

# Workforce Development in Chile's Offshore Services Value Chain



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## I. Introduction and Background Information

### A. Introduction

The offshore services industry has grown considerably in Chile within the past decade and the country has emerged as an attractive offshore services destination. With almost insignificant export levels in 2000, by the end of 2008 industry exports were close to US\$1 billion. This impressive expansion has been supported by the availability of human capital; today, the industry employs approximately 20,000 people. This past success has led key stakeholders to ambitiously drive to grow the industry fivefold by 2015. It is important to assess the challenges faced by both the private sector and educational institutions in developing an appropriately qualified workforce to sustain this projected growth. The lesson learned from India, with its abundant supply of human capital, is that workforce training and development are essential to remaining competitive.

This paper is based on interviews with CEOs, Country Managers, HR executives and employees of 15 key companies in this growing sector in Chile. We present an overview of both the challenges and best practices in recruiting, training (interpersonal skills, technical training and English language skills) and their relationships with educational institutions.

With a labor force accounting for just a fraction of that of India to draw from, workforce development in offshore services will need to become a strategic priority for many companies in Chile. We found that most employers in the segment agree that graduates of the Chilean tertiary education system have strong technical skills in their respective areas. In India, the lack of development of technical skills is more problematic. In a similar study carried out examining the development of the Indian offshore services workforce, *How the Disciple Became the Guru*, it was found that "the quality of...education at most colleges and universities is highly variable, and the majority of graduates are not employable without significant additional training and education" (Wadhwa et al., 2008). The presence of strong technical graduates indicates that the industry in Chile can shift its focus away from technical training to face other important challenges.

The key challenges that we draw from this research are: (1) the lack of English language skills remains a significant inhibiting factor in

market expansion for the offshore services industry in Chile; (2) graduates entering the offshore services industry have strong theoretical backgrounds, but require further practical experience and stronger interpersonal skills; and (3) the lack of interaction between educational institutions and the private sector is undermining the former's ability to produce graduates with the appropriate, balanced skill set for the offshore services labor market.

## B. Overview 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\$1 billion in service exports (IDC Latin America, 2009) and Chile was ranked as the world's 8th best global services destination (AT Kearney, 2009). This rapid growth, much of which occurred between 2006 and 2009, was largely due to efforts by the CORFO High Technology Investment Program (Castillo, 2008). The sector was identified as an important means for helping Chile to make the transition from a natural resource-based economy to a knowledge-based one (The Boston Consulting Group, 2007).

Initial outreach efforts focused on companies in information technology and business process outsourcing services (Fernandez-Stark et al., 2010). However, within the past two years, the program has provided support for companies in higher value added services in different industry sectors to establish service export operations in Chile (Au, 2009). Employment has thus been established for a wide-range of different education and experience levels.<sup>1</sup> This reflects the growing scope of the global offshore services industry which today includes Information Technology Outsourcing (ITO), Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO) as well as industry specific services that cannot be easily applied in other industries (Gereffi & Fernandez-Stark, 2010).<sup>2</sup>

In particular, information technology outsourcing (ITO) and business process outsourcing (BPO) services have grown considerably within the past decade, together accounting for over one-third of offshore exports and 12,300 employees (IDC Latin America, 2009). ITO services were among the earliest offshore centers established in

Chile, along with shared service centers for companies such as MSD, BHP Billiton and Zurich Financial Services. In 2006, improvements to data protection legislation in Chile led to the establishment of offshore service centers for a number of third-party providers – particularly in call centers and customer relationship management (Pérez, 2009). Growth in knowledge process outsourcing (KPO) services has been slower. However, this has begun to develop a more significant presence in the past two years following the establishment of the Valparaiso office of a key Indian KPO provider, Evalueserve. Other companies with an important presence in the offshore services industry in Chile include Citigroup, Tata Consultancy Services, Capgemini, Sitel, Teleperformance and Emergia (Fernandez-Stark et al., 2010).

Industry-specific service exports have also begun to grow with engineering services, particularly those focused on the mining industry, representing the strongest service export sector in Chile. Engineering services accounted for 32.7% of service exports in 2008 and employed 2,600 people (IDC Latin America, 2009). Industry-specific service exports remains an enormous potential growth area for Chile, particularly in industry sectors, such as agrifoods, retail and financial services, where Chile has already developed strong areas of expertise (Aguilera, 2009).

<sup>1</sup> For the purposes of this paper, the level of education is categorized as "low", "medium-low", "medium", "medium-high" and "high" based on both formal education and experience levels. Please see the table in Appendix C for further information of the definition of "low", "medium" and "high" levels of education.

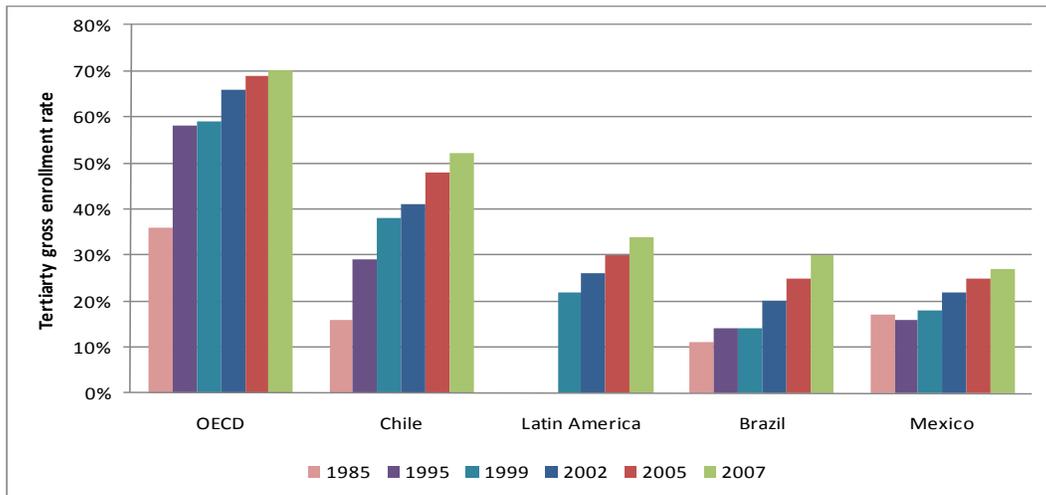
<sup>2</sup> For an in-depth description and analysis of the global offshore services value chain, as well as an analysis of the evolution of each segment of the industry in Chile, please see (Gereffi & Fernandez-Stark, 2010) and (Fernandez-Stark et al., 2010). Also see a global value chain offshore services diagram in Appendix B.

**C. Educating the Workforce: A Background of the Tertiary Education System in Chile**

Tertiary education in Chile in the past two decades has been characterized by tremendous growth. The student population increased from 250,000 in 1990 to 650,000 in 2006 and the number of graduates doubled between 1998 and 2007,

reaching 82,200. (Ministerio de Educación, 2009). Figure 1 shows the rapid expansion of the Chilean higher education system compared to the rest of Latin America; by 2007, the annual enrollment rate reached 52%. While the country has some way to go to catch up with OECD countries, it is clearly ahead of the rest of Latin America in higher education enrollment.

**Figure 1. Gross Higher Education Enrollment (undergraduate, post-graduate and doctoral levels) in Latin America and the OECD, 1985-2007**



Source: (World Bank, 2009)

Chile’s higher education system is composed of three major institutions: universities, professional institutes, and technical training centers. Growth has been most dramatic at the undergraduate level, specifically in private universities (Ministerio de Educación, 2009). Between 1990 and 2006, enrollments in private independent universities increased by 900% and in state universities by

160%, while professional institutes also saw a rise in enrollments. While enrollment in technical training programs faced a declining demand during the same period (Brunner, 2007), enrollment rates were more than double those of the OECD average (OECD, 2008). Table 1 shows the breakdown of non-graduate level programs in the higher education system in Chile.

**Table 1. Higher Education System in Chile (Non-Graduate Level Programs)**

	Number of Institutions	Type of program <sup>1</sup>	Years of study	Number of students in the system (2007)	Number of Graduates (2007)
<b>Universities (public &amp; private)</b>	61	5A	5 or more	448,747	51,822
<b>Professional Institutes</b>	43	5A & 5B	4 years	121,042	17,430
<b>Technical Training Centers</b>	105	5B	2 years	68,805	12,955
<b>Total</b>	209			638,594	82,207

Source: CGGC based on (Brunner, 2007; Ministerio de Educación, 2009)

<sup>1</sup> According to the UNESCO International Standard Classification of Education (ISCE) **level 5A programs** are tertiary programs that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programs and professions with high skills requirements. The content of ISCED **level 5B programs** is practically oriented/occupationally specific and is mainly designed for participants to acquire the practical skills, and know-how for employment in a particular occupation or trade or class of occupation or trades – the successful completion of which usually provides the participants with a labor-market relevant qualification (UNESCO, 1997).

A sustained increase in financial support for students with limited resources through the availability of loans and scholarships, combined with an ever-growing number of new educational institutions, has allowed for greater equity in access to higher education across all socio-economic groups (Brunner, 2007). According to Roberto Barriga, the Director of the School of Information Technology & Telecommunications at DuocUC, 70% of their students are the first generation in their families to go to college (Barriga, 2009).

The explosion of tertiary education graduates that increasingly include students from less advantaged socio-economic backgrounds has dramatically broadened the availability of the skilled workforce in Chile. Over 52% of each graduating high school class enroll in some type of tertiary education (World Bank, 2009). This shift from an unskilled to skilled workforce provides an important basis for continued growth of knowledge industries in the country. It should be noted, though, that while growth supports the development of human capital with basic undergraduate training, the number of resident Chileans holding Masters or Doctorate degrees is still low compared to other Latin American countries, thereby limiting growth possibilities in high value added activities.

This paper, based on interviews with key companies in offshore services, provides an analysis of the current workforce in the industry and highlights key challenges that both the education system and the private sector must face in order to continue to support the ambitious growth that stakeholders are seeking for the country.

## II. Methodology and Companies Interviewed

This workforce development study is part of a series of reports on the offshore services industry. The first report, "The Offshore Services Industry: A Global Value Chain Approach" analyzes the industry using the 'Global Value Chain' methodology. The second report, "The Chilean Offshore Services Industry: A Global Value Chain

Approach" presents an overview and analysis of the evolution of the industry in Chile.

This work is based on 15 company interviews representing different segments of the offshore services value chain. We met with CEOs, C-Level Executives and Human Resource Directors.

**Table 2. Companies Interviewed**

ITO	BPO	KPO	Verticals
Citigroup	Capgemini	Evalueserve <sup>1</sup>	BioSigma
Everis	Sitel	Scopix <sup>1</sup>	Fluor
Equifax	Tata Consultancy Services		SGS
Kael			Monsanto
Sonda			
GenShare			

<sup>1</sup>Many firms in the KPO segment also offer specialized services for specific vertical industries. Evalueserve, for example, also serves the financial services industry.

**Table 3. Interview Information**

Name	Company	Date	Language
Badilla, Ricardo	BioSigma	Sept. 25, 2009	Spanish
Campos, Hugo & Irene Schlechter	Monsanto Chile	Nov. 13, 2009	English
Casas, Edmundo and Alejandra Mustakis	Kael	Oct. 2, 2009	Spanish
Gomez, Fernando, Beatriz Bruzzone, Marcelo Ampuero & Gonzalo Sierra	Equifax	Sept. 29, 2009	Spanish
Julio, Eduardo	Fluor	Oct. 7, 2009	Spanish
Leiva, Monica, Arlene Ebensperger Jessen, Javier Steffens, Luis Parada Araya and Andrea Díaz	SGS Aquatic Health	Sept. 25, 2009	Spanish
Mongillo, Leonardo and Gustavo Tasner	Capgemini	Oct. 6, 2009	Spanish
Peña, Rodrigo	Sonda	Oct. 2, 2009	Spanish
Perez, Julio & Andrea Santibañez	SITEL	Sept. 29, 2009	Spanish
Roca, Nicolas and Ximena Jofre	Tata Consultancy Services	Sept. 30, 2009	Spanish
Schenkel, Andre and Marko Knezovic	Citigroup	Oct. 1, 2009	English
Schilkrut, Ariel and Luis Vera	Scopix	Oct. 1, 2009	Spanish
Srivastava, Mohit & Jairo Ortiz	Evalueserve	Jan. 23, 2009	English
Subramony, Arun	GenShare	Oct. 1, 2009	English
Tello, Carlos	Everis	Oct. 1, 2009	English

The interviews mentioned above were supplemented with information from industry databases, news articles, company documents, company websites and interviews with industry

experts from various Chilean industry associations, research organizations, government agencies, educational institutions and companies in the offshore services sector.

**Table 4. List of Supplementary Interviews**

Name	Organization	Date	Language
Aguilera, Víctor	3IE	Jan. 23, 2009	English
Arenas, Cristian & Alberto Ergas	Fundación Chile	Nov. 21, 2008	Spanish
Arze, Elias	Ara-Worley Parsons	Jan. 27, 2009	Spanish
Barriga, Rodrigo	DuocUC	Oct. 2, 2009	English
Barros, Alejandro	Consultant M. of Economy and participant in the Global Services Cluster committee	Jan.21, 2009	Spanish
Cabrera, Alex	Appear Network	Jan. 23, 2009	English
Cañete, Patricio	Canadian Embassy- Trade Commissioner	Jan. 22, 2009	English
Cornejo, Cesar	GECHS	May 19, 2009	Spanish
Infante, José Ignacio	BHP Billiton	Sept. 22, 2009	Spanish
Infante, Rodrigo	Salmon Chile	Jan. 28, 2009	Spanish
Izquierdo, Diego & Bernardita Prado	UNIACC. Project about Audiovisual industry in Chile	Jan. 26, 2009	Spanish
Katz, Jorge & Jose Miguel Benavente	Universidad de Chile	Jan. 27, 2009	Spanish
Machiavello, Liliana	Comité de Inversiones Extranjeras/ Ministerio de Economía	Nov. 17, 2008	Spanish
Maiz, Juan	CADE-AMEC	Jan. 21, 2009	Spanish
Merino, Marco	SNC Lavallin	Jan. 29, 2009	Spanish
Pérez, Miguel	ACTI	Nov. 14, 2008	Spanish
Pino, Ricardo	Hatch	Sept. 28, 2009	Spanish
Piña, Joaquin	Chile Export Servicios, Santiago Chamber of Commerce	May 22, 2009	Spanish
Rickmers, Olivier	Biociencia	Jan. 28, 2009	English
Rigotti, Attilio	Universidad Católica Centro de Investigaciones Clínicas	Aug. 25, 2009	Spanish
Roca, Nicolas and Ximena Jofre	Tata Consultancy Services	Sept. 30, 2009	Spanish
Sanchez, John & Hassan Boolani	Bechtel	Jan. 29, 2009	English
Seinfeld, Rolf	Asociación de Oficinas de Arquitectos	Apr. 28, 2009	English
Tello, Carlos	Everis	Oct. 1, 2009	English
Ugarte, Pablo & Carolina Soto	CORFO Foreign Investment Department- Clusters	Jan. 21, 2009	Spanish
Worner, Alfredo	Pro Chile	Jan. 27, 2009	Spanish

### III. Summary of Findings

Growth continues to look strong in the offshore services segment in Chile, despite the global economic downturn. Companies are in general satisfied with the quality of Chilean employees, and many stated that the availability of qualified human capital was among the top four factors in deciding to establish an offshore center in Chile. In ITO, while companies initially experienced some difficulties in finding appropriately qualified staff in software development, they stated that the information technology labor market has matured substantially over the past 10 years. BPO operations in Chile primarily draw on high school graduates and have generally found that the secondary education system provides an adequate basis for back-office job functions, with the exception of a need to improve on language and grammar skills. In KPO services, companies tend to be pleased with the technical education of graduates.

The quantity of available human capital must, of course, be addressed in this study. Chile's labor force is small, approximately 1% of the size of India's workforce. This limitation means that Chile cannot compete in areas that require economies of scale and instead must focus on niche areas (Fernandez-Stark et al., 2010). This study focuses on the workforce development and training challenges for this limited market and does not presume that training should focus on developing large armies of personnel for each industry segment.

During our research, it became clear that there are still important challenges facing the industry in order to sustain the growth rates achieved over the past decade. In particular, there are certain skill deficiencies that are creating bottlenecks in the supply of human capital and are beginning to stymie further expansion. These include: the lack of English language skills; a lack of practical, hands-on experience among graduates; a need to further develop interpersonal skills; and providing graduates with additional global experience.

We will be detailing our findings in the following areas:

- A. Employee Profile**
- B. Formal Education**
- C. Recruitment**
- D. Interpersonal Skills**
- E. English Language Skills**
- F. Training and Development**
- G. Higher Education –Industry Relationship**

The industry to date has tended to hire young employees that have recently graduated from technical institutes or universities. Firms typically favor technical and professional institutes, such as DuocUC and INACAP, over traditional universities as the four-year degrees granted by these professional institutes include practical aspects of training and the institutions are more willing to adapt their curriculum to meet the needs of the private sector. There are, however, few formal opportunities that bring the private sector together with universities in Chile to make similar changes to the university programs.

The following sections detail the best practices and challenges in the areas listed above. Section V provides an overview of each of the companies included in the study and lists some of their workforce development practices and methods.

## A. Employee Profile

Employees in the offshore service sector are typically younger, hold some level of tertiary education, and are mostly Chilean, with a slightly greater than 50% chance of being male. In 2008, 41% of the 20,000 employees in the offshore industry in Chile worked in BPO activities, such as customer service, marketing and sales (IDC Latin America, 2009).

### Youth Employment

The offshore services industry provides a growing source of new employment and has created thousands of jobs in the past four years. Employing primarily young people, this industry has been able to tap into a large unemployed youth base in Chile. At a global level, Chile is ranked 18<sup>th</sup> for youth unemployment (United Nations- ILO, 2009) and, while the general unemployment rate in Chile was 7.5% in 2008, unemployment among 20-24 year olds was 17.3% (Ministerio del Trabajo y Previsión Social - Chile, 2009). This cheap, available source of labor has been particularly important in cities such as Valparaiso and Viña del Mar, which have the highest youth unemployment rates in the country (Ministerio del Trabajo y Previsión Social - Chile, 2009). These cities have emerged as competitive, low-cost alternative locations for offshore services.

- GenShare plans to hire 1,000 people over the next five years to staff its new Valparaiso information technology (IT) service center. The average age of first-round recruits for management positions is likely to be no higher than 26 years old.
- Call center companies such as Sitel have struggled to brand themselves as long-term career alternatives. Approximately half of Sitel employees have completed their training in a technical institute. The remaining employees are mostly university students that use the job to help finance their studies.
- Small companies focused on R&D looking to hire innovators, such as Equifax, Kael, Scopix and Monsanto, tend to hire young employees. All employees at Kael are under 30 years old, while Equifax R&D

Center hires recent graduates with limited or no experience and their average age is 28 years old. Monsanto's R&D group has focused on hiring young, recent graduates with Masters Degrees.

There are exceptions to this general trend, particularly in companies offering unique, highly complex solutions where experience is an essential factor.

- Citigroup prefers to hire staff with 5-7 years experience in the IT industry and thus it hires slightly older employees.
- Sonda has one of the older workforces in the industry. The average age of senior managers is over 50 years old. This is atypical in the IT industry.
- Fluor, one of the world's leading engineering companies, face issues of pipeline replacement and many of their senior staff are almost at retirement age.

### Hiring Local Talent

Based on our interviews, the employees in this industry are mainly Chilean. However, this varies according to the level of skills required for the task. Routine tasks tend to be performed by Chileans, and BPO providers such as Sitel, Tata Consultancy Services and Capgemini have few foreigners working at the non-executive level. Companies that offer more advanced activities tend to employ more expatriates, such as Evalueserve and Citigroup.

- Evalueserve prefers to hire local staff as it provides the company with more stability in the long term. Expatriates are typically placed in the country for a maximum of three years before returning home and this can be disruptive for the local office. Nonetheless, the company does employ foreigners to help fill local skills gaps while local staff is trained, as well as providing essential cultural and language skills that are not available in the local labor market.
- Citigroup initially had significant difficulties in finding local staff and 30% of their staff is of foreign origin. They were able to take

advantage of flexible and smooth immigration processes in order to avoid breaching the Chilean Labor Law, which requires a minimum of 85% Chileans per company.<sup>3</sup> One of the managing directors even opted to take up Chilean citizenship.

### Greater Gender Equality

Many firms in the industry with headquarters in the developed world make hiring decisions based on gender equality. The ITO segment in Chile and other traditionally male-dominated careers, such as engineering and agronomy, in the face of limited female participation in the workforce, continue to employ a greater number of men than women. The BPO segment, by contrast, has begun to provide an important source of employment that is more suited to women. These companies provide greater opportunities for women than the general work environment in Chile, in which female participation in the labor force is just 38.8% (World Bank- SERNAM- Inter-American Development Bank, 2007).

- Twenty percent of the staff of IT Services at Tata Consultancy Services is female, compared to 40% of its staff for BPO services. At Capgemini, a BPO company, 50% of the staff are female, while at Sitel a BPO-call center, 60% of employees are female.
- Fluor is particularly concerned with promoting women in engineering. Half of

the employees identified as high potential within the company are female, while the company also provides a mentoring circle exclusively for women to further support career advancement for women in engineering firms.

### Flexibility and Adaptability in the Face of Change

One of the key characteristic of this industry is to employ people that can easily adjust to change, are open to lifelong learning, and have an innovative spirit.

- Equifax hires innovators with learning abilities that can become experts in one field. During the hiring process, they pay more attention to interpersonal skills and extracurricular activities such as involvement in open source activities or any extracurricular high tech activities (e.g., website development, etc.).
- During their feasibility study of Chile, GenShare visited an educational institution in Valparaiso and talked to the students. The great confidence and dynamism of the Chilean students played an important role in their decision process to establish in an operation center in Chile.

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<sup>3</sup> While the Chilean Labor regulations (*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): Capítulo III DE LA NACIONALIDAD DE LOS TRABAJADORES Art. 19]. "El ochenta y cinco por ciento, a lo menos, de los trabajadores que sirvan a un mismo empleador será de nacionalidad chilena. Se exceptúa de esta disposición el empleador que no ocupa más de veinticinco trabajadores.. Para computar la proporción a que se refiere el artículo anterior, se seguirán las reglas que a continuación se expresan: 1.- se tomará en cuenta el número total de trabajadores que un empleador ocupe dentro del territorio nacional y no el de las distintas sucursales separadamente; 2.- se excluirá al personal técnico especialista que no pueda ser reemplazado por personal nacional; 3.- se tendrá como chileno al extranjero cuyo cónyuge o sus hijos sean chilenos o que sea viudo o viuda de cónyuge chileno, y 4.- se considerará también como chilenos a los extranjeros residentes por más de cinco años en el país, sin tomarse en cuenta las ausencias accidentales."

## B. Formal Education

### Technical Education (Professional Institutes and Technical Training Centers) vs. Universities

Where no postgraduate degrees or highly specific training is required, there is a tendency for companies in the sector to hire more graduates from technical education institutions (professional institutes and technical training centers) than from universities. The main reason mentioned during company interviews is the level of skills preparation. Universities tend to offer more theoretical content, while technical education institutes provide a more practical approach. Almost all of the companies interviewed criticized the lack of correlation between skills taught by the universities and the skills demanded by Chilean industry.

- Citigroup states that the curricula at the Chilean universities are too long. They prefer to hire professional and technical school graduates that have less academic and more practical knowledge.
- Kael also noted that the education at universities is too theoretical. There is a wide gap between the private sector requirements and what the professors are teaching at the universities.
- Sonda explains that INACAP and DuocUC – the top two schools for technical education -- are doing a much better job training students and that universities are somewhat disconnected from industry challenges. University professors are very competent, but they do not teach students to be prepared for a working environment.
- Tata Consultancy Services (IT operations) explains that universities are not providing the correct skills; education programs and the required skills for the job are not moving at the same speed. More practical implementation of knowledge is required. The new graduates have very little idea of how to implement the theories they have learned in the classroom. The technical

education institutions, including INACAP and DuocUC, are more aligned with the industry requirements.

- GenShare is in the early stages of operations set-up in Chile. The company is currently hiring its first 30 managers, who will form the core team of the company. The hiring profile for these managers is that of an engineer holding a 4-year degree from a professional institute, such as DuocUC, and with less than two years experience.

### Developing Well-Rounded Professionals

The Chilean education system as a whole also fails to meet certain needs demanded by the industry. Many companies interviewed complain about the lack of interpersonal skills, English knowledge and a global perspective among graduates. As the majority of the companies addressed these topics, an entire section of this paper is dedicated to discussing the deficiencies in interpersonal skills and also the poor level of English of the Chilean workforce. Companies also reaffirm that students should be exposed to additional world experiences.

- Scopix stressed the importance of a more global perspective to be incorporated into the formal education system. University graduates should be better prepared to enter the professional ranks with a broader vision of the world.
- Tata Consultancy Services states that there is a lack of understanding about the global economy and how this changes the way they work. The company predicts that one of their greatest challenges in Chile in the future will be developing a workforce with a global understanding that is able to integrate technology and cultivate a culture of lifelong learning.
- Citigroup explains that the level of global exposure has begun to evolve recently. They state that seven years ago it was difficult for the people to understand the

differences of working in a global corporation and interacting with teams in different parts of the world. This has begun to change and Chileans are gradually broadening their outlook.

- GenShare stresses that its workforce will need to have a global perspective. While the company will initially begin as a captive center to serve General Electric procurement needs, the operations will soon expand to serve a broad range of clients from all over the world.

### **Graduate Education**

There are relatively few students in graduate programs (MS and PhDs) in Chile. In 2008, only 250 people graduated with doctorate degrees in Chile, representing just 15 graduates per one million inhabitants, compared to Brazil where there are 48 Ph.D. graduates per million. Nearly three-quarters (73%) of these graduates received their degrees from just two universities, Universidad de Chile and Pontificia Universidad Católica (PUC) (El Mercurio, 2008).

- BioSigma, a company dedicated to biotechnology in the mining sector, principally hires research staff with Ph.D.s. The company explained that there is a low number of Ph.D.s in the country and that the key focus of doctorate training in Chile is for basic rather than applied science. As a result, they regularly have to recruit abroad to find people with the correct competencies.
- Monsanto considers its research team in Chile to be very highly qualified, among the best qualified in Latin America. However, due to the small size of the labor pool in Chile (less than 1,000 qualified researchers at both the master and doctorate levels), the team in Chile works in conjunction with other teams around the world. In comparison, Monsanto's research team in Brazil employs hundreds of researchers.

### C. Recruitment

The offshore services industry has recruited 20,000 employees over the past nine years. As the industry continues to grow, competition for talented human capital is bound to intensify. Firms operating in the industry will soon be required to adopt innovative and comprehensive recruiting strategies. Recruitment policies to date in Chile have been reasonably conservative, unlike in India, where companies such as WIPRO, facing tremendous competition, have launched creative strategies such as setting up a stall in the virtual reality site, Second Life, where potential job candidates can use their “avatars” to submit resumes (Wadhwa et al., 2008).

Companies in Chile tend to use online job services such as [www.laborum.cl](http://www.laborum.cl), [www.bumeran.cl](http://www.bumeran.cl), [www.trabanjando.com](http://www.trabanjando.com) and [www.universia.cl](http://www.universia.cl) in combination with newspaper job announcements (this is on the decline) and attending job fairs. A number of firms provide internship opportunities for entry level graduates, many of whom are offered full-time positions at the end of their internships. Headhunting is also a common practice in more sophisticated services positions, such as engineering services and executive level staff. The most successful recruitment strategy employed by firms has been the use of referrals by existing employees.

- Sonda outsources the recruitment and selection process for most positions to [trabanjando.com](http://trabanjando.com), utilizing that company’s profiling strengths. At the executive level, hiring is conducted in-house with extensive rounds of interviews. As the company’s workforce ages, they plan to become more proactive with their recruiting strategies and will begin to attend job fairs.
- Tata Consultancy Services has found that attending job fairs is particularly effective when hiring for English-speaking positions. Mini-interviews are conducted on-site to determine the actual language levels of the applicant, avoiding time-consuming interviews later on in the hiring process. The company also offers bonuses to employees who refer a friend through their referral system “Bring a Buddy”.

- Everis offers employees bonuses or perks such as flights to Buenos Aires for the weekend if a referral remains with the company for at least six months.
- Scopix has hired 100% of its Chilean staff through referrals from friends, family and existing employees. This helps to increase employee loyalty and minimize attrition.
- Kael establishes relationships with potential employees through free workshops that the company offers during weekends at educational institutes as well as through internship programs.
- Sitel participates on average in one job fair per month – in technical institutes, universities, and at the municipal level. The company has found this to be a particularly effective way to recruit employees and recruitment is fairly easy for the company.

In addition, firms offering more sophisticated services that compete for highly qualified university graduates in the domestic market in Chile, have found that establishing a presence on university campuses has been an effective method for raising brand awareness among the students.

- In order to recruit the country’s top agronomy research talent, Monsanto plays an active role on campus, providing information sessions on a broad range of topics related to the industry, including workshops on how to build a successful career as a researcher in the industry.
- Evalueserve encourages its staff to serve as guest lecturers on university campuses. In addition to raising brand awareness for the company, participating at a classroom level helps staff to identify high potential candidates.

#### D. Interpersonal Skills<sup>4</sup>

Interpersonal skills were generally found to be lacking in the Chilean labor force, as both educational institutes and performance reviews in the work place have given disproportionate emphasis to the development of individual's technical skills (Jordan & Garay, 2009). The importance for the offshore services industry of these often overlooked skills is highlighted by both the time and money that the Indian offshore services sector has dedicated to developing them (Wadhwa et al., 2008). However, within the Chilean tertiary education system, and particularly in highly technical degree subjects such as engineering and electronics, little emphasis is placed on developing these skill areas. Employers are acutely aware of this problem. See Box.1 for more information on these skills.

- The Director of the Center for Entrepreneurship at the Universidad Técnica Federico Santa María expressed how difficult it is to convince the faculty to include these courses within the curriculum, despite the University's clear commitment to the subject in the provision of funding for the Center (Aguilera, 2009).
- Tata Consultancy Services explained that the educational system is not adequately preparing students for today's professional work environment. Challenges include the lack of ability to work in teams, to share knowledge with co-workers, and to think creatively.
- SGS noted that while technically their new recruits are strong, they face challenges in improving the level of interpersonal skills and the awareness of appropriate workplace behavior.

- BHP Billiton highlighted that the principal challenges it faced with its work teams was the lack of teamwork and communication skills and readiness to work with new technologies.<sup>5</sup>
- Sitel stressed the lack of work ethic – absenteeism is their most important human resource challenge within the company. In addition, they cite that commercial skills in Chile are very poorly formed; this is particularly apparent in the lack of quality in customer services interactions.
- GenShare, by contrast, has been particularly impressed by the confidence of the Chilean youth. The Country Manager noted: “if you have the will, it is possible to teach the skills. The only two things that really matter now are that you have to be willing to learn and have an ability to communicate.”

This lack of interpersonal skills, a key component of leadership and management development, has made it particularly difficult to fill Project Management positions.

- Most engineering firms interviewed during the course of this, including Hatch and Bechtel, cited that a leading human resource challenge was the development of non-technical, interpersonal skills. In particular, these firms highlighted the lack of professionals with experience managing and leading large teams and projects. The firms cited that they almost exclusively hire foreign staff to fill Project Management positions on all important contracts.
- Evaluerve also emphasizes that Project Management skills in Chile are very difficult to find. In the absence of qualified

<sup>4</sup> Interpersonal skills are beginning to be referred to in Chile as “habilidades superiores”, replacing the more traditional term, “habilidades blandas” or “soft skills” in order to further emphasize their importance in producing results and affecting a company's bottom line (Jordan, 2009).

<sup>5</sup> BHP Billiton's Financial Shared Services Center was interviewed as part of this study. However, during this interview, the Country Manager informed us that the company is in the process of closing the Chilean Shared Services Center. The company is centralizing all shared services operations in one global center in Kuala Lumpur.

staff, the company has been forced to hire abroad to fill management positions.

In the face of these problems, certain companies have begun to adjust their hiring processes. There is a sense that it is reasonably easy to teach someone technical skills, compared to developing their personal skills.

- Equifax R&D Center considers personal characteristics and interpersonal skills among the most important attributes for

the hiring process. The firm's policy is that it is more important to hire innovative people with diverse extracurricular interests who are willing to challenge the status quo than it is to hire technically qualified staff. Technical training can be provided for someone who shows a clear interest and ability to learn.

### Box 1. What Exactly are Interpersonal Skills?

"Interpersonal skills include those important non-technical skills that are required in all human interactions. These include personal qualities such as emotional intelligence, perseverance, motivation, self-discipline, assertiveness and creativity, and social skills such as the ability to work well in a team, empathy, effective communication, conflict management and leadership."

Rodrigo Jordan, Professor of Leadership and Innovation, Universidad Católica Business School.

The ten most common non-technical skills employers are looking for (Lorenz, 2009) are:

- 1. Strong Work Ethic.** Are you motivated and dedicated to getting the job done, no matter what? Will you be conscientious and do your best work?
- 2. Positive Attitude.** Are you optimistic and upbeat? Will you generate good energy and good will?
- 3. Good Communication Skills.** Are you both verbally articulate and a good listener? Can you make your case and express your needs in a way that builds bridges with colleagues, customers and vendors?
- 4. Time Management Abilities.** Do you know how to prioritize tasks and work on a number of different projects at once? Will you use your time on the job wisely?
- 5. Problem-Solving Skills.** Are you resourceful and able to creatively solve problems that will inevitably arise? Will you take ownership of problems or leave them for someone else?
- 6. Acting as a Team Player.** Will you work well in groups and teams? Will you be cooperative and take a leadership role when appropriate?
- 7. Self-Confidence.** Do you truly believe you can do the job? Will you project a sense of calm and inspire confidence in others? Will you have the courage to ask questions that need to be asked and to freely contribute your ideas?
- 8. Ability to Accept and Learn From Criticism.** Will you be able to handle criticism? Are you coachable and open to learning and growing as a person and as a professional?
- 9. Flexibility/Adaptability.** Are you able to adapt to new situations and challenges? Will you embrace change and be open to new ideas?
- 10. Working Well Under Pressure.** Can you handle the stress that accompanies deadlines and crises? Will you be able to do your best work and come through in a pinch?

Sources: (Jordan, 2009; Lorenz, 2009)

## E. English Language Skills

English continues to be an important constraint in the expansion of offshore services exports from Chile as the country's English-speaking population is comparatively small. It is estimated that just 2% of Chileans speak English fluently (approximately 150,000 to 200,000 people) and that only 7-8% of professionals speak English. Most of these people are concentrated in Santiago (AT Kearney, 2009). The shortage of English speakers, in general, has increased wages for fluent English speakers that are 30% higher than the rest of the labor force. This wage premium erodes some of Chile's competitive advantage in labor costs, compared to other Latin American countries. This also limits the country's ability to expand into new markets.

Private sector demand for English speakers is mostly in higher value added activities, where there is significant interaction between the service provider and the client, or between internal staff across a company's global network. The demand for English in lower value services, such as customer relationship management, has been more limited, as many of the companies established in Chile in this segment focus almost exclusively on serving the Spanish-language market. Where call center services are required in English, service providers highlight the difficulties of both finding and retaining qualified staff who speak English (Bocic, 2009; Mongillo & Tasner, 2009).

- Monsanto, one of the world's leading seed producers, has located one of its R&D centers in Chile. As the Chilean research team is fairly small, it works in collaboration with a network of Monsanto researchers around the world. English is the company's preferred language for international communication and publications. English is thus a requirement for all hires and interviews are often conducted in English. This requirement is only waived in rare cases, when a non-English speaking hire has particular expertise that the company requires and no other candidate can be found. Staff participate in ongoing English training on an individual basis.

- Fluor has offices in all major mining centers in the world. The company offers full-time (rather than project) contracts and thus its workforce is highly mobile, transferring around the world to where their expertise is required. As a result, the Chilean office often hosts foreign staff and Chilean staff often work on projects abroad. This requires a common language to manage complex interactions. At Fluor, English is the principal language. Key educational and knowledge-sharing resources such as Knowledge Online, a live forum which Fluor engineers from all over the world can use to share challenges and provide solutions, operate in English. Thus, while English is not a hiring requirement, non-English speakers face limited career opportunities.
- At Equifax R&D Center, all employees are required to speak English. The Center reports directly to the company headquarters in Atlanta, and thus all team leaders hired are required to have a strong level of English. The company provides English training programs for all employees through Berlitz English Institute and holds "English Wednesdays" during which all staff members are required to interact in English in order to overcome self-consciousness problems. Any person attempting to speak Spanish is fined a nominal amount. The company cites that they have seen incredible progress since initiating this practice.
- Tata Consultancy Services in Chile principally serves the local Chilean market, primarily due to the lack of English speakers available. Demand for English is highest in ITO services where most platforms are in English. Within ITO services, most of the software that the company employs is in English requiring a minimum understanding of technical language. In addition, the language is important for career advancement for all staff within the company. This is primarily because key training instruments are only available online and only in English. Hence in order to develop key capabilities for

promotion, personnel must have a basic understanding of English.

- Capgemini cited that without the required level of English, it would be unable to serve English-speaking markets, or even the Hispanic markets in the United States.<sup>6</sup> The company finds that it is more cost effective to hire an English-speaker with no technical skills and train them in the specific skills required to perform their job than to train a technically qualified person to speak English. Nonetheless, the company has a very difficult time finding English-speakers both at the executive and junior level and is providing on-going English training for all team leaders and executives, while junior staff can access Global English through Capgemini's online training system.
- GenShare believes that the biggest constraint it faces in establishing its center in Chile is English. They stress that the lack of exposure to the English language limits people's ability to learn. They feel that the way to teach English is for people to listen to others speaking English and to learn the language through this immersion process. DuocUC, which has partnered with GenShare to provide training for the company's employees, is willing to change the way they teach English.

The National Registry of English Speakers has been of limited use for employers. Companies cited both bureaucratic and technical difficulties in using the system, as well as a lack of relevant information such as formal education level and area of expertise. Less than half of the HR Directors interviewed were aware of the existence of the registry, while no company claimed to have used the system in order to recruit staff.

In addition, the level of English acquired through the IT professionals program "Perfeccionamiento Intensivo en Inglés" was criticized as being

insufficient. The program state that 600 points in the TOEIC (Test of English for International Communication) is sufficient knowledge of business English to successfully work in IT and 73% of the 2008 participants obtained 600 points or more. Companies have been explicit that the level of English after the program is not adequate. The total TOEIC score adds up to a scale from 10 to 990 points and a score of 600 is frequently considered the minimum acceptable for working overseas.

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<sup>6</sup> According to Capgemini, non-English speakers are unable to effectively serve the Hispanic market in the United States due to the general use of "Spanglish" by that population. That is, the Hispanic population there tends to mix a large number of commonly used English words with their Spanish.

**F. Training and Development**

Training and Development is an integral part of developing the offshore services industry by ensuring knowledge transfer to the local labor pool and private sector. A series of incentives are available through the CORFO High Tech Program to develop local human capital in Chile. These help provide the country with a competitive edge over other Latin American destinations. These incentives include on-the-job training (HT3) available for all new employees funding up to 50% of annual salaries as well as specialized training and

recruitment subsidies (HT6) that are focused on the acquisition of specific knowledge or recruiting experts. This subsidy is particularly important for firms focused on research and development as it may be used to finance training received abroad. Furthermore, the government offers income tax deductions for firms' training expenses through *Servicio Nacional de Compensación y Empleo* (SENCE) (SENCE, 2009). Tax relief is calculated based on the level of the employee's salary and is generally only available for employees in the lower wage ranges (Roca & Jofre, 2009).

**Table 5. Training and Development Subsidies Provide through the CORFO High Tech Investment Program**

Incentive/ Subsidy	Objective	Financial Support
On-the-job Training (HT3)	New employee training program	Up to 50% of annual salaries max=\$25,000 USD per person
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, 2009)

Training and development at the firm level in offshore services in Chile is focused on three main areas: orientation programs; technical training; and, to a lesser degree, interpersonal skills training, such as teamwork, leadership and communication.

**New Recruit Training**

New recruit training typically follows companies' standard global training formats. These sessions, which vary in length between one day and one month, provide new recruits with an overview of the company's corporate values, activities and procedures. Companies place high importance on risk and security of information while little attention is given to integration or development of non-technical skills in this initial training. HR executives are typically responsible for these training sessions. In high value add services, new recruit training is more in-depth covering a wider range of topics.

- Fluor offers a standard global orientation program for all incoming staff. This level of standardization is very important for the company, as staff are highly mobile

between different offices around the globe.

- New recruit training at Monsanto consists of a one-day "on-boarding program." New employees meet with key management figures during the course of the day and are provided with an overview of the business and its activities in Chile. They are also briefed on the company's compensation and benefit policies as well as its performance management protocol.
- Sitel employees participate in three to four weeks of orientation training before beginning work. This training includes an overview of the company, which is standardized at a global level. The main emphasis of the training, however, is placed on educating staff about the Spanish market. This includes vocabulary differences and insight into the Spanish culture. Following this, new recruits are provided with technical training on both the company and client systems.

- As the company is still in early growth stages, Scopix has only hired qualified, experienced engineers. However, due to the highly complex nature of the work, new employees still receive up to six months of training prior to becoming productive members of the team.

### Technical Knowledge

In general, most companies encourage cultures of lifelong learning. Technical skills of incoming employees are considered to be strong and focus is placed on providing personnel with the relevant certifications, as well as keeping them up to date with the most current technologies being used at a global level. Many companies interviewed cited that while Chilean graduates tend to have strong theoretical backgrounds, they have limited hands-on experience and thus there is a strong emphasis on on-the-job training.

Technical training is often provided through global e-learning tools to which employees have access at any time of the day.

- Tata Consultancy Services managers are required to work with their teams to establish annual Learning Manifests. This manifest outlines the online and on-site classes that an employee must take during the course of the year in order to continue their development. Classes may be taken during work hours if the employee so chooses. As job functions are highly repetitive, trainings are fairly standardized and focus on processes and procedures.
- Capgemini also provides employees with access to its online global training programs and requires that employees dedicate 40 hours annually to training, either using the online tools or in on-site training programs. Unlike many other global companies with similar systems in Chile, Capgemini's online training programs are available in multiple languages, including Spanish.

Where technical training cannot be provided internally and locally within the company, external organizations are contracted or internal staff are brought in from other countries to deliver the trainings. In addition, during the initial phases of the operations set-up in Chile, companies send their staff abroad to the company headquarters for further training. This is particularly prevalent in information technology services.

- At the Equifax R&D Center, trainings are provided on an ongoing basis internally. Different area experts are encouraged to provide training sessions for cross-functional teams to both share information and enhance opportunities for innovation. The company also brings experts from within Equifax in the United States to provide in-person training in Santiago. Local external organizations provide certifications for specialized software.
- Evalueserve brings Indian trainers to Chile to provide classroom-based technical training programs. In addition, the company uses teleconferencing to provide real-time training for teams in Chile, Europe and China using one trainer based in India. All teams thus receive the training at the same time and are able to seamlessly implement changes. This training is spread consistently over the year.
- Sitel leverages its knowledge and expertise on a global level to train its staff in Chile in new lines of business. Internal company experts are brought in from the different country offices depending on the expertise required. For example, the Mexican operations of Sitel has expertise in serving the airline industry, thus when Sitel Chile sign a new client in that industry, they bring staff from Mexico to train the team locally.
- Everis is one of the few companies that has an extensive training program that includes three months of staff training in Spain focused on knowledge transfer back to Temuco.

- GenShare is currently hiring the first thirty managers for the new Valparaiso center. These managers will travel to India for extensive training at the company's Global Leadership Institute. This team will be responsible for hiring and training the next layer of 100 employees within the organization.
- Sonda provides employees with the training opportunities to improve their certification levels in tools such as SAP and Microsoft. The company covers the costs for these training programs that are carried out by external organizations; however, it requires that the employee stay with a company for a certain period of time after completing the training.
- Senior staff at Kael provides regular workshops to bring both interns and full-time staff up to speed on new techniques and cutting edge technology. As its offices are on DuocUC's campus, the company is infused with a culture of constant learning and development.

In R&D, companies typically criticized the heavy focus on basic science and indicated that there is limited work being done at the university level in applied sciences. Despite this, training and development is an ongoing process where employees are encouraged to return to university to pursue further degrees.

- BioSigma focuses on life-long learning. The organization is dominated by an academic culture that promotes continual interaction with universities both within Chile and around the world and encourages employees to pursue further studies.

### **Interpersonal and Non-technical Skills Training**

The lack of soft or interpersonal skills such as communication, creativity, teamwork and leadership, is also referenced as an important challenge by firms operating in the offshore services industry. These classes are absent from

most undergraduate programs. There are few innovative firm-level attempts to address this shortcoming and this continues to be an area for workforce development in the industry.

- Evalueserve provides multicultural understanding sessions to try and iron out cultural issues both between team members and the clients. In order to understand the client's perspective employees have to understand the cultural depth within their own teams. The company reinforces this message on a daily basis in addition to formal training sessions.
- Fluor provides online skills training programs, including the development of project management skills through its contract with global e-learning company, SkillSoft.

## G. Higher Education-Industry Relationship

One of the key trends in this knowledge economy is the increasing collaboration between higher education system and industry. This collaboration seeks to improve companies' competitiveness and, at the same time, prepare students with the correct skills needed by the industry. These alliances are a win-win situation for both educational institutes and the industry and their ultimate goal is economic growth. However, it has been particularly difficult for companies in Chile to bring these alliances to

fruition, often due to conservatism and rigidity of university faculty in educational institutes. In order to achieve collaboration, higher education institutions have to be innovative, flexible and proactive. Similarly motivated actions are required on the part of companies.

Box 2 provides an example of how alliances between the North Carolina Community College system and the Biotech cluster in North Carolina have helped to foster a US\$4.5 billion industry.

### Box 2. Biotech in North Carolina

In 1984, the state developed a unique model for biotechnology development, centered on the formation of the North Carolina Biotechnology Center. The Center represented the world's first government-sponsored commitment to targeted biotechnology-based economic development (Battelle Technology Partnership Practice, 2008).

In 2003, BioNetwork, led by the North Carolina Community College system, was created to support the development of the biotech cluster in North Carolina, aligning world class workforce training and education to the biotechnology, pharmaceutical and life science industries. Across their seven centres, BioNetwork offers different types of training, upgrading the skills of incumbent workers, from entry level to management. BioNetwork also offers biopharmaceutical validation training and education through its Validation Academy, holds job fairs, and is developing an "Overview of Clinical Research" certificate program (Battelle Technology Partnership Practice, 2008). The centres themselves are staffed with highly skilled industry trained experts that are constantly developing workforce training programs that can be delivered anywhere in North Carolina (NC Bionetwork, 2009).

**Facts** (North Carolina Biotechnology Center, 2009):

- Biotechnology companies generate about US\$4.5 billion in annual revenue in North Carolina.
- Biotechnology employees represent a payroll of US\$1.7 billion and around US\$176 million in state income taxes.
- North Carolina has over 525 bioscience and related companies in the state.
- The industry employs about 58,000 people.
- The annual salary for entry level technicians starts at US\$25,000 to US\$30,000 and can potentially rise to US\$50,000 within 5 years.
- The average salary for all biopharmaceutical manufacturing jobs is US\$69,000 in North Carolina.
- NC ranks #1 in Contract Research Organizations in the USA, NC ranks #2 in Agricultural Biotechnology Research in the USA, NC ranks #3 in Biomanufacturing in the USA and NC ranks #4 in Pharmaceutical Manufacturing in the USA.

In this box we explain only one initiative –an alliance between the NC Community College system and the biotech cluster. However, different alliances between universities and this cluster are in place. One example is the Academic Research Initiation Grants; US\$14.7 million was awarded to public and private universities to do research in biotech applications (Battelle Technology Partnership Practice, 2008).

<sup>1</sup> In the United States, Community Colleges may grant up to 2 years education degree called Associate Degree, while universities grant 4 years education degree named Bachelor's degree. Universities also offer Masters and PhD programs.

Sources: (Battelle Technology Partnership Practice, 2008; NC Bionetwork, 2009; North Carolina Biotechnology Center, 2009)

An analysis of firm-level data from Chile finds that collaboration with universities increases the propensity of a private enterprise being involved in patenting by 35%, keeping all other explanatory variables in the model constant (Thorn & Soo, 2006). However, companies interviewed have limited relationships with educational institutions – the few exceptions will be discussed in this section. In general, companies describe university-level collaboration as an important topic; however, there are no formal mechanism to create or bring together these two players. Companies also mentioned that many of the universities are not teaching the skills needed by the industry because of the lack of understanding of industry needs. Technical educational institutions such as DuocUC and INACAP are doing a better job in creating channels of communications and trying to understand the real work environment.

With the exception of four companies, all of the firms interviewed state no formal relationship with educational institutions in Chile.

- Tata Consultancy Services explains that they were involved in a project led by CORFO-InnovaChile and Fundación Chile. The project involved DuocUC and the main objective was the development of interpersonal skills. This project was not completed and no follow up was provided.
- SGS states that they have no formal relationship with the universities or technical institutes. There is little transference between the universities and the industry; they claim that this is most likely due to a lack of incentives for experts in the industry to be involved in the universities.
- Sonda has an informal relationship with the Pontificia Universidad Católica (PUC) built principally on the fact that the company founders are PUC graduates. The company has even created companies together with the university, one of which is Solex.

However, this relationship is neither formal nor permanent.

Four companies have established formal relationships with both local and foreign universities.

- Scopix has a relationship with American universities such as Duke University, Columbia and the Wharton School of Business. These relationships focus on the analysis of data and publications in marketing and operations management. Additionally, they are working on developing new algorithms for data analytics. Scopix has no formal relationship with Chilean universities and they are open to establishing alliances.
- BioSigma is also working with universities from all over the world and with Universidad de Chile. They have jointly developed a research laboratory in genomics mathematics and biotechnology together with this university, where the CEO also serves as a faculty member.
- In 2007, Everis opened a High Performance Center in Universidad de la Frontera-Temuco. This Center focuses on software research. This model was originally established in Chile and now is being replicated in Brazil and Argentina.
- Kael and DuocUC have developed a close relationship. The company is located at the DuocUC facilities and students also work directly with the company. At the same time, Kael personnel offer training programs for the DuocUC students. The company also has informal relationships with universities in Tokyo, Germany and the United States.

#### **IV. Recommendations**

In general, Chilean education institutions provide students with strong, high quality technical skills. However, there are four key areas mentioned by companies that clearly need further development: English language skills; improvement of the workforce's interpersonal skills; developing a workforce that is well-prepared to work in the global economy; and foster alliances between educational institutions and Industry.

##### **Additional, Improved English Training**

English education should begin in a person's early years. Greater efforts should be made to lay the foundations for a bilingual Chile by increasing the number of schools offering English as a mandatory subject. For those generations that have already completed their secondary education, further opportunities should be offered to develop their English skills during their tertiary education, with an expansion of the English curricula and its full integration into key courses. Furthermore, it is important to provide opportunities for the incumbent workforce to refine their English skills. This is essential for highly skilled Chilean workers to interact in the global innovation and research networks.

##### **Place a Higher Premium on the Development of Non-technical and Interpersonal Skills**

Greater attention needs to be paid to non-technical skills training. Companies commonly criticize the lack of these interpersonal skills, yet they offer little training in this area. The teaching of these skills also has to start from early levels of education and extend through tertiary education

and beyond. As with English, generally interpersonal skills are more difficult to develop at an older age.

##### **Prepare a Global Labor Force**

A Chilean professional should be able to perform strongly and interact with peers in any place in the world. A global approach to education should be emphasized, offering scholarships abroad during which students are exposed to different cultural and technological realities. It is also important to establish internship programs abroad during which students can gain an understanding of what it means to work with a group of people different than him/herself.

##### **Foster Alliances between Educational Institutions and Industry**

The key to addressing these three skills gaps, however, lies in an increased degree of interaction between the industry and educational institutions. It has been shown that collaboration of this nature leads to a number of positive externalities. Through the training incentives provided by the CORFO High Tech Investment Program -On the Job Training and Specialized Training and Recruitment-, CORFO can help to forge greater opportunities for interactions, including requiring that a certain percentage of these training subsidies be spent on programs at local educational institutes. The majority of the companies interviewed are open to establishing formal relationships with educational institutions. The Chilean higher education system should create formal channels of cooperation and communication with the industry.

**V. Case Studies**

**A. BioSigma**

<b>BioSigma S.A.</b>	
<b>Segment of the industry</b>	Verticals: Mining Research and Development; Biotechnology
<b>Description</b>	The company is involved in the development of innovative products and technologies for the mining industry
<b>Country</b>	Chile
<b>Activities</b>	Chile - Biochemistry, biotechnology, molecular and industrial microbiology, chemical and metallurgical engineering and process and project engineering for new production of copper obtained from low-grade resources and secondary materials.
<b>Year of establishment</b>	Chile 2002
<b>Total Employees</b>	Chile 130
<b>Total Revenues/Chilean Exports</b>	Chile (No revenues to date)
<b>Level of Education<sup>1</sup></b>	Medium - High
<b>Annual Attrition Rate</b>	Low

**Activities**

BioSigma is a research and development firm dedicated to the use of biotechnology to improve the efficiency of copper extraction in the mining sector through bioleaching processes. The firm holds 17 patents for microorganisms. In addition to ongoing research, the firm will provide full service offerings to the mining industry that include the design, construction and operation of the plant in which the bioleaching will be carried out.

**Recruitment**

BioSigma recruits at both domestic and global level principally through the use of head hunter firms and job postings in universities. They also publish job openings in local newspapers in Chile. The firm only hires personnel with four or more years of tertiary education. This includes both technical and professional staff. The bulk of their staff holds four- and six-year engineering degrees while those involved in research and development work hold postgraduate degrees.

**Training and Development**

Formal training and development of staff is still limited within the company principally because most of the staff are already highly educated and come from an academic background and thus are generally self-motivated to manage their personal career development. The BioSigma culture that

encourages continual learning and staff keep up to date with the scientific developments. Staff is encouraged to maintain their involvement in academics and many pursue further training at universities abroad. The company offers orientation training to new staff.

**University Relationships**

BioSigma has established a formal relationship with Universidad de Chile for research collaboration, establishing a shared research laboratory in genomics mathematics and biotechnology. In addition, they have relationships with leading universities around the world. In general, the firm has found that Chilean universities focus heavily on theoretical approaches to research, with little emphasis being placed on application. Closer interactions with industry are required for the universities to deliver the range of educational skills that firms demand; however, the universities have been fairly inflexible to adapting their curriculum to meet industry needs. Also, public policies to date have been ineffective in reinforcing these relationships between the universities and industry.

<sup>1</sup> The level of education refers to the highest degree obtained by the employees as well as their work experience. Please see the table in Appendix C for further information of the definition of "low", "medium" and "high" levels of education.

**English Skills**

English is not required at BioSigma, but most of the staff is able to communicate in a mix of English and Spanish.

**Women in the Workforce**

30% of BioSigma employees are female. This percentage is higher among the research staff.

**Global Talent**

The workforce is mostly Chilean, with some international representation from Latin America,

Europe and Japan. Foreign staff members typically work in research and development. It is challenging to find the desired personnel in Chile due to the lack of practical, hands-on experience of university graduates.

**Challenges**

The biotechnology industry is characterized by risk-taking and there are few people that are prepared to do so in Chile.

**B. Capgemini**

Capgemini			
<b>Segment of the industry</b>	BPO Finance and Accounting		
<b>Description</b>	Capgemini is a French company that specializes in the provision of consulting, outsourcing, technology and local professional services.		
<b>Country</b>	France		
<b>Global Activities</b>	Consulting services, technology services, outsourcing services, local professional services		
<b>Year of establishment</b>	Global	1967	Chile 2008
<b>Total Employees</b>	Global	90,000	Chile 300
<b>Total Revenues/Chilean Exports</b>	Global	US\$12.7 million	Chile Not available
<b>Level of Education</b>	Low - Medium		
<b>Annual Attrition Rate</b>	20%		

**Activities**

Globally, Capgemini provides a wide range of services in three areas – Information Technology, Consulting and Business Process Outsourcing across most industries. In Chile, the company’s new operations currently offer limited services in BPO Finance and Accounting.

**Recruitment**

Capgemini entered the Chilean market through the purchase of Unilever’s Latin American operations and the company inherited the great majority of their staff. Unilever staff working in finance and accounting operations around Latin America were also encouraged to apply for positions in Chile. As a result there are a number of Venezuelans and Colombians working in the Chilean operations. This has both increased diversity, while at the same time enabled the company to maintain a close relationship with its first client- Unilevel. As the company has grown, recruitment has typically been outsourced, although the firm will soon begin to participate in job fairs in order to raise their profile in the labor market. The firm also offers an internship program and many interns are hired on the completion of this period.

**Training and Development**

Training is principally done on the job, combined with 40 hours of training programs per year that include both online and on-site programs. Incoming employees participate in a one-week orientation program, introducing them to the firm’s core

values, the importance of security in data management, as well as the firm’s human resources management processes. (Capgemini holds ISO9001-2008 certification and ISO27005:2008 security information certification). This is followed by three weeks of on-the-job training during which the employee is introduced to the client’s processes and their specific job function.

**Performance Management**

Performance reviews are conducted annually. Since May 2008, 60% of the staff has been promoted. In particular, potential leaders are identified for promotion as team leaders, coordinators and supervisors.

**University Relationships**

The firm has no formal relationships with any universities. The company has interns from local educational institutions.

**English Skills**

Finding affordable, English-speaking staff has proved to be a challenge for Capgemini, at both entry level and senior executive levels. As a result, they have not been able to expand service offerings outside of Spanish-speaking countries. The company has, however, rolled out English programs for their senior staff in Chile, and junior staff has access to Global English, an e-learning tool. While they are aware of CORFO’s initiatives to improve English levels, BPO operations are not

eligible to apply as the programs are limited to IT professionals.

**Women in the Workforce**

50% of the employees at Capgemini Chile are females. The company feels that this is an attractive career option for women as they have

more limited alternatives compared to their male counterparts.

**Challenges**

Reducing and maintaining attrition rates at reasonable levels.

**C. Citigroup Chile S.A.**

Citigroup Chile S.A.			
<b>Segment of the industry</b>	ITO Software Development and Maintenance		
<b>Description</b>	Citigroup is a global diversified financial services company. The company is engaged in providing a range of financial services to consumers and corporate customers.		
<b>Country</b>	United States		
<b>Global Activities</b>	Consumer banking and credit, corporate and investment banking, securities brokerage, and wealth management services		
<b>Year of establishment</b>	Global 1988	Chile	2003
<b>Total Employees</b>	Global 276,000	Chile	150
<b>Total Revenues/Chilean Exports</b>	Global US\$105.8 million	Chile	US\$10.6 million
<b>Level of Education</b>	Medium		

**Activities**

Citigroup Chile is dedicated to the design, development and maintenance of small, niche software for the financial services holding group, Citigroup. 75% of the work done in Chile is in specialized software development. The unit provides support to the US, Hong Kong, Singapore and London.

**Recruitment**

The firm does not recruit directly from universities, as they are particularly interested in staff with 5 to 7 years of experience in programming. The company uses headhunting firms to hire its staff. Citigroup initially faced challenges in recruiting due to a shortage of experienced programmers in the labor market, but considers that the IT labor force has matured substantially over the past seven years. The company contracts with programmers (per project) from 5 firms, including Polaris Laboratories. Once the software has been developed and rolled out across the company, those programmers are offered full-time contracts with Citigroup. In addition, in 2008 the company participated in CORFO’s English Job Fair as an additional recruitment opportunity.

**Training and Development**

Training at Citigroup Chile is focused on maintaining the technical expertise of the workforce. Training programs include shifts from legacy systems to cutting edge technology. These

training programs are provided through external organizations such as SAP or Microsoft Chile.

**University Relationships**

The company principally hires experienced workers and therefore they have limited need to interact with universities. When the company first began operating in Chile in 2003, their assessment of the university graduates was generally that the 6 to 7 year degree program did not fit their qualification needs. Indeed, they have found that the technical institutes such as DuocUC have been much more effective in catering to the industry personnel demands.

**English Skills**

The company provides English training to half of their staff every year through Berlitz English Institute. Approximately half of the company’s senior staff has been taking English classes for four to five years. Employees have also been encouraged to participate in CORFO’s program offering scholarships to IT professionals interested in studying English. This has been fairly successful and the company has seen progress.

**Global Talent**

Citigroup Chile has found it particularly useful and easy to recruit staff abroad to fill talent gaps in the country in order to facilitate growth. They find that foreigners are attracted to Chile because of the excellent quality of life in Santiago compared

to other big Latin American cities where the company has offices. Personnel with specific technical expertise are exempted from the percentage limits for foreign hires by the Chilean

Labor Law. Thirty percent of employees in the Santiago office are foreign, including Serbians, Peruvians and Argentineans.

**D. Equifax Chile R&D Center**

Equifax Chile R&D Center			
<b>Segment of the industry</b>	ITO R&D Verticals: Financial Services		
<b>Description</b>	Equifax Inc. (Equifax) is a global provider of information solutions for businesses and consumers. The company's products and services are based on databases of consumer and business information derived from numerous types of credit, financial, public record, demographic and marketing data.		
<b>Country</b>	United States		
<b>Global Activities</b>	Consumer information solutions, commercial information solutions, workforce solutions, and industry specific services		
<b>Year of establishment</b>	Global	1913	Chile 2009
<b>Total Employees</b>	Global	6,500	Chile 24
<b>Total Revenues/Chilean Exports</b>	Global	US\$0.94 million	Chile Not Available
<b>Level of Education</b>	Medium - High		

**Activities**

The Chile R&D Center is dedicated to providing research and development support for two IT platforms for Equifax Inc. – Interconnect and Appro. Interconnect is a global tool providing solutions for account acquisition, credit-risk decision making, cross-selling and fraud mitigation that can be applied in all industries. Appro is a platform dedicated to the financial services industry providing solutions for loans processing risk management.

**Recruitment**

Recruitment for the R&D Center was channeled mainly through online media, including websites such as [www.laborum.cl](http://www.laborum.cl) and [www.bumeran.cl](http://www.bumeran.cl). The company is concerned with attracting young and innovative staff with strong personal skills and a wide range of extracurricular interests. 90% of the 2009 recruits were civil engineers, with university degrees (6 years) and their average age was 28 years old at time of hiring. Once the core team was established, the firm relied heavily on referrals to hire other employees. They found this to be very successful. The company plans to increase the research team to 50 researchers within the next two years.

**Training and Development**

New employees receive one week of orientation training followed by an extensive five-month

training period prior to becoming productive members of the team. Technical training sessions are run by Chilean team members, per their areas of expertise. Where expertise is not available locally, internal personnel are brought in from the United States to conduct the training. This has been necessary particularly for operational and business knowledge. Online certification trainings for staff such as SAP or Microsoft are financed by the company. Training courses are permanently available online and the company relies on self-motivation of the staff to continue learning.

**University Relationships**

The firm has no formal partnerships with universities or technical institutes, although they have developed an informal relationship with University of Santiago, Chile (USACH) and half of the employees are USACH graduates. It was particularly difficult for the company to forge closer relationships with universities when they made their initial hires as the universities were closed for the summer vacation.

**English Skills**

The R&D Center reports directly to the R&D division of Equifax Inc. in Atlanta. While English is not a requirement, it is very important for career advancement. All employees are enrolled in English training through Tromwell English Institute. The Center has also taken a creative approach to

improving English levels within the group by establishing “English Wednesdays.” On these days, everyone in the company must speak English and anyone speaking Spanish is fined a small amount.

**Challenges**

The most pressing challenge for the R&D Center is maintaining their innovative culture. This is due to two reasons. Firstly, the Chilean Labor Law that

applies to all employees does not provide sufficient flexibility for creative staff as it requires a more rigid work schedule. Equifax are concerned that this will stifle both creativity and innovation. Secondly, although the R&D Center reports directly to the United States, it is technically part of Equifax Chile which owns Dicom. This local subsidiary, which was established in Chile in 1979, is a very conservative organization.

**E. Evalueserve**

Evalueserve			
<b>Segment of the industry</b>	KPO: Market Research, Data Analytics, LPO Vertical: Financial Services		
<b>Description</b>	Evalueserve provides Knowledge Process Outsourcing (KPO) services to a wide range of industry segments and various functional departments from its global research centers.		
<b>Country</b>	India		
<b>Global Activities</b>	Investment research, business research, market research, data and financial analytics, intellectual property and legal process services		
<b>Year of establishment</b>	Global 2000	Chile	2006
<b>Total Employees</b>	Global 2500	Chile	150
<b>Total Revenues/Chilean Exports</b>	Global Not available	Chile	US\$4.8 million
<b>Level of Education</b>	Medium - High		

**Activities**

Evalueserve has seven business streams: Business Research, Investment Research, Circle of Experts, Data Analytics, Knowledge Technology, Market Research and Intellectual Property. The largest service line in Chile is Investment Research services which include equity research, fixed income research, corporate finance research as well as macroeconomic research. In addition, the company has teams working in Knowledge Technology providing data services in decision-making for clients in the United States. While the company also provides market research and data analytics for consulting firms from Chile, these service streams are stronger in their Asian offices.

**Recruitment**

Evalueserve first opened their offices in Chile with three people in December 2006. Since then, they have grown their staff to over 100 people. The company has focused on hiring Chilean staff in order to provide greater long-term stability. As client demand has grown, more staff has been recruited. Certain positions such as derivatives staff or English editors are hired directly from abroad due to the lack of available human capital in Chile. Within Chile, the company uses online job forums, as well as using their presence on university campuses both as guest lecturers and with campus information sessions to recruit graduates. All hires go through a rigorous interview process where

emphasis is placed more heavily on applied knowledge and interpersonal skills.

**Training and Development**

Training at Evalueserve has two key focus areas: technical training and interpersonal skills training, particularly with respect to working in multicultural environments. Technical training is provided by Evalueserve trainers from India, who come on-site to work with new recruits through on-the-job training. These instructors act as mentors. In addition, the company provides classroom-based training using Indian trainers and teleconference training sessions simultaneously viewed in Chile, Europe and China. Technical training is provided at intervals throughout the entire year. Interpersonal skills training includes cultural awareness, effective communication skills, and professionalism and etiquette classes. The company stresses the importance of having an engaged and motivated staff in order to deliver results for the client. These values are reinforced both in formal training sessions as well as on a daily basis by management staff.

**English**

An external agency provides ongoing English language training for the Chilean staff. This is vital to the organization, as each client team is spread between its four global offices and English is the basis for most internal communication. In addition,

as the Chilean team serves principally the US market, they must interact with clients in English.

**Relationships with Local Universities**

The company is working to develop closer relationships with the Chilean universities by

establishing connections with professors and appearing as guest lecturers. In addition, the company has piloted an internship process with DuocUC. During summer 2009, the company hosted its first team of engineering interns. This was generally considered to be very successful.

**F. Everis**

<b>Everis</b>			
<b>Segment of the industry</b>	ITO Consulting and software development		
<b>Description</b>	Everis is a consulting firm that offers its clients comprehensive business solutions covering all aspects of the value chain, from business strategy through to systems implementation in the sectors of banking, healthcare, industry, insurance, media, public sector, telecom and utilities.		
<b>Country</b>	Spain		
<b>Global Activities</b>	Consulting, IT, outsourcing, & professional services		
<b>Year of establishment</b>	Global 1996	Chile	1999
<b>Total Employees</b>	Global 6,000	Chile	200
<b>Total Revenues/Chilean Exports</b>	Global US\$394 million	Chile	US\$ 6.7 million
<b>Level of Education</b>	Medium		

**Activities**

Everis is a Spanish IT consulting firm. The Chilean subsidiary offers the following services: IT outsourcing, IT consulting in business and strategic planning, joint venture integration and business intelligence. Everis has also established a High Performance Center in Temuco, which implements projects for clients around the world. The Center also provides software design and development.

**Employee Profile**

Employees at Everis have strong technical backgrounds. 80% of them are civil engineers or program analysts with over 6 years of experience. The remaining 20% are technical engineers (4 year degrees) with 2-3 years of experience. The company plans to hire an additional 50 people within the next year.

**Recruitment**

The company recruits both experienced professionals and final year engineering students from Universidad de la Frontera-Temuco. These students work with them on projects in the last year of their studies at the High Performance Center the company has in the Universidad de la Frontera. They also recruit through job fairs in Santiago and different regions, including job fairs at Universidad de Chile, Universidad Católica and Universidad

Técnica Federico Santa María. Valparaíso and Concepción are two major regions for recruitment. They also implemented an employee referral program with bonuses (for example, flights to Buenos Aires) if the referred person stays with the company for at least 6 months.

**Training and Development**

Employees are part of an international network of consultants, allowing them to be permanently connected with best practices and solutions. Everis also provides methodology training. The company sends professionals to the Everis headquarters in Spain for training and development. Half of the 80 professionals participating in the Chilean Temuco project were sent to Madrid for 3 months as part of this knowledge transfer initiative. Promotion is largely dependent on the employee's yearly performance. The company is owned by the employees. Consultants who have worked for the company for at least 3 years receive dividends.

**University Relationships**

In 2007, Everis opened a High Performance Center (CAR) in the Universidad de la Frontera (UFRO) that includes a software factory. All the clients for the software factory project are from Spain.

**G. Fluor S.A.**

Fluor S.A.			
<b>Segment of the industry</b>	Verticals: Mining Engineering Services		
<b>Description</b>	Fluor provides engineering, procurement and construction management (EPCM) and project management services. Fluor serves a number of industries worldwide, including oil and gas, chemical and petrochemicals, transportation, mining and metals, power, life sciences and manufacturing.		
<b>Country</b>	United States		
<b>Global Activities</b>	Engineering, procurement, construction, maintenance and project management services.		
<b>Year of establishment</b>	Global 1890	Chile	1976
<b>Total Employees</b>	Global 27,958	Chile	550
<b>Total Revenues/Chilean Exports</b>	Global US\$22.3 billion	Chile	US\$69.3 million
<b>Level of Education</b>	Medium – High		
<b>Annual Attrition Rate</b>	12% pre-crisis, 2.5% post-crisis		

**Activities**

Fluor S.A. offers all of the services provided by the company at a global level. The strengths of the office lie principally in the mining sector. Services include all aspects of the engineering services value chain, including design drawings, pre-feasibility studies, feasibility studies, basic engineering, detailed engineering and EPCM (Engineering, Procurement, Construction, Management) projects. In addition to mining, the company also provides services in infrastructure and plant maintenance.

**Recruitment**

The Chilean engineering industry is characterized by a high level of rotation through companies depending on the current projects that each company is working on. The market is also fairly small and each company is aware of the skills of the staff in other firms. Fluor handpicks its staff for different projects from other companies. New labor is recruited directly through personal relationships with faculty at the universities and many graduates are first hired as interns. Fluor S.A. also offers internship opportunities for students from abroad and often recruits internally from other global offices to fill human resource gaps in Chile.

**Training and Development**

New recruits undergo one day of orientation training upon joining the company. This is a standardized program that is conducted for all Fluor recruits around the world. Following this, training and development opportunities are customized according to the development needs of each employee. Development opportunities are largely based on a self-learning model. Three primary tools are available. Knowledge On-Line, an online forum open to all Fluor employees around the world designed to facilitate the transfer of knowledge and ideas around its global offices. Fluor University which offers classes based on technical and managerial skill development both online and in-person (in the United States). SkillSoft, another online tool designed to improve non-technical skills. In addition, when necessary, they will bring Fluor experts from around the world to lecture on specific topics. Besides these formal initiatives, efforts are also made to pair up young engineers with experienced staff on projects to facilitate knowledge transfer. Performance Management is a key part of working at Fluor. Employees establish an annual development plan and regularly meet with their managers to assess their progress, as well as completing an online tool that measures improvements.

### **University Relationships**

Fluor has no formal relationship with Chilean universities. However, they have considerable success in recruiting engineers from Universidad de Chile, Universidad de Concepción and USACH.

### **English Skills**

While English is not required as an entry-level skill at Fluor, it is considered important for career development within the company. This is principally because Fluor relies on a global skill network through which the most appropriate person is tapped for a specific project, regardless of their home office. Chilean employees are often sent abroad to work on different projects during the course of their careers with the company. The Chilean office also hosts a number of foreign workers at any one time, and English is used as the

common language. In addition, as most of the company's online tools are in English, access to cutting edge information is largely dependent on an employee's language skills. The company has found that, on average, about 50% of the incoming staff has a good command of English while the remaining half has some knowledge.

### **Global Talent**

Fluor is particularly concerned with promoting women in the engineering industry. The company has two programs dedicated to career advancement – the People Development Program (PDP) and the Mentoring Circle. The PDP for promising employees is approximately 50% female, while the Mentoring Circle is exclusively for women and includes female mentors.

**H. GenShare Ltda.**

<b>GenShare Ltda.</b>	
<b>Segment of the industry</b>	ITO Software Development and Maintenance
<b>Description</b>	Provides IT services across the software development life cycle including design, development, testing, and deployment and application management.
<b>Country</b>	Chile
<b>Activities</b>	The company will provide IT platform and software development and support.
<b>Year of establishment</b>	Chile 2009
<b>Total Employees</b>	Chile Predicted 1,000
<b>Total Revenues/Chilean Exports</b>	Chile Predicted US\$50 million
<b>Level of Education</b>	Medium

**Activities**

GenShare Ltda. is a joint venture between UST Global and the General Electric Company (GE) established in 2009 to provide IT services and is headquartered in Chile. It provides IT services across the software development life cycle including design, development, testing, deployment and application management. In particular, the company in Chile will be focused on supporting GE’s procurement platform. The company will begin as a captive center providing services for GE and later will offer services to other companies around the world leveraging GE’s procurement power.

**Recruitment**

Recruitment is schedule to occur in two faces. Phase one will consist of hiring 30 people. The employee profile is a 4-year engineer (all engineering streams), with less than 2 years experience. In this first phase employees will be taken to India for services training in design and development of projects at the Global Leadership and Training Institute in India. This group will then be responsible

for training the next layer of the employees. The second phase of hiring 100 people more will start in July 2010. The company will focus principally on campus recruitment. They will hire business analysts, testers, and project managers among others. The most important characteristics of GenShare recruits are a willingness to learn and the ability to communicate.

**Training and Development and University Relationships**

GenShare will create its own training programs. The company is working very closely with DuocUC in order to establish these programs. The educational institute has been very willing to adjust their curriculum to meet GenShare’s needs, both for technical training and English language skills requirements.

**English Skills**

The company feels that the people are not sufficiently exposed to English in Chile and believe that one of the best ways to teach English is through immersion programs. They believe that English will be their greatest challenge in establishing their operations in Chile.

I. Kael

Kael	
Segment of the industry	ITO R&D
Description	Kael is involved in the creation of technologically innovative products and software development for high impact advertising, education and various other applications.
Country	Chile
Activities	Chile R&D Software
Year of establishment	Chile 2008
Total Employees	Chile 20
Total Revenues/Chilean Exports	Chile Not Available
Level of Education	Medium – High
Annual Attrition Rate	30%

**Activities**

The company is focused on developing innovative software applications for all industries, including publicity, education and telecommunications.

**Employee Profile**

Employees at Kael are all under 30 years old. Of the 20 employees, approximately 60% hold 4-year degrees in electronic engineering, while the remaining 40% hold 6-year degrees. The management team consists of three engineering graduates from Universidad Técnica Federico Santa María. Two hold Masters degrees in electronic engineering, and the third holds a Masters in Business Administration.

**Recruitment**

The company recruits directly from two educational institutes, DuocUC and Universidad Mayor, where the staff runs workshops and classes on a regular basis. Students begin to work with Kael through these workshops and internships and then are often offered a full-time position on the team. Joining the Kael team is made more attractive by the fact that engineers are given the rights to the patents developed during their employment. However, this has led to attrition, as employees have left to sell their own products.

**Training and Development**

The company provides on-going training based on the development needs of the staff. This includes

interdisciplinary and cross-functional groups training together in specialty areas in order to maximize opportunities for innovation.

**University Relationships**

DuocUC has been a key partner in the growth and development of Kael. The institution provides the company with office space on campus, allowing them to be near their potential labor pool as well as providing support in business administration. The company initially approached Universidad Católica to form a partnership; however, it eventually chose DuocUC so that they could maintain ownership of their patents. In addition, the company works closely with DuocUC on curriculum development to ensure that the school is meeting business training needs. The company has also established informal alliances with universities in Tokyo, Germany and the United States including Stanford University.

**English Skills**

English language skills at Kael are limited. The management team however, feels that it is important for them to show leadership by improving their own level of English first before they can expect their staff to invest time in improving their language skills.

**Challenges**

The key challenge that the company faces is the lack of entrepreneurship skills. It has been

particularly difficult for the team to find talented, qualified staff prepared to work in a relatively high-risk entrepreneurial environment. In general, they have found that university curricula offer few

classes in entrepreneurship and sales. This makes it difficult for a start-up to gain momentum both within the country and for service exports.

**J. Monsanto Chile**

<b>Monsanto Chile</b>		
<b>Segment of the industry</b>	Vertical: Biotechnology R&D	
<b>Description</b>	Monsanto Company (Monsanto) along with its subsidiaries is a worldwide provider of agricultural products for farmers. The company's seeds, biotechnology trait products, and herbicides provide farmers with solutions to produce foods for consumers and feed for animals.	
<b>Country</b>	United States	
<b>Global Activities</b>	Global seeds and traits business, and genetic technology platforms and agricultural productivity business consisting of crop protection products and residential lawn-and-garden herbicide products.	
<b>Year of establishment</b>	Global 2000	Chile 2000
<b>Total Employees</b>	Global 22,900	Chile R&D <50
<b>Total Revenues/Chilean Exports</b>	Global US\$11.7 billion	Chile US\$7.2 million
<b>Level of Education</b>	High <sup>1</sup>	
<b>Annual Attrition Rate</b>	Very Low	

<sup>1</sup> The R&D center also draws on an experienced team of research technicians from Seminis. This team only has technical training degrees, however, they have, on average, 15 years of experience.

**Activities**

Monsanto Chile is dedicated to the production of seeds for both the domestic and foreign markets. In addition, the company carries out research and development in Chile for the production of vegetable seeds as well as corn, soy and canola row crops. Research conducted in Chile impacts directly the several crop markets they serve in North America and Europe.

**Recruitment**

During the past two years, Monsanto has focused on building a solid foundation for their Chilean research team. The group has grown significantly with almost all new hires being recent Masters graduates. The recruiting process is thorough. The company offers a range of informational talks at leading universities in Santiago, including sessions on career management in the field of agricultural research. In addition, they conduct surveys of graduating classes to gain a better understanding of the work environments that graduates are seeking. The company uses traditional recruitment tools such as attendance in job fairs and newspaper job postings. In addition, the company uses online job sites. Hiring at Monsanto is also highly selective, including first-round group

interviews and final-round individual interviews in which team managers generally play an active role. The company also offers summer internships (candidates must go through the same interview process as for full-time hires.)

**Training and Development**

Training begins with a one-day “On-Boarding” or orientation program that covers general information about the company and its work with different senior managers. In addition, new recruits are briefed on compensation and benefits policies as well as performance management protocols. Technical training is designed on an individual basis. Monsanto’s policy is to hire new graduates with Masters degrees and provide all necessary training. The company also provides Six Sigma training to improve production research and training for interpersonal skills such as leadership and teamwork.

**University Relationships**

The company has established informal relationships with seven universities in Chile, including Universidad de Chile and Universidad Católica de Valparaíso. Monsanto considers the graduates in agronomy to be very well trained technically. The

main shortcoming of the university system is the lack of career management skills being provided by the university programs for their graduates. The company thus has been very proactive in providing these trainings directly for university students.

**English Skills**

English is a requirement for all incoming research staff at Monsanto Chile as the research team work with Monsanto's international network of

investigators around the world and thus have to be able to communicate effectively. Rather than use test scores or other external parameters to check English levels, the company conducts their hiring interviews in English. The only exception to this requirement is made when the company needs to hire someone with significant (5-7 years) experience in a particular topic and they are unable to find anyone with an appropriate level of English.

**K. Scopix**

<b>Scopix S.A.</b>	
<b>Segment of the industry</b>	KPO, Customer Analytics Vertical: Retail
<b>Description</b>	The company develops innovative analytical software applications for use in the retail industry.
<b>Country</b>	Chile
<b>Activities</b>	Data analytics, Customer analytics
<b>Year of establishment</b>	Chile 2006
<b>Total Employees</b>	Chile 20
<b>Total Revenues/Chilean Exports</b>	Chile NA
<b>Level of Education</b>	High
<b>Annual Attrition Rate</b>	Low

**Activities**

Scopix is dedicated to developing innovative analytical software applications for use in the retail industry. These software applications provide clients with real time analytical information of customer behavior in retail outlets allowing them to maximize sales opportunities.

**Employee Profile**

Employees at Scopix are highly educated. The company currently employees 15 people, most of whom hold postgraduate degrees in civil engineering. One of the company’s two founders holds a Doctorate degree from the Massachusetts Institute of Technology. The company’s sales team is primarily based in the United States, while the operations team is in Chile. The team is primarily Chilean, with one Israeli.

**Recruitment**

Recruitment to date has been based almost exclusively on referrals, as well as support from friends and family. Hiring has been easier in the United States where there is a larger labor pool. The company expects to grow rapidly, hiring 280 employees within the next two years.

**Training and Development**

Training has been focused on developing technical skills; however, this has been limited as efforts

have been made to hire staff with experience and expertise. Staff has typically required 3-6 months of on-the-job training to become productive. In addition, they provide English language training.

**University Relationships**

The company currently has extensive relationships with leading universities in the United States including Duke, Columbia and Wharton School of Business. These relationships have been focused on analyzing data collected and publishing findings on marketing and operations in academic journals. In addition, research and development work with these institutions has been focused on developing new algorithms for data analytics. The company hopes to establish close ties with Universidad Católica and Universidad de Chile in the future.

**Challenges**

The key challenge that the company faces is the lack of entrepreneurship skills. It has been particularly difficult for the team to find talented, qualified staff prepared to work in a relatively high-risk entrepreneurial environment. In general, they have found that university curricula offer few classes in entrepreneurship and sales. This makes it difficult for a start-up to gain momentum both within the country and for service exports.

**L. SGS Chile Ltda.**

SGS Chile Ltda.			
<b>Segment of the industry</b>	BPO Vertical: Mining		
<b>Description</b>	SGS is engaged in the provision of inspection, verification, testing, as well as certification and quality assurance services.		
<b>Country</b>	Switzerland		
<b>Global Activities</b>	Certification, inspection, outsourcing, testing, risk management, technical consulting and training.		
<b>Year of establishment</b>	Global 1878	Chile	1951
<b>Total Employees</b>	Global 56,524	Chile	1,267
<b>Total Revenues/Chilean Exports</b>	Global US\$4.5 billion	Chile	US\$10 million
<b>Level of Education</b>	Low - Medium		

**Activities**

SGS Chile Ltda has seven divisions in Chile. Government and Institution Services (GIS) provide back-office support for Customs Services for countries in Latin America as well as Portugal, Angola and Haiti. International Certification Services (ICS) provides businesses with ISO9000, ISO14001, HACCP and other international certificates. Mineral Services, a large division in Chile provides support for the mining industry across Latin America providing testing services for new mines during pre-feasibility studies.

**Employee Profile**

The company has 1,267 employees, four of whom hold PhD degrees. The remaining staff are engineers and technicians. Generally, engineers with basic knowledge are recruited; over time these engineers develop area expertise. English is important for managerial positions but not for operational positions.

**Recruitment**

Recruitment strategy varies depending on the job profile. It includes newspaper job postings, the use of headhunters and employee referrals, which is a common practice. They conduct various tests (including ethical and integrity characteristics tests) to filter the applicants.

**Training and Development**

The company has a formal training program for 3-6 months, in particular in the south of Chile where it

is difficult to find people with lab skills. A trainee usually becomes productive after 3 months in the company. The company offers two kinds of training based on organizational needs: Identification of employee skills gaps through annual surveys and important technical training courses. Every employee undergoes training at least once a year. Based on the operative and competitive needs, process operational groups are trained on technical expertise and specialized programs as required.

**University Relationships**

The firm has no formal relationships with universities or technical institutes.

**English Skills**

The company offers English training as a part of formal training program to all the employees. It is the most frequently offered training program.

**Challenges**

English is one of the biggest challenges in the hiring process, as is recruiting in the south of Chile, which is very challenging as the level of education differs substantially between the universities. In general, the company feels that the university education does not adequately prepare the students to perform in the industry and hence they offer in-house training to all the recruits. This training tends to focus on filling gaps such as professional work behavior.

**M. Sitel**

Sitel			
<b>Segment of the industry</b>	BPO Customer Relationship Management		
<b>Description</b>	Sitel is a leading global provider of outsourced customer interaction and support services to clients in the automotive, consumer, financial services, insurance, technology, telecommunications and utility industries.		
<b>Country</b>	United States		
<b>Global Activities</b>	Back office services, acquisition and sales, collections, customer care, and technical support		
<b>Year of establishment</b>	Global	1985	Chile 2006
<b>Total Employees</b>	Global	34,000	Chile 1,200
<b>Total Revenues/Chilean Exports</b>	Global	US\$1 billion	Chile US\$13 million
<b>Level of Education</b>	Low		
<b>Annual Attrition Rate</b>	5% per month		

**Activities**

Sitel provides customer relationship management in Chile as a nearshore and offshore solution to clients in the Spanish market. The company is located in Santiago and employees 1,200 people. Most employees are customer service agents in companies' call center.

**Employee Profile**

The company has 1,200 employees, of which 60% are women and 99% are from Chile. Most of the employees have some technical or university level education. 55% of the employees have completed their studies from technical institutes and the rest have mostly unfinished university training. The majority of the management team has Masters degrees. Many employees are students looking to finance their university studies with part-time work. When they complete their university studies, they look for jobs in their field of specialization.

**Recruitment**

The company principally uses online job sites such as [www.laborum.cl](http://www.laborum.cl) and [www.bumeran.cl](http://www.bumeran.cl). They also participate in job fairs on a regular basis (approximately once a month) in universities, municipalities, and technical institutes. The last job fair was in DuocUC and they had a very positive response. The company also uses strategies like 'Refer a Friend.' Prospective employees also may

apply directly at their office and send resumes through emails. While the company faces significant attrition rates, this is lower than the industry average and the company has no difficulty in recruiting new employees.

**Training and Development**

Every new employee receives three to four weeks of training depending on his or her previous experience and education. The training begins with a standard global introduction to the company goals and values. This is followed by an introduction to the local company policies and procedures including compensation and benefits. Once the employee is familiar with company policies, they are trained in the idiosyncrasies of the Spanish market – examining cultural and language differences. The final part of the training consists of technical and client information and protocols for the different lines of business. Sitel makes an effort to draw on the company's internal resources for training. Sitel also has an e-university for the employees. This provides sufficient resources to the staff for development within the company. The company also has team leaders, trainers, and operation managers' certification process that the employees need to pass before taking on a higher level. The company has developed certain motivational instruments on

a global level to try and reduce the attrition rate and this is being implemented in Chile.

**University Relationships**

The firm has no formal relationships with universities or technical institutes.

**English Skills**

The limited English skill prevents Sitel from serving the large North American market.

**Challenges**

Retention remains a huge challenge for the future. They are thus trying to work with global programs and provide more rigorous performance management. Commitment to work has also been a challenge for the company and they have a high rate of absenteeism. Many people see this type of work as a temporary job and call centers are not very well known in the Chilean labor market. Few people are thus looking to develop long-term careers in the company.

**N. Sonda S.A.**

<b>Sonda S.A.</b>		
<b>Segment of the industry</b>	ITO and BPO All Activities	
<b>Description</b>	Sonda SA is a Chilean-based company principally engaged in IT consulting and IT solutions.	
<b>Country</b>	Santiago, Chile	
<b>Activities</b>	Software development, system integration, IT outsourcing, desktop and infrastructure management and support	
<b>Year of establishment</b>	Chile 1974	
<b>Total Employees</b>	Global 10,000	Chile 2,000
<b>Total Revenues/Chilean Exports</b>	Global US\$ 671 million	Chile US\$1 million
<b>Level of Education</b>	Medium	
<b>Annual Attrition Rate</b>	12% per month	

**Activities**

Sonda is the leading IT firm from Latin America, with an extensive network of offices around the continent. Activities include systems integration, infrastructure support, professional services and consulting, datacenter, IT outsourcing and BPO. In 2006, Sonda embarked on its most recent strategy for developing a regional services network – using the best people to provide the best service to the client. They have thus begun to develop centers of expertise. The Chilean office has developed expertise in highly complex IT activities and is home to one of the company’s few innovation labs for new software and platform development.

**Recruitment**

The company uses different strategies for hiring its staff. They have an extensive interview process for executive level hiring, while for the lower positions the hiring process is outsourced to Trabajando.com. They currently do not participate in the job fairs, but they have plans to do so in the future.

**Training and Development**

Most training is done on-the-job, where new employees learn through observation and practice. At the consultancy levels they have formal training. They hire external agencies for training if they cannot internally source it. They have trained 2,000 SAP consultants in Brazil. The company finances certification training for employees through organizations such as SAP and Microsoft, after which employees must remain with the company for a stated period of time.

**University Relationships**

The firm has no formal relationships with universities or technical institutes. However, there exists an informal relationship with Universidad Católica as many of the founding executives are alumni from the University. They also have a close relationship with Universidad de Chile.

**Challenges**

One of the company’s challenges is incorporating the younger staff with high energy with the older staff with significant experience. Another challenge is the misalignment between what the universities teach and the companies’ requirement.

**O. Tata Consultancy Services Limited**

Tata Consultancy Services Limited			
<b>Segment of the industry</b>			
<b>Description</b>	Tata Consultancy Services is an Indian-based information technology (IT) company. It offers a range of IT services, outsourcing and business solutions.		
<b>Country</b>	India		
<b>Global Activities</b>	Consulting, BPO, IT services, engineering & industrial services and enterprise solutions.		
<b>Year of establishment</b>	Global 1968	Chile	2002
<b>Total Employees</b>	Global 111,407	Chile	1500
<b>Revenues</b>	Global US\$ 6 billion	Chile	Not available
<b>Level of Education</b>	Low – Medium		
<b>Annual Attrition Rate</b>	Low		

**Activities**

Tata Consultancy Services provides a full range of consulting, BPO, and IT services in Chile. It maintains a large Global BPO Services center, which provides services to over 100 banking, financial, retail, manufacturing and government enterprises in the Chile. Services are typically focused on the domestic market; however, the company is currently establishing a shared finance and accounting center for a multinational client to provide offshoring services for Latin America.

**Employee Profile**

The average age of employees at Tata Consultancy Services is 35 years, and a great percentage of employees have been with a company for at least 5 years (the company purchased Comicrom, a Chilean BPO provider for the financial sector in 2005, employing all 1,200 employees). The company has approximately 6,500 people in Latin America. 1,500 in Chile, 1,000 in Brazil, 1,000 in Mexico, 800 in Uruguay, 400 in Argentina and 100 in Colombia. In Chile there are around 200 people in ITO and 1,300 people in BPO. Employees in the BPO service group generally only have high school diplomas, while in ITO services most employees hold undergraduate degrees. Very few employees have post-graduate degrees. 20% of the employees in ITO and 40% of the employees in BPO are women.

**Recruitment**

Tata Consultancy Services uses several sources for recruitment including job fairs, headhunters dedicated to the IT industry, employee referrals, newspaper advertisements, links to universities. In addition, the company makes use of search engines such as [www.bumeran.cl](http://www.bumeran.cl), [www.laborum.cl](http://www.laborum.cl) and [www.trabajando.com](http://www.trabajando.com). The recruitment process involves prescreening test followed by technical and psychological tests. Senior management is very involved in the hiring process.

**Training and Development**

New hires participate in a 2 day orientation process which varies with the profile (for IT there is a chapter oriented to quality and project administration). The company encourages a culture of ongoing learning. Each employee is required to establish a Learning Manifest together with his or her manager. This provides the employee with a program of courses for their continued development. The training schedule is very flexible. It can be done either at work or at home. The use of corporate tools is taught through 24/7 online training. Some of the trainings are mandatory and managers recommend others. The BPO unit has a more standardized and formal training as the jobs are highly repetitive. Tata Consultancy Services outsources the English training for its employees, who participate in 2- to 5-year programs depending on their education level.

### **University Relationships**

The firm has no formal relationships with any universities or technical institutes. The company cited a willingness to participate more closely with universities, however, they feel that there are limited formal opportunities that bring together the educational institutes with the private sector.

### **English Skills**

Currently only 200 out of 1500 employees speak English. Employees with English skills earn salaries up to 20-30% higher than non-English speakers. Also many employees miss out on the opportunities for career development as most training courses, online tools and software packages are in English.

### **Challenges**

The company feels the Chilean regulatory environment lacks flexibility and agility. The company has experienced challenges in bringing in staff, particularly from India due to the complexities of the immigration system. In addition, they have found the labor laws in Chile to be very restrictive. There is no room for flexible work hours, which makes it difficult to provide uninterrupted client services. Another problem is the pending change in the strike laws, which prevent a company from replacing workers for the duration of a strike; this prevents the company from providing continuous service to the client, which is a key aspect of BPO.

**VI. Appendix**

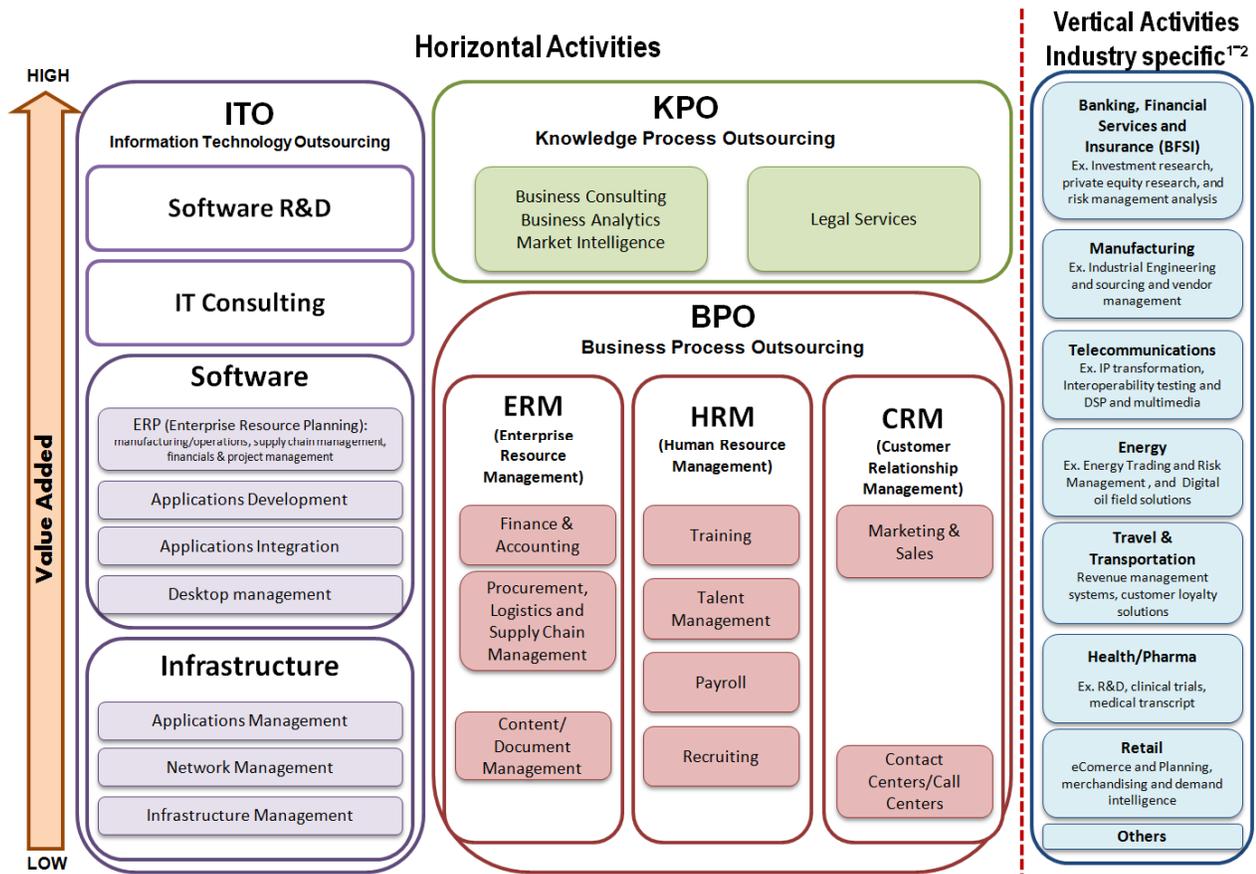
**A. Acronyms**

<b>BPO</b>	Business Process Outsourcing
<b>CEO</b>	Chief Executive Officer
<b>CORFO</b>	Corporación de Fomento de la Producción
<b>CRM</b>	Customer Relation Management
<b>DuocUC</b>	Duoc Universidad Católica
<b>ERP</b>	Enterprise Resource Planning
<b>ERM</b>	Enterprise Resource Management
<b>GVC</b>	Global Value Chain
<b>HR</b>	Human Resources
<b>HRM</b>	Human Resources Management
<b>INACAP</b>	Instituto Nacional de Capacitación Profesional
<b>ISCED</b>	International Standard Classification of Education
<b>ILO</b>	International Labor Organization
<b>IT</b>	Information and Technology
<b>ITO</b>	Information Technology Outsourcing
<b>KPO</b>	Knowledge Process Outsourcing
<b>MS</b>	Master of Science
<b>NC</b>	North Carolina
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>Ph.D</b>	Doctor of Philosophy
<b>PUC</b>	Pontificia Universidad Católica
<b>R&amp;D</b>	Research and Development
<b>SAP</b>	Systems Applications and Products
<b>SENCE</b>	Servicio Nacional de Compensación y Empleo
<b>SERNAM</b>	Servicio Nacional de la Mujer
<b>TCS</b>	Tata Consultancy Services
<b>TOEIC</b>	Test of English for International Communication
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>US</b>	United States

**B. Categorization of Human Capital Skill Level based on Education and Experience**

Skill Level	Low	Medium - Low	Medium	Medium - High	High
	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

**C. Offshore Services Value Chain**



## Bibliography

- Aguilera, Víctor. (2009). Chile Interview Series: 3IE International Institute for Innovation and Entrepreneurship- Universidad Técnica Federico Santa María. Personal communication with K. Fernandez-Stark & G. Gereffi. January 23.
- AT Kearney. (2009). *The Shifting Geography of Offshoring*. Chicago, IL: A.T. Kearney.
- Au, Rodrigo. (2009). Captive Centers in Chile. Personal communication with K. Fernandez-Stark. (e-mail). July 17.
- Barriga, Roberto. (2009). Chile Interview Series: DuocUC- Escuela de Informática y Telecomunicaciones. Personal communication with P. Bamber, K. Fernandez-Stark & V. Wadhwa. October 2.
- Battelle Technology Partnership Practice. (2008). *Evidence and Opportunity: Biotechnology Impacts in North Carolina*. Durham: Battelle Technology Partnership Practice. Prepared for the North Carolina Biotechnology Center.  
[http://www.ncbiotech.org/biotechnology\\_in\\_nc/battelle/battelleReport111708.pdf](http://www.ncbiotech.org/biotechnology_in_nc/battelle/battelleReport111708.pdf).
- Bocic, Sacha. (2009). Casos Exitosos de Servicios Globales, Emprendimiento e Innovación. Conference: Servicios Globales, Una Nueva Industria Exportadora para Chile, Santiago, Chile. August 28, 2009.
- Brunner, Jose Joaquin (2007). Chile's Higher Education System: A Comparative Political Economy Focus. from [http://mt.educarchile.cl/mt/ijbrunner/archives/HE\\_Chile\\_021107.pdf](http://mt.educarchile.cl/mt/ijbrunner/archives/HE_Chile_021107.pdf)
- Castillo, Mario. (2008). La Industria Global de Servicios: Oportunidades para Chile. In J. Leiva & M. Castillo (Eds.), *Globalización Económica Oportunidades y Desafíos para Chile*. Santiago, Chile: CORFO and Chile 21.
- CORFO. (2009). Incentives and Services. Retrieved August 11, 2009, from [http://www.hightechchile.com/incentives\\_and\\_services](http://www.hightechchile.com/incentives_and_services).
- El Mercurio. (2008). La U. de Chile y la UC Gradúan 183 Doctores en 2008. *El Mercurio*. Noviembre 21, 2008 Retrieved December 2, 2009, from <http://diario.elmercurio.cl/detalle/index.asp?id={1b40edef-c73f-427e-838a-ee9885ab7750>.
- Fernandez-Stark, Karina, Penny Bamber and Gary Gereffi. (2010). *The Chilean Offshore Services Industry: A Global Value Chain Approach*. Durham: Center on Globalization Governance and Competitiveness - Duke University. Commissioned by CORFO.
- Gereffi, Gary and Karina Fernandez-Stark. (2010). *The Offshore Services Industry: A Global Value Chain Approach*. Durham: Center on Globalization Governance and Competitiveness - Duke University. Commissioned by CORFO.
- IDC Latin America. (2009). *La Industria de Servicios Globales en Chile- Estudio Cluster de Servicios Globales*. Santiago: CORFO.
- Jordan, Rodrigo. (2009). Chile Interview Series: What are Soft Skills? Personal communication with P. Bamber. December 11.
- Jordan, Rodrigo and Marcelino Garay. (2009). *Liderazgo Real: De los Fundamentos a la Práctica* (1 ed.). Santiago, Chile: Pearson Educación de Chile.
- Lorenz, Kate (2009). Top 10 Soft Skills for Job Hunters. Retrieved December 10, 2009, from <http://jobs.aol.com/articles/2009/01/26/top-10-soft-skills-for-job-hunters/>
- Ministerio de Educación. (2009). Titulados Pre-grado, Post-grado y Post-Título, años 1998-2007. Santiago, Chile. [http://www.divesup.cl/index.php?option=com\\_content&view=article&id=93&Itemid=61](http://www.divesup.cl/index.php?option=com_content&view=article&id=93&Itemid=61).
- Ministerio del Trabajo y Previsión Social - Chile. (2009). Minuta- Resultados Encuesta Nacional de Empleo (INE) Trimestre Agosto-Octubre 2009. Retrieved December 2, 2009 from [http://www.mintrab.gob.cl/cifras\\_empleo/minuta\\_resultado52.pdf](http://www.mintrab.gob.cl/cifras_empleo/minuta_resultado52.pdf).
- Ministerio del Trabajo y Previsión Social. (2009). Código del Trabajo. Ley-18.620. Art. 20-21. Santiago, Chile.
- Mongillo, Leonardo and Gustavo Tasner. (2009). Chile Interview Series: Capgemini S.A. Personal communication with K. Fernandez-Stark & P. Bamber. October 6.
- NC Bionetwork. (2009). About NC Bionetwork. Retrieved November 27, 2009 from <http://www.ncbionetwork.org/>.
- North Carolina Biotechnology Center. (2009). Biotechnology in North Carolina. Retrieved November 27, 2009 from [http://www.ncbiotech.org/biotechnology\\_in\\_nc/index.html](http://www.ncbiotech.org/biotechnology_in_nc/index.html).
- OECD (2008). Education at a Glance 2008: OECD Briefing Note for Chile. from <http://www.oecd.org/dataoecd/37/49/41306573.pdf>

- Pérez, Julio. (2009). Chile Interview Series: Sitel S.A. Personal communication with K. Fernandez-Stark. September 29.
- Roca, Nicolas and Ximena Jofre. (2009). Chile Interview Series: Tata Consultancy Services Chile. Personal communication with P. Bamber & K. Fernandez-Stark. September 30.
- SENCE. (2009). Franquicia Tributaria. Retrieved November 30, 2009, from <http://www.sence.cl/franquiciatributaria.html>.
- The Boston Consulting Group. (2007). Estudios de Competitividad en Clusters de la Economía Chilena. Documento de Referencia Offshoring. May 18.
- Thorn, Kristian and Maarja Soo. (2006). Latin American Universities and the Third Mission: Trends, Challenges, and Policy Options: World Bank. [http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2006/08/30/000016406\\_20060830142439/Rendered/PDF/wps4002.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2006/08/30/000016406_20060830142439/Rendered/PDF/wps4002.pdf).
- UNESCO. (1997). International Standard Classification of Education (ISCED) 1997. Retrieved November 3, 2009 from [http://www.unesco.org/education/information/nfsunesco/doc/isced\\_1997.htm](http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm).
- United Nations- ILO. (2009). Youth Unemployment. Retrieved December 2, 2009, from <http://globalis.gvu.unu.edu/indicator.cfm?IndicatorID=87&country=CL#rowCL>.
- Wadhwa, Vivek, Una Kim De Vitton and Gary Gereffi. (2008). How the Disciple Became the Guru: Is it Time for the U.S. to Learn Workforce Development from Former Discipline India? : This research was funded in part by the Kauffman Foundation. [http://www.soc.duke.edu/GlobalEngineering/papers\\_disciple.php](http://www.soc.duke.edu/GlobalEngineering/papers_disciple.php).
- World Bank- SERNAM- Inter-American Development Bank. (2007). Chile: Country Gender Assessment: Expanding Women's Work Choices to Enhance Chile's Economic Potential. Santiago, Chile: The World Bank, SERNAM and Inter-American Development Bank. Report developed jointly between these three institutions. . [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/01/28/000333038\\_20080128010011/Rendered/PDF/362280SROP09671Box0321443B01PUBLIC1.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/01/28/000333038_20080128010011/Rendered/PDF/362280SROP09671Box0321443B01PUBLIC1.pdf).
- World Bank. (2009). World Development Indicators - Gross Higher Education Enrollment. Retrieved November 16, 2009, from <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20398986~menuPK:64133163~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html>.