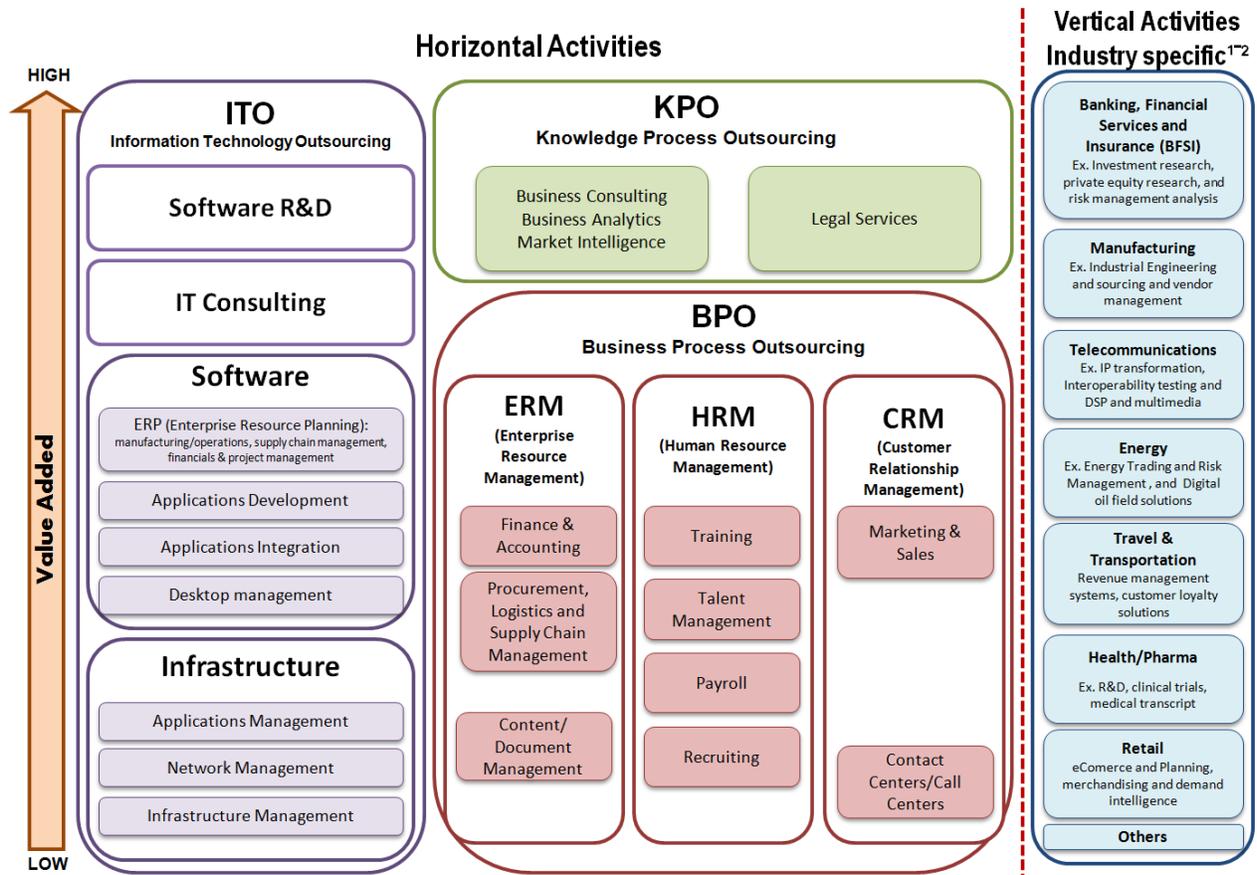
The GVC analysis developed in the accompanying paper, “The Offshore Services Industry: A Global Value Chain Approach” (Gereffi & Fernandez-Stark, 2010), identifies all aspects of the production of services in the offshore industry and measures the different values of each stage. While the offshore services 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).

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 a meaningful unit of analysis, 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. This distinction is particularly important in understanding where a country with a highly trained but limited labor pool may be able to effectively participate in the offshore services industry.

Within the horizontal services, all activities are related to supporting generic business functions. The **ITO segment** is made up of four categories. The first category is software research and development (R&D); the second is IT consulting; the third is software, and includes activities such as ERP (Enterprise Resource Planning, which is comprised of software development for Enterprise Resource Management activities), applications development, applications integration and desktop management; while the fourth category is infrastructure, 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, and payroll and recruiting. Customer Relationship Management (CRM) is the last category, being composed of marketing & sales, contact 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 A.

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. These activities can be present along the entire length of the industry value chain, from lower IT services to mid-value industry-specific repetitive business processes to R&D and new product creation. As with firms searching to lower costs in non-core business activities, firms seek out low cost locations for low value services and high talent locations for high value services. Effective market participation in vertical offshore services requires firms to leverage existing experience in the industry (i.e., to functionally upgrade along a value chain). Figure 1 shows the main segments and activities of the offshore services value chain.

**Figure 1. Offshore Services Value Chain**



Source: CGGC

<sup>1</sup> 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.

<sup>2</sup> 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 A.

Within horizontal services, ITO makes up the low, mid and high value segments of the offshore services value chain, BPO activities are in the low and mid segments while KPO is 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-added 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 Doctoral degrees.<sup>5</sup> Table 1 below identifies a sample of firms in the offshore services industry in Chile in different segments of the global value chain.

**Table 1. Examples of Offshore Services Providers in Chile, by GVC Segment**

ITO	BPO	KPO	Vertical industries
Equifax (R&D)	Teleperformance (CRM)	Evalueserve	Evalueserve (Finance – Equity Research)
Altec (All)	SITEL (CRM)	Scopix (Market Intelligence)	Monsanto (Agriculture – R&D)
Sonda (R&D, IT Consulting)	Capgemini (ERM)	Penta Analytics (Market Intelligence)	Hatch (Mining – Engineering)
Citigroup (Software)	Tata Consultancy Services (ERM)		BioSigma (Mining – Biotechnology)

Source: CGGC based on industry analysis and interviews.

The relative value of vertical services is correlated in the same way as horizontal services, using human capital skill levels. 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 in 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 in Section IV. D. High Value Services in Vertical Industries these are referred to generically as advanced activities.

The pace, nature and scale of offshoring of vertical services differs considerably across industries, making general service categorization along the value dimension very difficult. It is thus necessary to establish a global value chain for each vertical industry in order to fully identify

<sup>5</sup> See Appendix B. for further details regarding the correlation of value segments with education.

opportunities to exploit in offshore services. The one exception is R&D services that are present as one of the highest value added activities in most value chains. R&D 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).

## IV. Analysis of the Offshore Services GVC in Chile

### A. Information Technology Outsourcing

#### 1. Current Situation<sup>6</sup>

The ITO segment today represents the most extensively developed segment of the offshore services industry in Chile. The sector has been supported by government programs, including Innova Chile, which initially provided US\$60 million in resources in order to improve the e-readiness in the country<sup>7</sup> (Chile Innova, 2005), and the High Technology Investment Incentives program offered by CORFO. A world-class telecommunications and energy infrastructure and competitive broadband costs have provided a solid platform for the development of the sector. Application software outsourcing alone is already the third largest service exporter in the country, accounting for 15.5% of total service exports (US\$131 million) and employing over 4,000 people (IDC Latin America, 2009). The sector is also highly dynamic, with a large number of small companies entering the export market (Cornejo, 2009).

Despite a global decline in captive centers, the Chilean IT industry is characterized by a large proportion of offshore subsidiaries, accounting for 38% of the country's applications and software development services (IDC Latin America, 2009). These primarily serve the financial sector and include Altec S.A (Banco Santander), Citigroup and J.P. Morgan. The presence of these centers has attracted provider firms, such as Polaris Software Laboratories, a spin-off from Citigroup that provides the firm with contract labor (Schenkel & Knezovic, 2009). Equifax has leveraged its existing Chilean operations in the financial sector to establish a Chilean R&D center, which focuses on software platforms for both the financial sector (APPRO) as well as a platform that serves any company selling a product in any industry (Interconnect) (Gomez et al., 2009).

The majority of firms have concentrated in Santiago, with the exception of a few, such as GenShare and Everis, which are leveraging the second tier cities, Valparaiso and Temuco, respectively (Subramony, 2009; Tello, 2009). Both companies cite the availability of lower labor costs, the quality of life and impressive telecommunications infrastructure as reasons for location selection. In addition, Everis have developed a Software Factory with Universidad de la Frontera

<sup>6</sup> The analysis of the ITO section was developed using reviews of secondary sources including the IDC Report, the Customs Services Export Database (Prochile, 2009), as well as interviews with representatives from both industry associations, ACTI and GECHs, and company interviews with Everis, Citigroup, Sonda, Tata Consultancy Services, Capgemini, Kael, Scopix and Equifax. A list of all interviews conducted is referenced in Appendix F.

<sup>7</sup> Chile was ranked 4<sup>th</sup> in E-Readiness in the Americas by the Economic Intelligence Unit in 2008 (The Economist Intelligence Unit, 2008).

located in Temuco to work with engineers in the last year of their degree. This allows the students to gain work experience while simultaneously providing Everis with a supply of experienced staff upon graduation. All exports from this center are directed to their Spanish clients (Tello, 2009).

Local firms in the industry have followed differing business models in order to expand. Sonda S.A. and Quintec S.A., the two largest Chilean firms participating in the sector, have opted to develop a network of offices around Latin America, allowing them to build close relationships with their clients while developing centers of expertise across the continent. Sonda S.A. notes that a very small percentage of its US\$671 million 2008 revenue was in exports. While the company may not currently export large quantities, its Chilean headquarters is home to the company's innovation laboratories and its expertise lies in developing unique highly complex solutions, such as government procurement systems like ChileCompra, which is now being replicated for Colombia (Peña, 2009). Other leading Chilean firms that have seen rapid growth in the recent past have opted to replicate the Global Delivery Model<sup>8</sup> that has made companies such as Infosys and Genpact a great success. One example is Coasin, which has established three offices in North America to be close to its clients while maintaining a Chilean delivery center (Coasin Group, 2009).

Alongside the large companies, newer more nimble IT firms have emerged in the very highest value R&D niches in the ITO segment of the global services value chain. These companies generally have fewer than 50 employees and are still within their first three years of operation. They are led by electronic engineers and their business model is focused on R&D. These include Equifax's R&D unit, Yahoo!, Polaris Software Laboratory and Kael (Casas & Mustakis, 2009; Gomez et al., 2009; Schilkrot & Vera, 2009). These companies are currently offering very limited exports; however, the potential of their projects is impressive given that they do not yet have any significant competition on a global level. Kael, for example, has already filed for a number patents (Casas & Mustakis, 2009).

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<sup>8</sup> To find more information about the Global Delivery Model, please see (Gereffi & Fernandez-Stark, 2010, p. 33).

Table 2. Leading Firms in the ITO Sector in Chile

Company	Captive/ Contract	No of employees	Exports (2008) US\$ millions	Destination	Country of origin	Activities
<b>Altec S.A.</b>	Banco Santander	700	33.5 <sup>a</sup>	All of Latin America	Chile/Spain	IT Consulting, Applications Development and Support
<b>Telefonica Movil Aplicaciones y Soluciones</b>	Telefonica		22.7	Colombia, Mexico, Ecuador, Panama, Nicaragua, Peru, Venezuela, Argentina, Spain	Chile/Spain	Applications Development and Support, IT Consulting
<b>Citigroup</b>	Citigroup	140	9 <sup>b</sup>	Latin America, Hong Kong, Singapore, London	USA	Applications Development and Support
<b>J.P. Morgan</b>	J.P.Morgan	In expansion	9 <sup>b</sup>	Mexico, Colombia, Brazil, Argentina	USA	Applications Development and Support
<b>Everis</b>	Contract	40	6.7	Spain	Spain	Applications Development and Support, IT Consulting
<b>Synopsis</b>	Contract/ Energis		4.7	Spain, Brazil, Peru, Colombia, Panama, Bolivia Germany	Spain	IT Consulting, Applications support and maintenance
<b>DISC</b>	Contract	100	4.5		Chile	Applications Development and Support
<b>Administrado ra de Servicios Computacion ales y de Credito CMR Falabella</b>	Falabella	200	3.7	Argentina, Peru, Colombia	Chile	Applications Development and Support, Network and Infrastructure Management
<b>Synopsis</b>	Contract	24 (projected 100)	1.3 <sup>b</sup>	Global		R&D Software Development
<b>Sonda</b>	Contract	2,000	1	All of Latin America	Chile	Network, infrastructure and maintenance, software application development and support, IT consulting, ERP, BPO

Source: CGGC based on Company websites, Annual Company reports, Company Interviews, Customs Service Database (Prochile, 2009).

<sup>a</sup> This figure likely underestimates the total exports of the company. Figures for 2007 indicate that the company exported US\$35 million in 2007.

<sup>b</sup> Based on 2007 figures provided by CORFO.

## 2. Growth Potential

While the industry in Chile has experienced success to date, the potential for continued growth depends to a large degree on the service activity to be provided. The most important factor that will have an impact in this area is the availability of sufficient, qualified human capital. With respect to adequate human capital, GenShare are betting that the industry has reached a tipping point and that human resources in the industry will continue to grow from strength to strength. They plan on hiring 1,000 people over the next five years to staff their new Valparaiso service center (Subramony, 2009). Certain educational institutes have recognized the need to supply the industry with qualified programming staff and are working closely with businesses to reshape their curriculum (Barriga, 2009). This is essential for continued growth; without a new supply of qualified staff there will be upward pressure on the labor prices, in turn driving down Chile's competitiveness.

However, the depth of the qualified labor pool in Chile available to serve this industry is somewhat limited. In 2007, Chile graduated 20,000 people in *all* areas of technology across the entire country, including undergraduate and postgraduate degrees (Ministerio de Educación, 2009).<sup>9</sup> The labor market is thus much smaller than that of Brazil, which graduates 30,000 computer engineers annually (BRASSCOM, 2008), and just a fraction of the size of India, which graduates over 300,000 three and four year engineering, computer science and IT services graduates per year (NASSCOM, 2006). The shortfalls of an educated workforce with experience, the appropriate programming backgrounds and an adequate level of English have already become apparent. Rotation between firms is beginning to increase and this is expected to force salary levels up (Schenkel & Knezovic, 2009). Maintaining low attrition rates is vital for the competitiveness of companies in offshore services to avoid unnecessary cost increases in recruitment and training, while also ensuring quality service provision (Kaka et al., 2006). Expected income for the IT industry in the first year after graduation ranges between US\$1,000 and US\$1,500 per month (Barriga, 2009), while the average salary of an analyst with experience is slightly more than US\$30,000 per year (The Boston Consulting Group, 2007a). Rising labor costs thus has the potential to choke off the local industry, which will have limited ability to compete with international companies in compensation packages (Wadhwa, 2009).

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<sup>9</sup> Accurate statistics in Chile with respect to the IT industry are limited. The category "Technology" referred to here is understood to include all potential activities in technology, including engineers. Gathering accurate, well-categorized statistics is essential for the continued promotion of this industry.

Captive centers in Chile have recognized their inability to compete with similar centers in India or China due to the slow pace it takes to hire the required staff (Schenkel & Knezovic, 2009). While local labor supply may be limited, the relatively open immigration system and Santiago's ranking as one of the best Latin American cities to live in allows companies to meet needs with qualified staff from other countries.<sup>10</sup> To add to this, Chile recently launched the Global Talent Attraction Program,<sup>11</sup> which has further simplified the immigration and visa regulations to attract IT companies and entrepreneurs (Sharma, 2009).

While efforts are being made to support companies such as Coasin Global Services and Adexus to help them gain market awareness with their key audiences, it is important for these companies to establish niche markets. The ITO and BPO sectors have become increasingly consolidated at a global scale. Firms such as WIPRO, Tata Consultancy Services, and IBM have established comprehensive networks of delivery centers and customer service offices around the world, combined with years of experience and enormous economies of scale (Gereffi & Fernandez-Stark, 2010). With salaries that are already significantly higher than other offshoring destinations (triple those in India), new Chilean firms entering the global market are going to find it difficult to compete in the traditional low value IT activities.

Despite limits to growth, this human capital shortage has led to firms upgrading along the value chain in order to remain competitive. Citigroup Chile, for example, generates highly specialized software products for the banking group, choosing to specialize rather than compete on scale. The company today only hires staff with five to seven years of experience and 75% of the work they do is in software development (Schenkel & Knezovic, 2009). The Equifax R&D Center has a very small, highly specialized team innovating on software platforms for the developed world (Gomez et al., 2009), while DISC is producing high-end security software for Scandinavia (Cornejo, 2009). These firms hire relatively few people and are less likely to lead to crowding out of the labor market than the giant firms. Research and development in the IT sector is not yet highly consolidated and is characterized by smaller firms providing high value services (Gereffi & Fernandez-Stark, 2010). Thus, small entrepreneurial companies based in Chile have greater chances of competing in the global market. Furthermore, as Chile increases its

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<sup>10</sup> While the Chilean Labor Law (*Código del Trabajo*) requires that firms with over 25 employees consist of a minimum of 85% Chilean employees, it excludes technical specialists that cannot be replaced by local employees from this restriction (Ministerio del Trabajo y Previsión Social, 2009).

<sup>11</sup> The Global Talent Attraction Program was launched in November 2009 targeting tech entrepreneurs and companies around the world. The goal of the program is to provide an attractive alternative to the United States for tech companies to establish their headquarters. In particular, the program has streamlined immigration processes and provides financial incentives (Sharma, 2009).

participation in the higher stages of the value chain, it provides career advancement options that may be helpful to attract more people into the industry.

### 3. Challenges

The country has made tremendous progress in the ITO sector within the last ten years, becoming an important destination for information technology outsourcing. However, in order to improve competitiveness and become a center for innovative services in the IT industry, there are a number of challenges that must be overcome.

- **Certification:** There are few companies that have high-level CMMI5 certifications necessary for attracting important contracts. This is a drawback in the ITO industry. While the industry association, GECHS, is working with companies to help them attain higher certifications there are still only a handful of companies with level 5 certification (including Altec S.A, IBM, Tata Consultancy Services, and Kaizen).
- **Human Capital and Education:** It was clear from the interviews conducted that the universities and educational institutes still need to make significant progress in training engineers and technicians for this field. Greater effort is needed to connect with industry in curriculum development. In addition, more attention needs to be made in providing students with global opportunities to broaden their outlook on the world as well as better skills in marketing and entrepreneurship.
- **Positive Spillover Effects:** It will also be important to ensure that there are positive spillover effects from the presence of large multinational IT firms in Chile. This was key in enabling India to establish a number of leading companies in the field. Positive spillover effects include the turn over of staff from multinational to local firms as well as the establishment of new Chilean firms. Of particular importance is access to financing. While foreign tech entrepreneurs are eligible for the High Technology Incentive Program, which provides tremendous impetus for the development of the sector's higher value activities (Wadhwa, 2009), funding opportunities for Chilean entrepreneurs remain scarce (The Boston Consulting Group, 2007a).
- **Regulatory Framework:** The Chilean labor laws provide a particular challenge for the more innovative levels of this value chain. Staff are required to comply with traditional work hours and there are fears that this lack of flexibility may stifle creativity (Gomez et al., 2009). Furthermore, import regulations can make access to technology expensive. All technology-

based goods imported into Chile face a minimum of 6% import duty (under the Harmonized Tariff Schedule and Most Favored Nation policy). However, these imports are also subject to the 19% value-added tax in Chile. Combined with a minimal fee of 1-2% for handling, initial costs for technology imports can be up to 30% more expensive than in other countries.<sup>12</sup>

#### 4. Recommendations

- Whether firms elect to develop a Global Delivery Model (e.g., Infosys) or a global network of offices (e.g., Sonda), it is clear that in order to compete with the large international firms, they need to **establish a presence close to the key markets** to develop strong relationships with clients. International office platforms such as the New York Business Center office established in 2009 by CORFO and PROCHILE are important initiatives that should continue to be supported (CORFO, 2009a).
- **Foster improved relationships between the universities, other educational institutes and industry to improve flow of qualified human capital.** This does not refer necessarily to establishing R&D relationships, but rather improving the career management centers that bring together the supply and demand in the labor market. Due to the limited number of IT professionals in the country it is important to focus on skills upgrading in order for the country to compete globally in higher value activities. Since Chile clearly cannot compete on quantity, efforts should be focused on improving the quality of the services provided.
- Implement promotion policies to **support companies developing high end niche software**, rather than developing standard IT capabilities. If not, these firms will be unable to compete in the increasingly consolidated market.
- **Incentivize the inclusion of new technologies such as cloud computing** in service offerings from Chile. This will enable the industry to capture small and medium-sized clients that have been previously overlooked by the large suppliers. This service depends mostly on a reliable telecommunications infrastructure.<sup>13</sup>

<sup>12</sup> The value-added tax (IVA) is considered deductible for corporate tax purposes.

<sup>13</sup> Cloud computing is an emerging information technology outsourcing service that differs from traditional ITO and BPO services in that the client pays per use, rather than having to sign a multi-year, million-dollar contract. The average size of the ITO and BPO contracts in the industry for the past five years was \$200 million with an average contract period of five years. Cloud computing thus provides similar services, but a client will log-on to the service via the internet and pays as they go, thus allowing small and medium sized companies to benefit from outsourcing of non-core functions.

## B. Business Process Outsourcing

### 1. Current Situation<sup>14</sup>

The BPO segment in Chile is dominated by Customer Relationship Management Services (CRM), followed by Enterprise Resource Management (ERM) with strength in finance and accounting operations. The country has limited exports in the Human Resource Management (HRM) sectors, although it has potential for growth in the training and development area.

**Customer Relationship Management:** Services in CRM, which in Chile include call centers with marketing and sales functions, account for 18.3% of offshore service exports from Chile, making it the second largest export sector after engineering services (IDC Latin America, 2009). The comparative ease with which the BPO segment can set up operations is indicated by the rapid growth of CRM activities within the past four years. Prior to 2006, due to weak data protection regulation in Chile, few companies were willing to base their operations in the country (Pérez, 2009). However, as regulations improved, the sector has been characterized by impressive growth. This expansion has been driven by the installation of Spanish firms looking to serve the Spanish and Latin American markets (Pérez, 2009).

Table 3 provides a summary of information of the lead firms in this sector in Chile. Most firms have established their operations in Santiago, although Transcomm has taken advantage of the greater availability and lower costs of labor in Concepción and Valdivia (Transcomm, 2009). These second tier cities have demonstrated lower attrition and absentee rates than in Santiago, where absenteeism remains one of the sector's key challenges (Pérez, 2009). The limited number of English speakers stifles the ability of firms to serve a broader audience. However, the size of the Spanish market has so far proven sufficient to meet the growing capacity of firms setting up operation in Chile.

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<sup>14</sup> The analysis of the BPO section was conducted based on interviews with Tata Consultancy Services, Capgemini, Site1, Chile Exporta Servicios, personal communication with the Asociación de Call Centers, a review of secondary sources including the 2009 IDC Report and news reports on the market as well as a review of company websites.

**Table 3. Leading Service Providers in the CRM segment**

Company name	Year operations began in Chile	Country of HQs	No of employees	Market of Chilean operations	Exports (2008)* In US\$ millions
<b>Teleperformance (TP Chile)</b>	2006	Spain	1,450	Spain and US	13.0
<b>Sitel</b>	2006	Canada	1,000	Spain	NA
<b>Unisono</b>	2006	Spain	850	Latin America, Spain and Chile	8.7*
<b>Emergia</b>	2006	Spain	923	Spain	12.5
<b>Transcom</b>	2006	Spain	550	Spain and Brazil	11.5

Source: CGGC based on Company Annual Reports, Company Websites, Customs Services Databases (Prochile, 2009) and (Sinor, 2009)

\*2007 figures.

In addition to the strong presence of third-party contractors in Chile, a number of firms have established captive call centers in Chile. These include Delta Airlines, LAN Airlines, Air France-KLM, Shell, Unisys and Oracle.

**Enterprise Resource Management:** ERM offshoring in Chile is dominated by services provided in finance and accounting, representing the second largest provider of BPO services.<sup>15</sup> In the domestic outsourcing sector, there are many small providers along with two of the top ten BPO providers in the world, Capgemini and Tata Consultancy Services are also present in the country. Capgemini entered the Chilean market through the purchase of Unilever's Latin American Financial Shared Services Operations in 2008. The unit in Santiago currently employees 300 people, although the firm expects to undergo rapid growth before the end of the year to provide regional support for their second client, hiring an additional 150 employees.<sup>16</sup> Their goal is to increase the staff size to 1,500 over the next five years (Mongillo & Tasner, 2009). Tata Consultancy Services, which principally offers back office BPO support for the domestic financial sector, purchased Chile's largest service provider in the industry, Comicro, in 2005. It currently exports very little in services to Latin America, preferring to establish operations centers close to its clients. Nonetheless, the firm has been contracted to provide finance and accounting services for a large multinational's Latin American operations, including Brazil, from 2010. The company

<sup>15</sup> According to the IDC, horizontal Finance and Accounting Services accounted for \$28.3 million in exports in 2008 (IDC Latin America, 2009).

<sup>16</sup> As part of the agreement to purchase Unilever's Shared Services Center, Capgemini signed a contract to provide financial and accounting services to the consumer products company's operations in Latin America for 7 years. Unilever was thus the first client.

will be hiring 400 new employees to support this client, increasing the company size by close to 25% (Roca & Jofre, 2009).

In addition to outsourcing service providers, Chile has established itself as an impressive platform for shared services centers, dealing principally with finance and accounting, and to a lesser degree with Human Resources Management (HRM) and procurement. These captive centers account for US\$51.9 million in total exports (IDC Latin America, 2009) and include an impressive number of large multinational companies: Zurich (F&A, Latam), Phelps Dodge Mining (ERM, Latam), Xerox (HRM, Latam) MSD (ERM) and Telmex S.A (Chile Decentralizado, 2005). It is difficult to capture the return on investment for Chile of these operations because the companies use complex internal billing procedures (J. I. Infante, 2009).<sup>17</sup>

Offshore logistics and procurement services are still limited within Chile. The Asociación Logística de Chile A.G., the industry association in Chile, is committed to establish the country as a platform for logistics outsourcing (ALOG, 2008), but this has been a slow process and the country continues to provide very little by way of services. SGS Government and Institutions Services are one of the few providers in this segment providing back office support for customs services around the world (Jessen et al., 2009). In 2007, Sandvik, the Swedish engineering company that supplies drilling services and equipment to the mining industry, established a logistics and service center in Chile to serve its Latin American operations (Sandvik, 2009). In terms of procurement, the largest participant in the market is currently Quadrem, a firm focused on the mining industry. Despite CODELCO's key role as founder of this company, it only provides limited customer services from Chile.

**Human Resources Management:** The offshoring of HRM services has been relatively slow. It is still in its nascent stages in Chile and services are less standardized. However, this is consistent at a global level, where there are few firms providing comprehensive selection, recruiting, payroll and training services (Gereffi & Fernandez-Stark, 2010). The domestic industry is dominated by small firms dedicated to selection and placement, with the exception of large multinationals such as Manpower, Spain's Meta 4, Boyden and Grafton. One Chilean firm that has had greater success establishing itself in international markets is the Sonda subsidiary, Payroll S.A. The company provides payroll outsourcing in Chile and around Latin America. However, like the

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<sup>17</sup> The financial relationship between captive centers and subsidiaries in other countries is generally managed by a simple contract that includes work hours, cost of services and scope of services to be provided. This contract is used to invoice a standard amount each month. At the end of the fiscal year, the transactions that were actually carried out are calculated and compared to the invoices charged. A margin of 5 to 10% is added and the appropriate reimbursements or additional charges are then made. (J. I. Infante, 2009).

parent firm, the company has established a network of full service and delivery officer in all countries in which it is present, including in Argentina, Brazil, Colombia and Peru (Peña, 2009). The company recently acquired a 50% share in CDG Consultores, marking the first consolidation of local firms in this industry to provide all HRM services (Molina, 2009). Other human resource strengths in Chile include training programs drawing on the high quality of the business schools, including local universities such as Universidad Católica and Adolfo Ibáñez (Bertea, 2009). However, this is still a growth area and few programs are conducted outside of the country.

Upgrading in the sector has been limited with providers entering in one area and establishing expertise without advancing into new segments of the value chain. Exceptions are limited to growth in the human resource area as companies consolidate to increase service offerings. Lead firm Capgemini has expressed interest in upgrading into KPO; however, it stresses the importance in first establishing credibility as a supplier before clients will demand higher value services (Mongillo & Tasner, 2009). An upgrading step that has been seen in other countries around the world is the move of CRM providers into KPO services as they leverage their sizable databases and experience developed through customer support to provide market research. In 2005, for example, 24/7 Customer launched an innovation laboratory in India to deliver higher value services to customers in the CRM segment. By 2008, the company delivered consumer behavior predictive services via the innovation lab to 30% of clients (24/7 Customer, 2009).

## **2. Growth Potential**

Chile should expect to see its competitiveness in this sector decline in the next decade as new Latin American destinations begin to offer services to the same market. Until now Chile's superior telecommunications infrastructure, economic and political stability, and investment subsidies have provided the country with a significant competitive advantage over other Latin American countries in attracting both shared services centers and outsourcing operations (Jessen et al., 2009; Mongillo & Tasner, 2009; Pérez, 2009). However, increasingly aware of the benefits the industry can bring to a country, much of the rest of Latin America is now beginning to introduce measures to attract companies (Gereffi et al., 2009). Chile will be less able to compete based on the following factors.

Firstly, BPO operations in Chile principally serve the Latin American and Spanish markets. A large number of shared service centers provide back office support in finance and accounting

and HRM to the Latin American regional operations of large multinational organizations.<sup>18</sup> Third-party providers, particularly in the CRM sector, almost exclusively support Latin America and Spain. There are very few firms serving the English-speaking market from Chile due to the shortage of available English-speakers.<sup>19</sup> The market to which Chile can provide BPO services is thus limited. Chile will face tough competition for this limited market from cheaper regional providers, including the Dominican Republic, Guatemala and El Salvador in the CRM segment. As other countries, such as Colombia, Costa Rica and Peru, improve their economic and political stability, they will become increasingly important competitors for shared service centers providing ERP and HRM support (Gereffi et al., 2009).

Secondly, the sector does not require qualified human capital, but rather largely depends on high-school graduates. Less than 10% of the labor force in leading BPO companies such as Capgemini have higher qualifications (Mongillo & Tasner, 2009). Comparative analysis of high school graduates between differing Latin American countries shows no clear advantage for Chile over other countries in public education (Manzi et al., 2008). Given that the sector draws on low levels of education, Chile's strong professional sector is largely irrelevant and does not provide the country with any significant competitive advantage.

Thirdly, operating in Chile is more expensive than other Latin American countries, principally due to the high human capital costs.<sup>20</sup> The annual compensation for an accounting technician in Chile is 30% higher than in Costa Rica, while a telesales operator in Chile costs almost twice that of the same employee in Argentina (Mercer, 2008). SGS Custom Services operations in Chile is facing increased competition from other locations around the world that can provide the services at a lower cost (Jessen et al., 2009). Subsidies from the High Technology Incentives Program have helped to reduce these costs and make the sector more competitive (Mongillo & Tasner, 2009), however, these subsidies are all short or medium term and thus this competitive advantage is unsustainable in the long term.

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<sup>18</sup> Captive centers tend to favor regional rather than global offices due to language and cultural benefits (Gereffi & Fernandez-Stark, 2010).

<sup>19</sup> All companies interviewed in this study stated that English was the most important skills gap that affects their business. Oracle Chile employs 175 people in the CRM unit to service the USA and Canada. However, despite the small size of its operations, they have a high attrition rate amongst its English-speaking staff, which is limiting growth (Bocic, 2009).

<sup>20</sup> In 2008, Santiago was rated as the 8<sup>th</sup> least expensive city in Latin America in terms of office space, cheaper than Bogotá, Buenos Aires, Sao Paulo and Mexico City. Chile is also ranked competitively in terms of taxation, business start up costs and telecommunications.

### 3. Challenges

BPOs have served an important role for Chile in the offshore services industry, establishing the country as a credible offshore destination (Mongillo & Tasner, 2009). In the industry rankings, Chile has become well known internationally as an emerging destination (AT Kearney, 2007; Gereffi & Fernandez-Stark, 2010; McKinsey, 2007). However, the services currently being provided in Chile through the BPO firms are highly repetitive processes that make up the lower end of the offshore services value chain. The revenue generated per employee is lower in this segment than in all other segments of the Chilean offshore services value chain (IDC Latin America, 2009). The challenge the country now faces is to upgrade into higher value activities that will insert Chile into the knowledge economy and transform the country into one of the select group of offshore KPO and innovation destinations.

- **Costs:** Chile, already one of the most expensive countries in Latin America to provide BPO services, will face continued upward pressure in its labor costs and high attrition rate, particularly with respect to companies serving the English-speaking market. Within the next five years, Chile will face difficulties in competing with other Latin American countries, as advantages such as a solid telecommunications infrastructure are eroded by advances in these countries. The country should be prepared for companies to begin to relocate their offices to cheaper locations in the region.<sup>21</sup>
- **Human Capital:** Companies providing these services principally hire high school graduates (Mongillo & Tasner, 2009; Pérez, 2009; Roca & Jofre, 2009). Many of these companies are receiving subsidies provided through the High Tech Investment Program,<sup>22</sup> funded by the Chilean Innovation and Competitiveness fund aimed at fostering innovation and closing the gaps in human resource skills in the country. However, the activities being carried out are repetitive, requiring limited tertiary education and they do not promote innovation. In addition, as most of the staff in this segment is eligible for funding through the national training and employment organization (SENCE), the training subsidy being offered to companies is effectively being used to subsidize salaries for companies.
- **Regulatory Framework:** The industry also faces regulatory challenges. On the supply side, Chilean Labor Law requires greater flexibility to provide around the clock support for clients.

<sup>21</sup> Before the release of this report, several call center companies located in Chile announced they would move to Peru and Colombia due to cost pressures. More than 15,000 call center jobs in Chile are expected to be lost by mid-2010 (El Mercurio, 2010).

<sup>22</sup> These companies include Oracle, Delta Airlines, Teleperformance and Transcomm (Agosin & Price, 2009)

Ongoing attempts to extend the rights of striking employees to prevent employers from using replacement staff greatly undermine the ability to guarantee continued operations, and the potential instability this implies may greatly reduce the competitive advantage afforded by the country's stable political and economic macro-environment (Roca & Jofre, 2009). On the demand side, regulatory requirements differ across countries in Latin America, particularly in the financial and accounting services and human resources sectors, resulting in decreased regional demand for Chilean offices.

#### 4. Recommendations

- Conduct a **cost-benefit analysis for subsidies** being provided to the BPO segment of the industry aimed at phasing out current subsidies.
- **Upgrade within the BPO segment** to higher value added activities where technical skills are more relevant than English language skills.
- **Offer new incentives** for multinational companies operating in the BPO segment in Chile to **upgrade services to higher value activities** such as consulting, customer analytics or business intelligence to prevent these companies from leaving the country when Chile can no longer compete in the region due to cost pressures. This can include incentives for upgrading of human capital through formal education training (supporting staff to obtain university degrees) or providing incentives or assistance to improve certification levels.
- In order to encourage continued education of staff, efforts should be made to **coordinate with educational institutes to provide flexible university or technical institute programs for mature students** that can combine their studies with their full time work schedule.
- **Assistance in attaining widely demanded certification credentials** should include processes for companies to obtain certifications related to security of information such as ISO 27005: 2008. This will be essential for confidentiality levels of new third-party providers, particularly in the area of finance and accounting.

### C. Knowledge Process Outsourcing

#### 1. Current Situation

The KPO segment is the least developed sector in Chile and offers significant opportunities for growth. This segment, being the most recent to emerge in the outsourcing arena, is also the least documented at a global level. Within the global value chain for offshore services, KPO

includes the following activities: business intelligence, market research, risk analysis, customer analytics, business consulting services and legal process outsourcing. The industry is just beginning to develop in Chile, accounting for total sales of US\$43.7 million, which is just 5% of Chile's offshore service exports in 2008 (IDC Latin America, 2009). Given the nascent stage of KPO in Chile, a few characterizations can be made. These are summarized below.

The most important company to enter the country to date has been Evalueserve, which established operations in Chile in December 2006 (Srivastava & Ortiz, 2009). The company set up operations in Chile as part of their strategy to expand its global presence to include teams in Chile, Eastern Europe, India and China to allow them to operate 24 hours a day, 5 days a week (A. Gupta, 2009). The company, based in Valparaiso, also caters to the vertical financial services market. Approximately 20% of their 150 person workforce is dedicated to horizontal KPO activities (Srivastava & Ortiz, 2009).

Other firms that are entering this segment in Chile include Euromonitor International, a global leader in market research that recently established its first Latin American center in Chile in June 2009. This center will be used to gather market information from around the continent, and clients will include both regional and global companies (Euromonitor International, 2009). Local firms offering knowledge process services have principally been dedicated to the domestic market. One start up that has recently begun to export services to Mexico is Penta Analytics, a Chilean firm founded in 2003. From 2008 to 2009, it doubled its export sales in business intelligence and market research (Penta Analytics, 2009; Prochile, 2009).

There is a strong cadre of international consulting firms in Chile, including McKinsey, Boston Consulting Group and Mercer. Leading global consulting firms that are not present in Chile have either not yet established Latin American offices, or have offices exclusively in Brazil or Argentina.

The growth of Legal Process Outsourcing (LPO) has very limited potential in Chile. The current structure of the profession makes it unlikely that Chile will emerge as a lead supplier. The largest law firms in Chile have no more than 150 lawyers, approximately the same size as Infosys's first LPO project in India with Lexis Nexis (Sako, 2009).

## **2. Growth Potential**

Chile has high potential for growth in this sector, supported by the availability and high quality of its professional workforce. Growth is possible both amongst emerging domestic firms and via the attraction of foreign firms. At a global level, the sector is largely characterized by small and medium sized companies and consolidated giants have yet to emerge, as in the ITO

and BPO sector (Gereffi & Fernandez-Stark, 2010). This means that small or medium sized local and regional firms are still able to compete internationally. In addition, established KPO firms such as Evalueserve are beginning to expand their networks globally, building client teams that bridge all offices, in order to provide uninterrupted, multilingual and multicultural services for their clients. Chile's competitive advantages in workforce availability, smooth immigration policies, tax treaties and economic and political stability make it an attractive destination compared to other regional alternatives. Chile does, however, face competition as a regional center from Argentina.<sup>23</sup> Copal Partners, one of Evalueserve's competitors, has established operations in Buenos Aires, as has Irevna, although a very limited part of the work of these companies is focused on horizontal industries (Copal Partners, 2009; Irevna, 2009; Srivastava & Ortiz, 2009).

At a global level, firms in this segment can be divided into four types: (1) new firms that have emerged to provide a range of KPO activities, which also provide advanced activities in the financial sector (e.g., Copal Partners); (2) large ITO and BPO giants that have expanded their service offerings to include higher value services (e.g., Genpact); (3) existing firms that have long provided one of the services included in this category and now are beginning to offer others (e.g., Forrester Research); and (4) law firms that have adopted the Global Delivery Model through joint ventures with IT firms (e.g., Bodhi Global).

Firms are attracted by human resources availability and strategic position with time zones similar to the United States and off-cycles with Europe and Asia. These companies require multilingual staff with a global perspective that can interact with both clients and internal offices around the world. Where these capabilities do not have a strong presence in a market, smooth immigration policies and an attractive place to live become key factors in location selection (Srivastava & Ortiz, 2009).

Chile's tertiary education provides a labor force with strong business skills. In the 2008 América Economía Ranking of MBAs in Latin America, Chile has six programs ranked in the top 20 (Argentina and Brazil have just three programs each ranked in the top 20), and it graduates approximately 1,000 MBAs annually (América Economía, 2009). The country also graduated 3,500 commercial engineers<sup>24</sup> in 2007, accounting for over 10% of all university undergraduate degrees and providing a solid supply of analysts to work in this industry (Ministerio de Educación, 2009). By comparison, 7% of Argentina's undergraduates pursue Bachelor's degrees in business

<sup>23</sup> While Brazil is well known as a business center in Latin America, the country's complex and expensive corporate tax policies create a significant disincentive to offshore services (KPMG International, 2006).

<sup>24</sup> A Commercial Engineering Degree is equivalent to a 5-year Business Administration Degree in other countries.

administration (Global Foundation for Management Education, 2006). Furthermore, in Chile the annual compensation for a financial analyst is US\$40,789. While nearly twice the cost of an analyst in India, it is much lower than in the United States (average annual compensation for a US analyst is US\$70,000) (Mercer, 2008). Also, a higher proportion of professionals speak English than the rest of the population (around 7-10%). Where local human resources are unable to satisfy needs, such as language skills to interact with multiple cultures or specific industry knowledge, the immigration policies combined with the high standards of living in Santiago and Viña del Mar make the country an attractive location for international staff (Schenkel & Knezovic, 2009).

### 3. Challenges

While horizontal services provide interesting potential for growth, it is important to recognize that leading destinations including India, Ireland and Eastern Europe are all beginning to compete within this segment.

- The most significant challenge is that **the use of the term KPO is very broad** and is not consistently used, making generalized policy formation for the sector complex.<sup>25</sup> In particular, individual firms are less likely to brand their services as KPO. It is thus important to brand these higher value services by activities – such as Market Intelligence or Business Analytics. This inconsistency makes it more challenging to identify firms that are operating in the KPO segment, compared with ITO or BPO providers.
- These **services involve significant interaction with clients and coworkers from all around the globe**. This requires that staff be both fluent in English and have a broad global outlook. The shortage of staff with international experience and/or English was highlighted by BCG (2007a) and must be addressed.
- **KPO operations require higher-level initial capital investments**, particularly in human capital. Companies principally hire MBAs and professional staff and compete with the traditional business sector for these individuals. Initial capital outlays therefore may require signing bonuses and much higher salaries with long-term contracts (as opposed to hourly wages of the BPO industry).

<sup>25</sup> See Appendix D for an overview of the different uses of the term KPO.

#### 4. Recommendations

- Approach companies already operating in Chile in the BPO segment such as Accenture, IBM, Capgemini and Tata Consultancy Services that offer KPO services in other parts of the world. **Offer training incentives for development of these service offerings in Chile.** In addition, target existing KPO firms in India and promote Chile as a complementary site for the Indian operations.<sup>26</sup>
- **Increase awareness of scholarships available for short-term technical training abroad** available to the Global Services Cluster through Becas Chile<sup>27</sup> (Becas Chile, 2009). In addition, provide incentives for companies to offer internships abroad in other global offices to better prepare Chilean professionals. This will facilitate not only increased cultural awareness, but also knowledge and technology transfer when the staff returns.
- **Offer an English program directed to professionals in this field** in addition to the current English program for IT specialists.

#### D. High Value Services in Vertical Industries

KPO and the equivalent high-value segments of individual industry value chains are the fastest growing, most dynamic sectors of the offshore services market (Gereffi & Fernandez-Stark, 2010). Today, these are currently dominated by engineering and innovation services, including new product design and R&D as firms work “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). Given its talented labor pool, Chile has tremendous potential to become an important player in this R&D and engineering market. While domestic R&D spending has traditionally been very low, progress has been made in establishing an effective National System of Innovation through the creation of both institutional capacity and funding opportunities (Ministerio de Economía, 2009). Even prior to these efforts, in 2006 Chile ranked 20<sup>th</sup> in the world innovation list. By 2009, the country was highlighted as one of the world’s new innovation hotspots (Kao, 2009).<sup>28</sup>

<sup>26</sup> See (Gereffi & Fernandez-Stark, 2010). Table 6 and Table 7 provide information on the services provided by different companies in ITO, BPO and KPO.

<sup>27</sup> Becas Chile is the system established under the new National Innovation System to streamline scholarship applications and awards for students, technicians and professionals to study abroad. The goal is to provide financial support for up to 30,000 Chileans to study abroad during the next ten years (Comité de Ministros- Chile, 2009).

<sup>28</sup> The top 20 countries in this ranking included, in order: United States, Finland, Israel, United Kingdom, Singapore, Japan, Denmark, Brazil, New Zealand, France, Netherlands, Sweden, China, Germany, Russia and Chile.

Positioning Chile as an innovation export platform requires an in-depth understanding of the key elements in the location decision-making of the client firms, and specifically of firms choosing to put new high value service facilities in emerging economies. For these firms the most important attraction is the growth potential in the market, followed by the quality of R&D personnel, the presence of strong university faculty, and costs (Thursby & Thursby, 2006). While Chile's broad range of free trade agreements, across Latin America and beyond, provides a large market for expansion, high quality R&D personnel and strong university faculties tend to be more limited. However, Chile has specialized in a number of industries in which it is in a position to not only export products, but also to export innovation services.

The following section outlines a strategy in which Chile can offer higher value added services in specific industries, based on upgrading of the country's current position of those sectors in their global value chains.<sup>29</sup> In order to identify high potential opportunities for Chile, the following methodology, a Tier Industry analysis, was employed.

First, potential export industries were considered. The sample of industries was selected according to: (1) High Potential Cluster recommendations from BCG (2007a): copper mining, financial services, fruit and processed foods, aviculture, aquiculture and tourism; (2) High Potential Clusters identified by the Ministry of Economy (Ministerio de Economía, 2009): mining, aquiculture, foods and special interest tourism; (3) Industries supported by ProChile: architecture, audiovisual, environmental services, forestry, pulp and paper, mining and legal services related to mining; and (4) industries currently supported through CORFO's High Tech Investment Program (CORFO, 2009c): biotechnology, mining, salmon, renewable energy, agribusiness.<sup>30</sup> Interviews were then conducted with industry associations, leading companies, academic institutions and institutional actors.<sup>31</sup> Secondly, three key criteria were used to identify the export potential of each industry: these are expertise or "know-how"; qualified human capital availability; and regulatory framework.<sup>32</sup> Table 4 below provides a simple framework for analysis of an industry's readiness to enter the global offshore services market.

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<sup>29</sup> In January 2010, CGGC will present a report with strategic recommendations for the development of the offshore services industry in Chile.

<sup>30</sup> This list of sectors is not intended as a comprehensive analysis of the Chilean economy; rather the goal is to provide policy makers with a further decision-making tool to identify high potential industries and to reassess current promotional strategies.

<sup>31</sup> See Appendix E for the list of companies, industry associations, academic institutions and institutional actors interviewed for this study.

<sup>32</sup> The intensity of regulatory conditions has a negative impact on the ability to start to trade in services while cooperation between regulatory authorities between the exporting and importing country, or measures such as the adoption of international standards are key to increase service trade (CEPAL, 2007).

**Table 4. Industry “Readiness” for Offshore Services Exports**

	<b>Tier 1</b>	<b>Tier 2</b>	<b>Tier 3</b>
<b>Regulatory and/or institutional framework</b>	Good	Poor	NA
<b>Expertise</b>	Good-Excellent	Fair	Poor
<b>Qualified human capital resources</b>	Good-Excellent	Fair	Poor
<b>Potential competitiveness</b>	Good-Excellent	Fair-Good	Unsatisfactory
<b>Global Value Chain Positioning</b>	High value segments	Low to Mid value segments	NA
<b>Examples</b>	Agrifoods, Mining Engineering Service	Audiovisual, Renewable Energy	Automotive R&D services

Scale: Unsatisfactory- Poor- Fair- Good- Excellent

Source: CGGC

Tier 1 presents opportunities with the highest potential. This tier captures industries in which Chile already has significant experience and expertise, sufficient qualified human capital, a supportive regulatory and institutional framework, and a large local market. Tier 2 industries require further measures and development at a domestic level before service exports can become significant. These industries are those in which Chile can leverage existing strengths, but needs further support to overcome challenges of institutional, regulatory or human resource constraints. Tier 3 industries are those with high levels of demand in the global market, but in which Chile has no clear advantage and limited experience and human capital.

### **1. Tier 1**

Chile already has significant expertise and human capital in these industries that can be leveraged into the development of new offshore R&D centers and other high value added services. Typically, these sectors have regulatory frameworks that support the growth of exports. In general, firms in these segments, both local and international, first entered the Chilean market to address local demand, then gained experience and developed knowledge and expertise either through technology transfer or creating local solutions before beginning to export these services (Badilla, 2009; Campos & Schlechter, 2009; Jessen et al., 2009; Pino, 2009).

## Mining

- Engineering Services

Chile has long been a center of mining operations and in the past 20 years, the country has also emerged as one of the leading centers of engineering focused on the mining industry. As the international mining companies moved into Chile to tap into the country's tremendous mineral wealth, their large engineering partners began to set up operations in the country (Arze, 2009; Sanchez & Boolan, 2009). These firms, which include Hatch, Fluor, SNC-Lavalin, Bechtel, SKM-Minmetals and Ara Worley Parsons, have established a significant presence in Chile within the past 10 years (Arze, 2009). Having started providing lower value design drawings in Chile, today, five of these firms have Centers for Excellence for the copper industry based in Chile.<sup>33</sup> These Centers serve as the lead offices in the development of all copper projects around the globe. Together, they employ over 3,500 people and in 2008, at the height of the copper boom, engineering services related to mining, alone exported an **estimated US\$275.6 million**, making it the largest offshore services export in the country for that time (IDC Latin America, 2009).

The economic crisis has without doubt slowed the exports of these companies Fluor Chile S.A., for example, in 2009 exported just 50% compared to its exports in 2008 (Prochile, 2009). However, it is expected that the positive trend of copper and mineral prices will continue or in the worst case stabilize at current prices, resulting in growth in the demand for engineering services once again (Badilla, 2009; Julio, 2009; Pino, 2009).<sup>34</sup>

Chile has emerged as a leader in this field, but the country does face several challenges, specifically in terms of costs, to remain competitive versus others countries, such as Peru and South Africa that have growing competencies in this field (Julio, 2009; Merino, 2009; Sanchez & Boolan, 2009). All companies interviewed said that engineering graduates in Chile are technically very well educated for this field.

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<sup>33</sup> These are Fluor, SNC-Lavalin, Ara Worley Parsons, Bechtel and SKM-Minmetals (based on a review of each of the company websites and interviews with company representatives).

<sup>34</sup> The crisis has also had a positive impact in diversification of the industry. Companies such as Hatch have realized the difficulties of relying heavily on the mining industry and are beginning to strengthen capabilities in other areas, such as infrastructure and renewable energy. Their goal is to develop sufficient capabilities in the Chilean market and then begin to export (Pino, 2009).

- **Biotechnology**

Copper, Chile's leading export commodity, is a non-renewable resource. While demand remains high, the supply is diminishing, making it more important to extract the copper efficiently. CODELCO, together with Nippon Metals, embarked on a joint project, BioSigma, in 2002 to develop new biotechnologies for extracting minerals from mines to drive sustainable economic and environmental growth in the industry. BioSigma now holds 17 patents for microorganisms that accelerate the process of removing copper from low-grade ore. The first plant is being established for CODELCO in northern Chile at a total cost of approximately US\$10-15 million. As the world's leading biotechnology company in the mining sector, BioSigma is essentially an R&D company and the company employs 15 PhDs, as well as a large number of engineers who are responsible for developing the plants in which the microorganisms are used. The company expects to begin to offer services commercially in 2011 (Badilla, 2009). This is an important development, given that the four other companies in the world that are working in this field have not been able to commercialize this service on a large scale.

- **External Monitoring and Diagnostics**

A number of companies in Chile are beginning to sell monitoring services and industry-specific software packages to serve the mining industry. At the cutting edge of these services is the External Monitoring and Diagnostics Center that has been established by ABB to serve clients in Chile and Peru. Their goal is to then serve other markets beyond the boundaries of Latin America. The company plans to expand its service offerings to include other industries, such as forestry and power generation (PR Newswire, 2009). The multinational firm SGS conducts mineral concentration and quality test services in the development of new mines. They have four pilot plants worldwide, one of which is in Chile and serves the Argentine, Peruvian and Brazilian markets (Jessen et al., 2009). Coasin Group, through its two subsidiaries C2 Mining Solutions and C2 Labs, is developing new techniques and software platforms to improve efficient use of assets, energy and control processes. They are already exporting these services to Peru and have announced that they will open an office in Argentina in the near future (Coasin Group, 2009).

### **Agrifoods and Forestry**

Given Chile's favorable geographic and climate conditions, the country has been highly successful in establishing a large export industry in fruit and vegetables as well as forestry. As upward pressure continues in food prices around the world, Chile's strong experience, a wide range of climates and a disease free environment, combined with significant support from the

country's Department of Agriculture, *Servicios Agrícolas y Granaderos* (SAG), have put the country in a good position to export R&D, increase the production of seeds as well as export other supporting services in both forestry and agriculture.

- R&D and Biotechnology in Seed Production

While Chile is not amongst the world's largest R&D spenders in agriculture, the country has shown greater success in diversifying its spending into the private sector than countries such as Brazil, Mexico, India and South Africa, where research is funded mostly by public institutions (McIntyre et al., 2009). Eight of the world's leading seed producers have operations in Chile, including the three top companies -- Monsanto, Pioneer and Syngenta -- all of which have established Chilean R&D centers (Campos & Schlechter, 2009). While three quarters of the research is conducted in universities and public research organizations such as the Institute for National Research (INIA), substantial tax reductions on contributions to universities from the private sector has helped to increase sales of R&D services (Stads & Covarrubia Zúñiga, 2008). In addition, Chile already boasts independent research laboratories including Massai Agricultural Services and Tuniche Seed Services with substantial experience working with multinational companies (Campos & Schlechter, 2009; Hennicke, 2008).

Long term investments in human capital in the sector have also led to Chile having one of the most highly qualified agricultural research staff in Latin America (Stads & Covarrubia Zúñiga, 2008). Universities are beginning to interact more consistently with the private sector to ensure that they are meeting demand for qualified staff and researchers generally have advanced degrees (Campos & Schlechter, 2009).

- Engineering

As a leading producer of fruit and other food products, Chile has developed competencies in the engineering of food processing plants. For example, POCH, a Chilean engineering firm, won a contract to develop a food plant in the United Arab Emirates for the Brazilian food processing company, Sadia, having successfully completed two agro plants here in Chile for Agrosuper and the salmon industry (Poch Corp, 2009). In addition, as ABB have had success commercializing remote monitoring for the mining industry, Agrosat Chile S.A. operates remote monitoring systems (or precision agriculture) from Chile and Germany in the agricultural sector. The company currently provides services to Mexico and Brazil and recently received a grant from INNOVA Chile to further strengthen its technology (Agrosat, 2009).

In the forestry industry, Woodtech, another company supported by Innova Chile, has developed an innovative method of measuring log loads, and the volume and density of wood chips, as well as extending the application to measure coal volume. This method is fast, accurate and environmentally friendly. The company began offering this method as a product, but they have recognized the benefit of providing full service installations and now export these services to Ecuador, Argentina, Brazil and Germany (WoodTech, 2009). Ritrama, an Italian labeling company, has established an R&D laboratory in Chile as part of its new manufacturing plant that will focus on developing new paper and film adhesives. The company is looking to expand into the Latin American market (Ritrama, 2009).

### **Aquaculture**

The aquaculture industry is dominated by the production of salmon in Chile. The industry has developed substantially over the past two decades, undergoing a radical change from an infant industry to what today is a highly sophisticated cluster. Prior to the 2008 ISA (Infectious Salmon Anemia) crisis, Chile was the second largest salmon producer in the world (R. Infante, 2009). The presence of large multinational firms in Chile, including Marine Harvest and Mainstream, has led to significant technology transfer (Katz, 2006).

- **R&D and Biotechnology in the Salmon Industry**

Research and development in the salmon industry in Chile has been slow, although investments reached US\$77 million per annum by 2006. The research facilities established within the past five years include Cien Austral, a research initiative that was set up in 2005, and brings together a number of universities as well as local and international private companies (Cien Austral, 2009). The new AVS Chile center was established in 2007 with six PhDs on staff (AVS Chile, 2009),<sup>35</sup> while the EWOS Innovation Center was set up in 2008, funded by Norwegian capital (EWOS Innovation, 2009a).<sup>36</sup> In addition, Biomar, operating in the fish feed sector, also conducts R&D research in Chile (R. Infante, 2009).

However, perhaps the most important research to emerge in this past year has been the initiatives to tackle the problem of ISA, a disease that limits growth size in salmon. Three Chilean

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<sup>35</sup> AVS Chile was established in August 2007 by the three world class Norwegian research institutes within Aquaculture: Akvaforsk, Veso and Sintef Fisheries and Aquaculture. The shared goal of these institutes is to become stronger international R&D players and by this way contribute to the advancement of the global aquaculture industry (AVS Chile, 2009).

<sup>36</sup> EWOS Innovation aims to be globally recognized as the leading commercial Research and Development company, with a focus on creative high quality research and the implementation of advances within nutrition and production technology (EWOS Innovation, 2009b).

companies have produced vaccines against this virus, including Corporación Farmacéutica Recalcine, Diagnotec and Centrovét, investing over US\$11 million in this research (El Mercurio, 2009). As Chile was one of the first commercial producers of salmon to be seriously affected by the virus, they are the first to have developed the vaccine. Other producing areas such as Scotland are already being affected by the disease, thus catapulting this research initiative to international commercialization. The development of these vaccines and vaccination services is being supported by Innova Corfo (Cluster Salmon, 2009)

- Other Services

Other high value services include analytics and industry-specific market intelligence. Kaweskar Desarrollo y Tecnología S.A. provides outsourcing services in process improvement, R&D across all aspects of the salmon industry, as well as market research and project formulation services (Kaweskar, 2009). SGS Aquatic Health has set up a research laboratory in Puerto Varas that serves the salmon industry providing analytics for salmon – testing antibiotics, vaccines and microbiology. They are currently making a large investment in growing this division, and their plan is to develop local capacity and then to serve the emerging market in Brazil (Jessen et al., 2009).

## Retail

The Chilean retail sector is the most advanced in Latin America, and local retail firms have proven highly competitive in both local and regional markets in the face of competition from global brands (Bianchi, 2008). Falabella S.A. is already one of the largest and most consolidated retailers in Latin America, while Cencosud S.A. has successfully expanded into Argentina, Brazil and Peru. The regional expansion of firms in this sector has led to numerous IT service providers (both large firms and smaller enterprises) in the industry following suit, while new consumer analytics services are emerging to serve both the local and international market.

- ITO and BPO services for Retail

*Administradora de servicios computacionales y de crédito CMR Falabella* is a subsidiary of Falabella based in Chile and it supports all IT needs for the company, exporting US\$3.685.720 in services to Argentina, Peru and Colombia in 2008 (Prochile, 2009). While the company remains a captive center, there are 200 employees involved in the export of these services. Cencosud, on the other hand, has outsourced all of its IT services around Latin America to Sonda in Chile (Sonda, 2005).

Smaller companies in the ITO segment include BBR and Proretail. BBR, established in 1995 to service the retail value chain, provides software interface platforms to facilitate the

management of vendors in the market. In 2008, the company began exporting to Mexico, where it serves a leading pharmacy chain (BBR, 2009; Prochile, 2009). Proretail in Chile provides outsourcing support to Sodimac Argentina, Sodimac Peru and Sodimac Colombia. Their platforms help clients reduce losses and improve organizational efficiency in the retail sector (Proretail, 2009).

- Consumer Analytics Services

The firm Scopix has emerged with a sophisticated IT platform to provide customer behavior analytics for retail outlets. The firm is supported through a close relationship with Fuqua Business School at Duke University in the United States. The Chilean market provides the company with an excellent test environment for their services, given that the level of sophistication of the retail industry in Chile is the same as in the United States and the United Kingdom (Schilkrot & Vera, 2009). Consumer analytics will be conducted both from Chile and the United States. Another firm, Penta Retail, was established in 2003 to provide consumer analytics services focused on increasing sales, customer loyalty and maximizing retail spaces. In addition to providing support for clients in Mexico and Peru from Chile, Penta Retail set up an office in Brazil in 2007 (Penta Retail, 2009)

### Financial Services

Following the privatization of the pension system in the 1980's and the creation of large private pension funds (*Administradoras de Fondos de Pensiones*), Chile has established a strong, large and resilient financial system (Financial Sector Assessment Program, 2004). Competition in the banking sector is particularly high, where firms have access to foreign credit and capital markets. Given its increased integration into the international financial system, Chile requires efficiency and innovation on the part of the banking sector (The Boston Consulting Group, 2007b). The country has thus developed significant capabilities. As an outsourcing segment, however, financial services still contribute very little to the country's exports, accounting for just US\$23.7 million in 2008 (IDC Latin America, 2009).

- Back office Support

Tata Consultancy Services purchased Chile's largest BPO firm for the Chilean financial industry in 2005. Tata Consultancy Services now provides for 60-70% of the back office needs of the country's banking sector (Roca & Jofre, 2009). Micrologica S.A. has produced a specialized rapid check out service for banks in the U.S. (Palo, 2009).

- Investment Banking Services

Evaluéserv Chile works in the investment bank value chain. The company has 60 people in Chile dedicated to one investment bank conducting index research, derivatives strategy work and equity research both on US and Latin American stocks. They have two lines connected with the bank in New Jersey to ensure seamless integration with the client (Srivastava & Ortiz, 2009).

## 2. Tier 2

Tier 2 industries face either regulatory and/or human resource and experience challenges that must be overcome before significant growth in exports can be realized. Tier 2 industries are important for the country to further diversify its service export sector, reducing vulnerability to cyclical downturns such as in commodity prices that had an important impact on the engineering sector in 2009 (Arze, 2009). Examples in this sector include: architecture, audiovisual services, clinical trials, renewable energy and astronomy.

### Architecture

The offshoring of architectural services is a tremendous growth area in the global offshore services industry. Many of the services offered in this category include 2- and 3-D modeling, computer aided design (CAD), and detailed plans for construction blue prints and engineering. While Chile has a large number of civil engineers, there are limited cost advantages for the country to engage in the offshoring provision of these services. Chile's best opportunity is to enter the market through the exportation of the higher value activities of consulting services and master design plans.<sup>37</sup> The country's architects already have a well-earned reputation internationally. For example, Alejandro Aravena, Executive Director of Elemental S.A., a company that provides consulting, original concept and design work and master plans for social housing, was recently selected as one of just five finalists for the Global Award for Sustainable Architecture in 2008 in Paris (Global Award, 2009), and several firms already export services to Spain, the United States and the Middle East (eg. Atelier A4, Alemparte Barreda & Asociados, Sabbagh Arquitectos, Archiplan).<sup>38</sup> In addition, the *Asociación de Oficinas de Arquitectura* (AOA) has set up an agency in Beijing hoping to capture a part of the growing Chinese market.

<sup>37</sup> These activities consist of the most advanced segments of the architectural value chain. They include understanding of the general environment and client needs, which requires a creative approach. These designs are then transferred to detailed blue prints for construction.

<sup>38</sup> Companies identified as service exporters by AOA (Sielfeld, 2009) Followed by a review of company websites <http://www.archiplan.cl/>, <http://www.alempartebarreda.cl/index01.html>, <http://www.sabbagharquitectos.cl/>, <http://www.atelier4architects.com>, <http://www.alemparte-morelli.cl/>.

**Key challenges:** There are very few practicing architects in Chile. While there are 9,000 architects registered in the country (Colegio de Arquitectos de Chile, 2009), the AOA represents 75% of the country's architectural market, but only 900 architects (Sielfeld, 2009). This suggests that many architectural graduates pursue alternative career paths. Secondly, exporting these high-end services is limited by regulatory requirements in most countries that obligate firms to associate with domestic architecture offices. This requires initiatives that bring together Chilean firms with firms in target markets.

### Audiovisual Sector<sup>39</sup>

This sector has seen impressive growth within the past decade in Chile. A growing number of Chilean production companies, particularly in the publicity sector, registered exports totaling close to US\$16 million in 2008, while design, animation and simulation services totaled US\$32.8 million (IDC Latin America, 2009).<sup>40</sup> Cinemagica S.A. produced commercials for Colgate for use across Latin America, while Moonlighting Chile created spots for Peugeot Latin America. However, the industry faces several challenges before it can compete significantly in the offshore market. These challenges are underscored by the fact that the industry must first be consolidated locally and attain credibility as a service provider prior to entering the global market (Centros de Estudios Universitario-UNIACC, 2009).

**Key challenges:** The regulatory and institutional framework in Chile is not adequately structured to support large-scale film productions. This includes challenges such as obtaining permits to film in public spaces and a lack of tax incentives for firms carrying out export activities in this sphere. In addition, there is a shortage of human capital – this includes a lack of world-renowned directors and producers as well as technical personnel. While the supply of qualified labor is growing, the country still has no experience in major productions (Centros de Estudios Universitario-UNIACC, 2009).

### Clinical Trials

The demand for contract clinical research continues to grow around the globe. This growth has been particularly significant in emerging markets, made attractive by lower costs, greater access to patients, and well trained professionals and infrastructure improvements (Getz & Vogel,

<sup>39</sup> The information for this section was gathered from a report prepared by Centro de Estudios Universitarios – UNIACC on the audiovisual industry (Centros de Estudios Universitario-UNIACC, 2009). This report provides an example of industry analysis necessary to identify challenges to growth for Tier 2 industries.

<sup>40</sup> The leading companies that registered exports in 2008 and 2009 were: Compania de Films Ltd., Stirling Film S.A., Pro Cine, Cinemagica Producciones, Parox S.A., Twiset Films Publicidad and Moonlight S.A (Prochile, 2009).

2009; Kalorama Information, 2007). Latin America now represents 6% of the global clinical trial market (Getz & Vogel, 2009). This sector is already beginning to emerge in Chile. The country has a large number of highly qualified medical personnel, including researchers, doctors, and nurses. In 2008, over 1,000 researchers participated in trials; between 2002 and 2007, 500 medical trials, mostly Phase III multi-center trials (Cámara de la Industria Farmacéutica de Chile, 2009; Rigotti et al., 2009), were conducted and 350,000 patients were recruited. That same year, US\$24 million was invested in Chile by fourteen of the leading pharmaceutical companies to carry out trials (Cámara de la Industria Farmacéutica de Chile, 2009).

Progress has been made in the industry to support these trials, and there are 30 Contract Research Organizations (CROs) operating in the country today, including those of Pfizer, Roche and Bayer-Schilling. While the cost of clinical staff in Chile is by no means the cheapest in Latin America, there is a significant cost advantage when it comes to the overhead charged by research institutions in Chile. On average Chilean overhead costs are just 18%, compared to 30-40% in other Latin countries (Rigotti et al., 2009). The country is also developing important capabilities in the development and testing of medical devices.

**Key Challenges:** The regulatory framework and institutions are generally supportive. However, personnel shortages in the *Instituto de Salud Pública* that approves clinical trials often leads to unexpected delays, increasing the time for FDA approval and thus reducing Chile's competitiveness within the clinical trials arena (Rigotti et al., 2009). In addition, knowledge gaps pertaining to the management of trial processes must be filled before the country can take on any significant role in the global market (Rigotti et al., 2009). Finally, given the size of the population compared to Argentina, Brazil and India, Chile has limited ability to continue to compete for Phase III trials, where the sample sizes are over 1,000 people and must therefore upgrade into higher value segments.<sup>41</sup>

## Renewable Energy

With 4,000 windy kilometers of coastline, a northern desert that receives over 300 days of sun a year, and the geothermic activity of the Andes mountain range, Chile has a tremendous wealth of renewable energy resources to be exploited. The Chilean government has recognized this and established the Renewable Energy Center in 2009 to serve as an advisory center. The Irish energy firm, Mainstream Renewable, estimated that Chile's wind and solar potential are

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<sup>41</sup> Israel, with a population of approximately 7 million, is the leading offshoring base for clinical trials in the world and serves as a good example for driving growth through investment in niche sectors (Kalorama Information, 2007).

44,000MW and 37,000MW, respectively. To provide context, 44,000MW is the equivalent of the electricity use of 13.7 million homes in the United States (American Wind Energy Association, 2009; Belyeu, 2009). The company has invested US\$1 billion in Chile in order to realize some of that potential (Clean Tech Brief, 2009).

The Law for the Development of Non-Conventional Renewable Energy, which came into effect in March 2008, created a market for alternative energies and reduced capital risk by requiring that by 2010, 5% of all energy be “green” and that by 2024 it increase to 10% (Saldías & Ulloa, 2008). Institutions such as CORFO and the International Finance Corporation have also stepped in to provide venture capital to support these start up operations.<sup>42</sup> Furthermore, efforts are underway to introduce sustainable energy sources within two of Chile’s largest productive sectors (mining and forestry). A large wind farm is under construction at CODELCO’s new mine, Gabriela Mistral while Arauco have implemented a biomass project that uses wood.

**Key Challenges:** The renewable energy industry is advancing rapidly across the world, including a number of projects across Latin America. Competition is thus the most important challenge that Chile faces. The country must quickly establish credibility in the sector with the successful implementation of projects while at the same time providing support to increase the availability of local qualified human resources.

### **Astronomy**

The northern skies of Chile are considered some of the clearest in the world and have up to 345 clear nights a year. Today the Atacama Desert holds one of the largest concentrations of telescopes in the world, with nine major observatories including the Very Large Telescope (VLT) and the Atacama Large Millimeter Array (ALMA). The Chilean government has been highly supportive of the industry to date, allowing the observatories tax-free status, and in return Chilean scientists have been granted 10% of viewing time. This has facilitated both knowledge and technology transfer at the very highest level in the field (ESO/Government of Chile Joint Committee, 2006). In particular, there has been an increase in both doctoral and postdoctoral staff in a number of Chilean universities including the University of Chile and Universidad Católica, while dramatically increasing publication rates in academic journals by Chilean astronomers.

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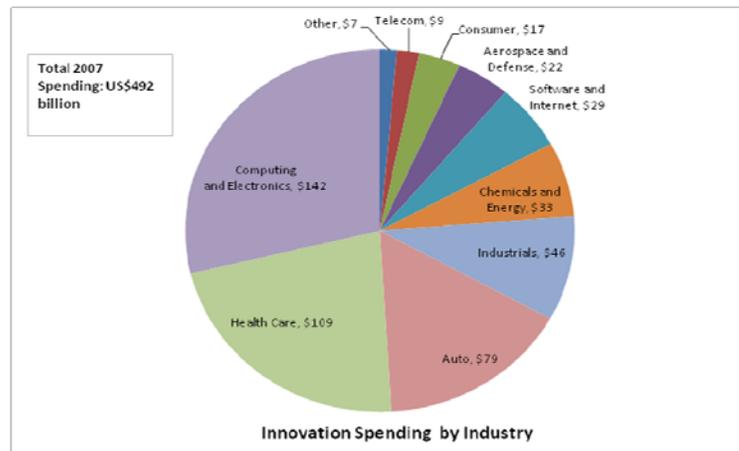
<sup>42</sup> The International Finance Corporation has provided matching loans of US\$30.5 million to Norvind, a joint venture held between Norway’s SN Power and Centinela from Chile. This is the first project finance undertaking in renewable energy in Latin America (International Finance Corporation, 2009).

**Key Challenges:** While great progress has been made in improving both the quality and supply of the human capital in this sector, the domestic industry still lacks a critical mass of staff in order to contribute significantly to the field internationally.

### 3. Tier 3

Tier 3 industries are high potential industry sectors in which Chile currently does not have significant presence in exports. As high value services in innovation and R&D begin to be offshored, location decisions are based on the search for qualified human capital and growth potential of the local market (Thursby & Thursby, 2006). Unfortunately, there are sectors in which Chile has neither these, nor an institutional or regulatory framework to support its development. Figure 2 below highlights opportunities in the emerging global innovation services.

**Figure 2. Global Innovation Spending By Industry**



Source: (Jaruzelski & Dehoff, 2008)

Of the leading nine industries for innovation services, Chile contributes only on a limited level and principally in the computing, electronics, and healthcare sectors. This offers a wide range of opportunities for the country. However, in order to be able to successfully compete for these services, significant investments need to be made in the area of human capital, attracting experts and developing local competencies, plus designing and implementing a corresponding regulatory and institutional framework. This has to be done rapidly and with an awareness of global innovation competitors, such as India and China in all industries.

This process of moving into these higher value services is referred to in the global value chain literature as *functional upgrading*, that is, acquiring new functions (or abandoning existing functions) to increase the overall skill level (Humphrey & Schmitz, 2002). Until very recently,

participation of most emerging countries in R&D functions was limited to incremental improvements of knowledge (Schmitz & Strambach, 2008). Today, innovation services are characterized by what may be called the “democratization of knowledge” and developing nations have taken on a much more important role in new knowledge development. This is apparent in both Latin America and Asia. Two examples of upgrading into innovation services are presented below.

### **Upgrading Through the Tiers**

Jalisco, Mexico provides an excellent example of the strong industry upgrading required to make the transition from a low-productive industry segment to innovation services. The city served as a center for the manufacturing of semiconductors in the 1970s and 1980s.<sup>43</sup> By 2000, the city was home to an electronics cluster with eight of the top 100 global electronics companies (Knowledge at Wharton, 2005). Forced by rising Asian competitors and the internet bust of 2001, the city made the strategic decision to move into provision of high value services in a niche sector, focusing on services such as design and parts replacement centers that required trained labor, professional support and a clear intellectual property system. As an early mover in the medium-to-high technology segment, the city developed a clear competitive advantage over other destinations. The cluster has since undergone important upgrading, and today hosts 39 R&D centers (Arber et al., 2009).<sup>44</sup>

Indian participation in the global pharmaceutical value chain provides another clear example of how these innovation services are deepening interactions and relationships between firms in developed and emerging nations and increasing the role of the latter in cutting edge knowledge creation. While the Asian country has long been an important destination for offshoring clinical trials and manufacturing, within the past three years, a number of multi-year contracts have been signed between large pharmaceutical giants, such as Wyeth and Bristol Myers Squibb, with up and coming Indian pharmaceutical research firms, GVK Biosciences and Syngene. These collaborations are focused on discovery of new molecules and advancing early development projects in the pharma industry. The pace at which these discovery collaborations are being established indicate that the industry is increasingly relying on India for highly skilled knowledge workers and source of innovative research rather than to cut costs (J. B. Gupta, 2008).

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<sup>43</sup> Prior to 1968, there was limited if any electronics sector in the region (e.g., Tier 3 industry). Through the 1980s and 1990s, the industry grew by developing expertise, human capital and fostering a supportive regulatory environment.

<sup>44</sup> By 2000, regulatory and institutional changes enabled the industry to clearly establish itself as a Tier 1 export sector capable of competing in global innovation services.

Thus, in the context of innovation and high value service offshoring, where firms are making decisions to establish R&D centers in emerging countries, it is important for Chile to first leverage the sectors in which the country already has a strong expertise and can emerge as a global leader, as happened with the electronics sector in Mexico. Secondary industries should continue to be supported when they can compete at a global level and in particular, where institutional and regulatory changes can be affected to allow the industry to advance in service exports.

#### 4. Recommendations for Growth in Tiers

- **Identify global value chains for each industry** represented in Tier 1 and Tier 2, paying particular attention to the highest value segments of each chain. Tier 1 sector services should be actively promoted, while efforts should be made to understand where to support Tier 2 sectors, i.e., with institutional changes, improving human capital or making regulatory changes.
- **The experience of InvestChile in horizontal services can be further leveraged to promote Chile as a platform for vertical service exports.** Interaction with established cluster organizations can be useful in identifying Chile's strengths in each industry, and thus potential competitiveness in the offshore services market. Incentives provided for companies dedicated to high value service exports in Tier 1 industry value chains should require basic reporting to ensure the return on investment for the country and to align policy aims with actual growth.
- **Continue to streamline investment processes and coordinate promotional programs** between CORFO, InvestChile, Innova Chile and PROCHILE.
- **Support investments that have higher potential to lead to positive externalities** (knowledge transfer, development of local industry and access to new markets). The analytical framework in Appendix D. provides a tool to quickly determine these spillover effects.
- As with KPO services, the labor force that works in this sector competes at an international level and thus must have a global outlook. Due to Chile's size, many companies use Chilean R&D services as part of a global network of experts rather than stand alone operations; **the workforce must thus interact, principally in English, with multiple cultures around the world.** Through Becas Chile the country can leverage internships through mining, agrifoods, and aquaculture to gain international experience. In addition, closer relationships are needed between educational institutions and the private sector to improve curriculum development for these offshore services.

## V. Conclusions

To date, the policies of InvestChile have been successful in leveraging the country's principal competitive advantages of economic and political stability, availability of qualified human capital, and a world-class telecommunications infrastructure to establish a productive offshore services cluster, particularly in the ITO and BPO segments. However, as seen in India, Ireland and Eastern Europe, these policies must continue to adapt as the global offshore services market evolves. This report provides a framework within which potential policy options can be assessed to identify opportunities for upgrading and diversification as the offshore services industry becomes more globalized and new, cheaper competitors emerge.

Central to this framework is the understanding of the value of each activity in the offshore services industry. The analysis presented above identifies many upgrading opportunities within the ITO segment for Chile, particularly with respect to R&D in niche areas. Given the comparatively small size of the labor pool, the country should avoid projects that require large scale human capital. The BPO segment, while popularly promoted, has been shown to be one of reasonably low value with limited opportunities for upgrading into higher value segments. As the industry requires only secondary education levels and minimum training for the staff, operations can be fairly easily displaced to other locations, thus reducing permanent positive benefits to the country. Finally, Chile's long-term competitiveness in this segment is limited as cheaper locations emerge across the region.

The higher value KPO segment, particularly in market research, business analytics and business consulting, is an attractive growth area for Chile. The country's supply of graduates in the area of business administration at both the undergraduate and graduate levels is impressive for the size of the labor pool. The large number of multinational regional headquarters in Chile indicates the business community's realization of the availability of these skills. There are, however, few visible promotional efforts focused on this segment. As companies in this segment begin to expand globally, Chile should aggressively target them by highlighting the economic and political stability of the country, the availability of qualified human resources, and the relatively simple immigration procedures to fill talent gaps and the good quality of life in Santiago and Viña del Mar. As other regions, including Eastern Europe and Ireland, strive to enter this market, Chilean policy should promote the complementary advantages of adding an office in the US time zone.

Finally, the key areas for substantial economic growth lie in offshoring the high value services in vertical industry value chains. As companies offshore an increasing number of their core services to increase their competitiveness, they are beginning to realize the potential of talent pools in emerging economies. Within several of Chile's key productive sectors, including copper mining, agrifoods and forestry, aquaculture, retail and financial services, the country boasts substantial expertise and both qualified and experienced human capital. Furthermore, regulatory and institutional frameworks are already in place to support continued growth in these segments. Other industry segments identified as potential growth areas, such as architecture, astronomy or renewable energy, represent future sources of offshore services revenue. These segments should be identified, analyzed and supported.

In conclusion, having already established Chile as a credible provider of offshore services in the global market, policy makers should now shift their attention to the development and growth of innovation services for export. The country can continue to build upon its solid economic and political platform and further enhance its already highly educated labor force to quickly upgrade along the offshore services value chain. In doing so, Chile will make significant progress in transforming the economy into a knowledge based one.

## Appendix

### A. Description of Categories of the Offshore Services Value Chain

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.
	CRM (Customer Relationship Management)	Recruiting	Outsourcing of activities such as Sourcing resumes, screening, scheduling interviews, and selecting personnel.
		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 is 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.
KPO	Business Consulting, Business Analytics and Market Intelligence	Outsourcing voice (inbound) services on customer support, business partners, or company associates.	
	Legal Services	Research activities and advice strategies in topics such as business opportunity assessment, market research and customer retention and growth, operations improvement or business optimization.	
			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.

Due to the broad range of activities that can be offshored in different vertical industries, vertical services have not been included in this table.

**B. Key Companies Participating in the Offshore Services Industry in Chile**

<b>Company</b>	<b>Est. in Chile</b>	<b>Principal service provision</b>
<b>Atento</b>	2006	Call Center and BPO Provider
<b>Energia</b>	2006	Call Center and BPO Provider
<b>Konecta</b>	2006	Call Center and BPO Provider
<b>Prego</b>	2006	Call Center and BPO Provider
<b>Transcomm</b>	2006	Call Center and BPO Provider
<b>Teleperformance</b>	2006	Call Center and BPO Provider
<b>Unisono</b>	2006	Call Center and BPO Provider
<b>SITEL</b>	2006	Call Center and BPO Provider
<b>Air France</b>	2001	Call Center and Technical Service
<b>Delta Airlines</b>	2000	Call Center and Technical Service
<b>Int. Center of Excellence</b>	2002	Call Center and Technical Service
<b>Reuters</b>	2005	Call Center and Technical Service
<b>Shell</b>	2003	Call Center and Technical Service
<b>Unisys</b>	2000	Call Center and Technical Service
<b>Capgemini</b>	2008	BPO – Finance and Accounting
<b>Tata Consultancy Services</b>	2010	BPO – Finance and Accounting
<b>Sandvik</b>	2007	BPO – Logistics Center
<b>BHP Billiton</b>	2001	Shared Services Center
<b>Lafarge</b>	2006	Shared Services Center
<b>MSD</b>	2006	Shared Services Center
<b>Oracle</b>	2007	Shared Services Center
<b>Phelps Dodge Mining</b>	1992	Shared Services Center
<b>Sodexho</b>	2000	Shared Services Center
<b>Telmex S.A.</b>	2007	Shared Services Center
<b>Transcomm</b>	2006	Shared Services Center
<b>Unilever</b>	2002	Shared Services Center
<b>Xerox</b>	2004	Shared Services Center
<b>Zurich</b>	2000	Shared Services Center
<b>Motorola</b>	2004	Software Development
<b>Tenbisure</b>	2009	Software Development
<b>Wise Ocean systems</b>	2006	Software Development
<b>Polaris</b>	2009	Software Development
<b>Everis</b>	2008	Software Development and Application Management
<b>Accenture</b>	2009	Software Development and IT Services
<b>Altec</b>	2001	Software Development and IT Services
<b>BBVA</b>	2002	Software Development and IT Services
<b>Citigroup</b>	2002	Software Development and IT Services
<b>Experian</b>	2007	Software Development and IT Services
<b>GenShare</b>	2009	Software Development and IT Services
<b>Intersystems</b>	2006	Software Development and IT Services
<b>Jigsaw Technologies</b>	2007	Software Development and IT Services
<b>JP Morgan</b>	2006	Software Development and IT Services
<b>Software AG</b>	2005	Software Development and IT Services
<b>Synopsys</b>	2006	Software Development and IT Services

<b>Tata Consulting Services</b>	2002	Software Development and IT Services
<b>Coasin Global Services</b>	2008	Software Development and IT Services
<b>Synapsis</b>		Software Development and IT Services
<b>DISC</b>	2007	Software Development and IT Services
<b>Readsoft</b>	2008	Software Development and IT Services
<b>CMR Falabella</b>		Software Development and IT Services
<b>Sonda</b>	1974	Software Development and IT Services
<b>Telefonica Aplicaciones y Soluciones Móviles</b>		Software Development and IT Services
<b>Polaris</b>	2009	Software Development
<b>Collexis</b>	2009	IT - Research and Development
<b>HyC TV</b>	2007	IT - Knowledge Center
<b>Yahoo</b>	2006	IT - Knowledge Center
<b>Evalueserve</b>	2006	Financial Services - Knowledge Center
<b>Equifax</b>	2009	Financial Services - Research and Development
<b>Hatch</b>	2000	Mining – Engineering Services
<b>Fluor</b>	1980s	Mining – Engineering Services
<b>Bechtel</b>	1992	Mining – Engineering Services
<b>SNC Lavalin</b>	1994	Mining – Engineering Services
<b>Ara Worley Parsons</b>	1961	Mining - Engineering Services
<b>Cade-Amec</b>	1969	Mining – Engineering Services
<b>SKM – Minmetals</b>		Mining – Engineering Services
<b>ABB</b>	2008	Mining - Engineering Services Remote Monitoring
<b>Terraremove</b>	2009	Engineering & Remote Monitoring
<b>Diagramma</b>	2008	Agriculture - Biotechnology
<b>Ecotecnos</b>	2009	Agriculture - Biotechnology
<b>Goyaique</b>	2005	Agriculture - Research and Development
<b>Monsanto</b>	2008	Agriculture - Research and Development
<b>Pioneer</b>	2008	Agriculture - Research and Development
<b>Sygenta</b>	2008	Agriculture - Research and Development
<b>Poch</b>	1998	Agrofoods – Engineering Services
<b>Ritrama</b>	2008	Forestry - Research and Development
<b>Woodtech</b>	2008	Forestry – Measurement Services
<b>Aquagen</b>	2008	Aquiculture – Biotechnology
<b>Cien Austral</b>	2005	Aquiculture – Research and Development
<b>AVS Chile</b>	2008	Aquiculture – Research and Development
<b>EWOS Innovation</b>	2006	Aquiculture – Research and Development
<b>Biomar</b>		Aquiculture – Research and Development
<b>Penta Analytics</b>	2003	Market Research
<b>Euromonitor Internacional</b>	2009	Market Research
<b>Rede Brasileira de Entretenimiento Digital</b>	2009	Audiovisual - Digital Distribution Platform
<b>Doblajes Internacional</b>	1982	Audiovisual – Translation
<b>Cinemagica</b>		Audiovisual – Publicity
<b>Moonlighting Chile</b>	2006	Audiovisual – Publicity

Source: CGGC based on company interviews; company websites; (Agosin & Price, 2009); (Au, 2009); (Cornejo, 2009).

### C. Summary of Incentives in the High Tech Investment Program

	Incentives	Financial support	Maximum
Pre-Investment phase	Pre-investment Studies or Prospecting Trips to Chile (HT1)	Feasibility studies for your investment project	Up to 60% of the pre-investment study cost Max=\$30,000 USD
Investment phase	Project launch Assistance (HT2)	The execution of a working plan to assist in project implementation	Up to \$30,000 USD for start-up activities
	On-the-job Training (HT3)	New employee training program	Up to 50% of annual salaries max=\$25,000 USD per person
	Equipment and Infrastructure (HT4)	Acquisition of technological infrastructure and equipment	Up to 40% of the total investment in fixed assets Max=\$2,000,000 USD
	Long Term Property Leasing (HT5)	Long-term lease of property associated with the investment project	Up to 40% of total lease amount during the first five years. Max=\$500,000 USD
	Specialized Training & Recruitment (HT6)	Acquirement of specific knowledge or recruitment of experts	Up to 50% of specialized training or recruitment. Max = \$100,000 USD

Source: CORFO

#### D. Instrument for Analysis of Potential Investment in Offshore Services in Chile

Desired or Expected Return on Investment per project type and skill level.	Level of Skills <sup>1</sup>	Positive Spillover		
		Knowledge transfer <sup>2</sup>	Development of local industry	Access to new markets
Information Technology Outsourcing	Medium - High High	High	Low Medium High	High
Business Process Outsourcing	Low	Low	Low	Medium
Knowledge Process Outsourcing	Medium - High High	High	High	High
Industry Specific Advanced Activities	Medium - High High	High	High	High

<sup>1</sup> The level of skill is associated with the level of formal education plus experience of the personnel hired to carry out the tasks.

<sup>2</sup> Knowledge Transfer: In low levels ITO and BPO, activities have become highly commoditized requiring little interaction between the client and the provider. Little knowledge is thus transferred in the process of service provision. In KPO and Industry specific advanced activities, services are highly customized to the client and require a high level of interaction between the client and the provider. This allows for significant opportunities for knowledge transfer (Gereffi & Fernandez-Stark, 2010).

	Low	Medium - Low	Medium	Medium - High	High
Skill Level	High school diploma	High school diploma + experience  Associate degree (2 years)	Associate degree (2 years) + experience  BS	BS + experience	MA MA + experience  PhD PhD + experience

Application example:

Evalueserve Chile	Level of Skills	Positive Spillover		
		Knowledge transfer	Development of local industry	Access to new markets
Information Technology Outsourcing				
Business Process Outsourcing				
Knowledge Process Outsourcing	Medium High High	High	Too early to tell	High
Industry Specific Advanced Activities	Medium – High High	High	High	High

Tata Consultancy Services Chile	Level of Skills	Positive Spillover		
		Knowledge transfer	Development of local industry	Access to new markets
Information Technology Outsourcing				
Business Process Outsourcing	Low	Low	Low	Medium - High
Knowledge Process Outsourcing				
Industry Specific Advanced Activities				

## E. Differing use of the term Knowledge Process Outsourcing (KPO) in the Offshore Services Industry

Institution/ Company	Comments on KPO
IBM	Their services segment does not include KPO
Capgemini	KPO is one of the segments under BPO <u>Activities under KPO:</u> <ul style="list-style-type: none"> <li>• Research and advisory services</li> <li>• Reference data management</li> <li>• Engineering Services</li> </ul>
TCS	KPO is one of the segments under BPO <u>Activities under KPO:</u> <ul style="list-style-type: none"> <li>• Customer Analytics (Retail)</li> <li>• Spend/Procurement Analytics (Manufacturing)</li> <li>• Equity Research (Banking and Financial Services)</li> <li>• Statistical Analysis (Pharma, Actuarial)</li> </ul>
Wipro	KPO is one of the segments under BPO/Specialized services <u>Activities under KPO:</u> <ul style="list-style-type: none"> <li>• Business Research</li> <li>• Analytics</li> <li>• Reporting Planning and Analysis</li> <li>• Communication and Publishing Services</li> </ul> (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 <u>KPO activities:</u> <ul style="list-style-type: none"> <li>• Market Research</li> <li>• Business Research</li> <li>• Investment Research</li> <li>• Sales Support</li> <li>• Data Analytics</li> <li>• Knowledge Technology</li> <li>• Legal Support Services</li> </ul>
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): <ul style="list-style-type: none"> <li>• IT Services</li> </ul>

	<ul style="list-style-type: none"><li>• ITES-BPO</li><li>• Engineering Services and R&amp;D,</li><li>• Software Products</li></ul>
<b>Dossani, Kenney and Mullan</b>	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: CGGC based on companies and institutions websites.

## F. 2009 Chile Interview Series List

Name	Organization	Date	Language
<b>Aguilera, Victor</b>	3IE	Jan. 23, 2009	English
<b>Arenas, Cristian &amp; Alberto Ergas</b>	Fundación Chile	Nov. 21, 2008	Spanish
<b>Arze, Elias</b>	Ara-Worley Parsons	Jan. 27, 2009	Spanish
<b>Badilla, Ricardo</b>	Biosigma	Sept. 25, 2009	Spanish
<b>Barriga, Rodrigo</b>	DUOC	Oct. 2, 2009	English
<b>Barros, Alejandro</b>	Consultant M. of Economy and participant in the Global Services Cluster committee	Jan.21, 2009	Spanish
<b>Cabrera, Alex</b>	Appear Network	Jan. 23, 2009	English
<b>Campos, Hugo &amp; Irene Schlechter</b>	Monsanto Chile	Nov. 13, 2009	English
<b>Cañete, Patricio</b>	Canadian Embassy- Trade Commissioner	Jan. 22, 2009	English
<b>Casas, Edmundo and Alejandra Mustakis</b>	Kauel	Oct. 2, 2009	Spanish
<b>Cornejo, Cesar</b>	GECHS	May 19, 2009	Spanish
<b>Gomez, Fernando, Beatriz Bruzzone, Marcelo Ampuero &amp; Gonzalo Sierro</b>	Equifax	Sept. 29, 2009	Spanish
<b>Infante, José Ignacio</b>	BHP Billiton	Sept. 22, 2009	Spanish
<b>Infante, Rodrigo</b>	Salmon Chile	Jan. 28, 2009	Spanish
<b>Izquierdo, Diego &amp; Bernardita Prado</b>	UNIACC. Project about Audiovisual industry in Chile	Jan. 26, 2009	Spanish
<b>Julio, Eduardo</b>	Fluor	Oct. 7, 2009	Spanish
<b>Katz, Jorge &amp; Jose Miguel Benavente</b>	Universidad de Chile	Jan. 27, 2009	Spanish
<b>Leiva, Monica, Arlene Ebersperger Jessen, Javier Steffens, Luis Parada Araya and Andrea Díaz</b>	SGS Aquatic Health	Sept. 25, 2009	Spanish
<b>Machiavello, Liliana</b>	Comité de Inversiones Extranjeras/ Ministerio de Economía	Nov. 17, 2008	Spanish
<b>Maiz, Juan</b>	CADE-AMEC	Jan. 21, 2009	Spanish
<b>Merino, Marco</b>	SNC Lavallin	Jan. 29, 2009	Spanish
<b>Mongillo, Leonardo and Gustavo Tasner</b>	CapGemini	Oct. 6, 2009	Spanish
<b>Pena, Rodrigo</b>	Sonda	Oct. 2, 2009	Spanish
<b>Perez, Julio &amp; Andrea Santibañez</b>	SITEL	Sept. 29, 2009	Spanish
<b>Pérez, Miguel</b>	ACTI	Nov. 14, 2008	Spanish
<b>Piña, Joaquin</b>	Chile Export Servicios, Santiago Chamber of Commerce	May 22, 2009	Spanish
<b>Pino, Ricardo</b>	Hatch	Sept. 28,	Spanish

		2009	
<b>Rickmers, Olivier</b>	Biociencia	Jan. 28, 2009	English
<b>Rigotti, Attilio</b>	Universidad Católica Centro de Investigaciones Clínicas	Aug. 25, 2009	Spanish
<b>Roca, Nicolas and Ximena Jofre</b>	Tata Consultancy Services	Sept. 30, 2009	Spanish
<b>Sanchez, John &amp; Hassan Boolani</b>	Bechtel	Jan. 29, 2009	English
<b>Schenkel, Andre and Marko Knezovic</b>	Citigroup	Oct. 1, 2009	English
<b>Schilkrut, Ariel and Luis Vera</b>	Scopix	Oct. 1, 2009	Spanish
<b>Seilfeld, Rolf</b>	Asociación de Oficinas de Arquitectos	Apr. 28, 2009	English
<b>Srivastava, Mohit &amp; Jairo Ortiz</b>	Evalueserve	Jan. 23, 2009	English
<b>Subramony, Arun</b>	GenShare	Oct. 1, 2009	English
<b>Tello, Carlos</b>	Everis	Oct. 1, 2009	English
<b>Ugarte, Pablo &amp; Carolina Soto</b>	CORFO Foreign Investment Department- Clusters	Jan. 21, 2009	Spanish
<b>Worner, Alfredo</b>	Pro Chile	Jan. 27, 2009	Spanish

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