

Latin America's emergence in global services

A new driver of structural
change in the region?

Economic Development



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Foreword

The financial and economic crisis of 2008-2009 and its aftermath have accelerated a number of structural shifts towards the global South in terms of global demand, production networks and global value chains (GVCs). The continued spread of information and communications technologies and the heightened imperative for cost savings through economies of scale and new sources of technical efficiency have combined to facilitate the unbundling of service activities. A broadening range of outsourced business services have been offshored to countries in the South. Rapid growth of trade in such services has been further facilitated by the liberalization of trade and investment in goods and services, whether pursued autonomously or negotiated in the context of preferential trade and investment agreements.

The growth of the offshoring business began with the outsourcing of information technologies to external firms (information technology (IT) maintenance, basic software operations, hosting, and data entry and conversion). India, the first partner in this outsourcing strategy, was later followed by a range of other emerging economies in South-East Asia, Eastern Europe and Latin America. Services offshoring gradually evolved into gradually more sophisticated forms of business process outsourcing (BPO), which include enterprise resource planning (ERP), human resource management (HRM) and customer relationship management (CRM). Several emerging economies are now in the process of further upgrading their services exports to knowledge process outsourcing (KPO), which includes research and development (R&D); product development; and more advanced vertical functions and activities in the value chain.

To date, relatively little scholarly attention has been devoted to studying the above trends in a Latin American context. For this reason, several leading institutions organized a conference on “Offshore services in global value chains: New drivers of structural change in Latin America and the Caribbean?” on 18-19 October 2012 in Santiago. This research consortium consisted of the Economic Commission for Latin America and the Caribbean (ECLAC), the Institute of International Studies at the University of Chile, the World Trade Institute of the University of Bern and the Latin American Network for Research on Services (REDLAS). The members of the research consortium are particularly indebted to the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany and the State Secretariat for Economic Affairs (Seco) of the Federal Department of Economic Affairs, Education and Research (EAER) of Switzerland for their generous funding of the conference from which this volume was drawn. They are also grateful for the continuous support of the European Council for Research on Services (RESER).

The conference attracted some 40 papers covering a diverse range of topics, from theoretical contextualization to country or sectoral case studies and implications for policy design. This volume brings together some of the most outstanding contributions presented on that occasion.

The empirical and analytical insights on offer in this volume document how several countries in Latin America have entered the offshore services sector both through the attraction of multinational companies and the internationalization of domestic service suppliers. Both strategies have induced new patterns of structural change in a sector traditionally characterized by large productivity differentials between service industries and between large transnational corporations and small and medium-sized enterprises (SMEs). The offshore services sector has furthermore provided an opportunity for Latin American countries to become more firmly anchored in the knowledge economy and, in turn, to reduce their dependency on extractive industries, particularly in South America.

The promising structural shifts depicted in this volume are driving countries in the region to actively encourage firms to establish operations within their boundaries and to use these operations as a platform for exporting services. The policies applied in different countries to attract multinationals in services have ranged from tax incentives to the installation of IT infrastructure.

However, in order to sustain and upgrade the participation of Latin American countries and firms in the global offshore services industry, additional policy efforts are required. The experience of several

countries has shown that the development of this industry depends crucially on close and continued interaction and coordination with stakeholders from the private sector and academia. As human capital is by far the industry's main determinant of competitiveness, public and private partnerships have focused specifically on workforce development involving universities and on-the-job-training.

The future of the offshore services sector in Latin America will depend on its continued ability to scale up towards more knowledge- and skill-intensive product offerings. Doing so will require the development of greater domestic technical capabilities, the design and implementation of industrial and investment promotion policies that can meaningfully attract foreign suppliers, the promotion of agglomeration economies best able to maximize backward and forward linkages, and the continued upgrading of human capital and IT-integrated manufacturing.

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Introduction

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The twenty-first century offers developing countries the opportunity to participate in the knowledge economy, a privilege previously reserved primarily for developed nations. The information and communications technology (ICT) revolution, which lowered the cost of computing and logistics, and the liberalization of trade and investment in goods and services, have transformed the way companies do business by allowing for the fragmentation of production and consumption. This process has triggered structural changes in the global economy. Moreover, these trends permit emerging nations to contribute significantly to the growth of the world's services sector for the first time (Gereffi and Fernandez-Stark, 2010a).

The offshore services industry refers to trade in services conducted in one country and consumed in another. It entails firms' decisions to "perform functions or activities anywhere in the world" (McKinsey Global Institute, 2005, p. 454). These decisions are based on the need to

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improve efficiency levels (labour costs and supply), enter new markets and gain access to strategic assets abroad (López, Ramos and Torre, 2008). The complexity of internationally traded offshore services has increased significantly. What began with the outsourcing of basic information technology (IT) services to external firms now includes a wide array of activities known as business process outsourcing (BPO) and knowledge process outsourcing (KPO). The latter includes advanced activities in the value chain, such as research and development (R&D), which were long considered core functions exclusive to multinational firms and strictly the domain of the industrialized world.

The offshore services industry has become an important new source of employment and economic growth around the globe, creating an estimated 4.1 million service jobs in the developing world by 2008 (McKinsey & Company, 2008)¹ and generating an estimated output of \$280 billion (The Boston Consulting Group, 2007). Due to cost arbitrage advantages, some developing nations such as India and the Philippines have become leaders in some of these offshore services. They have rapidly specialized in service areas where they enjoy competitive advantages, be it low cost labour or a highly educated workforce.

Other emerging economies in different parts of the world are actively seeking opportunities to enter the offshore services market and upgrade their service offerings. Examples include Egypt, Kenya, Mozambique, South Africa and Tunisia in Africa; the Czech Republic and Poland in Eastern Europe; Argentina, Barbados, Chile, Colombia, Costa Rica, Jamaica and Uruguay in Latin America and the Caribbean; and China, Malaysia and Vietnam in South-East Asia (Radwan & Strychacz, 2010) (ECLAC, 2009). To take advantage of this dynamic industry, numerous governments are offering significant incentives to attract international companies to use their countries as services export platforms (Gereffi, Castillo and Fernandez-Stark, 2009a).

This introduction provides an overview of the offshore services industry, presenting emerging business models, lead players, characteristics of global value chains (GVCs) and key elements of industry upgrading in the sector. It also documents the rising participation of firms from Latin American countries in this industry. Finally, the chapter offers a synthesis of the key findings emerging from the book's various chapters.

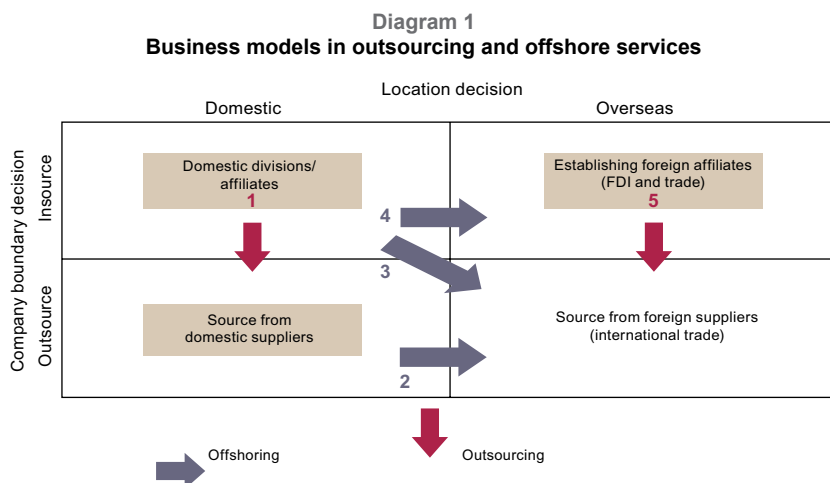
¹ Due to the lack of official data, we had to rely on estimates. It is likely that the number of jobs created by the service sector has increased dramatically over the past five years.

A. Offshore Services Industry

This section presents a general overview of the offshore services industry, including a conceptual understanding of the industry's evolving geography and texture, the major players (firms and countries) and the general characteristics of offshore services value chains.

1. Concepts

With intense global competition driving the search for greater cost savings and productive efficiency, many firms decide to outsource intermediate goods or services to other suppliers rather than produce them domestically. When the other suppliers are based outside national boundaries, the firm is offshoring the provision of this function or service. When offshoring services, firms can either provide these services in-house through a foreign affiliate (captive offshoring) or outsource them to a third party supplier (see diagram 1).



Source: M. Sako, "Outsourcing and Offshoring: Key Trends and Issues", paper presented at the Emerging Markets Forum, Oxford, United Kingdom, 2005 [online] <http://www.sbs.ox.ac.uk/NR/rdonlyres/99F135D4-E982-4580-9BF0-8515C7B1D40B/1752/EMFOutsourcingNov05.pdf>.

Diagram 1 illustrates the different business models arising from offshoring and outsourcing. The first scenario (arrow 1) illustrates a firm's decision to outsource services domestically. Arrow 2 shows the firm's decision to outsource a service to a foreign provider instead of a domestic supplier as with arrow 1. Arrow 3 shows the trajectory of a firm's decision to outsource services to a foreign supplier. Arrow 4 depicts the firm's choice to move its service provision to a foreign affiliate or subsidiary. The final

scenario (arrow 5) shows the shift from a foreign affiliate or subsidiary to provision of services by a foreign supplier (third-party providers). For host economies, most technology and higher skilled labour spillovers tend to occur in the process of changing from captive offshoring (upper right quadrant) to third-party offshoring or offshore outsourcing (lower right quadrant), as indicated by arrow 5 (Sako, 2005).

The choice of the business model in terms of a firm's geographic location and level of control of outsourced services is rather complex and depends on several factors. These include the nature of the service, the size of the required investment, the firm's localized knowledge and its internal (tacit and codified) knowledge (or experience) (The Boston Consulting Group, 2007).

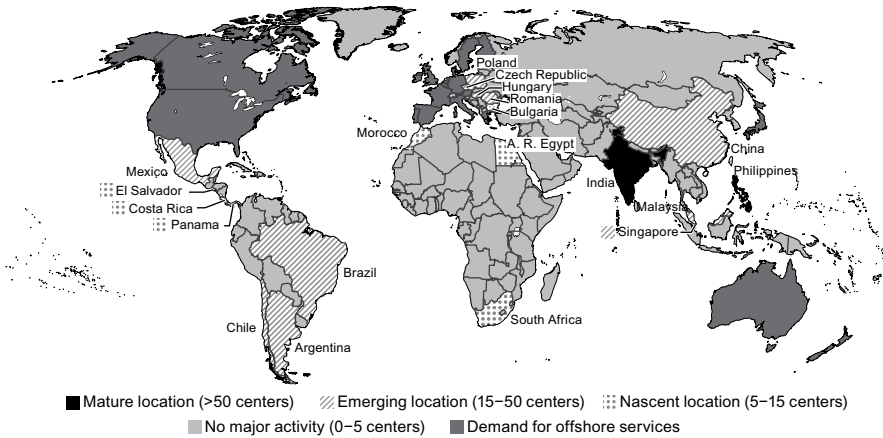
Nowadays, captive centres focused on routine activities are in decline. The foreign affiliates of multinational corporations (MNCs) subcontract these operations to third-party providers that are process experts, while MNCs concentrate on core business activities.

2. Lead players

The geography of the offshoring industry has changed rapidly in its short lifespan. After India and the Philippines recorded strong growth of these services exports, other developing countries from around the world have swiftly entered the industry. The first region to export this type of services was Eastern Europe, followed by Latin America. More recently, a broadening set of countries and firms in Africa and Asia are also participating in this sector's growth (see map 1). Country- and firm-level success in the industry is mainly determined by two key factors: low costs and industry expertise. Successful firms and countries either compete for the provision of low-cost services based on abundant labour with low wages or focus on exporting higher-value services in specific niche sectors, drawing on local expertise and innovation potential. India is one of the few countries that competes on both fronts (Fernandez-Stark, Bamber and Gereffi, 2011b).

In 2008, the offshore services industry in India accounted for 2.2 million direct jobs (NASSCOM, 2009). By 2012, employment had reached 2.8 million, with a sectoral turnover of US\$69 billion (NASSCOM, 2013). Top Indian global services providers include Genpact, Infosys, Tata Consultancy Services and Wipro. Revenue growth was of over 35% in the past decade (excluding the 2008–2009 financial crisis). This country has experienced a rapid industrial upgrading, with firms moving from the export of basic activities to sophisticated services, including R&D.

Map 1
The global supply for offshore services in 2008



Source: Center on Globalization, Governance & Competitiveness (CGGC), Duke University based on data from Everest.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

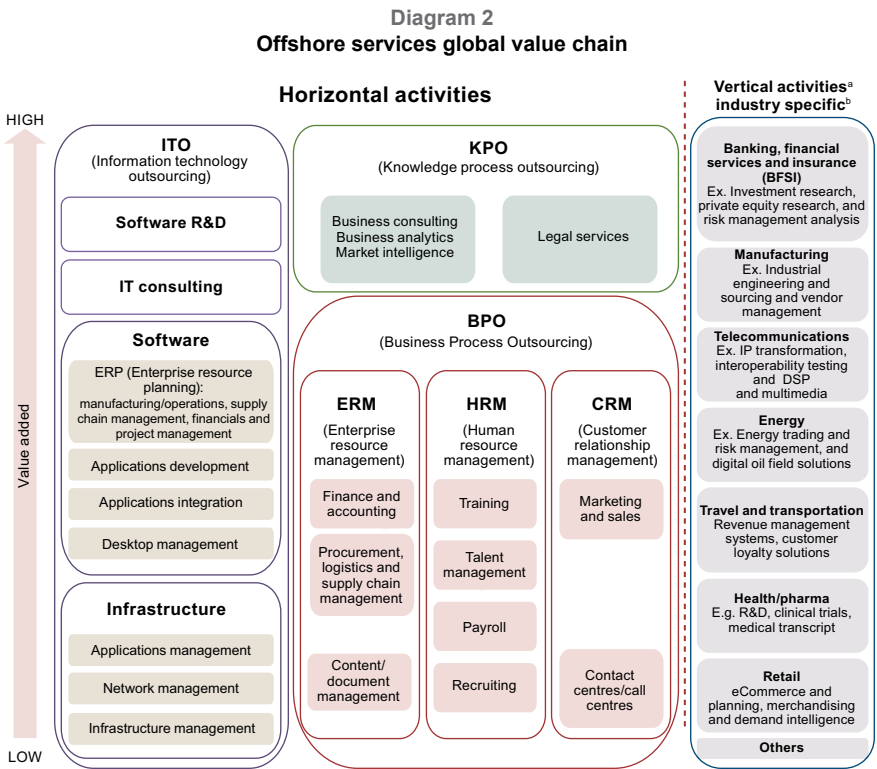
The Philippines is another major player in business process outsourcing (BPO), especially call centres. The industry grew at annual rates of 50% from 2004 to 2007 (Gereffi and Fernandez-Stark, 2010b). In 2007, India had over 300,000 call agents, while the Philippines had just half India's total. By 2010, India and the Philippines were on par with 350,000 employees each in voice BPO (The Economic Times, 2010). Many leading companies in the BPO industry, such as Genpact, Wipro BPO, Intelnet, Aegis BPO and Firstsource, have been scaling up their investments in the Philippines.

Today countries from all continents are supplying offshore services. As map 1 shows, emerging locations in Eastern Europe are Bulgaria, the Czech Republic, Hungary, Poland, and Romania. In Latin America, major exporters include Argentina, Brazil, Chile and Costa Rica. In Africa, Egypt, Morocco and South Africa are nascent locations. Most firms located in Eastern Europe and Africa serve the European market, while Latin American firms sell services to the United States and Canada. However, the latest economic crisis has boosted the changes to the industry's geography, with new demand from emerging nations opening up South-South trade in the sector.

3. Offshore services global value chains

Several attempts have been made to characterize the different segments of the rapidly growing offshore services industry. Gereffi and Fernandez-Stark (2010a) develop a comprehensive classification using the established global value chain (GVC) framework. In the case of services,

measuring value is often complicated by the lack of reliable company-level data and cross-border trade and investment statistics for services (Sturgeon and Gereffi, 2009). To partially address this problem, the value of different services can be approximated by employee education and experience levels, indicating the human capital required at different levels of the offshore services value chain. Employees located in the lower segment of the value chain diagram have less education and experience, while employees in the upper section tend to be more educated and have more years of professional experience (Gereffi and Fernandez-Stark, 2010a) (see diagram 2).



Source: Gereffi and Fernandez-Stark, 2010a. CGGC, Duke University.

^a Vertical activities (industry specific): Each industry has its own value chain. Within each of these chains, there are associated services that can be offshored. This diagram captures the industries with the highest demand for offshore services.

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

The offshore services industry can be split into two main parts: horizontal services provided across all industries (presented on the left-hand side of the diagram) and vertical services specific to particular sectors (presented on the right-hand side). Activities included in

horizontal services support generic business functions and rely on process expertise. These services range from repetitive transactional processes to transformational operations that depend on analytical skills. There are three main segments:

- Information technology outsourcing (ITO) includes services such as network management, applications development, IT consulting and software research and development (R&D). These services range from low to high value.
- Business process outsourcing (BPO) functions include services such as call centres, payroll, finance and accounting and human resources. These are in the low to middle segments of the value chain.
- Knowledge process outsourcing (KPO) includes higher-value services such as market intelligence, business analytics and legal services. KPO services encompass the highest-value horizontal services in the chain.

Vertical services, in particular, require industry-specific knowledge. These services may be so highly specialized that they have limited applicability in other industries. Examples include clinical trials in the pharmaceutical industry and transcription services in the medical sector. The depiction of vertical activities in diagram 2 does not imply value levels as it does for horizontal activities (Gereffi and Fernandez-Stark, 2010b).

This GVC framework is useful for identifying how firms and countries participate in this industry, the activities they perform and where they can add value. This latter process is called upgrading, which can be defined as firms, countries or regions moving to higher-value activities in GVCs with the aim of increasing their benefits (such as their capabilities, profits, security and value added market shares) (Gereffi, 2005).

4. Upgrading in the offshore services industry

Within the global value chain framework, upgrading typically entails four distinct changes in the firm's participation in a production model: (1) *product upgrading*, which describes the shift into producing a higher-value product or service; (2) *process upgrading*, which refers to improvements in the efficiency of production systems, such as the incorporation of more sophisticated technology; (3) *functional upgrading*, which refers to the movement to higher-value stages in the chain that require additional skills; and (4) *chain or intersectoral upgrading*, which focuses on entry into a new value chain by leveraging the knowledge and skills acquired in the current chain (Humphrey and Schmitz, 2004). In addition to these four upgrading trajectories, firms can also upgrade via (1) entry into the

value chain, that is, when a new actor begins to participate in the value chain (Fernandez-Stark, Bamber and Gereffi, 2011b); and, (2) *end-market upgrading*, when existing firms expand into new end-market segments. This can include moving into more sophisticated markets that require compliance with more rigorous standards or to larger markets that require greater scale and price accessibility.

Fernandez-Stark, Bamber and Gereffi (2011b) analyse five types of upgrading trajectories identified from country case studies based on the offshore services GVC framework presented above:

- Entry into the value chain: The most common means of entering a GVC is through the establishment of call centre operations, which offer great opportunities for smaller and/or low-income countries. Examples in Latin American countries include El Salvador (Dell, Sykes and Teleperformance), Guatemala (24/7 Customer, ACS and Exxon Mobil), Nicaragua (Sitel) and Panama (Caterpillar and HP) (Gereffi and others, 2009b).
- Upgrading within the BPO segment: Companies can expand the range of their BPO services supply through specialization in certain areas. For example, South Africa has become an important destination for BPO services, employing 87,000 workers in 2009 and growing at an estimated 33% per year. Firms in this country seek to expand their BPO activities (Everest Group and Letsema Consulting, 2008; Sykes, 2010).
- Offering broad-spectrum services: Companies positioned in the ITO and KPO segments may specialize in a more comprehensive range of activities and include BPO services. This is often achieved through the acquisition of smaller BPO firms or the creation of a new business unit within the company. Numerous Indian firms in the IT and consulting (KPO) segments have expanded into the BPO sector, including both large domestic firms (such as Infosys and Wipro) and subsidiaries of foreign firms located in India (for example, IBM and Accenture).
- Upgrading from ITO to KPO: IT service firms increasingly include KPO activities in their portfolio. They engage customers in finding solutions to their business problems. For example, from 2002 to 2005, Indian firms such as Infosys, TCS WNS and Wipro developed and launched business consulting service practices.
- Specialization of firms in vertical industries: Companies offering ITO, BPO and KPO services for many industries frequently specialize in key sectors to develop specific expertise. For example, firms in the Czech Republic entered the offshore services

industry through the establishment of BPO shared services activities and subsequently upgraded into R&D segments of vertical industries, particularly in the automotive, aerospace and IT areas (Business and Innovation Center, Brno, 2009).

For developing countries, the establishment of the offshore services industry offers important opportunities for employment creation. Jobs in this sector are typically regarded as better than those in manufacturing. Workers generally earn higher wages and are often drawn from vulnerable groups with high unemployment rates, such youth and women (Fernandez-Stark, Bamber and Gereffi, 2010a). Moreover, offshore services companies can operate throughout a country, help create employment in underdeveloped regions and spread a culture based on learning and continuous development (ECLAC, 2009). The provision of basic offshore services usually requires a high school diploma combined with specific industry training (Fernandez-Stark, Bamber and Gereffi, 2010b).

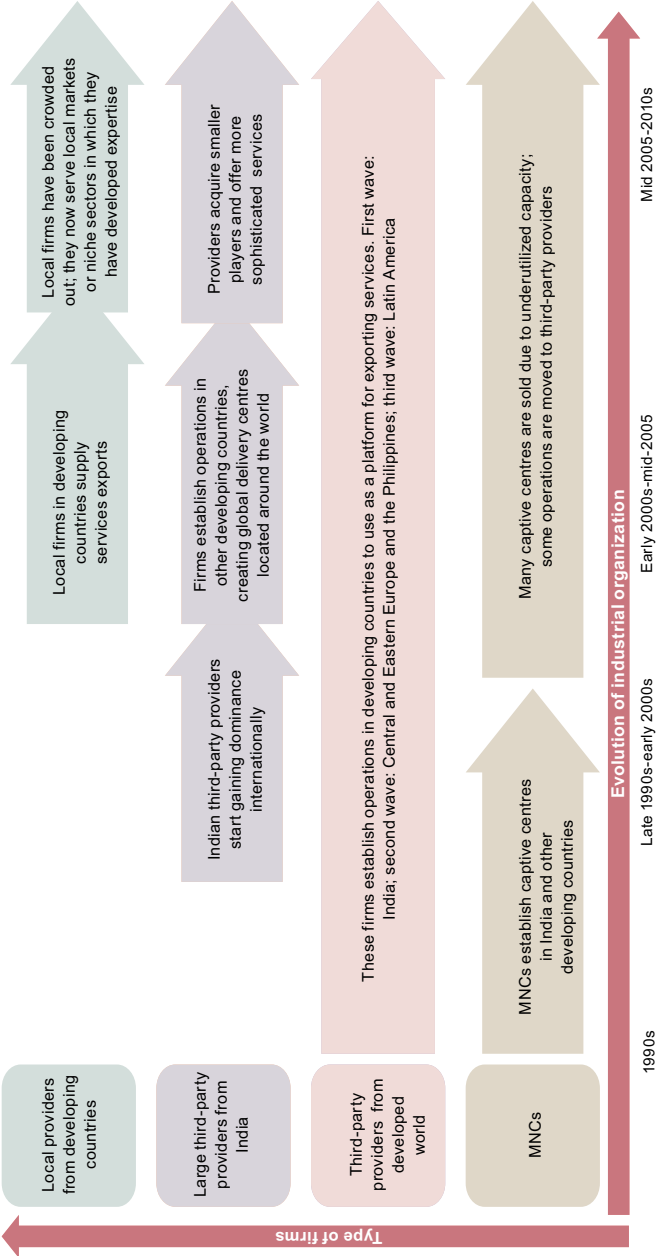
B. The offshore services industry in Latin America and the Caribbean

Over the last decade, countries in Latin America and the Caribbean have steadily increased their participation in the offshore services industry, catching up with emerging Asia and Eastern Europe, which penetrated this sector in the 1990s. Countries, firms and workers have thus been able to enter the knowledge economy, as an alternative to the region's growing specialization in natural resources. The region is strategically located to serve the North American market by having the same time zones and competitive wages. The region has received a wave of investments, both domestic and foreign, in search of competitive locations offering high returns to offshore services production and exports. In 2010, the size of the IT-BPO industry in Latin America and the Caribbean reached US\$8 billion, versus US\$5 billion in Eastern Europe, despite having entered the industry almost a decade later (Tucci, 2011).

In Latin America and the Caribbean, four types of companies are driving the development of the offshore services industry (see diagram 3). The first group is made up of captive centres of multinational corporations (MNCs).² Six countries —Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico— captured an estimated 50% to 75% of all captive centre operations in the region (Neves, 2009). Captive centres allow MNCs to keep internal operations in-house. Recently, however, many MNCs have decided to sell their captive centre operations to third-party providers to further reduce costs.

² Captive centres refer to wholly owned subsidiaries located in an offshore location. In captive centres, the headquarters remain in control of the activities even though the operations are abroad.

Diagram 3
Industrial organization in the offshore services industry



Source: K. Fernandez-Stark, P. Bamber and G. Gereffi, *The Offshore Services Industry: Economic Upgrading and Workforce Development*, Durham, Center on Globalization Governance & Competitiveness/RTI International, 2011.

A second group is comprised of well-established third-party providers from developed countries. These firms entered the industry by leveraging their subsidiaries in developing countries as platforms for service exports. These include third-party providers such as Accenture, Capgemini, EDS (now HP enterprises), IBM and Teleperformance. For example, 23% of Teleperformance's employees are located in Latin America and the Caribbean, distributed between Argentina, Brazil, Chile, the Dominican Republic, El Salvador, Jamaica and Mexico.

A third group of companies in the region's offshoring industry consist of Indian third-party providers that emerged in their national service sector in the late 1990s. These include Infosys, Tata Consultancy Services and Wipro. These companies established strategic delivery centres in Latin America in the 2000s to serve the North America market. For example, Tata Consultancy Services (TCS) established operations in Argentina, Brazil, Chile, Colombia, Mexico and Uruguay; Wipro in Brazil; and Infosys in Mexico (Gereffi, Castillo and Fernandez-Stark, 2009b).

A fourth group of companies is made up of local providers from developing countries. Most of these companies have not yet proven capable of competing with international providers. However, some now export services, mainly within the region.

Offshore service firms have expanded markedly in recent years, generating better-quality jobs throughout Latin America and the Caribbean. Governments have implemented a mix of incentives to promote the development of the sector and attract foreign direct investment (FDI). The most important incentives are tax-related instruments, infrastructure support measures, training benefits and various promotional initiatives, including export promotion. This government support, combined with the region's growing political stability, relatively low labour costs and ready availability of quality human resources, has attracted numerous offshore service centres to the region.

The industry has created thousands of jobs in Chile, Costa Rica, the Dominican Republic and Uruguay. In small countries such as Costa Rica and Uruguay, 1.3% of the country's total labour force was employed in the sector in 2008. The industry contributed significantly to total output, accounting for 4.6% of Costa Rica's GDP (Fernandez-Stark, Bamber and Gereffi, 2013). These contributions were larger than those observed in the economies of the industry leaders India and the Philippines, where the sector contributed 4.0% and 3.6%, respectively.

Table 1
Selected countries in Asia and Latin America: economic and offshore services industry indicators, 2008

Indicator	India	Philippines	Chile	Costa Rica	Dominican Republic	Uruguay	Mexico
Gross domestic product (GDP) (US\$ billions)	1 223	174	180	30	46	30	1 101
GDP per capita (at PPP)	2 914	3 636	15 274	10 701	8 007	12 326	14 446
Offshore services revenue (US\$ billions)	47 ^a	6	0.9	1.4 ^b	NA	0.8 ^c	5
Offshore services as a percentage of GDP	3.8	3.6	0.5	4.6	NA	2.6	0.5
Total labour force (millions)	475.6	38.8	7.1	2.1	4.4	1.6	49.1
Labour force in offshore services (number of workers)	2 237 000	475 000 ^d	20 000	33 000 ^b	22 000	20 000 ^c	n.a.
Offshore services labour force as a percentage of total labour force	0.5	1.2	0.3	1.3	0.5	1.3	n.a.
Entry year	Mid-1990s	Early 2000s	2000-2002	Late 1990-early 2000	2000-2002	Early 2000s	Late 1990-early 2000
Entry point	Low-value IT	Call Centre	IT & Call Centre	BPO	Call Centre	IT	IT and BPO
Highest-value activity	High IT, KPO, R&D	BPO and F&A	High IT, KPO R&D	KPO and R&D	BPO and F&A	KPO	KPO
Enrolment in higher education (millions)	20.7 ^e	2.6 ^d	1.0 ^c	0.2 ^b	0.4	0.2	2.8

Source: Business Processing Association of the Philippines (BPAP), "Offshoring and Outsourcing Philippines: Roadmap 2010", Manila, 2007; International Monetary Fund, World Economic Outlook database, October 2013; The Economist Intelligence Unit, "Country Profile 2008 – Chile", 2008; IDC Latin America, "Observatorio de la Industria de Servicios Globales en Chile: Cuarto Informe de Avance", Santiago, Chile, 2009; Ministry of Education of Chile, "Títulos Pre-grado, Post-grado y Post-Título, años 1998-2007", Santiago, Chile, 2009; NASSCOM (National Association of Software and Service Companies), "Indian IT-BPO Industry Factsheet", 2009 [online] http://nasscom.in/upload/5216/IT_Industry_Factsheet-Mar_2009.pdf; UNESCO Institute for Statistics, *UIS Statistics in Brief-Philippines*, 2010; Costa Rican Investment Promotion Agency (CINDE) (2012), "Offshore Services Data Industry", 2012; Nearshore Americas, 2012.

Note: PPP: is purchasing power parity.

^a Estimates for 2009.

^b 2011.

^c 2010.

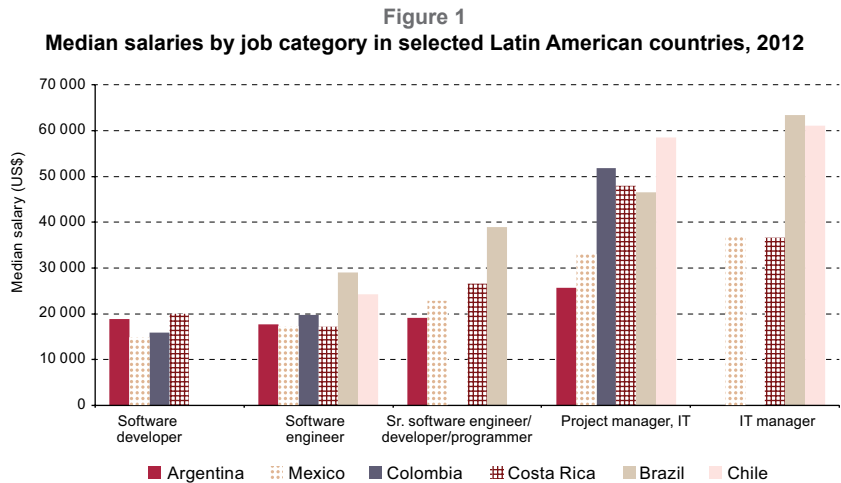
^d 2009.

^e 2005-2006.

As the industry is highly intensive in human capital, workforce skills are the main determinant of a developing country’s participation and prospects for upgrading in the industry. A failure to develop and upgrade an adequate workforce limits a country’s competitiveness in this sector. Conversely, strategic investments in workforce development by the public and private sectors have facilitated both market entry and upgrading to higher value industry segments (Fernandez-Stark, Bamber and Gereffi, 2011a).

Only a few Latin American and Caribbean countries have been able to upgrade their participation in the offshore services value chain, and they currently provide higher value added services. These countries started with call centres or the provision of basic IT services, but today are producing more sophisticated services such as KPO and R&D, albeit on a small scale. This upgrading presents a challenge for countries to increase the supply of high-skilled workers able to produce more sophisticated services. Human capital development has been and remains a major bottleneck for the development of the offshoring industry in the region. Shortages of workers with technical qualifications have limited the capacity of firms and countries to move up the offshore services value chain (Fernandez-Stark, Bamber and Gereffi, 2012).

Countries in the region are competing to attract offshore service centres, and the availability, quality and cost of labour are important determinants in the locational decisions of companies. Countries such as Argentina and Mexico are at the lower end of IT salary scales, whereas Brazil and Chile are at the high end (see figure 1).



Source: PayScale (2012) [online] <http://www.payscale.com/research>.
Note: PayScale has collected salary and career data from more than 35 million people, covering 12,000 job titles and 1,100 distinct industries in 150 countries.

Investment in worker skills is crucial for firms and countries to move up the value chain. Latin America is already well positioned as a region that participates successfully in the offshoring industry. However, the concentration in labour-intensive service segments, such as call centres, needs to be revised to foster employment gains in better-paying service jobs. Targeted industry support measures and a commitment to workforce development across the region are essential to foster growth and promote upgrading into less vulnerable and higher-value service segments.

C. The book's main findings

This book aims to analyse the growth and ongoing transformation of the offshoring services industry from both a global and Latin American perspective. Literature on this fast-moving topic is scarce due to the industry's intrinsic complexity and propensity to operate at the innovation frontier. Each day, new activities are becoming potential targets for offshoring, which makes categorization a difficult and daunting task. Additionally, the lack of reliable official data on trade and investment in offshore services hampers attempts at quantifying broad trends. The industry analysis thus tends to rely heavily on estimates.

The chapters of this book aim to unravel the complex industry's spectacular growth, with a particular focus on the Latin American and Caribbean region, and describe the forces that have underpinned this expansion. The book has four main subject areas. The conceptual chapters in the first part (chapters I, II and III) analyse general industry trends such as the international tradability of services, the importance of national innovation systems to support the sector and the offshoring or outsourcing strategies of small- and medium-sized enterprises. The book's second part (chapter IV) depicts the mix of policies that governments have deployed to attract offshore services companies to Latin America. The third part (chapters V and VI) discusses country case studies of Colombia and Costa Rica. The final part (chapters VII to IX) explores specific offshoring strategies pursued in selected industries, covering information technology services in Chile, pharmaceutical services in Mexico and the partnership between software companies and consulting firms in Brazil to provide business solutions.

As pointed out by Pierre-Yves Leo and Jean Philippe (chapter I), the international outsourcing of service activities fuels recurring fears over the alleged downsides of globalization. The offshoring industry could grow markedly in the coming years, to the extent that services will become less protected from international competition than before. This phenomenon opens a new era in global services trade. For some countries, this may be

a threat, but for others it presents new development opportunities. This is especially the case for countries in Latin America and the Caribbean, which for a long time were focused almost exclusively on manufacturing and extractive natural-resource-based industries. Improved access to affordable telecommunications infrastructure (namely, broadband) has enabled these countries to trade services in a non-traditional way, requiring no face-to-face interaction since information is transmitted through the cloud.

These authors emphasize how the dematerialized nature of digital trade boosts the growth of production networks that are increasingly indifferent to time, distance and scale. Firms looking to reduce costs can readily locate service centres where they can find the optimal mix of low-cost labour, flexibility and skills; cultural and linguistic proximity; international IT connections; fiscal and administrative attractiveness; and metropolitan locations that offer the additional benefits of customer clustering, infrastructure quality and the ready availability of talent pools. Leo and Philippe note that the locational determinants of firms vary according to their business model, ranging from foreign agencies serving internal operations, local markets, the home market or the regional one.

In chapter II, Paulina Ramirez underlines the importance of national innovation systems to help firms participate in offshore value chains and upgrade in the sector. Innovation systems differ markedly among countries, yet they have generally received scant attention in scholarly or policy circles. Ramirez analyses the cases of India and Ireland, identifying five key institutions or factors in this regard: those related to the supply of human capital; the national science and technology research system; industrial structures; domestic demand; and intellectual property protection regimes. In the case of India, entry in the IT offshoring services has been fuelled by the local skilled workforce and led by government programmes. Additionally, indigenous firms have invested heavily in in-house training programmes and career development. However, Ramirez highlights the inefficient use of skills in India, which has often led to tight labour market conditions and a shortage of skills in other sectors. In Ireland, the situation is different, as the industry is dominated by MNC subsidiaries that place specific demands on the country's educational system with the government's blessing and support. Furthermore, the Irish government has provided grants to MNCs for employee training initiatives as part of incentive packages to attract foreign direct investment to the country.

Multinational companies are not the only firms that are offshoring services; small and medium-sized enterprises (SMEs) are beginning to do so, as well. In chapter III, Martine Boutary and Marie-Christine

Monnoyer explore how SMEs increasingly resort to offshoring. In today's world, access to technology and communication systems is open to companies of all sizes and do not represent a technological gap hampering access to the outsourcing business. To reduce costs, SMEs also look for cheaper locations to conduct certain operations, especially in emerging economies. The authors underline that this may also present an opportunity for SMEs to discover new markets. However, because transaction costs remain high, delocalization seems convenient when knowledge is no longer exclusive to the home country or when SMEs lack the necessary internal human resources.

Ramirez emphasizes that a country's science and technology system is one of the most critical factors for pushing the industry towards needed upgrading. In India, weak linkages between industry and academia have resulted in a recurring mismatch between the skill sets required by employers and the research activities of academic institutions. In Ireland, the government nurtured the development of a science and technology system that allowed industry upgrading for MNCs. However, this system failed to benefit small indigenous firms.

Industry firm structure also plays a critical role in industry upgrading. India has a large number of indigenous firms, while in Ireland the number is more limited. Equally important is the role of domestic demand in allowing indigenous firms to gain needed experience and business expertise in their home country before considering export markets or foreign locations. However, domestic demand does not necessarily translate into successful growth in international markets. The last factor highlighted by Ramirez concerns the importance of intellectual property rights (IPR) for moving into higher value added segments of the value chain.

As the offshoring industry flourished worldwide, the Latin American region was offered a unique opportunity to take advantage of the sector's growth trajectory. Governments throughout the region began to actively court foreign services operations to locate within their national boundaries. In chapter IV, Andrés Lopez, Andrés Niembro and Daniela Ramos present and discuss the main mechanisms used worldwide to promote the development of the offshore services industry, and they draw a series of lessons and recommendations for Latin American countries. The authors indicate that public policies can play a key role in enhancing the conditions for attracting investment, boosting services exports, upgrading within global value chains and enhancing the generation of spillovers and linkages. They note that what matters are not only incentives or regulatory policies specific to GVC-related sectors, but also other more general policy measures relating to education, science and technology, infrastructure

and financing. Coincidentally, these areas overlap with the key upgrading determinants identified by Ramirez in chapter II.

Lopez, Niembro and Ramos further argue that the development of the offshore services industry should not be addressed solely by implementing isolated promotion mechanisms, but rather by developing a coherent and comprehensive development strategy with medium- to long-term horizons. This, in turn, demands a strong commitment and institutional sustainability, especially when one considers the time and resources that should be devoted to complex and necessary tasks such as improving a host country's technological infrastructure, deepening the national innovation system, reforming educational policies and generating a country brand that can attract foreign investments and position local services in the global market. The mechanisms most commonly implemented to promote services exports are the exemption of direct corporate taxes, especially on profits, and of taxes on corporate income and dividends. These benefits are often part of duty free zones, export processing zones or *maquiladora* schemes. While such regimes were not originally designed with services offshoring in mind, many countries have extended their application to services.

As a complement to the attraction of FDI, the offshore services industry in developing countries may also be promoted through measures supporting the internationalization of local companies with high growth potential. A key point here is to identify the business niches where such firms are most likely to be successful and promote their acquisition of the strategic assets needed to enter those markets. At the same time, because home country firms need to ensure the quality of the services they provide, it is advisable to generate support programmes for the acquisition of internationally recognized certifications. Many local companies in Latin America possess strong technical competences, but they often lack management and marketing capabilities and do not always know how to design business plans. Assistance programmes aimed at dealing with these weaknesses should be included in the set of policies directed towards such firms, particularly SMEs.

A final way to make inroads in the offshore services industry involves the creation of linkages between local firms and TNCs, particularly through the establishment of supplier development programmes. The design of such programmes needs to take into account the characteristics and objectives of both local and foreign firms. Learning more about TNC needs and matching them with the capabilities of domestic firms, while also lifting the obstacles the latter face in meeting TNC requirements, are thus key elements of successful support policies.

Lopez, Niembro and Ramos usefully point out that the creation of a strategy to promote services exports and attract investments in GVC-related activities can take many forms. There is, indeed, no single pathway replicable in all policy or country settings. Governments thus have considerable scope for policy innovation and the creation of new institutional trends. GVCs remain a relatively new phenomenon, and as such, the environment in which they are unfolding is still in flux. Consequently, economies of learning are shaping adaptive capabilities and policy responses.

The development of the offshoring industry in Latin America has been diverse. Some countries such as Costa Rica, analysed by Juan José Flores Saenz in chapter VI, have had a long trajectory, with the industry supported by the Costa Rican Investment Promotion Agency (CINDE) (Fernandez-Stark, Bamber and Gereffi, 2013). In contrast, Colombia (chapter V) has had more limited public sector involvement in the sector. Only in recent years has the government offered specific incentives to the development of the industry.

Flores Saenz explores two main issues related to service value chains in Costa Rica's free trade zone. First, he dissects new empirical evidence on MNC back office services located in the Costa Rican free trade zone using a panel data set of 56 MNCs over the 1997-2010 period. The chapter reveals that fully 82% of the MNCs in question are headquartered in the United States and that half of the MNCs came to Costa Rica after the 2008 recession, arguably motivated by cost-cutting considerations. Flores shows that call centres and shared service companies established in Costa Rica employ 500 workers on average. According to data from CINDE and the Foreign Trade Corporation of Costa Rica (PROCOMER), the Costa Rican IT-related service sector employs just over 30,000 workers in Costa Rica, with contact centres (call centres) and shared services being employing the most workers and engineering, software and entertainment and design employing the fewest. Such findings are consistent with the core business of each subsector, as call centres typically require a large number of workers with relatively low levels of specialization (basically language skills), whereas back office services tend to demand more specialized personnel.

The second core issue explored in the chapter is the degree of linkages that MNCs have established with the local economy. Flores Saenz shows that service companies produce greater linkages with the local economy than do companies producing medical devices (expressed as a ratio of local purchases to total purchases). However, labour productivity levels remains higher in the medical device sector. The linkages of service companies tend to concentrate on services targeting employees and the physical location of companies, such as catering services, transportation,

installation of office equipment and so forth. Although the analysis generated statistically significant results showing that older companies tend to purchase more from local suppliers, and that services companies have superior indicators than companies producing medical devices, the results are not robust and warrant closer empirical scrutiny. The chapter also shows that through linkages with MNCs, local companies can improve the professional (soft) skills of Costa Rican knowledge workers.

Nir Kshetri, Marleny Cardona, Hugo Díaz and Suelen Castiblanco assess the Colombian experience in chapter V, highlighting the forces behind the industry's recent growth spurt. While the Latin American outsourcing and offshoring industry is largely dominated and overshadowed by Argentina, Brazil and Mexico, Colombia is emerging as a major regional challenger. Global and local companies are expanding their operations to mid-sized cities in the country. There is also some evidence that the Colombian outsourcing industry is slipping into a higher gear and moving towards higher value added, data and knowledge-based services. In their chapter, Kshetri, Cardona, Díaz and Castiblanco seek to understand formal and informal institutions and the factors associated with economies of agglomeration in the Colombian outsourcing and offshoring industry.

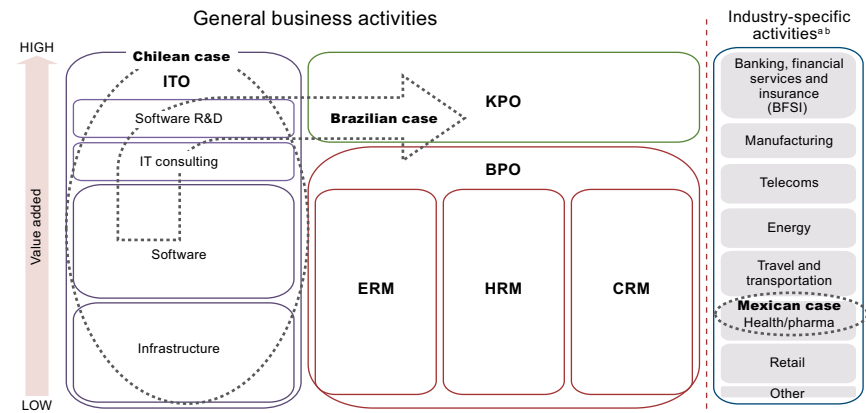
The chapter investigates the various factors that have facilitated and constrained the development of the Colombian outsourcing and offshoring industry through the prism of institutional theory and the economics of agglomeration. The analysis identifies the nature and source of Colombia's competitive advantages in various types of outsourcing services (such as voice and non-voice segments). The authors document the regulatory and norm-setting institutions that have underpinned Colombia's forward progress in service offshoring. The norm-setting institutions include the national registry for bilingual individuals and the selection of BPO as one of the eight sectors in the structural transformation policy, in the context of the National Competitiveness and Productivity Policy formulated by the country's National Planning Department. Institutions such as the Colombian Association of Contact Centres and BPO and the National Business Association of Colombia (ANDI) and the Chamber of BPO & IT have all offered centrally important institutional support. In addition, the authors identify cognitive factors such as Colombia's "neutral" Spanish accent, a large share of English speakers and a cultural similarity with the United States as important additional factors contributing to the industry's recent growth.

Despite the notable progress documented above, there is some evidence that, as in many countries in the Caribbean and Central America, Colombia-based outsourcing companies tend to underperform their

Brazilian or Mexican counterparts in attracting high-value BPO activities. One explanation for this trend might be that higher-value BPO activities in Colombia are still disadvantaged by weaker agglomeration economies. Compared with more successful countries in the region, Colombia also lags in skilled human resources.

As mentioned above, the offshore services industry includes a large range of activities, as it encompasses any service produced in one country and consumed in another one. It tends to operate in the business-to-business (B2B) market segment. Countries and firms in Latin America have tended to focus on specific service activities in which they possess a clear labour cost advantage and/or niche expertise. The book’s concluding section explores three specific areas of offshoring activity in which firms and countries in Latin America and the Caribbean have specialized: IT services in Chile; pharmaceutical services in Mexico; and the partnering between software companies and business-consulting firms in Brazil (see diagram 4).

Diagram 4
Mapping the offshore services value chain in the three Latin American cases presented in this book



^a Industry-specific vertical activities: All these industries have their own value chain, with associated services that can be offshored. This diagram captures the industries with the highest demand for offshore services.

^b The vertical activities segment does not imply value levels on the left, and they include ITO, BPO and advanced activities outsourcing.

In chapter VII, Francisco Rivera von Hagen, Osvaldo Marinao and Nanno Mulder evaluate the sophistication of Chile’s exports of IT services. The sector has grown rapidly over the past decade, with a main focus on the Latin American market. The authors present a novel typology

to estimate the sophistication of exported services using four criteria: level of human capital, technology content, degree of specialization and business differentiation, and innovation intensity. This typology is used to distinguish four levels of service sophistication: low, medium-low, medium-high and high.

To assess the sophistication of Chilean IT exports, the authors conduct a survey among 80 small, medium and large firms producing and exporting these services in 2012. The questionnaire included both quantitative and qualitative questions. The results show that the IT services industry in Chile is relatively sophisticated, employing highly qualified workers, and having a relatively high level of business differentiation and specialization.

Although a number of government policies have contributed to the sector's development, the country must address a series of pending tasks. These include the low level of investment in research and development, inadequate protection for intellectual property and the poor language skills of professionals (especially in English). Moreover, rising labour costs and the relative dearth of qualified human capital currently limit its continued expansion.

Chapter VIII, by María de los Ángeles Pozas, documents how Mexico's public research centres and laboratories have developed the means and absorptive capacity to insert themselves in value chains in the pharmaceutical and bio-medical sectors. A country's absorptive capacity is measured by the existence of qualified human resources, scientific experience, accumulated technical abilities, infrastructure, models of cooperation with universities and the availability of research centres and health institutions (hospitals and clinics), all of which are key determinants of the structure of a country's health system.

The chapter shows that a host country's institutional and regulatory framework are determining factors in establishing a sustainable scientific-technical outsourcing (STO) industry. A detailed analysis of research agreements —namely, who requests them, who finances them and who uses their findings— provides the basis for evaluating the potential supply of services to the pharmaceutical sector. Pozas argues that public sector research centres need to find an equilibrium between basic research to develop knowledge for public health and specialized research that responds to the needs of the private sector in general and the pharmaceutical sector in particular. The government needs to develop a properly adapted regulatory framework that allows these public research centres to spend their resources on further basic research, updating equipment and technology, and training human resources.

The author explains that this sector usually involves complex operations that require highly educated personnel and constant interaction between the client and the service provider, generating significant two-way knowledge transfers. Over the past decade, Mexico has experienced a positive investment inflow into this sector, estimated at 15% annually. More than 2,000 researchers from different institutions and research centres are involved in the sector, of which 80% are public institutions. This shows how Mexico's public research centres and laboratories have developed the means and absorptive capacity to insert themselves into higher segments of the pharmaceutical industry's services value chain. Pozas notes, however, that the country still lacks both an adequate regulatory framework and robust models of public-private collaboration in pharmaceutical research.

The final chapter, by Fábio Neves da Rocha and Dimária Silva e Meirelles, describes the upgrading trajectory of a successful Brazilian business consulting company, Finity Consultoria. This company was established in 2006 and started within the services value chain with the sale of IT services for banks. Over time, it upgraded its services to business process modelling and implementation of enterprise systems within a wide range of industries. Today it has 225 expert consultants, serving large national and international clients, with US\$ 25 million in sales.

The authors characterize the company's business model according to nine dimensions: customer segmentation by specific industries, value creation through the sale of services that improve performance and lower costs for the client, use of both direct sales channels and indirect ones (through contracts with software companies), the construction of long-term relationships with customers, revenue generation through selling software and services, use of IT and industry specialists as a key resource, sale of enterprise system software and related services as the key activity, and collaboration with the software company SAP as the main partnership. All these dimensions are permanently monitored using performance indicators.

Today Finity's value creation is concentrated at the pre-sale phase. Finity analyses the market and looks for opportunities related to economic trends (for instance, an economic downturn increases the demand for financial and risk management), technological developments and other events (such as new regulations or new software). On this basis, the firm designs tailored services over which it establishes intellectual property rights. These services have pre-designed project targets supported by quantitative and qualitative indicators that will ultimately define the revenues of the project. In sum, specialization is Finity's main strategy for sustainable growth: its consultants develop thorough knowledge of the

business processes within a set of industries to provide customers with problem-solving services.

Together, the chapters in this book make clear that firms and countries in Latin America and the Caribbean have entered a new stage of their development process. The region now has a proven capacity to attract leading firms in the offshoring services sector, thereby creating quality employment and generating significant export growth. The time has come, however, to build on and deepen such trends by adding more value to the industry, upgrading operations, training personnel with sophisticated skills and linking local private suppliers with the region's best university research centres. Another pending task is to lend support to the internationalization of indigenous firms, which in many countries has been lagging. Securing the latter objective can be expected to go some way towards generating strong positive spillovers and creating deeper and more durable linkages with the local economy.

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Chapter I

International service tradability: Understanding the offshoring of services

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Abstract

In industrialized countries, the interest in the internationalization of services remains on centre stage: in the WTO Doha negotiation, the agreement on the pursuit of the liberalization process is at stake because of the fear of job losses. Former studies show that service firms follow two objectives in the internationalization process: to conquer new markets to take advantage of new growth opportunities or to improve global competitiveness by outsourcing specific activities. These two motives now seem to be converging. Therefore, the main challenge is not to stem the direct job losses caused by firms settling abroad, but to evaluate the net result between these job losses and the benefits of the international market expansion in terms of newly created jobs. This chapter explores how service firms are organized and what modalities they use to expand at the international level; analyses the mechanisms of delocalization to identify which factors allow service activities to develop abroad; and discusses the determinants of the international movement of services, which is a first step towards modelling their offshoring probability.

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Introduction

The liberalization of trade in services brings together partisans and opponents putting forward the same arguments used since the nineteenth century, when free trade theory was first advanced for goods. In Western Europe, the delocalization of service activities has been widely discussed for several years because of the concern for potential job losses. This fear was aggravated by the 2006 liberalization of services trade within the European Union (known as the Bolkestein Directive). The 2009 financial and economic crisis further dampened workers' confidence, as it caused large increases in unemployment in most European countries. In the United States, similar debates took place during the 2012 presidential campaigns, in which supporters of laissez-faire policies and believers in capitalist creative destruction argued with those who felt that something had to be done to retain companies about to delocalize, if necessary by exempting them from taxes.

Several studies show that these workers' fears seem mostly unjustified. In developed countries, the employment losses associated with the offshoring of services remain low, especially when compared with those resulting from productivity gains obtained from the use of information and communications technologies (ICTs). That is, the delocalization of service firms has accounted for at most 5% of service employment in the sectors concerned (Dadian, 2005). Moreover, it was shown that not only were lesser- or semi-skilled jobs offshored (such as accountants, translators, and phone or computer tele-operators) were offshored, but highly skilled positions were sent overseas as well (including computer engineers, engineers, designers, project managers and so on). Offshoring has been concentrated in sectors such as software, information technology consulting, call centres, financial analysis, research and development, pharmaceutical experimentation and testing and statistical analysis of consumer behaviour.

Why, then, does this phenomenon attract more attention than merits its economic importance? First, the offshoring of services could grow in the near future, increasing the unemployment level in developed economies. Prospective studies show that some 200,000 jobs could be at stake in France (OECD, 2007) and about 4 million in the United States (NAPA, 2006). The growing importance of international trade in services is strongly related to the spread of ICTs, which have made services more tradable and less sheltered from international competition (Jensen and Kletzer, 2005). Second, the reduction in barriers to trade in services following the General Agreement on Trade in Services (GATS) of 1994 and the numerous regional and bilateral trade agreements since then. Third, service firms in Europe and the United States face new competition as the centralized and

planned economies in the Far East and Eastern Europe have opened up to free trade and free enterprise in the last two decades. A new competitive context has emerged, and its possible impact can be anticipated by looking at the large wage gap for skilled manpower between these newcomers and Western Europe.

This chapter explores how service firms are organized and what modalities they use to expand at the international level. We then analyse the mechanisms of delocalization to identify which factors allow service activities to develop abroad. Offshore services include many different categories with different levels of complexity, value added and human skills content. The possible offshoring of each category has a different impact on the home and destination countries. Finally, we discuss the determinants of the international movement of services, which is a first step towards modelling their offshoring probability.

A. Service firm organization models

Two models help clarify the possible impact of ICTs on the organization and internationalization of service firms. Both are dichotomous models that describe an autonomous and isolated service firm and its contact with clients. The earlier of the two is the flexiform model (Mills and others, 1983), which focuses on professional consultancy services. The more generalized servuction model was introduced a few years later, showing that service providers perform their tasks in a geographically concentrated area to control the creation, delivery, management and marketing of the service (Eiglier and Langeard, 1987). These two models gave rise to a third, in response to ICT development. Each is described in more detail below.

1. The flexiform model

The flexiform model, proposed by Mills and others (1983), describes the autonomy and freedom of consultants within a consulting firm when carrying out their service, while also bearing most of the responsibility for their company's success. The service provider travels to the client, which de facto dissociates back-office functions from front-office tasks. Consultants have almost complete power when dealing with their clients. Consultants and clients form operational service units functioning as a decentralized front office of the service firm. At the same time, the flexiform authors characterize the role of back-office management as autonomous, comprising administrative tasks, the distribution of assignments, the settlement of disputes between consultants and registration of their missions.

The authors of this model show that most of the service is concentrated in the front office, while the technical core only supplies resources and remuneration. This is not the case in the servuction model, where the back office defines the delivery made by the front office. Under the flexiform model, the client is integrated into the interaction process. Here information is required to carry out the assignments mainly attributed to consultants, who play a strategic role vis-à-vis the clients. In contrast, within the administrative core, decisions are taken following internal interactions which are not essential for external assignments, as they only apply to internal matters of the organization.

This model applies well to organizations implementing projects with uncertain outcomes. The flexiform structure is compatible with the matrix-type organizational structure adopted by leading consultancy firms. They use this configuration to manage several projects simultaneously (though they are often situated in different countries) by providing ad hoc resources for a given period. This model features a clear dichotomy between the back and front offices. This distinction has become blurred under the third company model presented below, which emerged with the Internet.

2. The servuction model

Servuction is a term coined in France to imply service production. The model distinguishes the back office from the front office following Shostack's (1984) concept of a line of visibility. As described by Eiglier and Langeard (1987), Servuction jobs differ from administrative positions in terms of behaviour and obligations towards the clientele. In this model, contact with the client is the essential moment of interaction; it is what differentiates one service activity from another. This approach underscores the classification of service activities proposed by Chase (1981) based on the intensity of customer contact in the servuction system: contact is intense in pure services, low in industrial services and intermediate in categories of services that fall between these two extremes. This classification not only is descriptive, but also determines business management rules. Services characterized by intense contact are harder to control and organize than services with low contact. Companies offering low-contact services can break up their operations by separating the technical part of the organization from the consumer delivery. Intense-contact services (such as consulting) have also been described through the previous model.

3. The Internet model

With the evolution of the Internet, several new services emerged, which gave rise to a new services delivery model (Léo, Munos and Philippe, 2002). In this model, the back/front office dichotomy has become hard to identify because suppliers are no longer limited to a geographic place. Contact with clients no longer requires a face-to-face encounter, since it mostly occurs over the Internet. The front office is situated at the client's place, and the client's access to expert systems and databases is shared by other clients in cyberspace. Here the service can be entirely or partly automated, if necessary with the help of a tele-operator, whose location remains unknown to the client.

Not all services can undergo such a transformation. Services that process information flows (including financial services, information centres and reservation handling) are most suitable for this model. Other services can use this type of organization to improve their service delivery (placing or taking orders, reservations, etc.), even though the core of their service activity is delivered through face-to-face contact between personnel and clients. Examples include call centres for hotels, tourism and air travel, parcel delivery and transport services.

These new organizational models apply to specific sector- and firm-related contexts. The preference for a certain model remains the choice of each firm, but it also depends on the sector in which the firm operates and its links to other markets. ICTs facilitate a firm's growth from a compact business into a multi-locational enterprise operating in different geographical sites and, if necessary, different countries. The Internet model offers organizational and geographical flexibility, which is essential for a firm's international expansion.

B. Mechanisms of service offshoring

ICTs reduce the costs of operational networks and facilitate the introduction of new service concepts, which do not require proximity to the client. These technologies are the backbone of numerous service firms with a decentralized organization. The internationalization of firms may act as a catalyst of new organizational processes, and it provides an incentive to standardize internal procedures. This section analyses the conditions under which these new types of extended organization can appear, with particular attention to the role of information in the organization of firms. We also show how the internationalization of service firms is supported by ICTs and how the organizational model they introduce allows for the offshoring of activities.

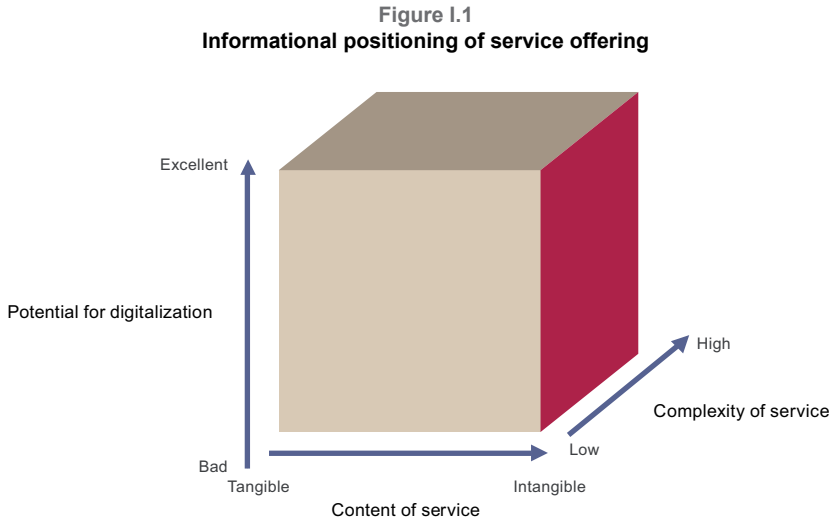
1. Geographical and organizational dispersion of firm

Many internationalized service firms have undergone important organizational changes with the adoption of ICTs, as suggested by the literature and the professional press (Contractor and others, 2010; Doh, Bunyaratavej and Hahn, 2009; Ghemawat, 2007). One obvious change has been the geographical separation of back and front offices, which enables the client relationship to be separated from the rest of the firm. The service firm thus tends to follow the industrial model, in which goods are produced in a different place than where they are consumed. Another trend, taking place mostly within multinational service firms, is the grouping of back office activities into central units to manage huge volumes of information and to exploit scale economies. Examples are reservation centres for tourism and transport, management of customers' information in banking, insurance and medical assistance. Multinational service firms rely on a multiple-location networked organization, with back offices centralizing all information from different units. This model differs from an industrial multinational, which brings together spare parts from all around the world to assemble a finished product.

For service firms, the integration of ICTs in their production and service delivery processes represents a challenge with uncertain outcomes. Under some circumstances, ICTs can generate savings and competitive advantages, as centralized information is available immediately. Managers are often uncertain about how to use ICTs in the context of the service they produce. Typical questions include which ICT business model creates value for customers, facilitates relations with our suppliers and partners, reduces repetitive tasks for employees, improves their productivity and has a positive effect on profits. To answer these questions, the service production and delivery processes have to be thoroughly understood and the affected parts clearly identified, as does the the ICT environment. It also requires precise knowledge of the information channels within the firm.

(a) The ICT potential of services

The potential for ICT integration into service production and delivery depends on three dimensions: the content of the service in terms of its mix of goods (tangible) and services (intangible), which goes beyond Shostack's distinction of pure and simple goods and services (Shostack, 1977); the suitability of the service for digitalization; and the structure of the service, ranging from simple (with one core service) to complex (made up of several core services accompanied by peripheral services) (Lovelock, 1992).



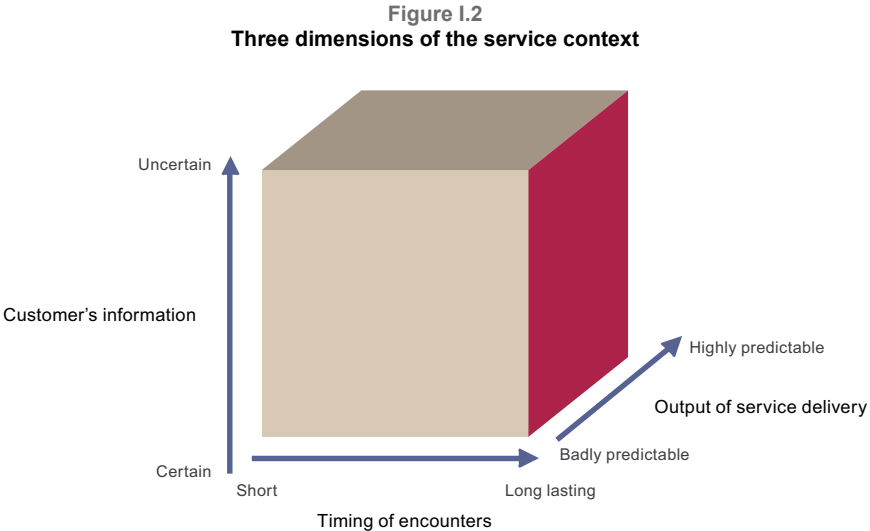
Source: Prepared by the authors.

The more or less tangible nature of services determines how they will be exported. The most tangible services will be hard to deliver without a network of subsidiaries or franchises, whereas intangible services are easier to set up on-line. Some goods, such as books, compact discs, films, photographs and newspapers, can be digitalized directly. Complex services that cannot use ICTs directly can introduce these technologies for their peripheral services, such as the provision of information on the product or service, invoicing and electronic payment (Léo and Philippe, 2002). In the case of professional services provided directly to the client, including those of dentists, hair dressers, or physicians, ICTs can facilitate peripheral services such as the scheduling of appointments. Finally, the complexity of the service delivery will determine the potential role of ICTs. For example, complex services are less suitable to an automated calling system, but require qualified operators.

(b) Service environment constraints and types of service relations

The potential role of ICTs in service delivery not only depends on the type of service, but also on the business environment, which directly or indirectly influences a firm's performance. This environment encompasses the firm's relationships with clients, suppliers or competitors, as well as political, economic, social and even cultural factors. The most important environmental aspect is the conditions under which the client encounter takes place, including the type of encounter (frequency, duration), the kinds of information exchanged (complexity, precision of the client's

real needs), the ability of contact personnel to respond to the client's expectations and the predictability of the outcome of the interaction. All these factors determine how the service firm should be organized.



Source: Prepared by the authors on the basis of P. Mills, *Managing Service Industries: Organizational Practices in a Post-Industrial Economy*, Cambridge, Massachusetts, Ballinger Publishing Company, 1986.

On the basis of these criteria, Mills (1986) distinguishes three types of environment. The first is a stable environment with numerous short encounters. In this context, there is little uncertainty regarding the clients' needs and the personnel's ability to respond effectively. This environment favours the development of large service firms, as the simple and stable supply of services allows for scale economies. Examples of firms that operate in this environment are FedEx and American Express.

The second type is a complex environment with an average level of uncertainty affecting the delivery of the service. In this environment, clients are conscious of their needs but lack knowledge on how to satisfy them. Service suppliers only sometimes have the solution to the client's needs. Standard solutions do not exist, and the service delivery requires deep interactions with the client. Consequently, these firms operate decentralized networks of subsidiaries and pay frequent visits to the client's premises. Examples of firms in this environment are architectural firms, audit firms and advertising firms (Mills, 1986).

The third type is a highly complex and dynamic environment, characterized by great uncertainty in terms of both the type of service requested by the client and the solution proposed by the provider.

Numerous encounters are needed to build a relationship of trust, with active participation from the client and great effort by the specialist. The result of these interactions is by no means guaranteed, and the contract established with the client cannot anticipate all outcomes. Examples of services delivered in this environment include health-care providers, religious organizations and consultancy services (Mills, 1986). The creation of specialized subsidiaries is the only way to deliver these services. Face-to-face interaction is crucial, and ICTs will only play an auxiliary role.

Mills' typology shows that the impact and role of ICTs will vary according to the environment in which the firm operates. In the first environment, ICTs manage large flows of information; in the second, they can provide simulations; and in the third, these technologies can collect data for operational models.

The potential for applying ICTs also depends on the type of communication networks used to circulate information. There are three types of networks: Internet, Intranet and Extranet. Internet is open to anyone who buys a personal computer and connects to broadband services. Intranet networks are made up of electronic mail services and websites within organizations, which are not accessible from the outside. They connect the vital departments within a firm and facilitate the transmission of information crucial for a firm's functioning. An Extranet network is available exclusively to an "extended family" of the firm: suppliers, distributors and sometimes even clients. These different networks set virtual boundaries within which the strategy of the firm is developed.

2. International relation modes and types of delocalization

ICTs provide service firms with new solutions to solve two difficulties in international trade: access to foreign clients and management at an international level. These new solutions provide new strategies, but they also force firms to make choices according to their objectives and the specific constraints of their services. In addition to the strategic global integration model adopted by large service firms, other forms of international development with more limited goals include direct exports of technical services, software services exports, international partnerships, collaborative agreements and so forth. Some of these strategies call for a very intense use of ICT; others are loosely tied to the firm's original trade and do not entail the problems that can arise when transferring a service concept to another cultural context.

With the sale of services in other countries, companies set up different organizations to deal with the specific needs of their clients

abroad. In a firm's day-to-day business, customer interactions occur frequently (for example, prospecting, presence on the market, service delivery). Each customer contact defines a relationship mode, which largely depends on the type of service activity being sold abroad. Before the age of ICTs, Richardson (1987) proposed a framework for analysing the tradability of services at the international level:

- Perfectly tradable services, which can be produced in one country and sold in another;
- Essentially tradable services, which need a commercial presence to facilitate sales;
- Hardly tradable services, which require the movement of staff for delivery; and
- Non-tradable services, which can be sold only through the creation of local subsidiaries.

This framework has largely been displaced by the spread of ICTs over the past two decades. Many services previously considered non-tradable are now regularly exported without any local support, through the use of ICTs. In this new context, the analysis of the international development of services should follow the four modes defined by the 1994 General Agreement on Trade in Services (GATS):

- Mode 1: Cross-border movement of services, in which neither the provider nor the customer moves. Many of these services are incorporated in manufactured goods or delivered through telecommunications (information services or tele-services). Databank services belong in this category, as do software activities, insurance, banking services (for individuals and companies), computer maintenance, games and electronic gambling (casinos).
- Mode 2: The movement of customers into the provider's country. In this mode, customers travel to the country where the provider is located to purchase the service. Examples include tourism, health care and training.
- Mode 3: Delivery through foreign affiliates. Companies often have to invest directly in the host country in order to deliver the service. Many services fall under this category, including direct services to consumers (such as restaurants and hairdressers), business-to-business services (such as legal consultancy, auditing, advertising and engineering) and services comprising both types of clients (such as hotels, cars and equipment rentals).

- Mode 4: The temporary movement of the provider to the client's country. In this case, the provider travels to the customer's country on a temporary basis to deliver the service. Examples include consultancy services and training services.

These four types of exchanges apply not only to service firms, but also to manufacturing companies that are trying to increase their competitiveness by joining services to the goods they export (Léo and Philippe, 1999). Except for large service companies, most firms progressively change the way they deliver their services. They often use two or three of these delivery modes simultaneously, depending on the host country context. ICTs have introduced unprecedented possibilities of organization either by facilitating the breaking up of the service supply at different stages and places or by directly promoting the cross-border trade in services.

Thus far, most research has concentrated on the development of networks abroad and on the creation of servuction-type organizations in the specific environments of different countries. Numerous researchers thus concentrate on the modes of entry and presence in foreign countries (Erramilli and Rao, 1990; Erramilli, 1991; O'Farrel, Wood and Zheng, 1996 and 1998; Pan and Tse, 2000).

In practice, services are exported through a great variety of modes, varying from cross-border sales to the set-up of local subsidiaries. Each mode has different financial and organizational implications. The offshoring of service activities represents a split in the firm's organization. This separation may refer to either the front or back office, depending on whether the goal is to improve the firm's growth potential or increase its cost efficiency. In this context, we identify four types of delocalization, with different impacts and consequences:

- Creation of service units abroad to serve foreign clients. These units are connected through an ICT network and share back office elements. The parent company aims to increase its market share in foreign markets where it sets up subsidiaries. This type of organization saves on travel expenses and increases closeness to clients.
- Creation of service units abroad to increase the home market share. Here the goal is to cut costs by benefitting from lower wages in other countries, even for skilled labour. This second type includes any service delivered using cross-border trade through telecommunications.
- Setting up (part of) the back office abroad. Firms with front offices in Europe or North America will offshore certain back

office services, which are then provided from a distance but controlled by the front office or headquarters in the original location. This strategy saves on wage costs, which make up an important part of total costs.

- The regional grouping of back offices of multinational subsidiaries. Consolidating back-office functions in geographically central locations, can provide labour flexibility and cultural variety and improve communications with the different nationalities and cultures of the subsidiaries. This strategy, which can be adopted by both service-oriented and manufacturing-oriented firms, looks for the best compromise between the scale economies of centralization and wage costs, which may be higher in central locations.

The rapid spread of offshore activities is not surprising when longer-term economic trends are taken into account. Vernon (1966) noted a similar spatial movement in the manufacturing sector due to the life cycle of products. Industrialized countries retained manufacturing activities, as these were the poles of innovation. When they reached maturity, manufacturers were pushed to export and set up production subsidiaries abroad to penetrate foreign markets more easily. Industrial activity at home then began to decline as it became cheaper to import delocalized products. For a long time, these trends did not apply to service activities, because production factors had to be moved during the delivery process. Some services have been freed from this constraint, however, by the use of ICTs. This explains the new offshoring processes. Table I.1 lists the major factors to be taken into account for each type of delocalization.

C. Determinants of the Movement of Services

The international mobility of services is constrained by three types of obstacles: national rules and regulations; ICT barriers; and linguistic, cultural and religious differences. In the first two domains, deep changes are taking place throughout the world, which may explain the growing adoption of new location strategies. As firms explore the possibility of offshoring, they must first ensure that a prospective host country has an adequate infrastructure, which commonly correlates with the existence of large urban centres. The host country must also satisfy the necessary conditions for meeting the two major objectives of offshoring: to improve competitiveness by using cheaper productive resources abroad and to grow the business through the penetration of foreign markets.

Table I.1
Determinants of delocalization

Type of delocalization	Geography	Administrative and social environment	Economics	Culture
Service units abroad serving the foreign market	Population in large metropolitan areas	Local foreign investment rights	Size and growth of the potential market	Acceptability of the service (social and religious norms)
	Transport and telecommunications infrastructure	Local restrictions on international transfers and payment	Size of the population (services to households)	Cultural proximity
	Climate	Local rules and regulation of the specific business	Local household income (for services to households) Attitude of the productive sector towards outsourcing (for business services)	
Service units abroad serving the original market	Transport and telecommunications infrastructure	Local foreign investment rights	Abundant qualified labour at low cost	Same language
	Distance from original market	Local restrictions on international transfers and payments	Low labour turnover	Cultural proximity
		Flexible local rules and regulation of the specific business Taxation differential Low level of bureaucracy		
Offshore back offices	Telecommunications infrastructure	Low level of bureaucracy	Abundant qualified labour at low cost	Same language
	Compatible time zones	Similar administrative system (former colony) Tax exemption Flexible local social laws	Low labour turnover Efficient legal system against ICT piracy	Religious neutrality
Regional back offices	Central location in the metropolitan areas	Favourable tax policy for headquarters activities Tax exemption	Abundant qualified labour at low cost Low level of trade unionization	Presence of cultural minorities or a strongly multicultural society (due to the country's history or the presence of multinationals)
	International-level metropolitan area			
	High-level transport and telecommunications infrastructure	Low level of bureaucracy		
	Position of the infrastructure (hub)	Flexible local social laws		

Source: Prepared by the authors.

1. Infrastructure and urban centres

Service firms tend to prefer urban locations, which provide geographical concentrations of equipment, population, activities and infrastructure and also make it easier to obtain the minimum efficient size. Historically, the localization strategy of firms engaged in service activities was driven by the concentration of demand. Although most personal services still preserve this characteristic, other types of services do not. Many business services have thus changed their location strategy from being close to their clients to having access to competitive resources, in particular skilled labour. Large cities offer a high density of potential clients, access to production factors and connections to other locations. On-line services no longer need proximity to clients, but they still depend on qualified labour and high-performance communications networks, both of which are concentrated in large urban areas.

In most countries, the development of the tertiary sector parallels the concentration of populations in large cities. Many expanding urban areas represent a great potential for the development of service firms. Globalization reinforces these trends because firms in metropolitan areas can access all the necessary infrastructure (including electricity, telecommunications and transport networks) and skilled labour. Whatever the motivation for a delocalization, the existence of large cities, high-quality infrastructure and international connections are crucial.

2. The supply of productive resources at competitive prices

The delocalization of a service firm's back or front office activities is mainly motivated by cost savings. Because wages represent the largest share of costs, wage differentials between countries are a decisive factor in the attractiveness of a given. Other variables also play a role, such as cultural and linguistic proximity, the state of the ICT infrastructure, the fiscal regime and other specific factors.

(a) Wage differential, flexibility and skills

The main motivation for offshoring outside Europe or the United States is the lower wages paid in developing countries, such as India, the Philippines, Morocco or Senegal, for staff with similar qualifications. These countries also have less rigid labour laws than Europe (in terms of organization and working hours), providing another competitive advantage. Several emerging countries have made progress in higher education and training of local specialists, which has facilitated the delocalization of service activities. Low job rotation is another aspect

firms look for, to maximize the benefits of on-the-job training. Many large companies are taking advantage of these benefits to improve their human resources management and increase their profitability and flexibility.

(b) Linguistic and cultural proximity

Because oral communication with clients remains vital for many on-line services, the spoken language of the service provider is essential to ensure service quality and avoid misinterpretations. Countries where the population speaks the language of a firm's home country have a clear advantage in attracting offshore services. The accent and culture may also be important factors. For example, American call-centres prefer Philippine tele-operators to Indians, whereas the latter are preferred by British companies. Prior colonies thus have an edge with firms looking for similar language and culture, assuming these continue to be taught there. Linguistic and cultural similarity is less essential for back office delocalization, unless it facilitates internal organizational relations. In general, the regional grouping of back offices is less connected to a shared culture. Rather, firms seek countries offering a wide diversity so as to recruit staff able to adapt to the different languages and cultures used in the region covered (Warner and Joynt, 2002). The presence of minorities may thus be a good asset.

(c) International communications and transport

Access to rapid and cheap international communications is a precondition for the development of a competitive subsidiary in a foreign country. It is essential for activities such as exchanging data between delocalized back offices and home-based front offices or headquarters and providing on-line services to clients. Access to efficient international travel is another important element. Service personnel must travel regularly to the home country for training and development, while home-office staff are often sent to the foreign subsidiary to verify that the norms defined by headquarters are well implemented. The choice of location to set up a back office therefore also depends on the existence of a well-connected international airport.

(d) Administrative regulations and tax regime

Two other factors that companies consider when establishing subsidiaries abroad is a country's regulations and level of taxation. Both depend on political choices. For example, the new Eastern European members of the European Union have explicitly chosen low levels of taxes and administrative burdens to attract multinationals, which may contribute to the modernization of the domestic tertiary business sector by inserting it in international business networks.

(e) Time zones

Lastly, some firms also consider specific factors such as differences between time zones of the market being served and that of the delocalized unit. North-South delocalization fits best when there are no time differences, but in some cases moving towards the West or East can replace night work by day work in the new country (or vice versa), while still respecting on-time delivery thanks to quasi-instantaneous telecommunications.

3. Attractiveness of local demand

The establishment of service activities abroad also depends on the potential for selling services in the target country. These growth-aimed offshoring operations have long been considered crucial for the international expansion of service activities. Our previous surveys (Léo and Philippe, 2002) show that setting up foreign branches is more advantageous when the foreign market is dynamic. These surveys also reveal that the primary factor in the choice of a location is its market potential, whereas cultural and linguistic proximity is less important (Léo, Munos and Philippe, 2002).

(a) The potential growth differential of markets

Trade liberalization in services, although more limited than in goods, has increased the growth potential of service firms. These firms are often restricted by the size of their home market. Accessing a wider clientele increases costs and decreases efficiency, as firms have to invest in countries where they are less familiar with prospective clients and the business environment. In this context, the best strategy is to sell standardized services in densely populated areas. Globalization reveals niches of potential demand inadequately satisfied by domestic producers, where dynamic firms can expect abundant growth opportunities.

The market approach resembles the second phase described by Vernon (1966). The establishment of subsidiaries in dynamic service markets in emerging countries largely originates from saturated demand at home in industrialized countries. The demand for household services expands rapidly in countries where per capita income is growing, following Engel's theory. This factor, in combination with market size, will determine growth opportunities. Market size, in turn, depends on the population, average income and income distribution. Business services follow a different logic, in that a country's potential depends on its ability to attract tasks previously carried out within firms. One indicator of a country's competitiveness is the level of development of its business service industries and the speed of sector-related changes.

An international expansion focused on large towns favours a stronger demand for advanced services from consumers and businesses. When governments reduce their protectionism, the possible deficiency of local firms will not remain undetected and will stir foreign firms' interest in these new markets. This international development will mainly be channelled through the creation of new units, which embody flows of investment or know-how (in the case of franchises).

(b) Culture and religion

The role of market size and growth in determining location may be overshadowed by cultural or religious factors, which can constitute important bottlenecks. There are many examples of large service firms suffering a setback for cultural reasons, including Star TV of the Murdoch group in Asia, the French group Carrefour in Japan and the Paris Taxis Bleus in Morocco. Cultural proximity is an essential factor for setting up international front offices in the market. Ghemawat (2001) illustrates the importance of historical connections in terms of language, way of thinking and legal system. All these factors provide qualitative competitive advantages that concentrate the offshoring process on specific countries. Religion is another determining factor which concerns the acceptability of the services offered, mainly according to the initial nationality of the multinational firm. Conflicts may provide a sign of incompatibility, as in the case of American firms in the Middle East. On the other hand, a positive attitude towards the home country may enable a firm to easily overcome cultural barriers, because its service will a priori be perceived as fulfilling all excellence criteria (Munos, 1999).

D. Conclusion

The increase in wages in industrialized countries, the improvement in long-distance communications and the reduction of protectionist barriers in services have partly freed service activities from their not-tradable character. It is difficult to estimate the scale of delocalization taking place or to anticipate protectionist reactions within different countries. The empirical studies on this phenomenon are still in their infancy.

This paper has clarified the context in which the delocalization of service activities is taking place and identified their determinants a priori. We also discussed the limits of this trend, in particular regarding the long-term requirements of service delivery. The most affected activities are those involving on-line services, either by telephone or by the Internet. Other services for which the quality of the client relationship is crucial often require the use of labour that is culturally close to the client.

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Chapter II

National innovation systems and learning, upgrading and innovation in services GVCs: Lessons from India, Ireland and Eastern Europe

Paulina Ramirez

Abstract

Studies of international production acknowledge that the ability of firms to learn, upgrade and innovate in global value chains (GVCs) is influenced by knowledge flows within these global networks and by the national institutional systems in which the firms are embedded. Little is known, however, about how differences in national innovation and business systems shape the way firms and national economies insert themselves in global value chains and how this influences their upgrading trajectories. Based on a review of the existing academic literature, the chapter examines the impact of national innovation and business systems from middle-income and developing countries on learning and innovation processes in services GVCs.

Introduction

Changes in the organization, location and governance of value-creating activities associated with the emergence of complex international inter- and intra-firm networks have been a major feature of the world economy over the last 30 years and a defining feature of present-day globalization (Dicken, 1992; Dunning, 1997; Gereffi and Korzeniewicz, 1994). The rise of these complex networks has been greatly accelerated by processes of vertical disintegration or outsourcing, which refers to the subcontracting of activities to third-party providers. At the same time, the international location or offshoring of activities has meant the increasing relocation of business processes across national borders, where they can be provided by a firm's subsidiary or a third party (offshore outsourcing). Though originating in manufacturing industries, these same trends have more recently brought about substantial changes in the organization and location of many service activities. A significant development in the case of services has been the advance in information and communication technologies (ICTs), which has given rise to increasingly more complex exchanges of data and information across both organizational and geographical boundaries. ICTs have also contributed to the standardization of many service activities (Sass and Fifeкова, 2011), enabling the increasing tradability of services between service providers and their geographically dispersed clients (Miles, 2005; Miozzo and Grimshaw, 2006).

These innovations in the organization and internationalization strategies of firms have been so significant that they have led to new conceptualizations of the multinational corporation (MNC), which focus on the power to control and coordinate international operations even when no ownership rights exist (Ernst and Kim, 2002; Dicken, 2007). Concepts such as global value chains (GVCs) and global production networks (GPN) have been developed to explore the new global configuration, functional integration and governance not only of fully owned subsidiaries of MNCs and their international joint ventures, but also of independently owned suppliers and contractors whose activities, strategies and in-house capabilities are strongly influenced by their participation in these global networks (Ernst and Kim, 2002; Gereffi and others, 2001; Gereffi, Humphrey and Sturgeon, 2005; Henderson and others, 2002). One important implication of these organizational and locational changes is that in order to understand processes of international knowledge flows and their impact on national economies and firms, it is no longer sufficient to focus on foreign direct investment (FDI) alone. Rather, the analysis needs to incorporate the cooperative relations between the lead firms who dominate and give strategic direction to these global networks and their independently owned,

internationally dispersed suppliers and service providers, customers and support institutions (Ramirez and Rainbird, 2010).

The challenges posed by the processes of international knowledge transfer have been widely recognized by scholars of international business, strategy and organizational capability (Kogut and Zander, 1993; Grant, 1996; Szulanski, 1996). Empirical work in this area indicates that even within wholly owned multinational corporations (MNCs), knowledge transfer is a costly and difficult business, and its success is strongly determined by the ability of subsidiaries to learn and absorb outside knowledge. There is scant systematic work on knowledge flows within services GVCs, although empirical studies of manufacturing and natural-resource-based industries support the notion that these global networks can be important vehicles for international knowledge diffusion (Gereffi, 1999; Ernst and Kim, 2002; Humphrey and Schmitz, 2002; Ramirez, Kahn and Tomlinson, 2012). It is generally acknowledged, however, that the ability of network partners to deepen and widen their capabilities is not automatic, but depends on their existing in-house capabilities, and this process is strongly influenced by the character of the national and regional institutions for knowledge creation and diffusion in which these firms are embedded (Humphrey and Schmitz, 2002; Ernst and Kim, 2002; Bair and Gereffi, 2003; Morrison, Pietrobelli and Rabellotti, 2008; Ramirez and Rainbird, 2010). Countries and regions interested in promoting the growth of higher-value service activities thus need to understand the role that national innovation and business systems play in shaping the learning, upgrading and innovation processes of firms inserted in services GVCs .

Based on a review of existing empirical studies from the academic literature on GVCs and national business and innovation systems, this chapter examines the impact of national institutions on the learning and innovation processes in services GVCs. Given that services are a very large and diverse sector comprising activities with very different characteristics, the chapter focuses on information and ICT-intensive service sectors (Miles, 2005). This encompasses activities such as the provision of information technology, business processing and knowledge processing services. The term services GVC will be used in the rest of this chapter to refer to GVCs in these three sectors. There is a dearth of research directly investigating the links between national institutions and upgrading in GVCs, so this paper draws on empirical studies of services GVCs for references to how national institutional systems influence firm-level learning and upgrading. From these studies, the relevant national institutions are identified. Research focusing on the character of national innovation and business systems in middle-income and developing countries with a strong presence of serviced-based GVCs is then analysed in order to identify the key characteristics of the national organizations

and institutions which have played a role in the upgrading of firm-level capabilities. Detailed and systematic academic research appear to be limited to only three middle-income and developing countries: namely, India, Ireland and Eastern Europe.¹ The chapter therefore focuses on the nature of the relevant national institutions of these three countries and their impact on the development of services GVCs. While most studies on upgrading in GVCs focus on indigenous suppliers, this chapter also explores the impact of national institutions on learning, upgrading and innovation in MNC subsidiaries and joint ventures in the area of services.

A. The link between national innovation systems and upgrading in services GVCs

There are a number of benefits associated with the adoption of a GVC framework to analyse the learning and upgrading opportunities offered by global inter- and intra-firm networks. One advantage of GVC analysis is that it not only focuses on the activities of MNCs, their subsidiaries and joint ventures partners, but it incorporates locally owned firms whose activities are strongly influenced and shaped by both the opportunities, demands and constraints placed on them by these global networks. Though there are few instances of large locally owned service firms in middle-income and developing countries, the experience of India shows that locally owned firms can evolve into lead firms at the centre of global networks. A second contribution of the GVC approach is that it unveils the nature of FDI by disaggregating the value-creating process into sequences of functions (for example, research and development, production, marketing and logistics). This allows for a more detailed study of the activities implemented by lead firms in particular countries and the corresponding knowledge and skills required by subsidiaries or partner firms. Studies of services and manufacturing GVCs can thus identify the types of skills and knowledge required to undertake particular functions, including the knowledge and skills required for upgrading (in the case of services, see Gereffi and Fernandez-Stark, 2010; Fernandez-Stark, Bamber and Gereffi, 2012; Hardy, Sass and Fifeekova, 2011).

One of the concerns of GVC analysis is how firms inserted in global networks upgrade their capabilities. A number of studies look at processes of knowledge transfer within global networks (for example, Ernst and Kim, 2002; Gereffi, 1999; Gereffi, Humphrey and Sturgeon,

¹ A number of other countries, such as Chile, Costa Rica, the Philippines, and South Africa, have become or are becoming locations for services GVCs. They are not discussed in this chapter as there are only a few and sometimes no academic studies analysing their insertion in services GVCs.

2005; Humphrey and Schmitz, 2002; Sturgeon, 2002). Empirical studies in this area show that GVCs have become significant vehicles for international knowledge diffusion, learning and upgrading (Gereffi, 1999, Gereffi, Humphrey and Sturgeon, 2005; Humphrey and Schmitz, 2002; Sturgeon, 2002), as the lead firms provide information as well as technical and managerial assistance and training to their network suppliers and partners. Evidence also indicates that the increasingly stringent demands by lead firms in terms of quality, consistency and speed of response from their supply base has had a positive impact on selected suppliers, driving them towards more complex and higher-value-added activities in the value chain. Research also shows, however, that local suppliers will only progress to more complex activities if they have already developed strong in-house learning routines (Ernst and Kim, 2002). This suggests that participation in GVCs will enhance capabilities where they already exist, but it will not create them from scratch. It is not enough for firms to be exposed to external knowledge to upgrade their capabilities; they must also make significant efforts to internalize, adapt and use this knowledge (Levinthal and Cohen, 1990; Ernst and Kim, 2002; Ramirez, Khan and Tomlinson, 2012). Moreover, case studies of specific industries also show that lead firms that want to retain control of strategic functions can also hinder upgrading by local firms to more complex functions (Schmitz, 1999; Schmitz and Knorrninga, 2000). Therefore, though generally positive about the possibilities for knowledge transfer, more nuanced studies that apply the GVC framework acknowledge the existence of considerable challenges for learning and upgrading in these networks. There is a complex relationship between the nature of the industry and the knowledge involved, the ability of suppliers to absorb and use external knowledge and the way GVCs are governed (Humphrey and Schmitz, 2002; Morrison, Pietrobelli and Rabellotti, 2008; Ponte and Ewert, 2009; Pietrobelli and Rabellotti, 2011).

Despite its contributions, one of the weaknesses of the GVC literature is a lack of attention to the processes of learning and upgrading at the firm level (Coe, Dicken and Hess, 2008; Morrison, Pietrobelli and Rabellotti, 2008). For example, although one of the advantages of using a GVC framework is that it includes the activities of both MNC subsidiaries and indigenous firms, researchers have not analysed whether learning and upgrading in GVCs differs in these different types of firms. This distinction is important. MNC subsidiaries and joint ventures are embedded in the global knowledge networks of their parent firms and are therefore likely to be less reliant on the national and regional institutions of the host country, whereas locally owned firms are much more rooted and dependent on local business and innovation systems. Without a greater understanding of how firms inserted in GVCs internalize

and use novel external managerial, organizational and technological knowledge and practices, it is difficult to understand the dynamics of these networks and the extent to which the potential for upgrading will actually be realized. Therefore, as argued in Ramirez and Rainbird (2010), to understand capability development in international networks, research on GVCs needs to make connections with theories of the firm that incorporate learning, upgrading and the development of absorptive capacity at the firm level.

Our understanding of how firms learn, absorb external knowledge and develop innovative capabilities is further broadened by literatures that conceptualize the process of learning and knowledge creation as social and interactive processes (see Lundvall, 1992; Lundvall and others, 2009; Nelson, 1993; Lall and Pietrobelli, 2003). Intense interactions between service providers and their clients appear to be particularly important for learning and innovation in the case of service industries, which is why close proximity of firms is often necessary (Miles, 2005). Learning and innovation processes within firms are also shaped fundamentally by the manner in which they interact with national and local organizations and institutions for knowledge creation and diffusion (such as education and skills development systems and public and private science and technology research institutes). Lundvall and Johnson (1994) argue that the specific combination of skills, education, knowledge and experience which characterizes the personnel of a firm will influence firm-level innovation and learning, including the ways problems are formulated and solutions sought. The type of skills and knowledge firms are able to access and the manner in which they are able to access them will, however, be influenced by the national institutional system in which they are embedded. Similarly, the varieties of capitalism literature makes a connection between the knowledge base of firms and the specific character of different national institutions that shape the manner in which firms are able to access resources necessary for production and innovation (such as skilled labour or finance). The argument is that these institutions differ in different capitalist economies (Hall and Soskice, 2001). In the specific case of services Miles (2005), Miozzo and Walsh (2006) and Tether and Tajar (2008) note that very few countries have university departments or research institutions tailored to the requirements of service firms and that few service firms make use of the institutions that do exist. One implication of this is that learning and upgrading may be inefficient in services GVCs (Miles, 2005). One exception to this general picture is the knowledge-intensive business services (KIBS) firms, which appear to be well connected to national institutions for innovation, knowledge and skills development (Miles, 2005). These firms are among the most innovative in the economy, recruiting highly educated and skilled

workers, and they play an important role in the learning and innovation process of their client firms.

These studies of national institutions highlights the perils associated with attempts to mechanically transfer institutional setups that have been successful in particular national environments to others, as well as the difficulties involved in identifying a best practice in institutional systems (Lundvall and Johnson, 1994). This literature also reveals that many of the national institutions that shape knowledge creation and diffusion are not technocratic in nature, but are often contested and subject to intense political conflict (for example, national education and training systems or the corporate governance and finance systems).² As a result, national institutional frameworks for learning and innovation are the product of the historical development of national business and innovation systems.

Although the different strands of the literature on national business and innovation systems have made significant contributions to the understanding of knowledge creation and diffusion, the focus remains local and national, and researchers have yet to engage in the opportunities and challenges faced by firms inserted in GVCs. A key insight of GVC analysis is that firms that are integrated in the global economy are subject to intense pressures to learn and upgrade their products and processes, while also encountering greater opportunities to acquire new knowledge and skills. Moreover, the needs of firms inserted in GVCs and the support they require from national business and innovation systems may differ from those of indigenous firms with weaker exposure to the quality standards and practices of international markets (Ramirez, Love and Vahter, 2013). By making connections between the literature on knowledge acquisition in GVCs and that on national learning and innovation systems, this paper provides a deeper understanding of how upgrading takes place in services firms inserted in both national and global networks.

B. Method

Based on a review of existing empirical studies in the academic literature, the chapter examines the effect of national innovation and business systems on learning and upgrading in services GVCs. An analysis of existing academic studies indicates that the following five institutions have a strong impact on learning and upgrading in service industries: institutions related to human capital formation; national science and technology research systems; the industrial structure of countries in

² See Streek (1989) for an example discussing skills.

terms of which industries are important, whether large or small firms dominate, and whether the relevant industries are locally or foreign owned; national demand; and intellectual property protection. Studies of service-based GVCs further identify the specific character of these networks in different locations (such as the extent to which locally owned firms or MNC subsidiaries dominate) and the general demands they place on skills and knowledge in each particular locality. These studies, however, seldom discuss whether MNC subsidiaries and locally owned firms require different types of institutional support systems in order to upgrade their capabilities, nor do they delve into how the different skills and knowledge required by firms inserted in GVCs were provided in different countries.

Having identified the key institutions for upgrading in services GVCs, I then analysed the literature on national innovation and business systems of middle-income and developing countries with a strong presence of services GVCs in order to explore the particular character of these five institutions in the relevant countries. Systematic and detail academic studies tend to focus on only three areas: India, Ireland and Eastern Europe. The chapter therefore focuses on the five institutions identified as important for upgrading and innovation in services GVCs in these three geographical areas. Most of the studies reviewed are qualitative, which limits their usefulness for generalizing from any particular experiences. Nevertheless, they do provide a basis for exploring what happens inside firms in terms of their learning and upgrading practices and their linkages with local institutions for knowledge creation and diffusion.

C. Results

The most significant finding from the review of existing empirical literature is the dearth of studies that directly analyse the relationship between national institutions for knowledge creation and diffusion in services GVCs. Work on service industries suggests that learning and innovation depend on institutions related to human capital; national science and technology research systems; industrial structure (whether firms are locally or foreign owned and where new firms come from); national demand; and intellectual property protection. Empirical studies of these five institutions in the three geographical areas with strong services GVCs give important insights into the specific character of national innovation and business systems and how they influence the ability of firms to upgrade their activities. The discussion below focuses on the lessons from these studies.

1. Institutions related to human capital

Empirical studies of services GVCs indicate that following three sets of factors have a great influence on firms' ability to learn and undertake more complex service functions: (i) the character of national systems for skills, education and training; (ii) the nature of national institutions for career and professional development; and (iii) the cost, supply and retention of labour.

(a) National systems for skills, education and training

Studies of MNC subsidiaries and indigenous firms inserted in services GVCs highlight the importance of access to skilled labour at relatively low cost as a key reason for the increase in the outsourcing and offshoring of service activities. These studies also link the ability to undertake more complex functions in GVCs to the increasing sophistication of labour skills and experience (UNCTAD, 2004; Dossani and Kenney, 2007; Massini and Miozzo, 2010; Gereffi and Fernandez-Stark, 2010). Although much of the present literature on the outsourcing and offshoring of services focus on skills in ICTs and software engineering, the offshoring of service functions started before the advent of ICTs. A number of locations that now have strengths in ICT-related services developed their competencies as services providers prior to the ICT revolution. In the case of the United States, for example, the offshoring of service work started in the 1970s, when batches of data were transported by ship and air for processing in the Caribbean (Metters and Verma, 2008). By the mid-1990s, a number of firms in the United States had also established offshore paper processing activities in Ireland. Though much of this work was unskilled, some activities (such as the processing of health insurance claims in Ireland) involved professional workers (in this case, nurses). Today both Ireland and the Caribbean are locations for services GVCs (Mulder and others, 2007), based on the availability of a broad range of skills. This experience cautions against an exclusive focus on the technical knowledge associated with modern ICTs.

The emergence and diffusion of ICTs is central to the emergence and rapid expansion of services GVCs offering software and computer programming services, as well as numerous ICT-intensive business and knowledge processing services. The increasing importance of ICTs in business functions meant that many firms which started out as providers of IT services, such as IT maintenance and software programmers, were able to diversify their service offering into ICT-intensive business processing services such as payroll and accounts, thereby widening their demand for skills. While initial accounts of the rise of ICT services GVCs thus tended to focus on the demand for highly educated ICT workers,

more recent accounts have identified a broader set of professional and language skills necessary for upgrading in business processing activities (See Gereffi and Fernandez-Stark, 2010; Sass and Fifekova, 2011).

India has a strong service industry made up of both MNC subsidiaries and strong locally owned firms. Though the origins of today's Indian services industry is associated with the development of relatively low-value software services activities, the ability of Indian firms to upgrade to more complex functions is widely acknowledge (Arora and others, 2001; Athreye, 2005; Dossani and Kenney, 2007). Research on the Indian software services industry shows that the country's national system of education, with its emphasis on science and engineering, has been a central to the development of this industry. India's engineering colleges have increasingly specialized in the development of software engineers, which has in turn led to the agglomeration of software MNCs around the pools of skilled labour clustered around these institutions (Arora and others, 2001). Moreover, a number of government initiatives in education during the 1970s and 1980s resulted in the introduction of numerous graduate and postgraduate programmes in computer sciences, and proficiency in computer programming is mandatory for all undergraduates of India's Institutes of Technology (IITs) and science postgraduates at all major universities (Joseph, 2009). At the same time, both public and private training initiatives were introduced to develop software skills among the workforce. These initiatives included support by India's Department of Education for training programmes in software development in firms and the establishment of private training centres. The significance of these initiatives for the development of India's software and ICT services industry is highlighted by Arora and others (2001), who report that a number of firms indicated that a graduate engineering education was needed to impart problem-solving skills, logical thinking and learning tools to employees, allowing them to quickly adapt to changes in technology and tasks. These skills and capabilities were deemed necessary since Indian firms aimed to provide a wide range of services.

While the large number of university-trained engineers has been seen as one of India's strengths in software and business services, various studies point out weaknesses in these initiatives. Joseph (2009) cites the uneven character of the ICT training imparted by private institutions. Arora and others (2001) note the inefficient use of human capital that results when highly qualified engineers are working in tasks that underutilize their knowledge and skills. This is explained by the fact that Indian software firms servicing the United States market prefer to recruit university-trained engineers rather than graduates of private training institutes, even though the majority of the job tasks are relatively

non-technical. Arora and others (2001) suggest that a more efficient use of skills would result if firms organized short software training courses for college graduates. Firms are reluctant to do this, however, because they do not want to give the impression to their international clients that they do not have the necessary qualified workforce. In contrast, Wadhwa et al (2008) study workforce development in India and find a number of workforce training and development initiatives introduced by major Indian firms. Their works suggests that human capital development is an important strategic priority in Indian services GVCs.

In the case of Ireland and Eastern European countries, the empirical studies reviewed indicate that the services industry is mainly dominated by MNC subsidiaries serving large firms and other MNCs within the host country and surrounding regions (Grimes and White, 2005; Grimes, 2006; Sass and Fifeekova, 2011; Hardy, Sass and Fifeekova, 2011). In these countries, locally owned business service firms appear to mainly serve niche markets or local SMEs and be weakly connected, if at all, to other GVCs. As discussed below, research indicates that in the Czech Republic, Hungary and Slovakia, as well as Ireland, the presence of business services MNC subsidiaries generated specific demands on national educational provision, which were positively met by national governments. In the case of Hungary, for example, a number of initiatives were developed in conjunction with the Hungarian Outsourcing Association, including the introduction of secondary-level training for future call-centre employees and university-level training course in service sciences (Hardy, Sass and Fifeekova, 2011). In the main, subsidiaries of services MNCs in Eastern European countries appear to want access to the specific language skills necessary for servicing the local region, so knowledge of at least one foreign language is a prerequisite for employment. Hardy, Sass and Fifeekova (2011) find that 80 to 90% of employees in these firms have a university degree, and the majority speak more than one foreign language. Firms tend to favour university graduates, not because the work requires university-level skills, but because graduates are more likely to have language skills. This suggests an inefficient use of knowledge and skills, as university graduates are employed in jobs that only require intermediate skills, while workers possessing the necessary, though lower-level, training are displaced from these jobs. On the other hand, there are significant shortages of specific skills related to IT and application specialists (Hardy, Sass and Fifeekova, 2011).

In the case of Ireland, access to a comparatively cheap, well-educated, English-speaking workforce was until recently the main argument used by Irish investment-promotion agencies to attract FDI in services GVCs (Mac Sharry and White, 2000). Since the late 1970s, the

Irish government has placed a high priority on developing a technically competent workforce and establishing an education system responsive to the skills requirements of foreign investors. This has led to a number of initiatives such as the creation of Regional Technical Colleges (RTCs) to supplement the universities and the establishment of a forum for dialogue between Ireland's Industrial Development Agency (IDA) and the education system, which has clearly placed industrial policy and the needs of MNCs at the centre of education and training policy (Barry, 2005). In the 1980s, initiatives designed to train school leavers in the basics of computerization, office procedures and business operations were rolled out at the same time that a programme of grants to enterprises for employee training was introduced. These grants were often included in the incentive package offered to MNCs locating in Ireland (Trauth, 2001). Ireland's accession to the European Union was crucial for the growth of its vocational and technical education system, as this expansion was largely financed with the assistance of European funds (Barry, 2005). Case studies support the notion that over time firms located in Ireland have tended to increase the numbers of engineers and technicians they employ. At the same time, these studies find that newer waves of FDI have tended to employ a higher proportion of skilled employees (Wickham and Boucher, 2004). While Ireland's institutional system of education and skills development has adjusted well to the changing needs of the foreign-owned sectors, there are concerns that the requirements of indigenous industry have been neglected (Wickham and Boucher, 2004; Ramirez, Love and Vahter, 2013). Moreover, as in the case of Eastern Europe, engineers in the software industry have been underutilized in terms of their skill level at various points in the development of the industry (Ó'Riain, 1997).

(b) Importance of a national research system for a high-skilled workforce

To undertake the more knowledge-intensive activities of the value chain, firms need access to high-skilled labour with doctoral degrees, research expertise and problem-solving experience. Studies of research and development (R&D) outsourcing in the pharmaceutical industry, for example, indicate that performing activities at this level of the value chain requires employees who are problem solvers, fixers and idea generators (Ramirez, 2013). While the international movement of labour through expatriate workers, immigration or education in foreign universities can alleviate shortages of knowledge workers, the lack of a national research system undermines the ability of indigenous firms and MNC subsidiaries to perform the more complex activities in GVCs (Athreye and Kapur, 2009). In the case of the Indian software and business services industry, for example, Arora and others (2001) point to the country's weak postgraduate

research and training infrastructure as a potentially serious constraint on the ability of Indian-based firms to develop research and problem-solving expertise. In the case of Ireland, the emergence of a number of international locations specializing in services activities in the 1990s led the Irish government to increasingly target the higher-value activities of the GVC for FDI. The need to create a pool of very highly skilled workers with research expertise in order to attract and embed high-value activities was one of the arguments presented by Irish policy makers to support a major shift in resource allocation towards the establishment of a national research system (Ramirez, Love and Vahter, 2013).

(c) Employment retention

The studies of India, Ireland and Eastern Europe reveal periods of high labour market attrition and turnover rates, with firms finding it difficult to retain high-skilled employees (Hardy, Sass and Fifeekova, 2011; Arora and others, 2001; Mac Sharry and White 2000). While this resulted in higher labour costs in all the countries studied, some countries responded to tight labour market conditions with a number of institutional initiatives. In the case of India, where locally owned firms (compared with MNCs) have found it particularly challenging to retain employees (Parthasarathy and Aoyama, 2006), one response to high labour turnover has been to provide career paths to employees; for example, by promoting software programmers to management positions based on seniority rather than on proven managerial ability (Arora and others, 2001). This practice was questioned by client firms in the United States, who argued that this practice weakened project-management capabilities in Indian firms. Interestingly, Parthasarathy and Aoyama (2006) suggest that Indian-owned firms have developed different trajectories for upgrading than Indian-based MNCs, which has influenced employee retention rates. They point out that the changing nature of the work performed by Indian R&D service firms has created new advantages for their employees, as they enable ICT professionals to continuously develop their skills. This contrasts with MNCs, whose employees often criticize the repetitive nature of their work. Further research is needed to establish whether this is also linked to more dynamic career progression in Indian-owned firms.

2. National science, technology and innovation research system

As firms undertake more complex functions in GVCs, the existence of a dynamic national science and technology research system becomes increasingly important. There are a number of reasons for this, including the need to develop a high-skilled workforce with research expertise; the ability to access consultancy services and advice from public-sector

research establishments and/or university research teams; the potential for more in-depth knowledge transfer in academic-industry links; and the potential for creating research-led academic spin-out firms with potential for insertion in the higher-value functions of GVCs.

In the case of India, government R&D efforts in software development within a variety of public research institutions and universities were central to the build-up of national capabilities and the development of a critical mass of skilled workers with software expertise (Parthasarathy and Aoyama 2006; Joseph, 2009). In addition to working for MNCs and large Indian-owned firms, many of these highly skilled workers went on to become the entrepreneurs who underpinned the development of local clusters of home-grown firms in areas such as Bangalore. Joseph (2009) argues that India's national science and technology system played an important role in attracting R&D investment by MNCs headquartered in the United States, which allowed their Indian subsidiaries to undertake higher-value activities in GVCs. Studies, however, also highlight how the existence of weak industry-academic links has generated a mismatch between the skill sets of employees and firms. Consequently, large companies have to make substantial investments in in-house training (Joseph, 2009). Some of these firms (such as TCS, Wipro and Infosys) have a larger training infrastructure than the country's leading universities. The commitment of Indian indigenous firms to their in-house training programmes is clear evidence of their drive to develop their own GVCs, and it contrasts with the weak indigenous industry in Ireland (Ramirez, Love and Vahter, 2013).

For countries where FDI is important, the presence of a dynamic research base may be necessary for both attracting and embedding the higher-value activities of MNCs. Hardy, Sass and Fifeekova (2011) give evidence of significant R&D cooperation between MNCs and universities, with examples of companies financing selected university activities in the Czech Republic, Hungary and Slovakia. The increasing international competition for FDI has led Ireland to develop an internationally competitive academic research system capable of generating knowledge relevant for industrial innovation, dynamic university-industry links and academic spin-out firms. This research system has become a central plank of the country's policy efforts both to attract and embed new waves of higher-value FDI activities and to create a new generation of indigenous firms capable of undertaking higher-value activities in GVCs. Research on industry-academic links in Ireland shows that firms with higher R&D, skills and export intensity have created the most linkages with universities (Ramirez, Love and Vahter, 2013). These firms tend to be subsidiaries of MNCs. Because they are deeply embedded in the global science and technology networks of their parent firms, they have

also developed substantial internal capabilities outside of the Irish innovation and business system. In contrast, Irish-owned software firms appear to have weak linkages with the new research system, due to the long-term nature of academic research and the need to contribute funding for these activities (*ibid.*). There are concerns that the science and technology research system emerging in Ireland is deepening the dual character of the country's industrial structure, which has been identified as a significant weakness for sustainable growth. While the policies introduced in Ireland were strongly influenced by best practices in high-technology industries or well-performing regions in the European Union and the United States (Liagouras, 2010; Tödtling and Trippl, 2005), they were not necessarily appropriate to the character of Ireland's industrial structure or stage of development.

3. Industrial structure

A key question for countries aiming to establish activities in services GVCs is where new service firms come from. New firms can arise from a number of sources. FDI is clearly one source of new firm formation; this has been very important for countries following FDI-led industrialization strategies such as Eastern Europe, Ireland and Singapore. The sources for new indigenous firms include the national science, research and academic system and spin-outs from existing national firms or MNCs. In countries such as India and Ireland, specialized spin-out firms from MNCs were critical to the emergence of a locally owned service industry. For example, the exit of IBM from India led to the establishment of small entrepreneurial firms by former IBM employees (Athreye, 2005). Many of the professionals that were later to become the founders and managers of home-grown higher-value service firms developed their technical and managerial expertise while working in the Indian subsidiaries of multinational firms (Parthasarathy and Aoyama, 2006; Joseph, 2009). Similarly, many of Ireland's indigenous firms are spin-outs from MNCs headquartered in the United States, and their technical and managerial employees gained critical knowledge from their employment in these larger firms (O'Malley and O'Gorman, 2001). Other examples include the emergence of Indian contract research organizations (CROs) in the pharmaceutical industry, after Indian-owned firms bought out MNC subsidiaries in the 1990s and 2000s, including their Indian-based research centres. This process allowed indigenous firms to develop critical capabilities and skills that facilitated their insertion in the GVCs of pharmaceutical lead firms based in the European Union and the United States (Athreye and Kapur, 2009).

Existing national firms are another important source for new firms entering GVCs in new dynamic sectors. In the Indian services industry, many indigenous entrants were traditional firms (such as indigenous computer hardware firms or enterprises with large in-house data-processing activities) that diversified into software (for example, Wypro). Spin-outs from large national firms have also successfully inserted themselves in GVCs (see Arora and others, 2001 for examples). A key challenge, however, is the existence of a financial system able and willing to support high-risk start-ups. In the case of both India and Ireland (through Enterprise Ireland), state financial assistance has been an essential source of finance for these firms (D'Costa, 2003). Indian start-up firms have also received financing from Indian techno-entrepreneurs based in Silicon Valley in the United States, who have become angel investors for Indian companies (D'Costa, 2003).

Research on national institutions indicates that the extent to which firms collaborate and interact at the national level also influences the learning trajectory of firms (Hall and Soskice, 2001). Studies of inter-firm relationships reveal that in a number of countries and regions, industry associations have supported firms' efforts to upgrade in GVCs by helping to provide technological knowledge and market research, both formally and informally (for example, through peer group networks). In the Indian service sector, NASSCOM has provided valuable market research (Parthasarathy and Aoyama (2006) and promoted India's international image (Joseph, 2009). In the Czech Republic, Hungary and Slovakia, companies participated in the development of business institutions through their membership in chambers of commerce, business clubs and outsourcing alliances. Hardy, Sass and Fifeekova (2011) find that these associations provide a forum for exchanging ideas and transferring industry-specific tacit and codified knowledge.

4. Importance of national demand

The strength and sophistication of national markets also have an effect on firms' ability to insert themselves in GVCs and upgrade their activities, above all in the early stages of development of indigenous firms. The main explanation for this is that most firms start out in national markets, where they develop the necessary skills to compete in international markets. Private sector client firms, MNC subsidiaries and public procurement all stimulate learning and upgrading in service firms not only by making stringent demands on quality, but also by giving service providers the opportunity to deliver more complex services (Botelho, Stefanuto and Veloso, 2005). In India, for example, the

exit of IBM from the Indian market created domestic demand for locally owned firms who could support domestically produced computers (Athreye, 2005). This process, along with the demand for programming skills by public sector programmes, promoted the formation of the knowledge and skills base that underpinned the growth of the Indian software and business services firms. The national market remained important even after Indian software firms had successfully entered international markets, as domestic clients requested more challenging projects than the export markets and thus fostered the development of a broader range of skills. While the bulk of exports from Indian service firms consisted of low-level design, coding and testing, projects for domestic customers were larger and more complex, as in the case of the establishment of the screen-based trading system for the Bombay Stock Exchange and the reservation system for India's railways (Arora and others, 2001). The products and services developed for these contracts resulted in strengthening capabilities and served as the basis for subsequent market expansion.

In Ireland, firms in the indigenous software industry got their start developing products and services for their domestic clients (such as the Irish banking system). However, the increasing dominance of MNCs, with their network of overseas suppliers in Ireland, and the rise of global procurement weakened the national market for indigenous firms. At the same time, anti-competition laws in the European Union restricted the ability of the Irish public sector to support the development of national firms via the procurement activities of government organizations such as libraries and local municipalities. These limitations on the Irish national market have raised significant obstacles for the emergence of a robust indigenous business services industry.³

Once an industry has been established, however, exposure to international markets may be necessary for its further development. For example, the R&D services sector in Bangalore evolved as part of the global networks associated with Asian (especially Taiwanese) semiconductor GVCs (Parthasarathy and Aoyama, 2006). These R&D service providers have grown without the support of local industry, and linkages to Asian networks have allowed Indian software firms to "path skip" to R&D services. Nevertheless, the origins of these Indian firms can be traced back to the pool of designers employed by two Bangalore-based public sector firms.

³ Based on a personal interview with the Irish National Software Association.

5. Intellectual property protection

Historically, national intellectual property regimes helped shape the ability of national firms to insert themselves in GVCs and the manner in which they did so. The World Trade Organization (WTO) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) have undermined these national differences, although TRIPs remains controversial. One example of the importance of national intellectual property regimes is how the patent legislation in India shaped the development of the Indian pharmaceutical industry. Prior to WTO accession, India's intellectual property legislation protected process but not product innovation. The nature of this legislation allowed Indian pharmaceutical firms to copy and reverse-engineer the pharmaceutical and chemical compounds of leading chemical and pharmaceutical MNCs, whereby Indian-owned firms developed quite extensive expertise in chemistry. India was forced to abandon this "developmental patent regime" (Schüren, 2012) as part of its entry into the WTO and its decision to abide by TRIPs, which requires the provision of patent protection for innovations in both products and processes. After the TRIPs agreement, a number of leading Indian pharmaceutical firms invested heavily in R&D to further upgrade their capabilities and undertake more complex activities. Many of these firms have developed into significant R&D service providers and are successfully inserted in the GVCs of global pharmaceutical companies (Athreye and Kapur, 2009). Global pharmaceutical lead firms and biotechnology companies are increasingly outsourcing chemistry-based activities, including R&D, to Indian pharmaceutical contract research organizations (CROs) (Ramirez, 2013). These Indian CROs can participate in GVCs today as R&D service providers because they developed strong capabilities in chemistry partly through reverse engineering before the patent laws were changed.

In contrast, India's software industry association (NASSCOM) has supported anti-piracy initiatives in software, which illustrates the complexity of intellectual property institutions even within the same country (Joseph, 2009). This reflects the different needs of industries at different stages of development and GVC participation. Though today there is much less scope for reverse engineering and imitation-based learning and innovation strategies, intellectual property protection remains an issue of contention within and between countries.

D. Conclusion

Systematic academic studies tracing the rise of services GVCs and analysing the role of national institutions in shaping learning and innovation processes in these global networks are few and far between, suggesting a real gap in our understanding of how upgrading takes place in today's global economy. The empirical studies analysed in this chapter reveal distinctions between services GVC activity in India versus in Ireland and Eastern Europe. While India has both MNC and locally owned services GVCs, services activities in Ireland and Eastern Europe are dominated by MNCs. The studies clearly suggest that national institutional differences were important influences in determining which firms were able to participate in services GVCs and the manner in which the resources required for learning and upgrading in these networks were created and developed.

The importance of human capital is highlighted in all studies that focus on the historical development of services GVCs. These studies identify national education and training systems as central for both the emergence and upgrading of firms' capabilities within these global networks. However, alternative strategies of industrialization have led to important differences between the education and skills development system of India, which was mainly geared towards the development of locally owned GVCs, and those of Ireland and the Eastern European countries, where FDI was a stronger force. The empirical studies reviewed indicate that the success of India's services industry hinged on the national education and training system, which placed a strong emphasis on science and engineering. Government education and training initiatives in the field of computer sciences started early and included government-sponsored programmes at both the undergraduate and postgraduate levels in universities and colleges, as well as support for software development courses in private training centres and firms. Given that the origins of the ICT-intensive business services industry was initially in the areas of software and ICT-services, India's early emphasis on science and engineering education placed it in a strong position to develop this industry. The existence of a critical mass of scientists and engineers has been a key element in India's ability both to attract FDI in ICT-related services and to develop its indigenous industry. A key distinguishing feature in India, however, appears to be the significant in-house training programmes of some of India's large indigenous firms.

In contrast to India, Ireland does not have a history of strong public investment in science and engineering, but the importance of FDI in Ireland's industrialization strategy has made its education and training systems very responsive to the skill needs of foreign investors. Since the

1960s, the Irish development strategy has been to target inflows of foreign investment in higher-value industries and activities. As part of this strategy, various Irish governments have introduced initiatives in vocational and technical education and training to increase both the technical and business competence of its workforce. Similarly, the more recent evidence from Eastern Europe shows that government responsiveness to the skill needs of foreign investors has influenced inward flows of foreign investment. A number of challenges and controversies are associated with the education and training systems in both sets of countries. In Eastern Europe, for example, there are important questions about the efficiency with which highly educated labour is used, in that skilled workers are underutilized while workers with intermediate qualifications do not find employment. In the case of Ireland, on the other hand, a policy system which is highly responsive to the needs of MNCs has been criticized for neglecting the skill needs of indigenous firms. Despite the identification of underutilized knowledge and skills, empirical studies in Ireland indicate that the country's weak postgraduate research infrastructure hinders the country's ability to develop and attract the highest-value activities of service-based GVCs. These activities require more in-depth problem-solving and idea-generating capabilities, which tend to be associated with research. The identification of these gaps suggests that it is not easy to efficiently match the skill needs of the high-value activities in value chains with the knowledge and skills developed in national education and training systems. Nevertheless, different countries, all of them successful as locations for business services GVC activity, have developed different education and training systems, which have resulted in different forms of GVC involvement.

The existence of a national science, technology and innovation research system appears to be an important factor for the development of an indigenous industrial base, as well as for attracting FDI in the higher-value activities of business services GVCs. In the Indian case, government R&D efforts in software development helped create the group of very skilled workers that was crucial for attracting foreign inward investment in higher-value activities. It also contributed to the emergence of indigenous entrepreneurs, which underpinned the rise of India's local clusters of indigenous business service firms. Ireland, on the other hand, did not have a significant national science, technology and innovation research system until 2000. This is one of the factors that explains the country's very weak indigenous industrial structure. The development of an internationally competitive national science and technology system has been a major policy initiative in Ireland in recent years, as part of the country's strategy to attract the higher-value activities of United States-based GVCs. The system being created, however, has been criticized for being of little relevance to existing indigenous firms, and thus far it has not been a source of Irish-owned

entrepreneurial start-ups. Moreover, while there is evidence that MNCs are locating higher-value activities in Ireland, it is not clear that Ireland's efforts to create a national science and technology system have resulted in the upgrading of these investments. The experience of Ireland, with its complex dual industrial structure, illustrates the complex role of national science and technology institutions in industrial development and why the implementation of best practices can result in institutional systems that are marginal to efforts to upgrade in GVCs.

The countries' industrial structure and national markets influence the type of firms able to engage in GVCs and their activities. Empirical studies from India and Ireland indicate the importance of MNCs as a source of indigenous start-up firms; India also has a number of spin-out firms from large national companies. Few studies, however, discuss the institutional support given to start-up firms in areas such as finance or market intelligence, though industry associations are involved in the latter. More research on the longevity of these start-ups and the type of support they require is necessary both because of the challenges faced by small entrepreneurial enterprises and because few countries have managed to engender significant numbers of these firms. One key factor is the nature of the domestic market. Research on the Indian software industry shows that even after indigenous firms had successfully internationalized, the domestic market remained a source for more challenging projects that required a broader range of skills than those demanded by international markets, thereby contributing to upgrading and learning processes. From a policy point of view, this has important implications for the role of public procurement policies in the development of the capabilities of firms and their participation in GVCs. The experience of India contrasts sharply with that of Ireland, where Irish-based MNCs have tended to buy services from other MNCs, and public procurement has not been seen as a policy tool to support the upgrading capabilities of indigenous firms.

Research shows that learning and upgrading in GVCs is a challenging task that requires a complex combination of long-term firm-level investment to develop in-house capabilities and knowledge flows within global networks. Despite the dearth of empirical research on the influence of institutional systems on the ability of firms to undertake more complex functions within GVCs, the studies reviewed in this paper indicate that differences in national institutions have shaped the various learning and upgrading trajectories of countries and firms with a strong presence of services GVCs. A more systematic approach to the study of national innovation and business systems is needed to gain a full understanding of the manner in which institutional systems matter for learning, upgrading and innovation processes in services GVCs.

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Chapter III

When SMEs think about delocalization: Theoretical issues

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Abstract

There is a wealth of delocalization studies for major corporations, but they largely overlook the constraints and mechanisms of decision-making in small and medium-sized enterprises (SMEs). We therefore analysed SME strategies in a bid to identify the risks and potential benefits of delocalization using a blend of internationalization theory, transaction cost theory and neo-institutional theory. This paper highlights linkages among these theoretical underpinnings and how they apply to SME delocalization decision-making.

Keywords: Internationalization, SME, delocalization, relocation.

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Introduction

The changing landscape of domestic and international markets entails ever stiffer competition which upsets the internal and external organization of individual corporations as it unhinges businesses operations from their national framework (Colletis and Dieuaide, 2012).¹ While this trend offers new business opportunities, it also demands more competitiveness through a quest for better business models that optimize financing and costs. Although some researchers prefer to reason in terms of regionalization, globalization has been shifting sales, production, and research and development out into the emerging markets at an ever greater speed (UNCTAD, 2005). Up to the end of the twentieth century, manufacturing and business services firms were not interested in worldwide markets. Since then, however, information technologies and the internet revolution have opened new kinds of relations between foreign markets and foreign service producers, and manufacturing and business services firms are now investing in foreign countries on a large scale (Py and Hatem, 2009)

One focus is the robust sales opportunities available in high-growth economies. These can be exploited in several ways, from simply adapting a current product or service to different existing needs, to identifying entirely unsuspected needs or applications. However, this brings up issues of marketing, knowledge of local markets and internal capacity for innovation. Companies need to fully understand the local market if they are to adjust efficiently and to anticipate upcoming changes in the marketplace. Moreover, delocalization models based on previous experience may not be relevant to the new market and thus require serious reworking.

In any case, location becomes an open question. Delocalization is a key strategic move that corporate leaders are very wary of making owing to a variety of constraints. Changes in the world business environment are forcing companies with strong ties to their home turf to reconsider those ties and question what had been self-evident: production happens where the company was first founded. But customers are also demanding proximity. This question sometimes triggers a decision to delocalize activities and develop new kinds of competitive advantages through market proximity (Dunning and Lundan, 2008; Mayrhofer and Urban, 2011). Another constraint comes from the principals, who are squeezing prices, or customers who want their suppliers located near their own overseas operations after they have delocalized to new markets.

¹ Many thanks to our English supervisor, Arthur, who passed away some months ago.

Conversely, national, regional and local governments lobby powerfully against delocalization because of the resulting job losses, but the quest for greater competitiveness often leads to at least some delocalization overseas nevertheless (OECD, 2007a).

There are many studies on how and why French businesses delocalize (Erramili, Agarwal and Kim, 2007; Banque de France, 2004; Chevallier, 2004; Aubert and Sillard, 2005; Duval, 2004; Mouhoud, 2006; Mayer, Méjean and Nefussi, 2007; and Berger, 2007), but most understandably investigate major corporations and manufacturing firms because they were the first to ship out and still constitute the bulk of delocalizers (Heres and Schwarz, 1997; Coucke and Sleuwaegen 2007, Py and Hatem, 2009). Then too, "SMEs delocalize little compared to big business, and they do it reactively rather than proactively" (Heres and Schwarz, 1997). Small and medium-sized enterprises (SMEs) also have little experience of globalization, and few are truly global-minded (Rugman, 2005). Although strong ties to the home market and its business environment make many SMEs more reluctant to delocalize than big business, recent studies report their increasing willingness to do so (OSEO, 2009). Today, only the agrifood industry remains immune to relocating production (Demmou, 2010).

The literature stresses both the variables pertinent to delocalization (such as size, suitability of the local environment, production cost savings, proximity to raw materials and markets, availability of local labour and bandwagon effects) and the low quality of objective indicators (such as forecasts of productivity gains and shipping costs) (Houseman, 2007), which clouds rational thinking. Unsurprisingly, actual outcomes sometimes disappoint. The media now give extensive coverage to the meagre fruits and organizational difficulties suffered by SMEs abroad, even though such failed delocalizations constitute a minority of cases. Few SMEs have relocated despite access to government grants since 2009. This often reflects a poor grasp of the delocalization process and obsessive focus on labour issues, with insufficient attention to the full ramifications of setting up and operating a production platform in the global marketplace (Coris, 2012).

Governments are increasingly interested in the international expansion of national businesses. Burgeoning trade deficits have prodded the French authorities to incentivize SMEs and others to expand their modest overseas presence. In tandem, a new ministry was founded in 2012 to promote development of local industry at home. But how compatible are these two initiatives? Is government encouraging internationalization and undercutting delocalization at the same time?

Many questions remain unanswered and largely uninvestigated. It is a quantum leap for an SME to relocate production or service production (servuction) abroad with remote management from the head

office after years of hands-on, on-site control of both. Today's business environment tends to disperse business activities and to fragment value chains (Colovic and Mayrhofer, 2008), thereby raising serious new issues for many SMEs.

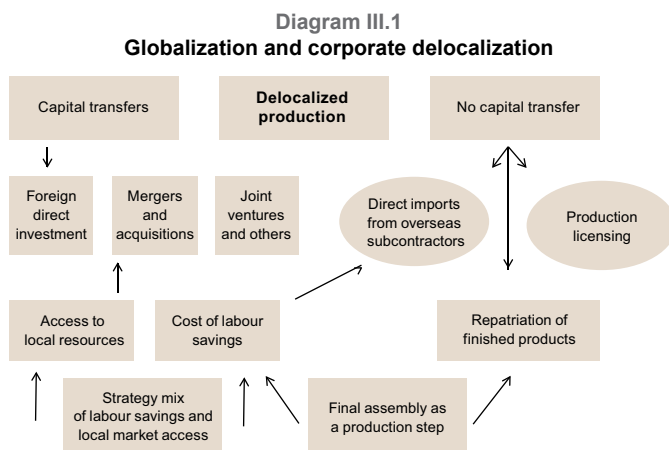
This phenomenon therefore deserves analysis from the perspective of SMEs. Relocation is a strategic issue, not a polemical one, which demands documentation in terms of multiple frames of reference, each compared against the others, in order to map out the complexity of the decision-making process and outcomes. This investigation is all the more necessary for SMEs that already have an overseas platform, which they use not only to blend into the local market, but also to expand abroad beyond their original dreams after realizing they had internal skills and know-how that equipped them to compete in new sectors of the local economy. Although initially intended to simply cut costs, delocalization can be a springboard to build international activities and overcome sundry impediments to internationalization that are onerous for SMEs (Acs and others, 1997; Veilleux and Ferro, 2010). Given dynamic management capable of stimulating innovation and managing risks (Etemad, 2004; Yang, Leone and Alden, 1994), overseas locations may well generate new opportunities (Oviatt and McDougall, 2005).

Before analysing the impact of delocalization on the international development of SMEs in terms of a range of theoretical underpinnings, we address a research question of concern to managers and elected officials alike: how shall we define delocalization?

A. Pinning down delocalization

The definition of delocalization is cloudy and polymorphic. The term designates the replacement of a labour force in one country by that of another, either through direct investment or subcontracting, with the intent to boost a company's performance and competitiveness (Grignon, 2004). More broadly, delocalization is also "the displacement of selected production processes (subject to vertical division of labour), as well as outsourcing of a given process by subcontract to a foreign company" (Banque de France, 2004). Other researchers reason in terms of production destinations, such that delocalization becomes "a microeconomic decision whereby a company transfers a production step abroad and repatriates the output, in whole or in part, to the country of origin" (Chanteau, 2001). Such an organization is common for production or services steps for manufacturing and business service firms, which are designing their value chain on an international basis.

Diagram III.1 sets forth the justifications and modalities for delocalization (Mouhoud, 2006). In this paper, we define delocalization as the decision to produce abroad for repatriation of the output in whole or in part, whether through a subsidiary or joint venture (Mayrhofer and Urban, 2011). Our definition excludes multilocalization, whereby a company locates abroad for proximity to local demand with zero repatriation. It further excludes overseas subcontracting involving no foreign direct investment (FDI). We find that this definition best reflects mainstream thinking among SME managers with an eye to the viability of their production platform and its value as a strategic asset, both financial and economic.



Source: E.M. Mouhoud, *Mondialisation et délocalisation des entreprises*, Paris, La Découverte, 2006.

Beyond the definitions is the issue of scale. Different researchers obtain different figures that are not comparable (Kirkegaard, 2008; Fontagné and Touball, 2010). Overseas production facilities are included under foreign direct investment (FDI), while outsourcing or production steps leading to the repatriation of output fall under the customs heading of outward processing, the standard indicator of delocalization activity (Chedor, 2000).

Although outward processing is a sideshow (Mayer, Méjean and Nefussi, 2007), companies hesitate to disclose figures for overseas processing of products intended for repatriation because they might generate controversy and become socially explosive for all players involved. We are therefore left to abandon the financial aspect and to shift our focus to the issues and modalities of the delocalization process itself (Carrincazeaux, Coris and Piveteau, 2010).

B. Management policy and international expansion

Economists, geographers and historians have been observing corporate relocation at least since the emergence of the first multinationals in the late nineteenth century (Mouhoud, 2006). Interest picked up in the late 1950s as FDI from the United States flooded Western Europe. The history of delocalization became indistinguishable from that of international expansion, and it was a tale of both conquest and a drive to cut costs. Hymer (1968) explains multinationalization by the presence of specific transferable advantages that enable a company to lock in yields that outweigh set-up costs, while remaining competitive in host countries. Examples of such advantages include a technological breakthrough, superior marketing or privileged access to production input. In the course of management research, Vernon (1966) develops the concept of the international product life cycle. In many cases, a manufacturing or service firm first builds at home for the local market, then expands further afield until the need to protect margins leads the firm to set up operations at new locations closer to the new client bases, where it can better adjust to local demand and play off the competitive advantages of the home versus host markets. For business service firms, the internationalization process may be organised in various ways. The client can visit the supplier in its own country; the supplier can go to the client; or the firm can employ both modes of interaction. Regardless, cross-border exchanges are not as frequent as in manufacturing firms (Léo and Philippe, 2001). The Vernon or service model considers delocalization to be a natural stage of corporate development conducive to economic growth.

From this standpoint, the stepladder to delocalization may appear highly deterministic and dependent on wide gaps of technology or economic development between the home and host countries. Some researchers take a finer view, however, when they note that cost savings are not the sole impetus for delocalization and that any actual location is not a neutral variable acting as passive host to its corporate guests. A French study on the location of business service firms (Py and Hatem, 2009) shows that business service firms are investing more deeply in Western than in Eastern Europe even if wages are higher: 83% of services investment is in Western Europe, versus 16% in Eastern Europe. The gap is not so wide for manufacturing firms (64% versus 35%). The nature of a host location determines its appeal, which is likely to affect its final selection or rejection (Carrincazeaux, Coris and Piveteau, 2010).

1. Delocalization and cost savings

Delocalization became easier and faster toward the end of the twentieth century as a result of advances in information technology and sudden access to new markets. This context shortened both the lag in technology and the preparation time available to corporate delocalization planners. Now operating under less protectionism at home, businesses needed tighter cost control and expansion into new markets as they reframed their thinking to cope with a more open home market and moved to preserve their competitiveness. Localization had therefore become a two-tier issue.

Cost savings were at first the main incentive to delocalize. Statistics show the macroeconomic advantage of shifting business operations out of high-wage economies. Cheap labour and other comparative advantages became the rationale for the selection of new locations (OECD, 2007a).

This rationale was countered by transaction cost theory. Coase (1937) questions decision-making based on unfettered competition. Exploiting the advantages intrinsic to a given market is not an isolated action. Market access implies transaction costs that include information gathering, contracting (such as identification of partners, negotiation and conflict resolution) and uncertainty (which is greater in overseas contexts characterized by new players and an unfamiliar culture). These three costs undercut the savings from cheap labour (Quélin, 1997; Drancourt, 2006; Berger, 2007). Relocation of production is expensive due to the cost of identifying potential locations, the final site selection and start-up costs. Inversely, a decision to keep production in-house (called internalization) also comes at a cost. On that point, there is no real difference between manufacturing and service activities, although servuction tends to be less eager to invest than manufacturing. A common language in the home and host countries facilitates the servuction process (call centres, accountancy, data centres or culture services), but manufacturing processes are easier to standardize and control from a distance.

Williamson (1989) expands transaction cost theory to include the transaction environment, characterizing player behaviour by limited rationality and opportunistic manoeuvring. In short, complex environments fraught with unknowns will force companies to take risks due to the increasing frequency of transactions and commitment of assets. Because this generates added expenses, companies may respond by keeping production in-house in order to hold down market access costs and retain tighter control over production processes and trade secrets.

Regardless of whether the issue is market access or overseas production, delocalization may seem to promise cost savings through a trade-off between proximity to markets and a company's uniqueness. Low wages are only one consideration; the costs of information gathering and contract negotiations can swing the appeal of delocalization either way.

While hard numbers are an inevitable component of the decision-making process, soft non-financial considerations also weigh into yield forecasts and the tricky final choice.

2. Stepping stone to multinational status

Export figures underscore the value of having a local presence in target markets (Porter, 1990; Léo, Philippe and Monnoyer, 1992; Boutary, 2004), and optimum local siting is critical to the expansion of any multinational enterprise (MNE) (Mayrhofer and Urban, 2011). The ownership, location and internalization (OLI) model offers a dynamic approach to the determinants of FDI; Dunning (1988) refined it to include the eclectics of a given corporation, asserting that host country endowments and location do not suffice to explain all delocalization choices adequately.

While host countries offer *comparative* advantages that are economic, political and social, plus natural resources and other *location* advantages, each corporation has *ownership* advantages that consist of unique tangible and intangible assets (such as managerial skills, technologies and information access) that constitute an operating platform with a unique competitive edge. It is this uniqueness that enables MNEs to absorb start-up costs and achieve market dominance. Finally, MNEs have an *internalization* advantage when they retain total control and keep production in-house, thereby avoiding full disclosure of a production cycle and exposure to copycat products from local competitors, especially abroad (Driss, 2009).

Successful internationalization demands possession of a competitive edge founded on hard assets (ownership advantage) and the extraction of maximum benefit from various locations (location advantage), while deriving benefit from control (internalization advantage). Dunning and Lundan (2008) stress that these two variables are not only interdependent, but evolve in a non-linear fashion: for example, a given firm may have ownership advantage *O*, which justifies a move to locational advantage *L*, which then fosters the creation of internalization advantage *I*. Industrial MNEs are using such a strategy to choose the location of their service functions (logistics, packaging, call centres) in new European countries for a worldwide market (Py and Hatem, 2009).

While the OLI model explains corporate delocalization options nicely, it was not designed to include SMEs, whose principals might impose delocalization at the same time that government agencies are providing incentives to expand their overseas income. Among researchers exploring the internationalization of SMEs, Johanson and Valhne (1977) are prominent for the Uppsala model, which holds that companies engage in overseas markets stepwise over time in order to limit commitment and reduce risk exposure in unfamiliar new markets. One salient feature of this model is psychological distance: SME management transitions to succeeding steps as that distance shrinks. The innovation-driven I model refines the Uppsala model by treating each stage as an innovation in itself (Gankema, Snuif and Zwart, 2000).

Yet if the above three models focus on a company's export capabilities and choice of markets, they follow the Vernon model (which assumes that production stays at home) and thus devote scant attention to delocalization. According to the Observatory of European SMEs (Pacitto, 2006), delocalization ranks among the final stages of internationalization; only 3% of SMEs eventually reach it. They do so mostly through link-ups to local SMEs abroad, although 18% are exporters and 30% are importers.

Johanson and Valhne (2009) have updated their Uppsala model to include new behaviour patterns. SME leaders seem to be viewing overseas markets and their risks in new ways, thanks to the availability of better, more detailed input from credible peers with a broader outlook. The updated Uppsala model argues that some barriers have fallen, thereby facilitating entry to overseas markets. In other words, the psychological distance that inhibits transition to the next step is narrowing because increased exchanges of information, both tacit and explicit, are making SME decision makers more knowledgeable.

Finally, the question of performance underlies the issues of cost savings, overseas expansion and whether or not to delocalize. Delocalization may underperform and disappoint: cost savings may be smaller than expected, and mechanical issues may disrupt business operations. When the internationalization process is treated not as an innovation, but as a matter of adjustment to a new business environment vital to a company's viability (Schindehutte and Morris, 2001), then the balance shifts in favour of arguing determinism imposed by the new business environment versus managerial objectives for companies of all sizes (Atamer and Calori, 1998), including SMEs (Bourcieu, 2006). Delocalization thus involves tension between strategic objectives and environmental pressures fostered by internationalization.

We therefore need to examine the issue of SME internationalization through the lens of characteristics unique to SME management.

C. The uniqueness of SME management

Ample data show that SMEs are delocalizing or at least planning to do so (OSEO, 2009). Many fresh start-ups are experiencing strong initial growth (Brouwer, Mariotti and van Ommeren, 2002), and they are internationalizing in ways that undermine step theory. That said, little research has examined the characteristics specific to SMEs, their relationships to their business environments and the impact of both on delocalization and siting. We now review a set of theoretical underpinnings that serve to widen the scope of discussion.

1. Proximity

Studies of SME management styles point up the heuristics of proximity (Torres, 2003). Building on Moles and Rohmer (1978), Torres observes that SME leaders tend to stake out an immediate environment and cultivate business relationships within this zone of proximity.

The term proximity refers to physical distance measured in kilometres, travel time and shipping costs (Carrincazeaux, Coris and Piveteau, 2010), but it expands to affect SME management style in several other ways, as follows.

- A small company, in which all employees work at a single location, promotes direct interpersonal interaction that generates troves of rich informal shoptalk. In addition, close owner-worker contact is important when some flexibility is needed to answer to the client's demand. Planque (1987) shows that the "information vector is a set of unstructured, non-institutional, informal interpersonal relationships." More generally, spatial layout directly affects a company's information sharing capabilities (Léo, Philippe and Monnoyer, 1992). The interpersonal layout outweighs the organizational set-up. SMEs can be pictured as "a total unit, where all operations are fully integrated or at least strongly interconnected [and] the owner oversees all operations, directly managing some and personally contributing to a handful" (Julien, 1994). Such job cross-qualifications apply not only to the owner, but to all employees able to witness events around them and to inject input thereon: the proximity is interactive.
- Proximity is equally interactive when it comes to coordination based on direct supervision and individual adjustments between co-workers. It prevails over the standard operating procedures, output targets and detailed job profiles needed for smooth management of operations at remote locations.

- SMEs mostly think short-term and strategic decisions are reactive rather than proactive. SME decision-making is an intuitive process that relies relatively little on hard facts and formal decision-making models (Blili and Raymond, 1994). As such, the qualities of responsiveness, flexibility, interactiveness and adaptability typically attributed to SMEs can also be considered as dependent on strong temporal proximity.

As defined herein, proximity can be a highly responsive style of management founded on personal interaction with clients, which enables joint innovation of a product or service tailored to a local, demand-based need. Although it was once an impediment to internationalization, could this style now improve SME chances of successful delocalization?

As noted, the concept of delocalization includes remoteness. It also embraces culture gaps and differences of government regulation (Ghemawat, 2001). However, it further connects to the discovery of unmet demand and undeveloped resources, both human and material.

Dunning and Lundan (2008) find that MNEs have also been experiencing an ever-growing need for proximity. Competitive advantage is becoming increasingly dependent on tacit awareness and other soft resources, such that MNEs need greater proximity to local players on their overseas markets. The commitment to invest in a given overseas market may even stand or fall on the capability for local innovation (Boshma, 2005). Meanwhile, Talbot and Levy (2012) insist that the need for informal mechanisms of supervision demands greater proximity, even though the power of that need varies over time and from step to step.

If we assume that delocalization is a mere matter of “remote control”, then delocalization is necessarily unwieldy for SMEs. This could explain why some have chosen to repatriate operations entirely after a failed attempt at delocalization (Mercier Suissa, 2011). If we acknowledge the MNE studies cited herein and consider that delocalization is a decision to reconstitute proximity locally, then SMEs stand out as vested with unique delocalization advantages and abilities.

However, no new location is just an empty receptacle in which a SME can set up operations. Business leaders stress the need to fit into the local fabric of society through direct personal relationships with employees, local institutions and neighbouring enterprises as much as through strong exploitation of local resources. As Pecqueur (2012) suggests, the cultural, historical and institutional dimensions of the host “territorial space” should not be overanalysed because this may eventually interact adversely with quality on the production line. Thinking as they would at home, some SMEs do precisely that. For these managers, delocalization is

a strategic choice, and they inject their home-grown need for roots into the decision-making process. They perceive delocalization as a leap into the unknown and a true change of paradigms, most notably in terms of personal attachment to a territorial context. In an investigation of outbound investments from Belgium, Sleuwaegen and Pennings (2006) report that half of firms targeted immediate neighbours within the European Union (EU), not low-wage countries. This is because fellow EU members promise a broadly familiar infrastructure and set of services, which Carrincazeaux, Coris and Piveteau (2010) term “institutional proximity” and define as “the subscription of players to one same space of shared representations, rules and mindsets.”

A firm grasp of management style promises better insight into the reality of the process that SME leaders enveloped by various pressures.

2. Niche strategies

SMEs prefer to target niche markets instead of confronting bigger corporations that compete on volume backed by substantially greater human and financial resources. They shun competitiveness based strictly on cost criteria and focus on differentiation through innovative products and superior service, as well as on organizational flexibility and faster response to changing market demand.

These strategies require flexible shop-floor organization geared for small production runs and speedy delivery to enable an agile response to discriminating demand for service. Numerous examples of relocation stress the importance of production logistics and shipping for refocusing the business on baseline competitiveness: by moving production to remote but cheap locations, where those baselines become foggy, many SMEs lose their original edge. Despite ever-better data collection and control of remote operations through improved information systems and technology, proximity continues to offer unique conveniences.

Niche strategies are often based on some particular technological edge. The edge is usually short-lived, however, because it becomes vulnerable to piracy as soon as the product reaches the international marketplace. Speed is therefore critical to maximizing yield on a niche strategy, although the Vernon model recommends proceeding slowly. Here, SME management finds itself caught between the need to delocalize to low-wage countries in order to contain costs and the choice to target a niche market, which dictates internalization.

Niche strategies do not systematically lead to full delocalization, although the need to access specific resources and suppliers may trigger delocalization of production. It happens with luxury goods which need

an efficient but low-cost workforce (Koromyslov, 2007; Marshall, 1920) or specific services that can be delocalized even if other elements of the production or servuction are always produced in the home country.

However, grey areas remain in our grasp of the global economic rationalization for delocalization (Dyer and Singh, 1998).

3. Restricted access to resources

In looking at delocalization, SMEs are warier than larger firms because they have fewer people to collect and analyse information on potential sites. Small size thus makes SMEs likelier to inflate the importance of decisions and adverse events, thereby inhibiting expansion (Mahé de Boislandelle, 1996). The options available in terms of financing, potential business partners and expatriate manager candidates also tend to operate against SME delocalization.

Because of resource constraints, SME managers tend to rely heavily on existing proximal relationships and unique advantages and technologies, inducing them to restrict a niche strategy to the domestic market. These factors may explain the low internationalization rates for SMEs and micro-enterprises in terms of both sales and local market presence abroad.

From this standpoint, the Penrose theory of firm growth (1959) and the Wernefelt analysis (1984) are highly relevant: a business's competitive edge lies in its ability to mobilize human and material resources that are rare and hard to imitate (Grant 1991). Companies can find new sources of productivity, such as greater creativity, better performance and sustained competitiveness, by (1) innovating in terms of the content of their products or services, production streamlining, standardization and savings on labour and inputs; and (2) overhauling their organization through the restructuring of production tasks, knowledge management, creativity incentives, relationships with fellow companies and the local economic environment (Valenduc and Vendramin, 2006). In any event, delocalization remains an option, and none of the measures are mutually exclusive.

A company's uniqueness therefore lies in its ability to exploit its organizational model to integrate and coordinate different capabilities (Grant, 1991) in order to secure specific, significant and viable competitive advantages (Durand, 2006; Tallman and Fladmoe-Lindquist, 2002). These capabilities may stem from internal resources and/or external partnerships; they reflect a company's identity, learning style and history (Berger, 2007) and will operate to lock out competition (Majocchi and Zuchella, 2003).

Two ways to mobilize and activate resources into exploitable strategic assets which are rare, hard to imitate and immune to substitution are direct acquisition and the gradual build-up of the required resources through delocalization (Saives, 2002). This resource-based perspective is particularly relevant to SMEs. It lends itself nicely to internal evaluation while incorporating the economic environment and human relationships (Dyer and Singh, 1998), as well as the institutional context (Oliver, 1991). It sidesteps the general tendency to focus exclusively on the environment (Birkinshaw, 2001) by looking at processes that include overseas subsidiaries based on the hypothesis that they hold key strategic potential in their ability to activate company resources at the local level.

4. Decision-making and the institutional context

No study of SME management style is complete without the institutional context. Neo-institutional theory stresses that efficiency cannot be the sole criterion of decision-making. Once a given organization shares a given social environment with other organizations at a given point in time, interaction will arise that will prompt the different organizations to standardize their structures and develop a common set of attitudes (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). Therefore, even the most detailed cost-cutting targets cannot account for at least some strategic decisions. By shifting focus from the economic to the social environment, neo-institutional theorists call attention to the interplay of external influences and how they funnel decision-makers towards very similar isomorphic choices. Some of these influences are rooted in power bases that induce a particular decision (coercive isomorphism). Others emanate from government agencies or consultative bodies, which exert indirect but non-negligible influence (normative isomorphism). Finally, still others come from trends or a consensus of opinion that cause decision-makers to subscribe to certain positions, regardless of the evidence; these factors frequently arise in contexts of high uncertainty (mimetic isomorphism) (Piotti, 2009).

Thus, isomorphism explains delocalization decisions in terms of limitations imposed by principals (coercive) and consultants (normative) and the uncertainties of disadvantaged positioning in a given competitive environment (mimetic). In the delocalization decision-making process, all three isomorphisms potentiate one another. Consultants work for corporate clients, who pass on the consultant's norms to their subcontractors. Both consultants and major corporations play an active role in economic and financial structures, such as banks, management committees and FDI management. That participation restricts principals

and consultants in their freedom of choice. In his study of the construction of myths in delocalization discourse, Piotti (2009) shows how elites package and frame ideas in order to delegitimize previously accepted practices and justify their own policy choices. Based on a review of 400 German news articles spanning 15 years, Piotti describes how the media underestimated the advantages of domestic production and overestimated the cost savings of delocalized production, which fabricated a myth about cost savings and the benign or purely positive value of delocalization that long prevailed in the German media and other institutions. He also notes astonishment that the trade press largely ignored anti-delocalization input from family-owned SMEs. Recent neo-institutional studies deny that managers are completely dominated by social pressures that force mimetic isomorphic choices (Lounsbury, 2008), but admit their power to affect decisions as a result of a player's need for legitimacy with his social environment in a context of high uncertainty and strong competition. Because industrial production is subject to the invisible hand of the market, relocation operations are always presented as subject to performance and other business considerations using a cause-effect model (Sergot and Claret, 2011).

As noted, a full cost analysis of delocalization is complex. All else being equal, actual production costs escape accurate prediction as long as the structure of the delocalized production unit remains a virtual model. Actual delocalization itself is another unknown that makes estimates even rougher. Uncertainties cause decision-makers to seek outside support for their choices. At this point, several elements make imitation an attractive strategic option (Baudonnière, 1997):

- Rational option: Imitating the approach of a successful peer carries potential benefits (Henisz and Delios, 2001; Mouricou, 2010), but the outcome is uncertain for the imitator's specific case. When the decision-makers realize the heterogeneous nature of the information in their possession and have guidance from experienced sources, as well as other grounds for decision-making, instrumental imitation is a very rational option.
- Legitimacy needs: When the need for legitimacy triggers a decision of major short-term impact on the delocalizing structure, the explanation lies in a comparison of the decision-maker's behaviour with respect to his peers. According to social identity theory (Turner, 1985), these peers are selected by self-categorization, often because they belong to the same strategic group and face the same competitors (Peteraf and Shanley, 1997). Here, comparative analysis may unearth sectoral or even macroeconomic trends that legitimize the delocalization decision to the group. In this case, imitation is the result of evaluation.

- Justification needs: As noted, SMEs have strong ties to their original locations. Delocalization implies local layoffs and shorter workweeks, which are perceived not only as a business failure, but as a breach of faith with employees and the hometown population. This articulates in two ways: (1) if the SME can claim submission to a principal's imperative, imitation is an argument that carries weight locally; but (2) if the SME is independent of its principals, it faces a conflict of interest. Corporate social responsibility (CSR) theory now stresses both the quest for linkage to financial performance and the social value of the potential for self-regulation (Acquier and Aggeri, 2008). However, the ethical dimension remains central in either case. As Carroll (1991) notes, moral managers will restrict profit generation to the confines of the law and of ethical principles, such as justice and equality, although their primary duty is to ensure the viability of the enterprise through profit. While this definition curtails the justification and popularization of CSR theory across the world's economies, it points up the dilemma facing many SME leaders. Here, imitation is as a tool for resolving this conflict and finding self-comfort in a difficult situation.

The burden of any delocalization decision falls largely on the SME owner and a handful of key managers. Emphasizing the human dimension, neo-institutional theory explains both the handwringing and backpedalling of some managers and the variety of strategic options available for any given sector of business activity.

Our review of the literature leads us to situate delocalization decision-making with respect to the following influences. The SME managerial preference for niche strategies, with close relationships to partners in order to cushion shocks from the competition, rules out decision-making based solely on labour costs and raw materials. In addition, although it may make management appear weak, imitation may be justified by the need for close direct relationships that trim the costs of transactions and access to information. Existing cases show that delocalization for proximity should not be a form of escapism, but a matter of reconfiguration with a view to establishing a new style of development, including internationalization.

D. Conclusion

SME delocalization should not be founded simply on a need for higher productivity in a brutally competitive market. It requires a fully strategic analysis that takes into account the unique characteristics of SMEs, some of which will operate to their advantage even if others will hinder internationalization.

The delocalization option is exercised in a context fraught with uncertainties. Normative and coercive pressures may precipitate hasty decisions by managers whose cost-cutting objective overrides other concerns and the risks involved. The application of complex indicators that measure risk with respect to a company's internal capabilities and target location is difficult for companies with limited resources and pre-existing commitments to their original location. The assessment of qualitative and other elements, such as flexibility and fast response, does not readily square with the issues of remote versus proximal management particular to SMEs. Nevertheless, such assessment constitutes a tool for raising awareness and addressing the cultural and administrative gaps. This case is thus far removed from that of the nomadic MNE.

Delocalization is not linear. Manufacturing and business services SMEs tend to base their strategies on constraints rather than on new opportunities. Given the deficit of information on the actual articulation of a delocalization project and the narrow focus on objectives that only considers objective criteria, delocalization happens as a learning curve of multiple discoveries over time. One potential key discovery is how to boost international sales. Although not always the case, delocalization may improve company performance and lift appeal on the markets. It is also an opportunity to build up knowledge about the new host location(s) and to evolve a management style that handles distances more efficaciously.

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Chapter IV

Promotion policies for services offshoring: Global analysis and lessons for Latin America

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Abstract

Public policies play a key role in enhancing the conditions for attracting investment and boosting services exports, and especially when the aim is to upgrade within global value chains in service sectors and to foster the generation of spillovers and linkages. These policies include not only incentives or regulatory instruments specific to these sectors, but also more general measures related to education, science and technology, financing and infrastructure. The objective of this chapter is to present and discuss the main mechanisms used worldwide to promote the development of the offshore services industry and to draw a series of lessons and recommendations for Latin American countries.

Key words: global value chains, services, offshoring, public policies, Latin America.

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Introduction

Services have long been a dominant sector in the global economy, as they account for the bulk of aggregate output and employment in developed and developing economies alike.¹ In addition, international trade in services has grown steadily in recent decades.

One of the key emerging issues in services trade concerns the implications of the creation of global value chains (GVCs). Transnational corporations (TNCs) play a central role as organizers of most GVCs, to the extent that these companies seek to offshore their supply of services to locations where they can optimize costs and access to skilled resources and other key inputs. Many developing countries have emerged as central actors in this process thanks to the availability of abundant and cost-competitive human capital.

It is logical that firms from developing countries seek to actively participate in GVCs. From a country perspective, GVCs offer significant benefits in terms of employment generation and foreign exchange earnings. The rise of GVCs has led to intense locational competition between countries through the provision of benefits to attract efficiency-seeking investments and boost services exports. This competition is stimulated by TNCs, which compare potential locations based on their relative attributes and advantages, and international consulting companies, which produce country or city rankings of the top destinations for services offshoring.

Insertion into GVCs can take place in different stages of value chains, which may have differing levels of technological sophistication and require specific and often distinct capabilities. In turn, the possibility of generating knowledge spillovers or linkages with other agents (such as customers, suppliers, universities and research centres, public agencies, and so on) may be conditioned by the type of activities performed in the value chain and by the nature of the firms operating in specific sectors. For example, a transnational pharmaceutical company that relocates its research and development (R&D) activities to an emerging country might have lesser connections, for reasons of confidentiality and acquired trust, with host country universities or local laboratories than a local firm performing the same kind of activities.

Moreover, the possibilities of upgrading and spillover generation are strongly conditioned by the local context regarding the availability of human capital and infrastructure, the existence of consolidated clusters, the level of technological competences and absorption capabilities of domestic firms, the performance of the national innovation system, the macroeconomic and institutional framework and the existence of specific public policies directed to GVC-specific outcomes (Kosacoff, López and Pedrazzoli, 2007).

¹ This chapter is a condensed version of a report carried out for the Inter-American Development Bank (IADB).

In short, although participation in GVCs may generate significant export and job-creation opportunities for developing countries, there are no explicit guarantees that other benefits will emerge (such as knowledge spillovers, linkages, or the accumulation of technological capabilities). Moreover, to the extent that the insertion in value chains is often chiefly predicated on labour cost considerations, the process can soon find its limits. For instance, as services exports have a favourable impact on the level of per capita income in the exporting country, sooner or later wages increase and competitiveness can be eroded.

Public policies can play a key role in enhancing the internal conditions for attracting investment, boosting exports of services, upgrading within global productive frameworks and fostering the generation of spillovers and linkages. This includes not only incentives or regulatory policies specific to GVC-related sectors, but also other more general policy measures related to education, science and technology, infrastructure and financing.

This chapter presents and discusses the main policy instruments used worldwide to promote exports and attract investment in the services sector and, especially, to develop the offshore services industry. The section that follows (section A) briefly discusses where some of the largest opportunities for developing countries within services GVCs can be found. Section B compares and analyses the current framework of incentives and policies used in the services sector in different developed and emerging countries. Section C concludes by drawing a number of lessons for Latin American countries and firms.

A. Opportunities for developing countries within services GVCs

A number of services that were previously weakly tradable or non-tradable —such as health, education, accounting, legal and administrative services, advertising, and research and development services— now show significant trade levels and rapid growth forecasts. Moreover, other sectors in which international trade has already long been important, such as finance, construction and engineering, have increased their degree of internationalization in recent years. Finally, some younger industries, like software and computer services, were almost born global (López, Ramos and Torre, 2009). It is on this set of sectors, hereafter referred to as new services-exporting sectors,² that the ensuing analysis concentrates (see table IV.1).

² This is one of the possible ways to classify different types of exporting services, which in turn may suggest different analytical perspectives.

Table IV.1
Typology of new service export sectors

Business services/ business process outsourcing	Health services	Creative industries	Informatics	Other services
Accounting and Finance	Medical tourism	Audiovisual industries (cinema and television)	Software development	Education
Management and Process Development	Clinical trials	Publicity	Consultancy and computer services	R&D
Human resources	Telemedicine	Content industries	Management, integration and application maintenance	Engineering and construction
Call centres, contact centres, customer relations management	Telediagnosis	Architecture	Infrastructure and networks	Knowledge process outsourcing (financial and market research, legal services, etc.)
Other back office services	Analysis and interpretation of medical practices	Design	Videogames, animation and simulation	Financial services
Shared services centres				

Source: Prepared by the authors.

As said above, to take advantage of the opportunities opened in these markets, countries and firms need to understand the logic of GVCs. This is important not only for the objective of being part of those chains, but also with a view to gradually upgrading the kind of tasks performed within them.

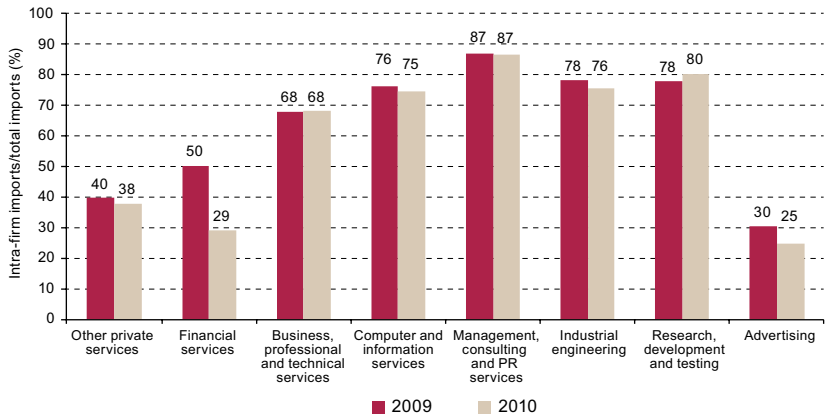
The available empirical evidence suggests that in most sectors of interest to this chapter, GVCs are hierarchical in character. That is, TNCs fully internalize the division of labour within the value chain among its globally distributed subsidiaries. This is evident in several indicators, notably the large share of intra-firm transactions in services trade (see figure IV.1).³

However, the data also reveal a trend towards the vertical disintegration of certain functions that are outsourced (and frequently

³ The relevance of United States intra-firm imports at the global level can also be extrapolated for Latin America (see the figure in the appendix). Although Bureau of Economic Analysis (BEA) statistics do not directly reflect this variable by country of origin, we can approximate intra-firm trade from the level differences between the series reported by this institution: trade between unaffiliated firms until 2005; and total trade (that is, between non-affiliated plus intra-firm commerce) thereafter.

offshored) to specialized global suppliers,⁴ particularly in the business process outsourcing (BPO) and information technology outsourcing (ITO) sectors. Thus, in some cases, relational chains are formed, in which providers and clients establish links of strong interdependence that require significant levels of coordination and trust. For other, more standardized, activities, providers develop services platforms that can be adapted to different customers at relatively low cost, approaching the model of “modular chains”.⁵

Figure IV.1
United States: share of intra-firm transactions in total imports, 2009 and 2010
(Percentages)



Source: Author’s calculations based on data from Bureau of Economic Analysis [online] http://www.bea.gov/international/international_services.htm.

At the same time, the tendency towards de-verticalization does not cover all the services or functions that could be offshored. For example, R&D services have recorded a marked recent trend towards the relocation of some activities, yet the bulk of offshore units are captives of TNCs (see López, Niembro and Ramos., 2010b). This is somewhat logical not only because R&D has a strategic character to the corporation, but also because outsourcing such functions could generate potential risks in terms of unwanted knowledge spillovers to suppliers.

In most of the sectors analysed in this chapter, companies intend to establish permanent relationships with providers through networking or

⁴ We use the terms vertical disintegration and de-verticalization to refer to the reverse process of vertical integration. This means the fragmentation of the productive process in different stages that can be provided from remote locations, both as captive or outsourced activities.

⁵ See Gereffi, Humphrey and Sturgeon (2005) for a taxonomy and analysis of the different types of global value chains.

intrafirm operations. Consequently, the existence of pure market relations in the respective chains is relatively rare and limited to specific operations.

The available evidence suggests that, at least in the areas of BPO and ITO, exports are often channelled through GVCs led by TNCs.⁶ On the one hand, a substantial part of services trade is intra-firm. On the other, even in the case of trade between independent parties, the provision of offshore services seems to be increasingly concentrated in a relatively small group of companies that are consolidated as the main actors in these global businesses (and that are prone to purchase their smaller competitors via cross-border merger activity).

Many Indian firms operating in the above market niches have globalized in order to compete with large international firms from the United States and Europe.⁷ Some Latin American firms, such as Sofftek, Neoris, Sonda, Stefanini, Politec, CPM Braxis, Globant, Assa and Prominente, are trying to follow the same model, both in the region and globally, through new investments and cross-border takeovers of foreign companies.

The adaptations depicted above are logical since trends towards concentration and “commoditization” have been consolidating in the BPO and ITO segments. The game of “buy or be bought” thus tends to predominate in these market segments, which in time could result in higher entry barriers for smaller competitors.

This analysis should not be seen as suggesting the absence of a place for local firms in services GVCs. These companies can provide services that are cheaper and/or better adapted to the needs of certain customers in the local market, thereby avoiding the direct competition of TNCs, which generally focus on serving the government⁸ or the corporate and export markets.⁹ At the same time, there is certainly a space for local firms to export through alliances and/or through the development of niches or differentiated services. However, quality certifications or partnerships with bigger players are increasingly needed to compete in larger markets.

⁶ Data from a study by IDC (2009) on the Chilean experience illustrate the above statement. According to the study, the participation of domestic firms in Chilean exports of offshore services reached 34% in 2008. Only in BPO did local firms hold a majority participation (66%), while in other segments TNCs clearly dominated (88% in R&D, 80% in ITO and 71% in knowledge process outsourcing, or KPO).

⁷ Indian firms have been investing in several Latin American countries, with Brazil representing their preferred destination so far (Gereffi, Castillo and Fernandez-Stark, 2009).

⁸ The fact that the government usually contracts these services from TNCs is not negligible. As a large-scale buyer, the State could readily promote the emergence and development of local small and medium-sized services firms by using its purchasing power. However, TNCs are often better prepared to comply with public procurement standards.

⁹ For an illustration of this point in the context of Eastern Europe, see Fífeková and Hardy (2010).

Examples of certification procedures include the Capability Maturity Model Integration (CMMI) certification for software and computer services, the eSourcing Capability Model for BPO service providers or the accreditation from the Joint Commission International (JCI) for suppliers of medical tourism. In terms of partnerships or alliances, various types exist. For example, exports of health services in Mexico are supplied through partnerships between local hospitals and universities or health chains from the United States (Portas, 2010). In Argentina, many local advertising companies have joined different networks or international groups that concentrate the bulk of the global advertising business (López, Ramos and Torre, 2009).

Another phenomenon observed in some markets is that independent firms showing evidence of traction in export markets on the basis of their innovative capabilities end up being acquired by foreign companies. This is the case, for instance, of some Argentine firms in the fields of software, video games and advertising services.

Moreover, local firms in developing countries often encounter competitiveness obstacles due to the presence of pervasive market failures, particularly information asymmetries in financial markets, as well as shallow or weak innovation systems. Besides, when developing countries become attractive locations for TNCs, the ensuing fight over scarce local human capital typically puts local firms at a disadvantage as TNCs offer higher wages and better career development prospects.

Another important point is that TNC investments in these sectors seldom generate significant linkages and spillovers for the host economy. Fífeková and Hardy (2010) identify three key obstacles: (i) given that a significant proportion of TNC investments are geared towards external markets, interaction with local clients can be reduced or limited to the segment of the local market that TNCs already serve, which is that of large firms and the government; (ii) only peripheral activities are outsourced to local agents (such as office equipment and supplies, cleaning and catering); and (iii) in the case of more sophisticated services, TNCs resort to global suppliers or to their own subsidiaries or headquarters (due to issues such as trust, reputation, cost and confidentiality). The propensity to interact with local actors in the field of knowledge-intensive activities is especially limited.¹⁰

The greatest scope for development-enhancing spillovers involves human capital mobility, either to local firms or through the creation of spin-offs. The latter is probably more feasible in some activities aimed at

¹⁰ See, for instance, the cases mentioned by López, Niembro and Ramos (2010a) in their study of R&D services exports in Argentina.

developing new ideas through technical knowledge (such as software) than in others where employees do not actually have access to the whole knowledge of the respective business, which tends to follow standardized procedures and rules (such as BPO). The mobility of human resources from TNCs to local firms still seems to be an isolated phenomenon. At present, the opposite effect prevails in many countries: that is, TNCs often hire staff trained by local firms, creating strong competition for human resources. In some cases, the human resources hired away from local firms by TNCs are put to work in more routine activities and/or using older technologies.¹¹ Meanwhile, there seems to be a relationship between the type of functions performed in a GCV and the ability to generate spillovers. Countries and firms are thus actively seeking to enter the emerging area of knowledge-based services, which encompasses knowledge process outsourcing (KPO), R&D and so on. These activities employ higher-level personnel and also generate larger human capital gains, as employees do not perform standardized or routine tasks, but rather create knowledge to solve new problems. Additionally, such activities may generate greater opportunities to stimulate interactions with universities, research centres and other institutions.

Opportunities for developing country firms to partake of this kind of upgrading depend on the type of services in which they specialize and the existence of domestic enabling conditions. Thus, some countries with large volumes of highly qualified manpower (such as China and India) are well positioned as attractive locations for TNCs looking to decentralize their R&D activities. Firms from developing countries are sometimes also able to move into the KPO market segment after originally competing in the BPO and ITO markets. Several Indian companies successfully upgraded through this channel (Gereffi, Castillo and Fernandez-Stark, 2009). Opportunities are also available for smaller countries as long as they can provide the required assets, including a specialized and highly qualified workforce.

B. Policies to promote exports and investments in the services sector

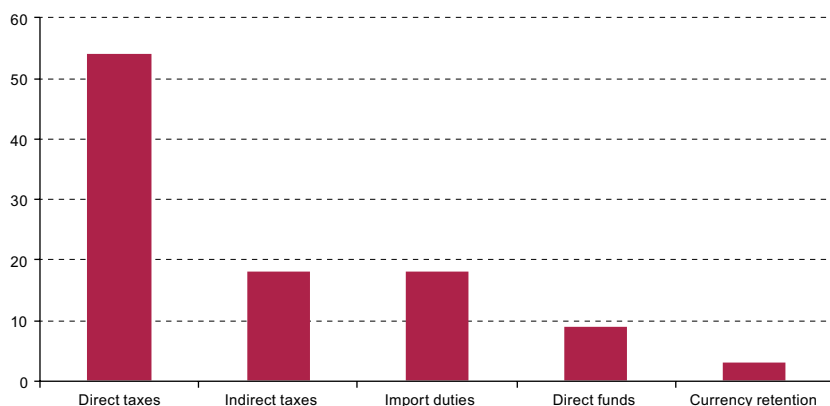
Given the growing relevance of the service sector, most countries today have some kind of mechanism or institutional set-up to promote exports and/or to attract foreign investments in different service sectors. However, there is very little systematic information on this subject at the global level. Existing studies on the topic are typically old and outdated (e.g., UNCTAD, 2000), or focus solely on certain groups of countries (e.g., APEC, 2007 and 2010).

¹¹ See López and Ramos (2009) for a fuller discussion of the Argentine case.

Despite certain methodological and data collection weaknesses, one of the major sources of information on programmes and incentives in the services sector is the Trade Policy Reviews published by the World Trade Organization (WTO) in the period 1998-2007, covering 106 member countries. According to Geloso Grosso (2008), who analyses these reports, about 30% of the countries in the sample employed some subsidy mechanism to promote services exports (including the expansion of free zones to cover both goods and services production, particularly among developing countries), while over 10% established policies specifically aimed at promoting services offshoring.

As shown in figure IV.2, exemptions on direct taxes are the most frequent means of promoting the services sector, followed by other indirect tax exemptions (such as value added, equipment, excise, turnover, stamp and registration taxes) and duty rebate or drawback schemes applied to imported inputs (both goods and services) that are destined for export production. Within direct taxes, exemptions or reductions on corporate profits are the most common promotional tools, followed by tax benefits on dividends and interests, assets and real estate and other corporate taxes (figure IV.3).

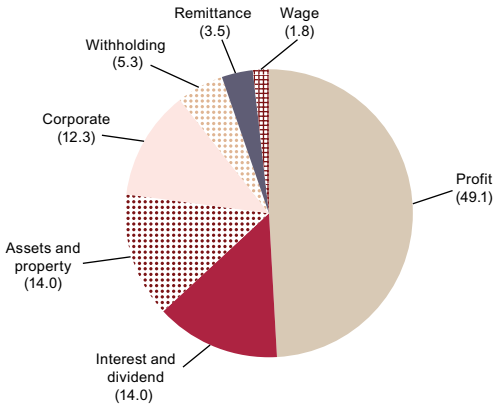
Figure IV.2
Share of WTO countries that use measures to promote
exports and offshoring of services, 1998-2007
(Percentages)



Source: M. Geloso Grosso, "Analysis of subsidies for services: the case of export subsidies", *OECD Trade Policy Papers*, No. 66, Paris, Organization for Economic Cooperation and Development (OCDE), 2008.

Note: Based on a sample of 106 member countries of the World Trade Organization (WTO) for which WTO Trade Policy Reports are available.

Figure IV.3
Most common types of direct tax exemptions or reductions, 1998-2007
(Percentages)



Source: M. Geloso Grosso, “Analysis of subsidies for services: the case of export subsidies”, *OECD Trade Policy Papers*, No. 66, Paris, Organization for Economic Cooperation and Development (OCDE), 2008.

Note: Based on a sample of 106 member countries of the World Trade Organization (WTO) for which WTO Trade Policy Reports are available.

Tables IV.2 and IV.3 offer a summary reading of the implementation of various promotion measures in a sample of 40 developing and emerging countries. This does not include the activities of logistical support and business intelligence carried out by different types of agencies at the national or subnational level (such as export promotion agencies or ministries of foreign trade), since these organizations have a worldwide presence. However, the work of these institutions is often very useful for exporters since they provide market information, export guidelines, training about available instruments and common business practices, support to firms through their involvement in international delegations, advocacy, participation in trade fairs and so on.

In developing economies, the actions of the above organizations usually focus on exports of certain goods or traditional manufactures, with little room and resources devoted to trade in services, beyond the traditional promotion of the tourism industry (as in the Caribbean). However, more and more developing countries have begun to lay the foundations for better promoting service industries, especially in the fields of software, information and communications technology (ICT) and business services.¹² As shown in tables IV.2 and IV.3, these subsectors have attracted the attention of the majority of the countries analysed.

¹² For example, the Caribbean Export Development Agency commissioned a series of studies, which were performed in 2007 in Barbados, Dominica, St. Lucia and Trinidad and Tobago, under the title “Strategic Marketing Plans for the Promotion of Professional Services Exports”.

Table IV.2 (concluded)

Region or country	General measures				Specific measures				
	Direct grants	Preferential credit and guarantees	Equity injections	Tax incentives	Duty-free inputs and free trade zones	Infrastructure support (technology parks, rent, etc.)	Human resources training (tax exemptions or subsidies)	R&D and innovation (exemptions, subsidies, promotion programmes)	Support for quality certifications
Romania	X			X		X	X	X	
Russia		X		X	X	X		X	
Serbia	X	X		X	X		X		
Slovakia		X	X	X		X		X	
Asia and the Pacific									
China	X	X		X	X	X	X	X	X
India	X	X		X	X	X		X	X
Indonesia		X	X	X	X		X	X	
Malaysia	X	X		X	X	X	X	X	X
Philippines		X		X	X				
Singapore	X	X	X	X	X	X	X	X	
Taiwan Province of China		X	X	X	X	X	X	X	
Thailand		X	X	X	X	X		X	
Turkey	X	X	X	X	X	X		X	
Africa									
Egypt				X	X				
Kenya		X		X	X				
Morocco	X			X	X				
South Africa	X	X		X	X	X	X	X	
Tunisia	X			X	X	X		X	
Uganda		X		X	X		X	X	
Total	23	27	9	39	36	21	16	24	9

Source: Prepared by the authors based on data from the United Nations Conference on Trade and Development (UNCTAD).

Note: The classification used in the table follows WTO (2007). For more details, see <http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>; [http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20\(IIA\)/Country-specific-Lists-of-DTTs.aspx](http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/Country-specific-Lists-of-DTTs.aspx); and [http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20\(IIA\)/Country-specific-Lists-of-BTIs.aspx](http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/Country-specific-Lists-of-BTIs.aspx).

Table IV.3
Mechanisms for promoting exports and investment in the services sector: priority sectors and international agreements, 2011

Region or country	Priority sectors				International agreements			
	Financial services	Software, ICT and business services	Construction	Personal, cultural and recreational services	Audiovisual services	Economic integration and free trade in services (GATS Article V) ²	Double taxation ³	Bilateral investment treaties (BIT) ⁴
Total	21	35	12	13	12	31	38	39
South America								
Argentina	X	X	X		X	X	X	X
Bolivia (Plurinational State of)	X			X		X	X	X
Brazil	X	X	X	X	X	X	X	X
Chile		X	X		X	X	X	X
Colombia		X	X	X		X	X	X
Ecuador		X				X	X	X
Paraguay	X				X	X	X	X
Peru		X				X	X	X
Uruguay	X	X				X	X	X
Venezuela (Bolivarian Republic of)		X	X		X	X	X	X
North and Central America and the Caribbean								
Costa Rica		X		X		X	X	X
El Salvador		X				X	X	X
Guatemala		X				X		X
Honduras				X		X	X	
Jamaica	X	X		X	X	X	X	X
Mexico		X	X	X	X	X	X	X
Trinidad and Tobago	X	X	X			X	X	X

Table IV.3 (concluded)

Region or country	Priority sectors				International agreements			
	Financial services	Software, ICT and business services	Construction	Personal, cultural and recreational services	Audiovisual services	Economic integration and free trade in services (GATS Article V) ²	Double taxation ³	Bilateral investment treaties (BIT) ⁴
Europe								
Croatia		X				X	X	X
Czech Republic	X	X				X	X	X
Hungary		X				X	X	X
Poland	X		X			X	X	X
Romania		X				X		X
Russia		X		X			X	X
Serbia		X			X		X	X
Slovakia	X	X				X	X	X
Asia and the Pacific								
China	X	X	X			X	X	X
India	X	X	X	X		X	X	X
Indonesia	X					X	X	X
Malaysia	X	X			X	X	X	X
Philippines		X		X		X	X	X
Singapore	X	X			X	X	X	X
Taiwan Province of China	X	X	X	X	X		X	X
Thailand	X	X				X	X	X
Turkey	X	X	X				X	X
Africa								
Egypt	X	X					X	X
Kenya		X					X	X
Morocco	X					X	X	X
South Africa	X	X			X		X	X
Tunisia	X	X		X			X	X
Uganda		X		X			X	X
Total	21	35	12	13	12	31	38	39

Source: Prepared by the authors based on data from the United Nations Conference on Trade and Development (UNCTAD).
Note: The classification used in the table follows WTO (2007). For more details, see <http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>; [http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20\(IIA\)/Country-specific-Lists-of-DTTs.aspx](http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/Country-specific-Lists-of-DTTs.aspx); and [http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20\(IIA\)/Country-specific-Lists-of-BITs.aspx](http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/Country-specific-Lists-of-BITs.aspx).

In terms of fiscal and financial support measures, the most common promotional tools available for the service sector involve the application of tools originally designed (and still operating) for trade in manufactured goods (Prieto, 2003; Abugattas, 2005; Gari, 2011). These include various tax incentives (exemptions, reductions or refunds of taxes), operation in free trade zones, deferred payment and tariff reductions on imported inputs and/or capital goods, measures that can be exploited, to a greater or lesser extent, by firms operating in many service subsectors. This logic often applies to the most common financing mechanisms, such as lines of preferential credit, guarantees and export insurance, which in principle are available for firms selling both goods and services.

In the same vein, some countries have recently encouraged the formation of venture capital schemes, which are essential for activities based on intangible assets or that require funding to carry out risky and uncertain innovation processes, both of which are common in the field of knowledge-intensive services.

An example of the use of schemes originally designed for the manufacturing sector is the extension of the benefits of free trade zones to service activities in Costa Rica. The largest incentives for exports and investment in services in that country are concentrated in the free trade zone policy, and this system is used by a large number of export-oriented service companies, mainly operating in information technology (IT) offshoring and business services. In addition to the benefits in terms of agglomeration economies, joint infrastructure and targeted support services, the free trade zone scheme includes a series of tax incentives and benefits for export-oriented enterprises, such as tariff exemptions for raw materials, components and capital goods up to 100%; full exemption from corporate taxes for eight years and a 50% corporate tax rebate in the following years (for periods of up to 12 years); full sales tax exemptions; a 10 year exemption on taxes on assets; and full exemption from municipal taxes for 10 years (Martínez, Padilla and Schatan, 2008). There are also no restrictions on the repatriation of capital or profits and no limitations on foreign currency management.

Some specific mechanisms are also at work. Many governments, especially in the emerging economies of Europe, Asia and –to a lesser extent– Latin America, have adopted policies directly aimed at promoting certain services activities, regardless of their export capacity, under the premise that they can generate knowledge spillovers or other externalities or that they are relevant from the perspective of promoting creativity and local culture. In the case of Latin America, several countries in the region have implemented programmes to promote sectors such as audiovisual,

software and computer services and the film industry. As stated above, however, these policies are not always specifically oriented towards exports, and they do not necessarily involve investment attraction.

The attraction of foreign investment facilitates the insertion of local firms in global value chains. Therefore, one way to boost offshore services exports is to attract multinational companies that dominate the respective value chains. BPO, ITO and, to a lesser extent, financial services, are often the focus of interest of investment promotion measures. Tax benefits are the most common tool for attracting such investments; other types of subsidies are also frequently provided, whether of general application or aimed at financing certain expenses. For example, wage subsidies for each worker employed were relatively common in European countries at least until 2010–2011.

Chile stands out among Latin American countries for the range of tools implemented to promote and attract investments in high-technology sectors and business services. In 2000, the Chilean Production Promotion Corporation (CORFO) launched a programme of special incentives for local and foreign investments in projects with high technological content. These contributions involved the co-financing of pre-investment studies, start-up costs and investment in physical assets (including long-term leases, installation of basic services, infrastructure and technological equipment). The programme also included the provision of subsidies for staff training in specific skills over a year and the possibility of obtaining a subsidized rent in the technological building of CORFO in Curauma, Valparaíso.

According to CORFO, the most popular incentives for service companies were those linked to the specialized training of staff (Gereffi, Castillo and Fernandez-Stark, 2009). One of the challenges of the Chilean offshore services industry is precisely to supply an adequate number of qualified professionals with English language skills so as to meet the demands of companies that choose to invest in the country. This partly explains why the government strategy has been shifting towards higher value added segments and less labour-intensive activities (but employing highly qualified staff), such as KPO and R&D, rather than the more standardized activities of ITO and BPO.

Given the importance of the knowledge factor in several service subsectors, new support measures have been devised in recent years to encourage investments in strategic assets. More than half of the countries included in table IV.2 feature some sort of programme to promote investment in research and development and innovation by way of tax breaks, direct subsidies or linkage schemes with host country universities and research centres, among other measures.

Among developed countries, the case of Ireland is highly illustrative. The country has been one of the pioneers in the offshore services industry, taking advantage of its strategic location close to Western Europe, together with its cultural and linguistic affinities with the United States, the availability of low tax rates and an abundance of skilled human resources. Although Ireland initially focused on the export of software and ITO services, rising labour costs and a relatively small population in comparison with other Asian and Eastern Europe competitors led the country to expand its participation in higher knowledge and value added content markets (such as R&D and KPO) and financial services (Grimes and White, 2005; Yavuz, 2007). The tax system currently offers the possibility of obtaining a tax credit of around 25% of incremental expenditure incurred on R&D, which is intended to encourage local and foreign firms to undertake new or additional research activities. The credit is available for R&D carried out anywhere in the European Union, provided that it has not received any help in another country. R&D must be conducted in-house, with the exceptions that up to 5% of these expenses may be commissioned to universities and 10% outsourced to other companies. Additionally, innovation expenditures incurred in Ireland give rise to a tax exemption of 12.5%, leading to a possible cumulative benefit under both schemes of up to 37.5%. With respect to financial subsidies, contributions can range from the costs of feasibility analysis and training funds to a substantial part of the investment needed to develop R&D centres in new firms.

Moreover, the Science Foundation of Ireland was established in 1998 to encourage the performance of R&D activities in the country, and a programme for research in tertiary institutions was launched. Meanwhile, the research carried out in universities, often sustained by European Union programmes, allowed not only the growth of R&D in informatics, but also the generation of important spin-offs from such working groups (Breznitz, 2007).

Another central aspect of the promotional policies for services adopted worldwide concerns the availability of supporting technological infrastructure. The creation of science and technology parks, under the cluster concept, is the most common instrument in this area. These locations not only provide building, communications and other infrastructure facilities, but also often include specialized research and training centres and/or universities. Furthermore, the benefits of these parks are usually complemented by "incubators" of new projects, shared resources (such as laboratories) and so on.

India is a typical case in point. There, the basic material conditions required for the production and export of software, mainly stable electricity

supply and good communications, represented a serious constraint for the development of the sector in the 1980s, since they were only available in some regions (Athreye, 2005). These difficulties were overcome through the establishment of Software Technology Parks (STP), where the government supplied infrastructure, buildings, electricity, telecommunications and high-speed satellite connections (Lateef, 1997). Furthermore, the promotion of software exports from technology parks was accompanied by a benefits scheme (STP Scheme). The most important incentive offered by the STP Scheme was a 100% exemption from income tax on export earnings. There were also exemptions on taxes on services and excise taxes, discounts for the payment of sales taxes and exemptions for import duties on capital goods, among other incentives. At present, there are 51 parks distributed around the country, 44 of which are located in Tier II and Tier III cities.¹³ The success of the regime is reflected in the fact that approximately 90% of Indian software exports currently come from STPs.

In addition to the creation of science and technology parks with promotional tax regimes and specialized support services, several countries have credit lines to contribute to the financing of critical initial investments for the realization of certain projects. In the case of science parks in Taiwan, public contributions can reach up to 49% of the investment costs, while the Turkish government provides financial support to cover the costs of land acquisition and construction of offices and infrastructure in the country's technology parks. In the case of Tunisia, public participation in infrastructure investment can range from a quarter to three quarters of total investment, depending on the geographical location of the project. Finally, the Critical Infrastructure Programme in South Africa functions as a direct subsidy covering between 10% and 30% of the cost of physical infrastructure in strategic projects.

Several countries support the training of human resources for specific qualifications either through the extension of tax credits for expenses incurred or through direct financial contributions. Examples in Europe include Belgium, Croatia, the Czech Republic, Estonia, Hungary and Serbia, which provide subsidies to cover different percentages of staff training costs in designated sectors (usually between 25% and 50%). In the case of Romania, these activities are promoted through tax deductions of up to 20% of the training costs incurred. Meanwhile, Singapore has a wide range of support programmes in the field.¹⁴ One example is the

¹³ Tier II and Tier III cities are relatively less important in terms of population and economic activity, but they offer favourable conditions for the development of new activities in a context of rising wages and land prices in major (Tier I) cities.

¹⁴ Some of these initiatives are the Strategic Attachment and Training Programme (STRAT), the Local On-the-Job Training Programme (LOT) and the Critical Infocomm Technology Resource Programme (CITREP).

Initiatives in New Technology scheme, which provides co-financing for the development of human resources with professional expertise in R&D and the application of new technologies.

In China, the government established a programme entitled "Ten-One Hundred-One Thousand" in 2006, with the objective of improving the country's position in the global outsourcing market. The name of the project refers to its objectives: establishing 10 base cities with international competitiveness for services outsourcing; promoting the transfer of operations of business services outsourcing to China by 100 corporations recognized worldwide; and developing 1,000 local (medium and large) companies with international certifications in the field of outsourcing services. Programme measures include the provision of special funds for the training of university graduates in skills and techniques related to services outsourcing and the encouragement of services firms to conduct internal training programmes, so as to ensure specialized training of 300,000 to 400,000 university students and the creation of 200,000 to 300,000 jobs for college graduates. The promoted training activities include technical qualification and certification according to international standards, internship programmes and pre-job training programmes. The need to improve and adapt the population's skills to the new requirements of the global market has also led Chinese decision makers to rethink certain guidelines of the country's educational policy, so as to spread informatics literacy and languages knowledge (especially English) throughout the workforce.

Regarding university education, the large number of engineering graduates in both India and China has been emphasized as one of the distinct advantages of these countries in the global services market. However, several investigations (Gereffi and others, 2005 and 2008) note the influence of quality over quantity as a key determinant for competing in these markets. While no country can compete with India or China on the basis of the number of potential graduates, both countries continue to confront weaknesses in professional skill levels. In the case of India, the countrywide network of Indian Institutes of Technology and Indian Institutes of Management enjoys a good reputation by global standards, yet graduates from these institutions represent only a fraction of total graduates. The rest of Indian institutions of higher learning do not enjoy the same status. Also, according to a study conducted jointly by India's National Association of Software and Services Companies (NASSCOM) and McKinsey (2005), India will face a possible shortage of skilled workers in the service sector over the next ten years, since only 25% of technical graduates and between 10% and 15% of university graduates are deemed to be suitably prepared for employment in the ICT and BPO industries, respectively. These difficulties have not only elicited a vigorous reaction

on the part of leading Indian companies, many of which have established their own training centres, but have also had an impact in the public policy domain. In 2010, the Ministry of Education advanced a proposal to allow the entry of foreign universities and to modify secondary school curricula to meet international standards.

In China, the Ministry of Education and the Ministry of Commerce decreed in April 2009 that Chinese universities should introduce specific educational programmes for the outsourcing industry, with the aim of producing 1.2 million graduates for the sector in the next five years. The outsourcing industry was expected to generate one million jobs for these graduates in that period. The Chinese authorities also allowed universities to reorganize their existing curricula and establish specific courses focused on outsourcing services (Accenture, 2010). The Chinese Ministry of Education made English training mandatory from the third grade of primary school onwards, and all college graduates must successfully pass an English language test in order to obtain their degree.

Several Latin American countries are implementing educational reform programmes and/or mechanisms to encourage greater training in ICT and English. Costa Rica has reviewed its technical school and university curricula and encouraged the creation of new study programmes in order to better align and adapt the country's educational system to market requirements. For example, in secondary technical schools, new areas of specialization were established in bilingual accounting, bilingual information technology and executives for service centres. Costa Rica has also seen the launch of a new college degree in computer engineering, developed jointly by the Technological Institute of Costa Rica and local electronics and software companies. The programme "Costa Rica Multilingual" aims to improve and expand the mastery of English and other languages.

In Colombia, the Ministry of Education, the National Apprenticeship Service and the British Council have been collaborating to increase the number of people with English skills in the country, while Bogotá has a specific language programme for contact centre operators and BPO professionals. In Guatemala, educational programmes have been under reform, with the active participation of the national investment promotion agency, to incorporate the teaching of English from primary school onwards. Furthermore, alliances have been forged with the Technical Institute of Training and Productivity in order to train workers for call centres and BPO (ECLAC, 2009).

The diffusion of quality certificates is also key for promoting services exports. In the case of software and IT services, several countries have established support mechanisms (including information, support

and financial contributions) to secure internationally recognized qualifications. In Chile, CORFO has worked closely with industry associations and technology agencies to create a quality certification programme for the country's ICT industry by offering subsidies to companies interested in obtaining internationally recognized certifications. In China, as part of the "Ten-One Hundred-One Thousand" programme, the Ministry of Commerce decided to grant incentives and financial support to local firms to obtain international certifications, with the objective of seeing 700 companies with Level 3 CMM/CMMI certificates and 300 with Level 5 certificates.

Furthermore, most of the countries cited in table IV.3 have made progress in liberalizing services trade liberalization and signing international agreements on the subject. Double taxation agreements and bilateral investment treaties are also widespread, although they vary substantially in terms of extension and scope. With the exception of African countries, all the countries in table IV. 3 are pursuing deep economic integration and/or preferential trade and investment agreements in services.

Finally, measures aimed at generating linkages between local firms and transnational corporations can facilitate access to the global network of services offshoring. Both targeting investments with the potential to generate such linkages and increasing the competitiveness of local firms to meet the demands of these companies are central. Schemes of this kind should be applied in conjunction with policies that encourage domestic companies (information, training and technical assistance, financial support, etc.). Examples of such initiatives include the National Linkage Programme in Ireland, the Local Industry Upgrading Programme in Singapore, the Supplier Development Programme in the Czech Republic, and the *Costa Rica Provee* and *Comisión Nacional de Encadenamientos* programmes in Costa Rica.¹⁵

C. Conclusions and lessons for Latin America

In recent years, exports of many different types of services have been booming in parallel with the process of global fragmentation of production and the further expansion of global value chains. This has presented new export opportunities for many countries, which can provide not only currency and employment earnings, but also other benefits for the host economy in the form of spillovers and linkages.

¹⁵ *Costa Rica Provee* was a supplier development programme for high-tech multinationals, which then triggered the creation of a national commission in charge of this issue (*Comisión Nacional de Encadenamientos*).

The analysis in this chapter suggests that to foster exports in certain services markets, such as BPO and ITO, countries increasingly need to engage in the respective GVCs. The attraction of foreign direct investment (FDI) in these sectors appears to be particularly important, since transnational corporations usually organize, coordinate and run the majority of these chains.

This does not mean that there is no space for services exports by local companies from developing countries. Fostering those exports, however, requires identifying specific market niches where these firms can generate differentiated capabilities so as to consolidate their business and grow within their niche. These business opportunities usually go hand in hand with distinctive elements such as gaining a reputation in terms of quality, delivering innovative products, holding strategic assets or establishing alliances with international players. Consequently, there is a growing interest in developing countries to participate in less commoditized and higher value added market segments such as KPO or R&D, in which competition is based not on costs and the existence of a very large workforce, but rather on the availability of highly skilled human resources.

The development of the offshore services industry cannot be addressed solely through the implementation of isolated promotion mechanisms. It requires a coherent and comprehensive development strategy with medium- to long-term horizons, which, in turn, demands a strong commitment and institutional sustainability. The prospective host country must be willing to invest substantial time and resources to develop complex and necessary tasks, such as improving the country's technological infrastructure, deepening the national innovation system, reforming educational policies and generating a country brand that can attract foreign investments and position local services in the global market.

The mechanisms most commonly implemented to promote services exports are the exemption of direct corporate taxes, especially on profits, and of taxes on corporate income and dividends (sometimes for all sources of income; sometimes only for export earnings). Often these benefits are part of free trade zones, export processing zones or *maquila* schemes. As Gari (2011) notes, these regimes were not originally designed with services offshoring in mind, but many countries have extended their application to incorporate services sectors in response to the new global trends. However, not all the benefits or incentives of these promotion schemes are equally relevant for services (for example, the possibility of importing intermediate inputs free of tariffs). Also, the generation of enclaves that are relatively isolated from the rest of

the host economy might prove problematic. Although free trade zones can be more harmful in terms of blocking spillovers in the case of manufacturing than in services, the development of services export enclaves will limit the emergence of some of the potential economywide benefits that the activities might otherwise generate (such as linkages and spillovers).

As for attracting TNCs in the offshore services industry, competition for FDI has a number of requirements. First, policy makers must gain a fuller understanding of the motivations and interests of the main subject of these policies, that is, the foreign investor. The internationalization of TNCs and their investment abroad are determined by factors related to the capacities, objectives and strategies of TNCs and the markets in which they operate. Second, FDI is also driven by other factors related to the locational advantages of a given country or region. In this regard, each country must carefully analyse its locational advantages and disadvantages and then design programmes aimed at improving the former and mitigating the latter. Third, a study of this nature can also contribute to better identifying investors and international projects with a higher probability of being attracted and a larger potential for generating spillovers and linkages.

Thus, it is not enough to grant tax exemptions and establish preferential regimes. If a host country's political context, macroeconomic environment and institutional framework do not generate a stable and predictable business environment, and if the human capital base is weak or the physical infrastructure poor, then attempts to attract GVC-related investment and develop the services sector can easily fail.

Policies towards FDI increasingly require the implementation of comprehensive schemes, in which foreign investment is a part of a country's overall development strategy and in which proactive and focused measures are taken to mobilize the actions of the organizations related to these areas. This is essential if a country seeks to attract quality investment and reap the potential benefits that FDI could bring to the economy as a whole.

Regarding the mechanisms for attracting FDI in services sectors, this chapter has shown that many countries resort to tax breaks or subsidies as a way to encourage investment from TNCs. Incentive schemes are often generic in character, but they can be applied in the context of sectoral programmes (as in the case of software and computer services) or tied to specific policy objectives (such as exports, R&D, job creation and staff training).

Human capital plays a key role in the offshore services industry. In the case of Latin America, skills shortages affect almost all countries, not only when it comes to higher-level personnel or English-speaking staff, but also in the case of the specific knowledge required to work in the BPO and ITO market segments. Hence, incentives that are targeted at skills enhancement and training activities are welcome. Meanwhile, incentives linked to the creation of new jobs may have negative consequences if they overheat the domestic labour market without generating an adequate level of skilled personnel. Moreover, foreign firms often hire personnel that work in local firms. The latter firms, who bore the initial costs of training local skills, may be at a distinct hiring and personnel-retention disadvantage vis-à-vis the TNCs that are receiving the incentives.

As a complement to the attraction of FDI, the offshore services industry in developing countries may also be promoted through measures supporting the internationalization of local companies with high growth potential. A key point here is to identify the business niches in which such firms are more likely to be successful and to facilitate their acquisition of the strategic assets needed to enter those markets.

Home country companies need to ensure the quality of the services they provide, so it is advisable to generate support programmes for the acquisition of internationally recognized certifications. Many local companies in Latin America possess strong technical competences, but they often lack management and marketing capabilities and do not always know how to design business plans and so forth. Assistance programmes aimed at dealing with these weaknesses should also be included in the set of policies directed towards such firms, particularly SMEs.

Governments also need to create an environment conducive to technology transfer, knowledge dissemination and the generation of innovative products. Possible mechanisms include the following: (i) the provision of credit lines and/or tax exemptions for R&D and other innovation activities; (ii) the promotion of linkages with universities and public research organizations; and (iii) support for launching knowledge-intensive spin-offs from TNC affiliates, universities and research organizations. All such support measures can help to strengthen the national innovation system and facilitate the diversification of the country's technological capabilities.

Domestic firms in Latin America and in most developing countries (especially those engaged in knowledge-intensive activities) also face difficulties in accessing private credit. In these settings, there is an almost complete absence of venture capital for the types of activities addressed in this chapter. This represents another public policy priority.

A complementary way to foster the growth of local companies involves the strategic use of public procurement, for example, by giving some priority or procurement preferences to local suppliers or at least not blocking their access in public purchases of IT infrastructure, IT services and other e-government initiatives. TNCs are often the main suppliers of host country governments due to their experience, antecedents, reputational quality and so forth. This can represent a major hurdle for domestic firms, who not only lack access to a relevant market, but are unable to accumulate experience and credentials that could help them to participate in public procurement tenders abroad.

A final way to make inroads in the offshore services industry is through the creation of linkages between local firms and TNCs, particularly through the development of supplier development programmes. The design of such programmes needs to take into account the characteristics and objectives of both local and foreign firms. It is thus key to learn more about TNC needs and to match them with the capabilities of domestic firms, while also targeting policy attention to lifting the obstacles the latter face in meeting TNC requirements. This first step should be followed by the implementation of specific programmes to strengthen areas such as management, marketing and quality control and complemented with ensuing matchmaking activities.

The area of human resources training and education warrants particular attention, insofar as the success of any GVC insertion and FDI attraction strategy ultimately rests on the availability of skilled human capital. This chapter identified three core areas of action with differing implementation horizons. Meeting the challenge of human resource adequacy requires a holistic approach featuring measures taken in the short, medium and long terms. As the Indian experience of building up engineering and managerial excellence attests, the returns to investment in human capital take time to materialize.

Short-term measures should aim at overcoming specific weaknesses through short training courses. The State can encourage employers to undertake specialized training, for example, by extending a tax credit for the incurred costs. Targeted financial support for those who seek access to private training and certified vocational courses can also be helpful. The State can also play an active role in fostering the establishment of training centres in partnership with private firms and supporting the creation of specific programmes in foreign languages (particularly English) and technical skills focused on industry needs. A sound architecture for regular stakeholder dialogue between the public and private sectors can help address potentially damaging information asymmetries in this area.

In the medium-term, priorities should revolve around the generation of new learning structures and specific programmes tailored to industry needs, in the form of new technical degrees in tertiary education (two to three years) and adapted programmes of study in technical secondary schools. English should gradually be made a compulsory subject at the primary school level. Established university programmes should periodically be reviewed, and new specialization streams should be developed in response to changing labour market needs. The dissemination of targeted information about evolving career options and subsequent employment opportunities, along with the establishment of scholarship programmes linked to relevant training, would also be desirable in the medium-term.

A final, longer-term challenge involves rethinking the structure of the national education system to promote, from an early age, training in science and mathematics, logical thinking and computing, management techniques and the mastery of foreign languages. Once again, training and education programmes need to be periodically updated since the skills required in services markets evolve rapidly alongside fast-paced changes in the technological landscape.

The creation of a strategy to promote services exports and attract investments in GVC-related activities is a task that has many degrees of freedom. There is no single pathway replicable in all policy or country settings, and there is considerable scope for policy innovation and the creation of new institutional trends. GVCs are a relatively new phenomenon, and as such, the environment in which they are unfolding is still in flux. Consequently, economies of learning are shaping adaptive capabilities and policy responses. This chapter has modestly attempted to extract a few core lessons deriving from the study of diverse experiences in GVC formation and service supply promotion at the global level. The practical application of any such lessons and recommendations should ultimately be tested against the multiple realities of each country or region.

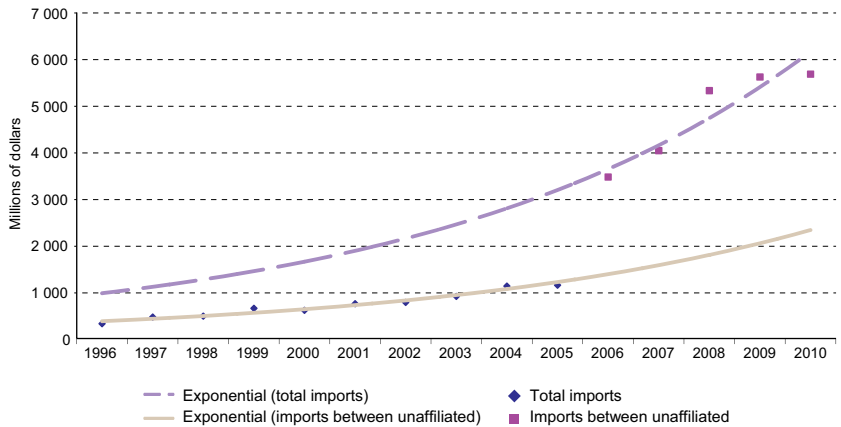
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Appendix

Figure A.IV.1
United States intra-firm imports of “Business, professional and technical services”
from Central and South America: imports between unaffiliated firms
(1996-2005) and total imports (2006-2010)



Source: Author’s calculations based on data from Bureau of Economic Analysis (BEA) [online] http://www.bea.gov/international/international_services.htm.

Chapter V

The Colombian outsourcing and offshoring industry: The effects of institutions and agglomeration economies

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Abstract

While the Latin American outsourcing and offshoring industry is largely dominated and overshadowed by Argentina, Brazil and Mexico, and, Colombia is emerging as a major challenger. Global and local companies are expanding their operations to mid-sized cities in the country. There is also some evidence that the Colombian outsourcing industry is slipping into a higher gear and moving towards high-value, data and knowledge-based services. In this paper, we examine formal and informal institutions and the factors associated with economies of agglomeration in the Colombian outsourcing and offshoring industry.

Keywords: Outsourcing, institutions, agglomeration economies, Colombia, voice-based Business Process Outsourcing (BPO) services.

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Introduction

A *Business Week* article published in 2006 suggested that Colombia ranked among the “up-and-coming” economies in Latin America in terms of the development of its outsourcing industry (Reinhardt and others, 2006).¹ In general, while developing Asian economies such as India, the Philippines and China have dominated the global outsourcing industry, in recent years, global outsourcers are paying more attention to middle-income countries in Latin America (*Business Latin America*, 2010). The Latin American outsourcing industry is largely dominated and overshadowed by Argentina, Brazil and Mexico, as evidenced by the establishment of major global outsourcing services centres in Buenos Aires (Argentina), Sao Paulo and Rio de Janeiro (Brazil) and Mexico City, Monterrey and Guadalajara (Mexico). Colombia is now also emerging as a leading outsourcing destination, alongside Chile, Costa Rica, Panama and Uruguay (Emerging Markets NOW, 2008).

As in other Latin American countries, a large share of the demand for Colombian outsourcing services come from companies based in the United States, which want to deal with vendors in the same time zone, as well as multinationals serving customers in Latin American and other Spanish-speaking countries that need Spanish-speaking support services (Schectman, 2012). A number of multinational firms such as CitiGroup, Hewlett Packard, Kimberly Clark, Siemens and Tata have established call centres in the country. For instance, Convergix, an information technologies services provider, opened a call centre in Bogotá in 2011 with 850 bilingual agents to serve an international telecommunications client via phone, web-chat, short message service (SMS) and email links. The company plans to increase its workforce to 5,000 and expand its offerings to include customer service, technical support, help desk, back office and interactive voice response (IVR) support services (Nearshore Americas, 2011). Teleperformance, which had over 135,000 employees in 49 countries as of November 2012, expected to have 14,000 employees in Colombia by 2013, with an investment of US\$ 4.2 million (Government of Colombia, 2010). Similarly, Sitel first established its Latin American call centres in Colombia in the 1990s and then expanded to neighbouring countries such as Brazil, Chile, Mexico, Nicaragua and Panama (Hansen, 2009). Likewise, Fiserv, which provides integrated information management systems and services, such as transaction processing, business process outsourcing, document distribution services and software and systems solutions, has significant international operations in Colombia (*Data Processing & Outsourced Services Industry Profile: Global*, 2009).

¹ An earlier version of this paper was presented at the conference, Deslocalización de servicios y cadenas globales de valor: ¿Nuevos factores de cambios estructurales en América Latina y el Caribe? Santiago, Chile, 18-19 October 2012.

In 2009, the Colombian outsourcing and offshoring industry had an estimated turnover of US\$1.8 billion, which was 6.1% of the Latin American outsourcing and offshoring industry (Parker, 2010). Colombia ranked fifth in Latin America behind Brazil, Mexico, Argentina and Venezuela (Parker, 2010). In 2011, the Colombian outsourcing sector generated US\$ 640 million of exports, representing 13% of the country's total services exports (IDB, 2013). The Colombian government's target is to create 305,000 jobs and US\$ 10 billion in sales by 2019 and 600,000 jobs and US\$ 48 billion in sales by 2032 (Pinzón, 2010).

The business process outsourcing (BPO) sector dominates the Colombian outsourcing and offshoring industry. Call centres accounted for 59% of the overall BPO sector in 2007. The contribution of human resources, finance and accounting sectors was 34%, and that of the data carrier sector was 7.0% (McKinsey & Company, 2008). There is some evidence, however, that the Colombian outsourcing and offshoring industry is shifting into a higher gear and moving towards higher-value, data and knowledge-based services. For instance, according to the Industrial Research Institute's (IRI) 2011 survey conducted with its member companies, 2% of the respondents considered Colombia as a possible international location for research and development (R&D) laboratories. The same proportion of respondents considered Argentina, Austria, Israel and South Africa as possible international R&D locations (Antcliff, 2012). In a similar survey conducted in 2010, no respondent considered Colombia an attractive international location for R&D activities.

This paper analyses the role of institutions and agglomeration economies in the development of the Colombian offshoring industry. The paper is structured as follows. The next section provides a review of the relevant literature. We then examine the roles of institutions and agglomeration economies in the development of the Colombian outsourcing and offshoring industry. Next, we analyse a case study of the outsourcing and offshoring industry in Medellín, followed by a discussion of policy implications. The final section provides concluding comments.

A. Literature review

Prior research indicates that institutions and agglomeration economies rank among the chief determinants of foreign direct investment (FDI) location decisions (Campos and Kinoshita, 2003). In this regard, it is important to examine whether the same relationship holds for the outsourcing and offshoring industry. In this and the following section, we extend this logic in considering the development of the Colombian outsourcing and offshoring industry.

1. Institutional theory

Institutional theorists emphasize the importance of formal and informal institutions in shaping the behaviour of economic actors (North, 1990; Scott, 1995, 2001; Parto, 2005). An economic system is arguably a “coordinated set of formal and informal institutions” (Dallago, 2002) that influence economic agents’ behaviour. Institutions are the “rules of the game” (North, 1990, p. 27) and include “formal constraints (rules, laws, constitutions), informal constraints (norms of behaviour, conventions and self-imposed codes of conduct) and their enforcement characteristics” (North, 1996, p. 344).

Institutional theory deals with the issue of how economic actors seek legitimacy, approval and support from various actors in the environment (Dickson, BeShers and Gupta, 2004; Campbell, 2004). Institutional influence in the outsourcing and offshoring industry is an admittedly complex process, given that providers and users of outsourcing services need to derive legitimacy from multiple sources such as employees, clients, clients’ customers, professional and trade associations and governments. These issues are complicated further by the fact that offshore outsourcing involves the development of long-term relationships with partners that have different norms and are embedded in different social and legal institutions (Kshetri, 2007).

A number of researchers examine the growth of the outsourcing and offshoring industry using Scott’s (2001) three institutional pillars: (i) regulative; (ii) normative; and (iii) cognitive. These pillars relate to “legally sanctioned”, “morally governed” and “recognizable, taken-for-granted” behaviour, respectively (Scott and others, 2000, p. 238). The following examples illustrate the three pillars from the standpoint of the outsourcing and offshoring industry. Prior research indicates that privacy laws in the origination country and the strength of rule of law in the destination country affect the extent to which services can be outsourced (regulative institutions). In some economies, professional and trade associations in the destination country play an important role in driving the growth of the outsourcing and offshoring industry (normative institutions). For instance, India’s National Association of Software and Services Companies (NASSCOM) has stimulated the outsourcing and offshoring industry by bringing about various institutional changes in the country (Kshetri and Dholakia, 2009). Finally, the culture of modern management and the degree of cultural compatibility between countries of origin and destination are important (cognitive institutions) (Kshetri, 2007).

2. Economies of agglomeration

As a large number of firms in related industries cluster together, each firm may benefit from positive externalities in various firms, creating economies of agglomeration. Factors such as the presence of multiple

competing suppliers, knowledge spillovers, availability of intermediate inputs, a higher degree of labour specialization and division of labour lead to decreased costs of production. For instance, by locating close to other firms, a company can benefit from positive spillovers from investment and economic activities that are already in place. Several mechanisms associated with agglomeration economies include technology spillovers, advantages of thick markets for specialized skills and backward and forward linkages (Marshall, 1920). Prior research in economic geography emphasizes the linkages effects. For instance, users and suppliers of intermediate inputs tend to cluster because the large market provides greater demand for goods and facilitates the supply of inputs (Krugman, 1991). Clusters also include historical effects such as social capital, dissemination of common codes, speed of information flow and respect for contracts and agreements (Venacio, 2007).

B. The roles of institutions and agglomeration economies in Colombia

This section describes the institutions and agglomeration economies affecting the outsourcing and offshoring industry in Colombia. Table V.1 presents a list of factors that facilitate and inhibit the growth of the Colombian industry. We then discuss the factors in more detail as they relate to institutions and agglomeration economies.

Table V.1
Factors facilitating and inhibiting the growth of the Colombian outsourcing and offshoring industry

Type of factor	Facilitators	Inhibitors
Institutions	<ul style="list-style-type: none">• Colombians have a neutral accent that allows them to assimilate other Spanish accents, and they are very good English speakers.• The country is one of the top reformers in the region.• Free trade zones have been established for BPO.• The government has made BPO a priority area, with government investments and tax incentives.• Trade associations play important roles.• International financial reporting standards (IFRS) have been adopted.	<ul style="list-style-type: none">• Negative publicity about guerrilla activity, drug cartels and high crime rates has slowed investments by both domestic and foreign corporations.
Agglomeration economies	<ul style="list-style-type: none">• Operating costs are low.• Externalities generated by well-developed textile fabric, apparel and fashion industries create a culture of outsourcing.	<ul style="list-style-type: none">• Colombian clusters are characterized by a low degree of firm-level specialization and poorly developed enterprise networks.

Source: Prepared by the authors.

1. Regulative institutions

Regulative institutions consist of regulatory processes and activities related to the setting of rules and policies, as well as their monitoring and sanctioning (Scott, 1995). These are mostly related to the state.

In general, Colombia's overall security level and legal environment (rule of law) have improved dramatically over the last decade, which has contributed to the development of the outsourcing industry. A high priority has been placed on the development of the BPO sector, which is one of the eight sectors targeted by the country's structural transformation policy, a component of the National Competitiveness and Productivity Policy formulated by the National Planning Department (DNP, 2008 and 2010). The government has also announced an investment of US\$ 20 million to strengthen the sector (MinCIT/Proexport, 2011a). Income tax incentives are offered to companies in this sector. In 2010 the government eliminated value added taxes for BPO exporting companies, affording them the same incentives given to companies exporting goods. The government has established three free trade zones with BPO facilities in Bogotá, Manizales and Pereira. In addition, local governments in Medellín and Bogotá are working on the establishment of free trade zones specializing in BPO.

The Colombian government has also established a national registry of bilingual individuals (www.ispeak.gov.co). Companies in the BPO sector can thus more easily find qualified employees. In addition, Bogotá has created a programme to fund English language courses for call centre employees (Andrade and Cadena, 2010).

In December 2012, the Inter-American Development Bank approved a US\$ 12 million loan to finance a government programme to boost the Colombian offshoring and outsourcing industry. The proposed programme involves public-private partnerships between universities and businesses. The funds will help design curricula tailored to the specific needs of the industry, which include technical knowledge as well as soft skills such as customer service and English language proficiency. The four-year programme is expected to provide training to 4,000 people. Other project components include strengthening the business capacities of small and medium-sized enterprises (SMEs) in the global services sector, reinforcing the industry's regulatory framework and promoting partnerships with Colombian expatriates (IDB, 2013).

2. Normative institutions

Normative institutions introduce "a prescriptive, evaluative and obligatory dimension" (Scott, 1995, p. 37). The basis of compliance in the case of normative institutions derives from professional and social obligations.

Some examples of normative institutions include trade clubs and other associations, such as the National Business Association of Colombia (ANDI) and the recently created Colombian Association of Contact Centres and BPO. These organizations have played a key role in the growth of the outsourcing and offshoring industry. For example, ANDI recently established a Chamber of Business Process Outsourcing and Information Technologies, which has 12 member companies that employ 15,000 people and generate US\$ 250 million in turnover. The Chamber provides services related to optimization processes in the health, telecommunications, finance, administration and back-office sectors. Member companies have developed trade relations with Spain, the United States, Argentina, Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Puerto Rico, Venezuela and others (Pinzón, 2010). The Chamber has signed memoranda of understanding aimed at promoting collaborative exchanges with the following international counterpart associations: India's NASSCOM, the Brazilian Association of Information Technology and Communication Companies (BRASSCOM), the Australian Business Process Outsourcing Association (ABPOA), the Czech ICT Alliance and the Business Processing Association of the Philippines (BPAP). It has also established the Colombian chapter of the International Association of Outsourcing Professionals (IAOP), which is the first such chapter in Latin America (ANDI, 2009). The Chamber's objectives are to facilitate interaction between Colombian entrepreneurs in this sector and those from other countries, to create awareness about global trends in the sector and to encourage foreign investment in the sector.

Finally, Colombia has adopted international financial reporting standards (IFRS) with a view to helping Colombian professionals and firms active in outsourcing activities in international finance and cross-border accounting.

3. Cognitive institutions

Cognitive institutions are "the shared conceptions that constitute the nature of social reality and the frames through which meaning is made" (Scott, 2001, p. 57). They are built on the mental maps of individuals and organizational decision makers (Huff, 1990). Relevant cognitive institutions include the various components of the country's culture that have affected the growth of the industry, as well as their degree of cultural similarity with major outsourcing origination economies such as the United States.

Cultural similarity has a strong effect on a company's choice of outsourcing locations. With regard to relations between the United States and Brazil, Carlos Díaz, an expert on human resource issues in Latin America, notes that "The countries share many cultural references

—music, movies, television shows, etc.... You wouldn't have to explain who Mickey Mouse is to a Brazilian, but that may not necessarily be the case when it comes to somebody from India" (Ruiz, 2007). This observation is equally applicable in the Colombian case.

Another advantage of Colombia is that local contact centres can easily reach the growing Spanish-speaking market segments of the United States. People in the country have a neutral Spanish accent, which allows Colombians to readily assimilate other Spanish accents. Moreover, a large proportion of Colombians are good English speakers (Díaz, 2011). The United States company Yuxi Pacific has indicated that it opted to establish call centre operations in Medellín in 2011 after its operations in China encountered problems finding English-speaking staff (Laughlin, 2012).

4. Agglomeration economies in the outsourcing and offshoring sectors in Colombia

As indicated in table V.1, Colombian clusters are characterized by a low degree of firm-level specialization and poorly developed enterprise networks (Pietrobelli and Olarte Barrera, 2002). These factors tend to constrain local external economies and collective efficiency. Moreover, backward linkages are poor or lacking (Pietrobelli and Olarte Barrera, 2002).

Agglomeration economies have been built in Colombia in the past. Several decades ago, firms based in the United States outsourced jobs relating to the assembling of cut fabric pieces in Colombia. Most of these companies subsequently moved their operations to Asian countries, when lower communication and transport costs made it feasible to take advantage of their lower wages (Morawetz, 1981). However, once industrial clusters and hubs are established, the associated advantages tend to persist even after the original industries disappear. Colombia's long-standing involvement in outsourcing-related activities is thus likely to be a crucial asset for the development of the BPO industry.

C. A case study of Medellín

This case illustrates the factors examined in the previous section in the context of the development of the outsourcing and offshoring industry in Medellín, Colombia's second largest city. BPO revenues for Medellín in 2008 amounted to US\$ 185 million, representing 37% of the total market in Colombia (ACI/Alcaldía de Medellín, 2009, p. 2).

A number of local as well as multinational companies have established BPO centres in the city. For instance, Hewlett-Packard has a BPO centre in Medellín which handles the company's worldwide

back-office needs (Sutter and Williams, 2011). In early 2012, Kimberly Clark announced the creation of a global innovation centre in Medellín, which will complement its existing centres in South Korea and the United States (Tholons, 2012). Local companies established in the city include Allus Sectoren Global BPO (formerly Multilink SA), Teledatos and Emtelco (a subsidiary of EPM). In 2002, EPM opened Colombia's largest call centre.

1. Formal and informal institutions in Medellín

From the standpoint of regulative institutions in the Colombian outsourcing and offshoring industry, the most significant changes have taken place in Medellín. After Sergio Fajardo became the city's mayor in 2003, he brought about dramatic changes by nurturing an entrepreneurial environment. Fajardo established innovation centres, allocated 40% of the city's budget to education and spent US\$ 17 million a year to stimulate entrepreneurship (Isenberg, 2010). These measures have generated significant payoffs, with recent studies suggesting that Medellín today is safer than Washington, D.C., and many other leading cities in the United States (Isenberg, 2010).

During his mayorship, Fajardo also took initiatives to form entrepreneurial networks linking local universities, entrepreneurs, private equity funds, large companies (such as the local power utility, EPM), nonprofit organizations (such as Proantioquia Foundation and Comfama) and diaspora networks with roots in Medellín (Isenberg, 2010). He also focused on building beautifully designed, technologically advanced public libraries and community centres (Isenberg, 2010).

Various organizations from both the public and private sectors deserve particular attention. Established in 1957, the National Learning Service (*Servicio Nacional de Aprendizaje*, SENA) is a government institution financed partly by private enterprises. SENA provides training services, technical skills certification and quality insurance (Pietrobelli and Olarte Barrera, 2002). The Foundation for the Recovery of Antioquia (ACTUAR) was created in 1980. In partnership with SENA, ACTUAR provides training to workers in a diverse range of industrial sectors.

In Medellín, joint initiatives involving the business community, the local government and various civil society organizations have often entered into successful partnerships. Just as important is a strong sense of belonging to the region (Pietrobelli and Olarte Barrera, 2002). Trade clubs and other associations in the city provide increased opportunities for inter-firm interactions while also strengthening business-government collaborations (Pietrobelli and Olarte Barrera, 2002).

The Ruta N project, launched in July 2010 by the City Hall of Medellín, ranks among the most successful projects undertaken by the local government with a view to furthering the growth of the outsourcing and offshoring industry. A three-building complex established in an area of the city plagued by crime, Ruta N forms part of the Medellín Cluster City initiative to enhance the city's competitiveness based on innovation and technological development (Medellín Ciudad Inteligente, 2011). This project also emphasizes and promotes relationships between the state university and business societies. Public and private actors such as the city government, SENA, the Chamber of Commerce of Medellín, Proantioquia, universities and national and multinational firms have all participated in the project. The idea is to develop regional production systems from suppliers to customers, covering value chains in different economic sectors.

2. Agglomeration economies in Medellín

More fully developed examples of economies of agglomeration can be found in Medellín, which counts at least six information and technology services companies with capability maturity model integration (CMMI) certifications (Tholons, 2012). The city also has a number of large multinational companies, such as Owens Illinois, Sab Miller, Phillip Morris, Procter & Gamble, Renault, Toyota, Teleperformace, Allus Global BPO, Tata Consulting Services, Infosys and Unisys. It is also home to the headquarters of 19 of the 100 largest enterprises in Colombia (Tholons, 2011). Infosys, one of India's leading suppliers of information technology (IT) services, has focused exclusively on providing supports for Bancolombia's core banking and enterprise resource planning (ERP) operations. The company has also established a programme that involves taking the 100 top computer science students from the city's EAFIT University to its headquarters in Bangalore, India, for specialized training every summer (Laughlin, 2012).

Medellín's industry-oriented culture has been an important source of agglomeration economies for the outsourcing and offshoring industry. Private sector businesses have created a number of financial and training centres, which have facilitated the development of a strong local productive network (Pietrobelli and Olarte Barrera, 2002). These networks have greatly facilitated the development of the outsourcing and offshoring industry and have resulted in joint initiatives such as Ruta N, discussed above.

Ruta N is based on the idea that a corporation could promote the development of science, technology and innovation for the city's competitiveness. The City Hall, UNE and EPM provided the infrastructures needed for the development of the IT industry, as well

as the outsourcing and offshoring sectors. The first phase of the project involved an investment of about US\$ 55 million by the City Hall, UNE and EPM for the creation of facilities of 30,000 m² generating 1,300 jobs (González Toro, 2010). The Public Service Company of Medellín (EPM) established an R&D centre with local researchers and multinational companies (Medellín Ciudad Inteligente, 2011). Six laboratories from the Technical Assistance and Research Quality Team were also installed.

The facilities house the global service centre of Hewlett-Packard (HP) and other companies. The HP service centre provides value added services to the company's other subsidiaries and its customers (Gallo Machado, 2010). In the same vein, the Chinese telecommunications equipment manufacturer Huawei has signed a memorandum of understanding with the local government to participate in the Ruta N innovation and training centre (Qi, 2012).

Álvaro Uribe, the former President of Colombia, recently drew attention to the fact that his home city of Medellín needed 1,000 engineers per year, whereas local educational institutions could only supply 40% of these needs (Schechtman, 2012). While the demand for skills currently exceeds supply by a wide margin, agglomeration economies have been created for the outsourcing and offshoring sector through the presence of a large number of universities with engineering and computer science programmes and the right combination of policies and institutional actors. Foreign multinationals that have established outsourcing and offshoring operations in Medellín feel strongly that they have benefited from agglomeration economies in the city. Gérard Brossard, the Vice President of Strategy and Corporate Development at Hewlett Packard, noted that Medellín's human resource pool was a key factor for attracting the company's operations to the city (Gallo Machado, 2010). Similarly, Huawei reported that access to human capital in key areas such as electronics, computing, telecommunications, finance, marketing and human resources influenced the company's decision to locate its operations in the city (Qi, 2012).

3. Agents of institutional change and entrepreneurship

Sergio Fajardo's role and initiatives in the development of the outsourcing and offshoring industry in Medellín can be analysed from the perspective of institutional entrepreneurship. A growing number of studies suggest that institutional entrepreneurs challenge or disrupt particular models of social or economic orders and construct new organizational fields (DiMaggio and Powell, 1991; Scott, 2001). Fajardo brought significant changes to the city's business model.

Institutional entrepreneurs “lead efforts to identify political opportunities, frame issues and problems and mobilize constituencies” and “spearhead collective attempts to infuse new beliefs, norms and values into social structures” (Rao, Morrill and Zald, 2000, p. 240). They also engage in activities related to deinstitutionalization (that is, the dissolution of existing logic or governance structure), as well as institutional formation, which entails the birth of a new logic or governance structure (Scott, 2001).

Institutional entrepreneurs need to be dominant in order to gain wide legitimacy, bridge diverse stakeholders and compel other actors to change practices (Maguire, Hardy and Lawrence, 2004). The fact that Fajardo was elected as an independent allowed him to “escape the tradition of patronage and clientelism” (Innovation for Successful Societies, 2009). His motto, “Let’s Work Together”, led to the establishment of partnerships with key institutional actors, including the national government, Medellín city councillors and other relevant groups such as the teachers’ union and affected neighbourhoods (*comunidades*).

Institutional entrepreneurs must mobilize external and internal constituents and financial resources (DiMaggio and Powell, 1991) and be able to communicate with other institutional actors in the system so that their initiatives are perceived favourably (Groenewegen and van der Steen, 2007). Fajardo was able to increase land taxation for the city, which provided financial resources to invest in various developmental projects. By changing public perceptions, he was able to build the necessary citizen support.

Theorization, or “the development and specification of abstract categories and the elaboration of chains of cause and effect”, is an important process through which institutional entrepreneurs facilitate the diffusion of new ideas (Greenwood, Suddaby and Hinings, 2002, p. 60). Theorization provides rationales for the practices to be adopted and thus increases the likelihood that the practice will be accepted (Strang and Meyer, 1993). Two key elements of theorization concern framing and justifying. Framing focuses on the need for change, while justification concerns the value of the proposed changes for concerned actors (Greenwood, Suddaby and Hinings, 2002; Maguire, Hardy and Lawrence, 2004). In order to understand framing and justifying, we can offer the following example: during the first year of his tenure as the city’s mayor, Sergio Fajardo launched the construction of new schools and libraries in the poorest parts of Medellín. New building sites were opened with big posters which read: “Here are your taxes!” (stefanoboeri.net, n/d).

D. Discussion and implications

Colombia performs better in overall cost competitiveness than many other Spanish-speaking countries such as Argentina, Chile and Mexico (Ryan 2011). Due to recent institutional changes, firms in the country's outsourcing and offshoring industry can take further advantage of this benefit. This means that outsourcers establishing in Colombia can target the neighbouring Latin American market. That said, global outsourcers are increasingly looking at factors other than low costs.

Outsourcing industries in different cities and regions in Colombia may have different advantages. For instance, Pietrobelli and Olarte Barrera (2002) find that while firms in Bucaramanga tend to enter global production and marketing networks, firms operating in Medellín are often primarily oriented towards the national market. This pattern is also found in the evolution of offshoring and outsourcing industry. That is, the existing global production and marketing networks might help Bucaramanga-based firms to operate internationally, whereas Medellín remains nationally focused. Thanks to the developed home market, however, Colombian firms in the offshoring and outsourcing industry are likely to be in a position to take advantage of the fast-growing domestic market as an initial target. Institutional changes undertaken in recent years have contributed to the development of the Colombian outsourcing and offshoring industry. Various changes—such as the establishment of free trade zones with BPO facilities in Bogotá, Manizales and Pereira, infrastructural investments in the sector, the creation of a national registry of bilingual experts, Bogotá's programme to fund English language courses for call centre employees, the elimination of value-added taxes for BPO exporters and the adoption of international financial reporting standards (IFRS) to certify Colombian professionals in financial and international accounting standards—are set to transform the Colombian outsourcing and offshoring industry into a regionally and globally competitive sector.

The agglomeration economy approach reveals how the Colombian outsourcing and offshoring industry benefits from positive externalities generated by firms in related industries through processes and mechanisms such as the presence of competing multiple suppliers, knowledge spillovers, availability of intermediate inputs, and a higher degree of labour specialization.

Despite the notable progress documented above, there is some evidence that, as in many countries in the Caribbean and Central America, Colombia-based outsourcing companies tend to underperform their Brazilian counterparts in attracting high-value

BPO activities. For instance, Colombian firms mostly offer voice-based BPO services (call centres) to serve clients in the United States (*Business Latin America*, 2010). IN contrast, companies in Brazil tend to offer a fuller range of higher-value services. For instance, the BPO component of CPM Braxis and Tivit involves enterprise resource planning (ERP) functions and payment processing transactions (*Business Latin America*, 2010). Likewise, Mexico offers information and technology outsourcing in addition to BPO services to customers in the United States (*Business Latin America*, 2010). One explanation for this trend might be that higher-value BPO activities in Colombia are still disadvantaged by weaker agglomeration economies. Compared with more successful countries in the region, Colombia also lags behind in skilled human resources (McKinsey & Company, 2008).

To illustrate the effects of institutions and agglomeration economies on the development of the outsourcing and offshoring industry, the paper produced an in-depth case study of the development of the industry in the city of Medellín. We also analysed the central role played by Sergio Fajardo, who became the city's mayor in 2003, as an institutional entrepreneur. Fajardo ushered in far-reaching changes to create an entrepreneurial environment in the city, which helped to stimulate the growth of the outsourcing and offshoring sector.

The presence of a large number of software companies with CMMI certifications has helped Medellín improve the depth and quality of service delivery. Such capabilities have attracted providers such as Hewlett Packard to the city. From the standpoint of institutions and agglomeration economies for the outsourcing and offshoring industry, it is probably fair to say that the most significant changes observed in Colombia to date have occurred in Medellín.

Finally, global and local outsourcing companies are increasingly expanding their operations to mid-sized Colombian cities. There has also been a gradual shift towards higher-value, data and knowledge-based services (Andrade and Cadena, 2010). These trends are likely to facilitate the development of further agglomeration economies in mid-sized cities and encourage the supply of higher-value services in the country.

E. Concluding remarks

This article has investigated various factors that have facilitated and constrained the development of the Colombian outsourcing and offshoring industry. It has done so through the prism of institutional theory and the economics of agglomeration. The paper also compared Colombia to other Latin American leaders in the outsourcing and offshoring industry. The

analysis helped identify the nature and source of Colombia's competitive advantages in various types of outsourcing services (for example, voice and non-voice services).

The underlying historic problems facing Colombia centre on adverse perceptions of the respect for the rule of law linked to the negative publicity of guerrilla warfare, drug cartels and high crime rates, all of which has slowed investment in the country. A wave of sweeping changes has occurred in recent years. This paper's discussion suggests that profound institutional changes underway in Colombia are likely to fuel the continued growth of the country's outsourcing and offshoring industry.

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Chapter VI

Service multinationals in Costa Rica's free trade zone and their linkages to local suppliers

Juan José Flores Sáenz

Abstract

Back-office service components, such as payrolls and client service, have been increasingly relocated from developed countries to developing countries, such as Costa Rica. This trend has grown considerably over the past 10 years, heightening the policy importance of analysing the performance of these companies, their evolution and their linkages.

This chapter pursues two main objectives. First, it explores new empirical evidence that multinational corporations (MNCs) are locating their back-office services in the Costa Rican free trade zone. We use a panel data set of 56 MNCs over the 1997-2010 period to determine some economic characteristics. Fully 82% of the MNCs in question are headquartered in the United States. More than 50% of the MNCs came

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to Costa Rica after the 2008 recession, and the call centre and shared services subsectors employ 500 workers on average. The chapter's second objective is to analyse the linkages that MNCs have established with the local economy.

Introduction

Costa Rica's economy has undergone a notable structural transformation over the past six decades. It evolved from an agro-exporting economy in the 1950s to a development model predicated on import-substitution industrialization in the 1960s and 1970s in the framework of the Central American Common Market (CACM). The country then shifted to an outward-oriented development model based on integration with world markets and a diversification of export destinations in the mid-1980s, adopting export promotion policies and consolidating its market-opening strategy through accession to the World Trade Organization (WTO). The government successfully promoted inward foreign direct investment (FDI) and, from the early 1990s onwards, sought to deepen integration through a series of bilateral free trade agreements (FTAs) with key trading partners in the Western Hemisphere and beyond.

Ciarli and Giuliani (2005) report that as a result of the wave of inward FDI between 1985 and 2000, Costa Rica was able to increase its specialization in some of the most dynamic services exports in the world market. FDI inflows increased considerably in the early 2000s, particularly in technologically intensive fields such as electronic components, medical devices and global services (back office and outsourcing). While the latter may not always be considered as having a high technological content, their use of highly skilled labour helped to generate high added output.

FDI inflows have risen markedly in Costa Rica in recent decades, growing from US\$ 158 million a year on average in 1970-1974 to US\$ 2.4 billion in 1995-1999. Inflows surged spectacularly in 2005-2009 to an unprecedented US\$ 7.5 billion, thus surpassing the previous fifteen years (Flores and Céspedes, 2010).

FDI flows also grew enormously worldwide in the same period, particularly from developed to developing countries. There was also a radical shift in the production paradigm. The technological revolution in information and communications drastically reduced the cost of moving not only capital, but also information, from high-cost developed countries to lower-cost locations around the world (Audretsch and Thurik, 2004). The traditional production factors (labour and capital) are no longer sufficient to explain growth patterns, and leading theorists such as Romer (1986), Lucas (1988 and 1993) and Krugman (1991) all embed

knowledge at the heart of endogenous growth models. Knowledge has typically been measured in terms of research and development (R&D), human capital and patented inventions (Audretsch and Thurik, 2000 and 2001). Such trends towards knowledge-based economies have clearly engulfed Costa Rica (Flores and Céspedes 2010). Not surprisingly, the country's commercial services exports have grown markedly in recent years, inserting the economy into the new geography of trade resulting from increased production fragmentation and the rise of value chains in service markets.

As reported by the Costa Rican Investment Promotion Agency (CINDE) the service sector in Costa Rica has experienced dynamic, continuous growth over the past decade, supplying services to the Americas, Europe, Asia and Oceania. Outsourcing and cross-border services have become the country's most dynamic industry over the past 15 years. The number of companies and jobs created has grown exponentially: in 2001 the sector employed approximately 2,000 people, versus more than 30,000 workers ten years later. Costa Rica is now the fifth leading destination for global services in the Americas (according to the global management consulting firm, AT Kearney, in 2010-2011), making San Jose the fifth leading city for outsourcing in Latin America.

According to CINDE, the country has sought to attract FDI from companies in the following six categories: contact centres; shared services; back office; entertainment and digital technologies; design and engineering; and software. Foreign companies come to Costa Rica to take advantage of the country's ample supply of highly trained and bilingual (Spanish-English) workers and its geographic location in the middle of the American continent, which facilitates the development of commercial activities for clients in both North and South America. According to the Foreign Trade Corporation of Costa Rica (PROCOMER), other types of services companies are also being created, such as tourism or medical tourism, which have a higher domestic content, but these latter areas are not investigated in this chapter.

This chapter pursues two main objectives. First, it reports new empirical evidence on the outsourcing activities of multinational corporations (MNCs) located in the Costa Rican free trade zone. Second, it analyses the links between MNCs and local suppliers. We use a panel database on MNC services located in the Costa Rican free trade zone to determine the evolution, origin, entry date and employment level of MNC service providers. We then develop an econometric model to determine linkages between MNCs and the local economy. Panel data are available for 56 MNCs operating in the Costa Rican service sector over the 1997-2010 period.

The chapter is organized as follows. Section A reviews the main strands of relevant literature. Section B presents new empirical evidence on the service companies located in the Costa Rican free zone regime. Section C advances the hypothesis that will be tested in the chapter's econometric model, whose purpose is to analyse MNC-local suppliers' linkages. Section D describes the methodology used, while Section E presents and discusses the main findings. The final section closes with concluding considerations.

A. Literature review

1. Service companies: back office, contact centres and shared services

The revolution in information and communications technology (ICT) has drastically reduced the cost of moving both capital and information. This has allowed multinational companies (MNCs) to outsource and fragment both their productive and administrative processes. Various components of back office services, such as payroll and client services, have been relocated from developed to developing countries, such as Costa Rica. For example, one Fortune 500 company was able to reduce its costs by an estimated 80% by relocating back office operations to Bangalore, India in the mid-2000s. According to a report prepared jointly by NASSCOM and McKinsey, General Electric (GE) saved up to US\$ 340 million per year by relocating part of its operations to India.

There is broad agreement that service companies face different challenges than manufacturing firms (Miozzo and Miles, 2002). According to Miozzo and Yamin (2012), the main characteristics of service companies include the intangibility of their products, the simultaneity of production and consumption, product heterogeneity and the pervasive influence of regulation.

A study by Dossani and Kenney (2003) on back office activities in India indicates that the main motivation for contracting third-party services is potential cost savings. Additionally, the authors observe that cross-country differences in professional wages play a determining role. For example, the average salary of a certified public accountant in the United States is around US\$ 75,000 per year, whereas a professional in India performing the same tasks earns US\$ 15,000, on average, at similar productivity levels.

Nevertheless, wage differences are not the only relevant consideration. For example, when call centres in the United States began

to move from big cities to rural areas of the country, the companies ran up against limiting factors such as lower levels of education, a lack of soft skills and low labour offer (Dossani and Kenney, 2003). A contrary, large cities in India such as Mumbai or Bangalore offer not only a huge labour pool, but also an abundance of highly educated talent, which supports large-scale recruitment campaigns.

Finally, the study finds that call centres are one of the first services to be transferred from an MNC to a host country, since they have low fixed costs and operate less complex processes (their relative simplicity is such as to allow full transferability within six months). More complex back office services, such as accounting, finance or human resource management, require more time due to the need for greater staff training.

2. Foreign direct investment and backward linkages

Foreign direct investment (FDI) is one of the main financing sources for many developing countries, and multinational companies (MNCs) are thus central players in their development strategy. As documented by Barba Navaretti and Venables (2005), a major branch of the economic literature is devoted to how multinational companies contribute to output and affect the host economy.

Countries fiercely compete to attract high-quality FDI from multinational companies. However, several studies of the benefits of FDI, particularly with regard to knowledge spillovers, offer ambiguous conclusions. Reviewing this literature, Smeets (2008) finds that almost every study devoted to the topic is ambiguous. Many of the causes of this ambiguity can be traced to methodological and measurement matters.

Görg and Greenaway (2004) carry out several econometric studies to measure the beneficial impacts of FDI, but the results are mixed. In the same manner, Javorcik (2004), who analyses the contribution of FDI to productivity growth and the competitiveness of domestic industries, suggests that the lack of conclusive evidence on this subject can be traced to data limitations. Additionally, Barrios, Görg and Strobl (2011) argue that the measurement of backward linkages used in recent studies on MNC spillovers is potentially problematic, since the measures depend on a group of restrictive assumptions that are not met in practice.¹

¹ The restrictive assumptions in question are that (i) multinationals use domestically produced inputs in the same proportion as imported inputs; (ii) multinationals have the same input-sourcing behavior as domestic firms, irrespective of their country of origin; and (iii) the demand for locally produced inputs by multinationals is proportional to their share of locally produced output. The authors discuss why these assumptions are unlikely to hold in practice and provide alternative measures that overcome these drawbacks. See Barrios, Görg and Strobl (2011).

(a) Backward linkages

FDI benefits (spillovers) are most likely to occur through backwards linkages, via contacts between national suppliers of intermediate inputs and multinational clients (Javorcik, 2004). The formation of linkages between multinational and local companies is considered an important means of promoting economic development, since such linkages are often associated with the generation of knowledge transfers and knowledge spillovers (Giuliani, 2008; Smeets, 2008). That is why governments continue to spend resources in the creation of linkages, despite the mixed empirical evidence.

According to UNCTAD (2001), multinational companies also benefit from the formation of linkages, since using local suppliers can lower their operation costs, increase their specialization and speed up the adaptation of technologies and products to local conditions. Key factors in determining linkages include MNC operations in the host country (Alfaro and Rodríguez-Clare, 2004; Rauch and Watson, 2003), MNC productivity (Girma and Görg, 2004) and the intensity of intra-firm trade (Moran, 2001).

The existence of FDI spillovers depends on a number of conditions². The interaction of two key factors stands out:

- The type of foreign direct investment. Investment in natural resource exploration generally offers very limited spillovers, since such projects are typically highly capital intensive and largely divorced from the rest of the local economy and local suppliers. FDI in the manufacturing sector has more potential to generate spillovers, owing to the sector's greater knowledge intensity, which in turn requires a broader range of competences from local suppliers. MNCs that use host-country operations as an exporting platform (so-called efficiency-seeking FDI) rather than as a base for supplying the local market (so-called market-seeking FDI) tend to generate fewer linkages, to the extent that they operate as *maquiladoras*, or assembly plants, with more muted technological transfers (Ekholm, Forslid and Markusen, 2003; Ugur and Ruane, 2005; Baltagi, Egger and Pfaffermayr, 2005).
- The absorption capacity of the host country. The size of a host country's economy may affect its ability to absorb FDI. If the host economy is small, it may have difficulty attracting FDI and supplying MNCs with the required inputs, including specialized human capital. The quest to increase market size through regional integration efforts may help in this regard.

² See Dunning (1988), Paus and Gallagher (2008), Cordero and Paus (2008) and Monge (2010).

Cordero and Paus (2008) investigate some of the main factors limiting linkage developments in Costa Rica. Their study indicates that despite the presence of several high-tech companies in the country, the technological spectrum remains limited, since local firms still tend to concentrate on assembly work rather than generating technological value added. Additionally, local companies face barriers to entry in intra-firm trade, especially in the case of supplying inputs for high-tech MNCs. While some local companies are successful suppliers of MNCs and high-tech MNCs (as in the production of moulds for metal and plastic pieces), these tend to be exceptions rather than the norm.

As the above literature review illustrates, there is no single reason for which MNCs locate in a given host country, nor is there a consensus on the factors most likely to determine backward linkages between MNCs and local suppliers.

B. Main characteristics of the service sector in Costa Rica

Costa Rica has experienced remarkable growth and dynamism over the past decade, with a rich ecosystem of companies of different origin that serve markets in the Americas, Europe and Oceania from their Costa Rican base. In the past 15 years, delocalized services represent one of the most vibrant sectors of the Costa Rican economy (along with medical devices). According to the Costa Rican Investment Promotion Agency (CINDE), of the 34 new FDI projects in 2011, 21 are related to services. The estimated 110 companies operating from the country's free trade zone generated US\$ 1.7 billion in exports (33% of the country's total that year) and 32,000 direct jobs.

The country's attractions include sharing a time zone with the United States market (either Mountain or Central, depending on the time of year) and a highly qualified work force. These factors contributed to Costa Rica's high ranking in the 2010-2011 AT Kearney Global Services Location Index for the Americas, which ranked San Jose, the country's capital, as Latin America's fifth most attractive outsourcing destination.

CINDE categorizes service companies into the following subsectors:

- **Shared services.** Under this operative model, an entity specializes in providing a highly transactional service for different business units (usually internally) in order to standardize procedures, improve service for users, avoid the duplication of efforts in different business units and reduce costs. Shared services are often used for human resources, finance, accounting and IT, and the four main locations for such centres in the region are Argentina, Brazil, Costa Rica and Mexico (Deloitte, 2011).

- Back office services. This category encompasses tasks that are required to keep a business running smoothly and efficiently, but that do not make up the core of the company's business. The services supplied are similar to shared services, such as computer and communications networks, human resources and accounting functions.
- Contact centres. More commonly referred to as call centres, these are centralized offices that receive or transmit a large volume of requests by telephone or via the internet. An incoming call centre provides product support or other information requested by a company's customers. Call centres can also perform telemarketing, debt collection and charity or political donation campaigns.
- Entertainment and media. This category comprises companies dedicated to digital animation and audiovisual production. According to the Costa Rican Chamber of Information and Communications Technology (CAMTIC), the bulk of production in this market segment is destined for export markets.
- Software. These companies provide maintenance, daily operation and support services related to software used by the client.
- Engineering: As in the case of software, engineering MNCs are located in the host country for the development of engineering services (such as architectural design and technical drawings) for other markets and/or headquarters.

We used data provided by PROCOMER to gather annual information on 56 service companies operating in the free trade zone for the 1997-2010 period. According to CINDE, there were 119 service companies in 2010, of which 29 were new. The 56 companies in the PROCOMER database thus represent a little over 60% of the universe of service companies located in Costa Rica. Nevertheless, according to both PROCOMER and CINDE, the largest firms in sector are included in the sample. Additionally, these same key players are the ones that report to the Central Bank of Costa Rica (BCCR) and PROCOMER for the annual survey on the free trade zone's performance.

Of the 56 MNCs included in the sample, 17 are call centres, representing 30% of all MNCs located in the Costa Rican free zone regime. They are followed shared services with 15 companies (26%), back office services with nine companies (16%) and software, engineering and entertainment with a combined 15 companies. On average, each company employed 277 workers and purchased almost US\$ 5 million of local services per year during the 1997-2010 period (see table VI.1).

Table VI.1
Main characteristics of service companies located in the Costa Rican
free trade zone, 1997-2010

Subsector	Number of companies	Local purchases (average, US\$ millions)	Number of employees (average)
Contact centres	17	1.3	265
Shared services	15	4.9	258
Back office	9	4.7	221
Entertainment and media	6	0.8	139
Software	5	0.2	36
Engineering	4	1.0	281
Total	56	4.7	277

Source: Author's calculations, on the basis of data from PROCOMER.

The remainder of this section presents new evidence on the following questions:

- Where do the MNCs come from?
- When did they establish themselves in Costa Rica?
- How many workers do they employ?
- What is the nature of their local purchases?

1. Where do the MNCs come from?

According to CINDE, 82% of the service MNCs operating in Costa Rica are headquartered in the United States. This number rises to 92% when medical devices and electronics are included. The remaining companies are from Europe (11%) and Asia (7%).

Several questions need to be addressed to provide a better understanding of the reasons behind the locational decisions of MNCs and the clear regional preference for Costa Rica. What factors most influenced their decision to locate their offshore operations in Costa Rica? Was the free trade agreement with the United States instrumental in fostering the dominant presence of companies from that country? Are there noticeable differences between companies and across market segments? Greater knowledge on these issues would help Costa Rican decision makers enhance their policy mix with a view to attracting more FDI and increasing linkages to the local economy.

2. When did they establish themselves in Costa Rica?

The question of timing offers insights into the probable answers to the questions raised above. More than 50% of the MNCs in the free trade zone established a presence in Costa Rica after 2008. That year, the world

economy experienced one of the most severe contractions since the Great Depression of the 1930s. The financial crisis and its impact on the real economy may well have prompted a number of MNCs to implement cost-cutting strategies in a downward market by delocalizing to Costa Rica.

Table VI.2 shows that 60% of the companies offering contact centre services established their offices in the Costa Rican free trade zone in 2008 or later. The share is almost 56% for companies supplying back office services, 53% for the group of companies offering entertainment, software and engineering services, and 30% for shared service companies. There were almost no service companies before 1997, with the exception of one company in the contact centre subsector (Procter & Gamble). Two shared services companies arrived in the following period (1997 to 2000) The pace picked up after 2005. This implies two main conclusions: the Costa Rican service industry began to mature after 2005, and an important group of companies arrived in the wake of the 2008 crisis. Nevertheless, it is not possible based on available data to state unequivocally that the service companies came to the country with the intention of taking advantage of the international situation, with the explicit aim of lowering costs and enhancing labour productivity levels. This chapter therefore takes a closer look at the reasons the service companies (and more generally, the MNCs) established themselves in Costa Rica.

Table VI.2
Arrival of service companies located in the Costa Rican
free trade zone, 1997-2010
(Percentages)

Year of arrival	Shared services	Entertainment media, software and engineering	Contact centre	Back office
Before 1997	0.0	0.0	5.9	0.0
1997-2000	13.3	0.0	0.0	0.0
2000-2004	13.3	20.0	11.8	33.3
2005-2007	40.0	26.7	23.5	11.1
After 2008	33.3	53.3	58.8	55.6
Total	100.0	100.0	100.0	100.0

Source: Author's calculations, on the basis of data from PROCOMER.

3. How many workers do they employ?

MNCs located in the Costa Rican free trade zone employed just over 32,000 workers in 2011. This represents slightly more than half of all jobs in the free trade zone. This is a significant contribution to the Costa Rican labour market. Preliminary calculations using the 2010 census indicate that the private labour market employs approximately 700,000

people in the Greater Metropolitan Area of San José.³ In other words, approximately 5% of the private labour market is linked to MNCs located in the free trade zone.

Table VI.3 shows the different employment levels of the various services subsectors under study in this chapter. Companies supplying back office services provide the most employment, with an average staff often exceeding 1,000 workers. At the other end of the spectrum are the software, entertainment and engineering services companies, which tend to hire fewer than 100 employees, given their level of specialization. Companies operating contact centres are larger, on average, employing between 100 to 500 workers. This subsector employs a total of 18,000 workers. The shared services subsector generated the most employment during the study period, with over 20,000 jobs created in the 1997-2010 period. The rest of the service companies employed approximately 9,000 persons.

Table VI.3
Employment range of service companies located in the Costa Rican
free trade zone, 1997-2010
(Percentages)

Number of employees	Shared services	Entertainment media, software and engineering	Contact centre	Back office
100 or fewer	20.0	60.0	35.3	55.6
From 101 to 500	60.0	26.7	41.2	22.2
From 501 to 1,000	13.3	6.7	17.6	11.1
More than 1,000	6.7	6.7	5.9	11.1
Total	100.0	100.0	100.0	100.0

Source: Prepared by the author, on the basis of data from PROCOMER.

4. What is the nature of their local purchases?

As discussed earlier, one of the main reasons to attract MNCs to a host country is to promote productive linkages that can generate positive externalities for the host economy (Javorcik, 2004; Giuliani, 2008). Service companies differ from their manufacturing brethren in regard to the organization of their production. Firms in the service sector do not require as broad a range of intermediate inputs (such as raw materials) to develop their productive capacity, since their activities are related to the provision of services to different places and companies, where their main asset is information. This has proven possible, in large measure, thanks to the ICT revolution, which has contributed to higher levels of economic

³ The Greater Metropolitan Area encompasses three quarters the Costa Rican population. Geographically, it includes the four main cities of the country (San José, Heredia, Cartago and Alajuela).

development while also generating a strong demand for new services (Audretsch and Thurik, 2004).

In Costa Rica, the available data measuring the local purchases of MNCs are grouped into 16 categories, including the purchase of non-tradable goods (payment of public services, income tax, etc.). Monge (2010), Vargas (2010), Flores (2011) and Flores and Jenkins (2012a) all discuss the importance of better identifying local purchases in order to improve the measurement of linkage levels. Vargas (2010) and Flores (2011) use only tradable goods to measure such linkages, while Flores and Jenkins (2012a) use a basket of specialized goods.⁴ This exercise has been carried out to measure the performance of the manufacturing MNCs, but not yet for service companies. Given the nature of their core business, it is not always possible to clearly separate the relevant supplies, so this paper uses total purchases as the relevant proxy.

According to the data provided by PROCOMER, service MNCs purchase less locally than their counterparts in the medical device and electronics and electrical sectors. In 1997-2010, each company made local purchases equivalent to US\$ 3 million per year, on average, versus almost US\$ 10 million for medical devices and US\$ 4 million for electronic and electrical products during the same period. Nevertheless, the local purchases of service MNCs have risen markedly over the past decade, from an annual average of less than US\$ 1 million for the different sectors (shared services, contact centres, back office and others) in 1997-2001 to an average of US\$ 4 million in 2001-2005 in the case of shared service companies. These amounts increased further in 2006-201, with MNCs operating in the back office and shared services subsectors purchasing more than US\$ 5 million annually, on average, while other subsectors all surpassed US\$ 1.5 million in annual local purchases.

Costa Rica has a linkage promotion agency, which is a division of the Foreign Trade Corporation of Costa Rica (PROCOMER). The Export Linkage Division (formerly Costa Rica Provee) pursues the explicit mission of promoting greater linkages between local suppliers and MNCs. The level of local purchases appears to be positively correlated with the length of time an MNC is established in Costa Rica. MNCs that have been in Costa Rica the longest have built up the strongest linkages with local suppliers, purchasing up to US\$ 13 million per year.⁵ There also appears to be a scale effect, where larger companies tending to purchase more locally (up to US\$ 24 million) than firms that have fewer personnel.

⁴ The basket comprises local purchases related to the categories of raw materials and subcontracts.

⁵ This is consistent with the findings of Alfaro and Rodríguez-Clare (2004) and Rauch and Watson (2003).

Table VI.4 provides the linkage indicators of the medical device and service sectors. I use two very common indicators, the first being the ratio of local purchases or expenses (G) over total purchases including imports ($G + M$). Authors such as Cordero and Paus (2008) and Vargas (2010) indicate that this ratio differs across the various subsectors of companies installed in the free trade zone. The ratio is high for MNCs in the agrifood or food sectors (above 90%), but very small for companies in the electrical and electronics sectors (approximately 2%).

Table VI.4
Linkage indicators of MNCs in services and medical devices, 1997-2010
(Percentages)

Year	Ratio of local to total supplies		Linkage coefficient	
	Medical devices	Services	Medical devices	Services
1997	51.1	n.a.	1 818.8	n.a.
1998	41.7	n.a.	2 956.3	n.a.
1999	15.2	40.9	2 283.9	9 000.0
2000	17.1	30.6	2 933.8	7 638.9
2001	14.8	54.8	7 471.3	7 932.2
2002	22.4	60.5	8 634.6	5 405.2
2003	18.4	69.2	7 044.3	5 402.5
2004	17.4	72.4	12 811.8	16 212.6
2005	12.2	77.7	9 563.4	13 689.5
2006	15.7	68.5	12 072.2	13 754.9
2007	39.6	77.4	45 683.3	10 131.3
2008	43.7	75.3	56 625.6	12 161.4
2009	46.2	83.1	52 858.5	10 627.5
2010	44.5	85.6	49 129.3	19 687.1

Source: Prepared by the author, on the basis of data from PROCOMER.

The second measure is the linkages coefficient, which measures local purchases per employee. Even though MNCs may have a low ratio of local purchases, they may have relatively high purchases on a per employee basis (Alfaro and Rodríguez-Clare, 2004). Thus, MNCs may not necessarily be generating weak linkages with local companies. The evidence reported in table VI.4 shows that service companies have a consistently higher ratio of locally purchased supplies to total supplies than companies in the medical device sector.

In the case of the linkage coefficient, there is no clear trend in either sector until 2007. From that year onwards, there was a large influx of MNCs to the medical devices sector in Costa Rica, which allowed companies to source proportionally more supplies locally. As a consequence, the linkage coefficient for the medical devices sector largely overtook that of the services sector.

C. Model specification and estimation

A core aim of this chapter is to document the scale and nature of linkages between service MNCs and local suppliers in the Costa Rican free trade zone over the 1997-2010 period. Using the methodology proposed by Flores (2011) I develop a model with which to analyse the determining factors of the linkages of service companies located in the free trade zone. This model is then used to test two hypotheses econometrically. First, one of the determining factors related to the specific characteristics of a given MNC is the establishment date in the host country (Alfaro and Rodríguez-Clare, 2004; Rauch and Watson, 2003). The first hypothesis is thus formulated as follows:

H₁: Multinational service companies that have been in the country longer tend to have better linkage levels than newly established companies.

Second, the performance of the service companies in terms of their linkage development can be compared against another sector in which MNCs operate within the free trade zone. The medical device sector and the electronic and electrical sector are the most dynamic sectors and have the largest economic weight in the Costa Rican free trade zone. Of the two, the medical device sector has better linkage levels (Flores and Jenkins, 2012b). Therefore, the second hypothesis compares the medical device and service sectors:

H₂: Multinational service companies have higher linkage levels than medical device firms, as measured by the ratio of local purchases to total purchases.

1. Estimation methodology

The data used in the analysis are from the Foreign Trade Corporation of Costa Rica (PROCOMER) and Costa Rica Provee. Both institutions form part of the Costa Rican Ministry of Foreign Trade (COMEX). The database is a panel set. Yearly information was gathered on a group of 56 multinational companies (MNCs) supplying shared services and established under the free trade zone regime during the 1997-2011 period.

In the model, the dependent variable is the ratio of local purchases to total purchases,

$$\frac{G}{G+M}$$

where G represents local purchases or expenses and M is imports.

Six independent variables are included in the model: Industry takes a value of one if the MNC is in the service industry and zero if it is in the medical device industry; Age is the log of the number of years since the MNC established its offices in Costa Rica; three dummy variables for the type of service company (contact centre, back office, and shared services), which take a value of one if the MNC supplies that type of service and zero otherwise; and dummy variables for each of the years in the 1997-2010 period. Finally, e is an error term.

The model specification is as follows:

$$\frac{G}{G+M} = \alpha + \beta_1 \text{industry} + \beta_2 \text{Age} + \text{Company dummies} + \text{Year dummies} + \varepsilon_i \quad (1.A)$$

Model 1.A is a simple linear ordinary least squares (OLS) regression. Model 1.B includes fixed effects⁶ to control for non-observable heterogeneity among the companies.

D. Results

The results are presented in table VI.5. The results for Model 1.A seem to support the claim that service companies have better linkage levels than medical device companies; this is measured via the ratio of local purchases to total purchases (hypothesis 2). The relevant coefficient is 49.3, with a 99% statistical significance. The model also indicates statistical significance for the length of time since establishment. In other words, our findings support the notion that local linkages grow the longer a given MNC has been established in Costa Rica. The robust coefficient for hypothesis 1 is 10.15.

With regard to the model's dummy variables, only the contact centre variable is statistically significant, with a robust coefficient of -12.3 at the 95% confidence level. Simply put, these companies tend to have fewer linkages than other types of service companies (shared services or back office services). For the other two, the model does not generate statistically significant results.

⁶ In panel data, it is common to include fixed effects, which control for effects that do not vary over time in the panel. For example, in a panel of countries, each country has characteristics, such as geography and climate, that are assumed to be fixed in time. In the case of the MNC panel database, model 1.B controls for the type of industry, as well as for each company's characteristics (size, export volume, local purchases, etc.). This reduces the risk of bias in the omitted variable.

Table VI.5
Results of the econometric model

Variable	Model 1.A (OLS)	Model 1.B (OLS with fixed effects)
Age	10.15 ^a (2.16)	-10.86 (8.60)
Medical/services industry	49.30 ^a (3.99)	Omitted
Contact centre	-12.70 ^b (5.64)	Omitted
Back office	-2.47 (5.32)	Omitted
Shared services	-1.21 (4.97)	Omitted
Year dummy variables	Yes	Yes
No. observations	355	355
Fixed effects	No	MNC
R2	0.52	
F(14,68)		14.89
Prob > F		0.0000

Source: Prepared by the author.

Note: The dependent variable in an ordinary least square (OLS) regression is a continuous variable that takes the value of 1 to 100. The table shows the coefficients. Robust standard errors are in parentheses.

^a Statistically significant at the 1% level.

^b Statistically significant at the 5% level.

E. Conclusions

This paper has pursued two main objectives: to provide new empirical evidence on services MNCs located in the Costa Rican free trade zone and to analyse the linkages they have established with the local economy. The analysis uses a panel database of service companies located in the free trade zone during the 1997-2010 period.

The results, based on data provided by PROCOMER, show that more than 80% of the service MNCs are headquartered in the United States. However, it is not possible, based on the data, to determine precisely the main motives prompting MNCs to locate in Costa Rica, including whether the CINDE incentives to attract FDI or the Central American Free Trade Agreement (CAFTA) play into the decision to establish offices in the country. This is a very interesting theme to explore in future research, using structured firm-level surveys of key MNCs across all sectors.

Another characteristic uncovered in the paper is that a significant share (over 50%) of the service companies located in the free trade zone came to the country after 2008. This date coincides with the global financial

crisis and ensuing recession, which in turn begs the question of whether multinational firms used the pretext of the crisis to delocalize production to Costa Rica for cost-saving purposes.

With regard to employment, the CINDE and PROCOMER data indicate that the service sector employs just over 32,000 persons in Costa Rica. Contact centres (or call centres) and shared services employ the most workers, while the subsectors of engineering, software and entertainment and design employ the fewest workers. This is consistent with the core business of each subsector, in that call centres typically require a large number of workers with relatively low levels of specialization (basically language skills), whereas back office services typically demand more specialized personnel.

There is evidence that service MNCs provide their employees with a series of training and soft skills development that is not offered in the domestic labour market. The resulting demand level, as well as the internationalization of tasks and international projection, can represent intangible benefits for human capital working in this type of company. In fact, Monge, Leiva and Alegre (2011) indicate that entrepreneurs who had previous experience in a MNC were able to accumulate a series of skills that were of great use for the development of their own company. This would appear to support the hypothesis that these soft skills in some way contribute to improving the professional profile of local employees. It is thus vital to deepen the analysis of such effects through future research.

Finally, this chapter tested two hypotheses regarding the linkage level of service companies, but the results of this modelling exercise did not provide robust results. Although statistically significant results were found showing that (1) older companies tend to purchase more from local suppliers and (2) services companies have better linkage indicators (measured by the ratio of local to total purchases) than companies producing medical devices, the results cannot be considered robust. This result is not new; in fact, Flores (2011) also identified such limitations.

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Chapter VII

Information technology enabled services in Chile: A new export niche?

Francisco Rivera von Hagen

Oswaldo Marinao

Nanno Mulder

Introduction

Over the last decade, Chilean exports have become more concentrated in raw and semi-processed copper and a few other natural resources. This trend was a reversal pattern observed through 2003, when the country increased the number of goods and services exported and incorporated new enterprises into the exporting process. From 2003 onwards, however, exports become less diversified as the price of copper, salmon and other commodity export products rose steeply. This caused Chile's external revenues to be increasingly sensitive to international price fluctuation of these products. Moreover, the reduction of export diversification may have negative effects on technological spillovers, productivity growth,

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employment creation, the participation of small and medium-sized enterprises in exports, income distribution and poverty.¹

To revert this export concentration process, Chile is looking for new export niches, including business services. World trade in business services has been more dynamic than goods trade over the past decade, and it was less affected by the 2008-09 global financial and economic crises (Gereffi and Fernandez Stark, 2010). As these services are also less subject to price fluctuations, they could contribute to the stabilization of earnings (Prieto, 2003).

Within business services, information technology (IT) enabled services constitute a non-traditional sector that is innovation intensive and employs a large share of qualified workers (Fernandez-Stark, Bamber and Gereffi, 2011). From 2005 to 2010, world exports of these services grew at an annual rate of 15% (WTO, 2011), which reflects both technological progress in IT and an increase in the outsourcing and offshoring of non-core tasks, in particular IT functions. The demand for IT services has grown rapidly with the further spread of global value chains, which has increased the need to store and analyse large volumes of information and to maintain large communications infrastructures that require permanent support and applications.

This paper analyses whether IT-enabled services may contribute to the diversification and upgrading of Chilean exports. We start by describing the IT-enabled service supply in the country in section A. We then present a conceptual framework for approximating the level of sophistication of IT-enabled services in section B. This framework is used in a questionnaire to estimate the sophistication of Chile's IT-enabled sector (section 4). Based on the answers to the questionnaire, the Chilean IT industry appears to contribute to the diversification and sophistication of Chilean exports.

A. The development of IT services in Chile

From 2001 to 2009, the sales of the Chilean IT sector grew at an average annual rate of 12%.² The number of employees increased 8% a year in the same period, while wages rose 16% (INE, 2011). In terms of investment

¹ The diversification of exports and production is a key driver of productivity growth and economic development for low- and middle-income countries (Imbs and Romain, 2003). Chile's export basket is characterized by strong product concentration, but the country has diversified the destinations of its exports. This was partly due to the signature of numerous free trade agreements and double taxation agreements. In 2012, Chile had preferential access to markets covering 62% of the world's population and 86% of global gross domestic product (GDP). See DIRECON [online] <http://www.direcon.gob.cl/>.

² These activities include computer equipment consulting, computer programme editing; computer programme consulting; computer programme supply; data processing; maintenance and repair work for office machinery; accounting and information; and activities related to databases and the online distribution of electronic contents.

in the IT sector, Chile recorded one of the highest growth rates in Latin America over the last five years, according to data from the International Data Cooperation (IDC). IT investment grew 15% in 2012; the projected growth rate for 2012 was 14%.³

The rapid growth of Chile's IT sector is explained by several factors. First, there is a high demand for IT services in economies that are in the process of increasing their productivity and competitiveness. The modernization of the public sector and its support for the digital development have also boosted the demand for IT.

Second, Chile has introduced a number of initiatives, agreements and programmes to promote the IT industries. Several of these were public-private initiatives, encompassing government institutions, business organizations and academia,⁴ which aimed to increase competitiveness, equity and productivity, modernize the public sector, reduce the productivity gap between small and large enterprises through the use of IT, improve the quality of education, enhance transparency and promote the participation of the civil society. Other goals were to improve the competitiveness of Chilean IT firms and enable them to compete internationally, as well as to increase the attractiveness of Chile as a platform for IT offshoring services.⁵

Third, the development of the IT service industry in Chile has also been facilitated by the rapid spread of broadband in the country.⁶ Nevertheless, Chile is still far from the standards of some member countries of the Organisation for Economic Cooperation and Development (OECD).⁷

We used indirect sources to estimate Chilean IT services exports, because reliable data are not available. According to balance-of-payments data, information and computer services exports recorded constant growth from 2000 to 2010 (see figure VII.1), with the exception of 2004 and 2009. The latter year marked the world financial crisis, which had a smaller effect on this sector than on other types of exports.

³ IT investment is estimated using the Information Technologies Activity Indicator for Chile, developed by the IDC and the Chilean Association of Information Technology Firms (ACTI).

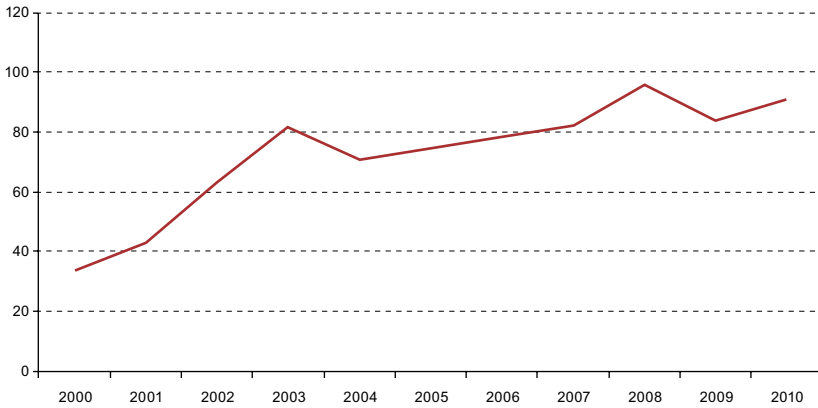
⁴ Examples include the 2004-2006 Digital Agenda (DA), which established the Digital Action Group in 2003 and the Information and Communication Technologies Satellite Account in 2004; the National Council on Innovation for Competitiveness; the Ministerial Council for Digital Development; and Programme 070106 (Strengthening the Digital Strategy in Chile).

⁵ Until 2010, the Production Promotion Corporation (CORFO) had a special programme to attract foreign investment in IT-enabled services.

⁶ According to the World Wide Web Foundation, Chile has the highest Internet penetration in Latin American and ranks 19th in the world.

⁷ The 2013 edition of *The Global Information Technology Report* ranked Chile 34th in the world in the adoption of information and communications technologies (Dutta, Bilbao-Osorio and Lanvin, 2013).

Figure VII.1
Chilean information and computer services exports, 2000-2010
(Millions of dollars)



Source: Prepared by the authors, based on data from Chilean Central Bank, Balance of Payments Statistics.

Another data source was a study by the IDC on behalf of the Production Promotion Corporation (CORFO). This study is based on estimates from private firms and personal interviews. These data show that IT exports (including software and applications, outsourcing, IT consulting and IT infrastructure) grew at an annual average rate of 50% from 2006 to 2010, notwithstanding the financial crisis of 2008 and 2009.

B. The sophistication of IT services: conceptual framework

The contribution of IT services to the diversification of Chilean exports and economic development depends, in part, on their level of sophistication. In the case of goods, this can be measured by the research and development (R&D) intensity of their production (Lall, 2000).⁸ In the case of services, no reliable data are available on R&D and innovation.

A possible proxy for the sophistication of services is their value added content. However, the measurement of value added is complicated by the lack of reliable company-level data and trade statistics for services (Sturgeon and Gereffi, 2009). Fernandez-Stark, Bamber and Gereffi (2011) use wage levels as a proxy for the value added content, since wages are the largest share of value added in services. The wage level reflects the

⁸ This author distinguishes commodities, natural-resource-based manufactures, low-technology manufactures, medium-technology manufactures and high-technology manufactures.

required employee education and years of experience and provides the best indication of low and high value added activities (Gereffi and Fernandez-Stark, 2010). For example, low-wage activities, which require less education and experience, are relatively unsophisticated services, while higher-wage activities, performed by employees with more formal education and experience, are highly sophisticated services. Human capital has been found to be a main driver of value creation, competitiveness and success in service exports from developing countries (Chadee and others, 2011; Graf & Mudambi, 2005; Nyahoho, 2010; Saez and Grover Goswami, 2010).

In addition to the level of human capital, we consider three other dimensions of the production process to approximate the level of sophistication:

- Technology content, which is classified into four categories using an adapted version of the technological intensity classification for goods developed by ProChile's Development Department (ProChile, 2012, p. 8) (see table VII.1);
- Degree of specialization and business differentiation, which depends on the firm's capacity to differentiate its services from those of its competitors to achieve brand visibility; and
- Innovation intensity, or the pace of change in services characteristics, such as the development of new services and significant improvements to existing services, processes related to service development and distribution methods, implementation processes, external relations, organization of the workplace and marketing methods (OECD/EUROSTAT, 2005, p. 23).

Table VII.1
Typology of services by technological intensity

Type of services	Definition	Example
Primary services	Low technology content	Hotels
Low-technology services	Use of stable and well-known technologies; low investment in R&D and low presence of qualified labour	Non-specialized call centres
Medium-technology services	Use of complex but stable technologies; moderate investment in R&D, requiring engineering and advanced design	Software development services
High-technology services	Use of advanced and fast evolving technologies; high investment in R&D, which requires highly skilled personnel	Oncological services, including chemotherapy, conventional radiotherapy and intensity-modulated radiotherapy

Source: Prepared by the authors, based on the technological intensity classification for goods developed by the Development Department of ProChile (ProChile, 2012, p. 8).

The combination of these four dimensions provides a proxy classification with four degrees of sophistication of a service: low, medium-low, medium-high and high (see table VII.2).

Table VII.2
Four levels of service sophistication

Degree of sophistication	Definition
Low (degree 1)	Basic services with a low technology content, low specialization and little business differentiation. Few qualified workers are required to deliver the service.
Medium-low (degree 2)	Low-technology services, with low specialization and little business differentiation. Some of the workers involved in the development of the service are highly skilled.
Medium-high (degree 3)	Medium-technology services, with a high degree of specialization and business differentiation. Most or all workers involved in the service delivery are highly skilled.
High (degree 4)	High-technology services, with a high degree of specialization and business differentiation and rapid innovation in service characteristics, development, process organization and marketing. Most or all workers involved in the service delivery are highly skilled.

Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

With these four variables, we can differentiate a customer service call centre from an emergency medical service support centre. The former has a lower level of sophistication than the latter, in that the latter requires greater investment in advanced technological equipment, the supply of a greater variety of services and the availability of more qualified personnel (doctors, paramedics, nurses, etc.).

C. Questionnaire: development and results

To assess the sophistication of Chilean IT exports in Chile, we developed a questionnaire on the production and export of IT-enabled services, in order to characterize the internationalization process of Chilean IT services producers. The questionnaire is both quantitative and qualitative in nature, with open and closed questions, and was conducted in 2012.

The questionnaire was sent to 80 Chilean IT services producers that had previously requested support from ProChile to initiate or strengthen their export activities. Some are members of Chilean IT associations. A total of 24 firms answered the questionnaire. To corroborate the results of the survey, we also conducted in-depth interviews with both public and private actors involved in the internationalization of IT services. Additionally, we checked the results for consistency with other studies on the subject.

The final sample included firms of different sizes (see table VII.3), with annual sales ranging from under US\$60,000 to over US\$7.5 million. For the 17 out of 24 firms that exported in 2012, foreign sales represented up to 25% of their total invoicing. The total number of employees in the sampled firms was 2,990.

Table VII.3
Characteristics of the 24 interviewed IT firms, 2012

Firm size (annual sales in millions of dollars)	Number of enterprises	Percentage range of exports in total annual invoicing	Number of employees
Up to 60 000	2	1 firm: 26-50 1 firm: does not export	13
60 000-1.0 million	6	4 firms: 1-25 1 firm: 51-75 1 firm: does not export	60
1.0 million-2.5 million	9	5 firms: 1-25 1 firms: 26-50 3 firms do not export	235
2.5 million-5.0 million	4	2 firms: 1-25 1 firm: 26-50 1 firm: does not export	247
5.0 million-7.5 million	1	1 firm: 1-25	85
7.5 million or more	2	1 firm: 1-25 1 firm does not export	2 350
Total	24	—	2 990

Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

1. IT-enabled services

The surveyed enterprises provide a wide range of IT-enabled services, as illustrated in table VII.4. The sample includes the majority of the types of services identified in the industry classifications proposed by the Chilean Association of Information Technology Firms (ACTI and the Inter-American Development Bank (IDB).⁹

⁹ The industry classifications in question are described in (i) a study conducted by Diego Portales University for ACTI in 2010, which identified the main services produced by the Chilean IT industry (ACTI, 2010); and (ii) a proposal by the Inter American Development Bank and the Latin American Association of Services Exporters (ALES) for a common nomenclature for trade in services in Latin America [online] www.ales-lac.org/uploads/products/9/resumen-ejecutivo-estad%C3%ADstica-fcg.pdf.

Table VII.4
Type of IT services offered by the enterprises

Type of activity	Number of firms	Level of sophistication
Online sales of audio tours and development of audio content tailored to the customer's requests	1	2
Remote support for software applications and licenses for retail	1	3
Consulting services for web design, web positioning, digital marketing and graphic design	2	3
Internet, hosting and system support development services	1	3
Web performance monitoring services	1	3
Enterprise resource planning (ERP) systems (including ERP VI Internet software), governmental systems, business intelligence services and integration services	2	3
Operational test services based on test automation through open-source software and proprietary management tools	1	3
Software product development (not a software factory)	1	3
Implementation services, consulting services and support and maintenance services software	3	3
Cellular phone communication gateways and Voice over Internet Protocol (VoIP) manufacturers	1	3
Software development, maintenance and testing	1	3
Mining software	1	3
Software and services related to telephone control (hosting, cloud)	1	3
Implementation of web technology solutions	1	4
Development of intelligent systems and the associated software for a particular industry, such as measuring, energy efficiency and automated control systems.	1	4
Cloud software	1	4
Attendance, access and lunchroom control; web as a service (WAAS), ERP and technological platforms for human resources with electronic signature; biometric control and biometric templates, radiofrequency and other identity-capture services, oriented towards security and human resources	1	4
Development and improvement of new service lines for the convergence of fixed and mobile networks through a mobile channel solution for the support of non-bank financial companies (starting with credit collection support services)	1	4

Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

2. Sophistication level of IT services

To evaluate the level of sophistication of Chilean IT services exports, we look at the four dimensions outlined above: namely, technology content, degree of specialization and differentiation, innovation intensity and human capital level. For the first dimension, we find that the majority of the firms provide medium-technology services, with some high-technology offerings. For example, business process monitoring services

require the incorporation of high technology and an advanced design that changes rapidly, requiring intensive engineering work. These services improve business processes through the integrated monitoring of production stages. In the mining industry, control and production management services at a mine site, using stock-line measurement with 3D modelling, require innovative radar technologies, which are used to monitor inventories and improve loading and unloading services, among others.

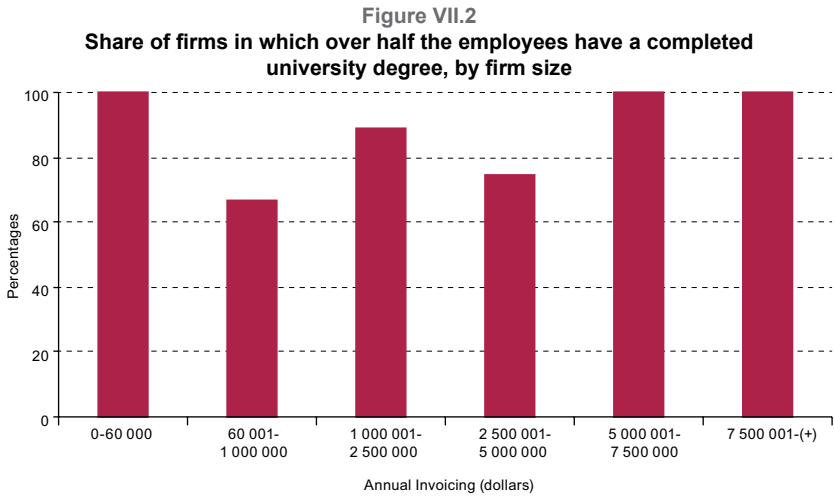
With regard to the second dimension, IT service exports are highly specialized and differentiated. In contrast, a large share of Chile's exports consists in undifferentiated (processed) commodities.¹⁰ An example of the degree of specialization of IT-enabled services is original software design and development, such as applications developed for specific purposes that are not covered by standardized or pre-packaged software. That is, a customized solution is developed for a specific client. These services result in new software or the transformation of an existing application.

While there is a clear specialization in the supply of IT services, most enterprises offer several types of services within their business model. Firms do not restrict their supply to a single service, despite the fact that global services are becoming increasingly specialized and differentiated. Rather, a given company will generally offer a large number of different IT services.

The third dimension is the intensity of research, development and innovation (R&D&I). Although most IT services use a medium level of technology that does not change rapidly, they are innovation intensive. Examples include the website construction, mobile web applications, cloud software and the development of smart devices with integrated software for manufactures, such as measuring systems, energy efficiency systems and automated control systems. Firms innovate through changes in their distribution and development methods and apply new organizational and sales methods. These innovations have contributed to the international expansion of the Chilean IT industry both directly and through the Internet, with wide-ranging effects in terms of subsidiaries and branches; distributors, representatives or official channels; (local) partners with contracts; alliances; franchising through free software transfers; and joint ventures (ACTI, 2010). Notwithstanding the medium-high quality of current Chilean IT service exports, ongoing innovation is crucial for the success of the IT sector.

¹⁰ Chile's main export product is copper. Although high technology has been incorporated in the extraction and production processes, the country mostly exports refined and bulk copper. This results in a low level of sophistication, reflecting a low level of differentiation.

Finally, the fourth dimension is the level of human capital employed in the sector. IT services require that most workers involved in the service delivery are highly skilled, contributing to a more advanced level of sophistication in the industry. In over 80% of the IT services firms surveyed, more than half of the employees have a completed university degree (see figure VII.2).¹¹ Moreover, 4% of all employees are dedicated to R&D. The high qualifications of workers in IT services explain their relatively high wages: in 2008, the average salary in the IT services industry was US\$ 38,000 (CORFO, 2009, p. 6).¹²



Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

3. IT exports

The majority of the surveyed firms were exporters (71%). Several of those that were not exporting at the time of the questionnaire saw international sales as an important growth area, as 86% of all firms were interested in exporting. The results of the survey suggest that there is no relationship between firm size and export intensity, In 2012,

¹¹ Not all university-educated employees provide sophisticated services. For example, in India and Central America, most entry-level call centre agents have a university degree.

¹² The sample included software applications, IT outsourcing, IT consulting and IT Infrastructure.

35% of the exporting firms were small, 53% medium and 12% large.¹³ For most firms, exports represented a small proportion of total sales: 77% of all firms had had an export share of less than 25%; 18% had a share of 26% to 50%; and only 6% exceeded 50%.¹⁴

The majority of firms (77%) recorded exports in each year from 2010 to 2012. Of all exporters in 2012, 29% started selling abroad in 2010, while 18% were already exporting before 2002.

Most of the IT firms exported their services to more than one country. Only 20% of the firms sold their services to a single country, whereas the remaining 80% exported to two or more destinations. Fully 27% of all firms exported to five or more countries. The main markets for IT services were Peru (47% exported to this country), the United States (29%), Argentina (24%), Colombia (24%) and Spain (24%).

The predominance of the Peruvian market may be explained by its proximity to Chile and by the fact that the countries share certain niche markets with a high demand for these services. Moreover, Chilean companies with major investments in Peru prefer to work with their Chilean IT providers when they expand their operations to other Latin American countries, creating a piggyback effect. Examples of the latter are mining and retail trade companies. In the near future, the demand from these industries is expected to continue to grow at high rates. The second-largest market for Chilean IT exports is the United States, which is the main purchaser of outsourcing services in the world. Chile has an advantage in this market because it shares the same time zone as the East Coast during half the year and has a three to five hour difference with the West Coast. Additionally, business practices are similar in the two countries, so United States businesses are comfortable contracting services from Chilean IT firms.¹⁵

When asked about new export destinations, Chilean IT firms were very interested in exporting to other developing countries, in particular in Latin America, especially Colombia (41% of the preferences), Brazil (29%) and Ecuador (29%). Outside the region, China (18%) was also a popular new destination. South-South trade is a relatively new phenomenon that was accelerated by the 2008-2009 global financial crisis, which caused a large drop in demand from industrialized countries in the North.

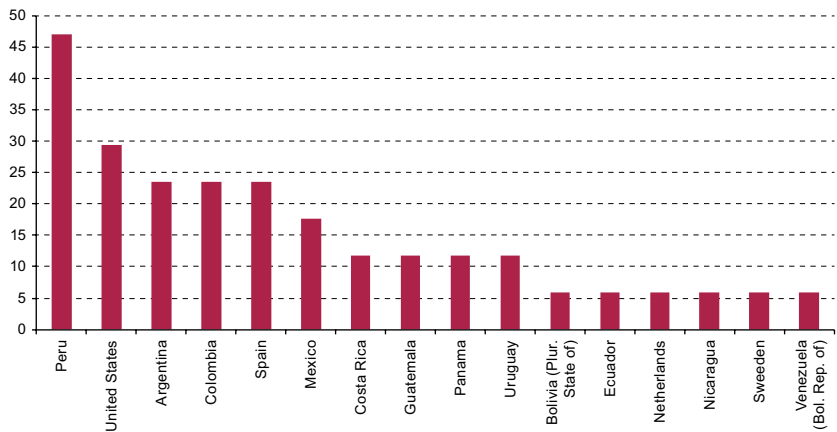
¹³ Our results are similar to ACTI (2010), which finds that 13% of all Chilean IT firms considered themselves to be highly experienced exporters, 41% thought they had reasonable to good experience, and 46% stated they had little or no experience in selling abroad.

¹⁴ López and Muñoz (2008), who study export financing in Chilean IT firms, find that none of the surveyed enterprises had had an export share of over 50% of total sales.

¹⁵ Personal interview with Raúl Ciudad, President of ACTI, January 2012.

Finally, the survey also showed that 53% of the exporting firms were members of at least one of the two main Chilean IT associations (ACTI and the Chilean Association of Software and Services Companies, GECHS). Both associations are platforms for developing new kinds of services, but neither contributes to the broadening and deepening of supply chains or the promotion of exports. This reflects the small contributions paid by members, which limits the initiatives of both ACTI and GECHS.

Figure VII.3
Share of firms that export IT services to a given destination, 2012
(Percentages)



Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

4. Success factors in IT service exports

The results of the survey also point to factors that contribute to the success of export firms. Conceptually, these success factors can be divided into four categories (Lopez and Muñoz, 2012).¹⁶

- Organizational factors related to the company and the economy. This is the main factor, and it is essentially the competitiveness of a firm: offering a good-quality service at a competitive price.
- Public policies to support export processes and promote exports.
- External factors, such as cultural, legal or sociocultural similarities, the use of international standards, host-government regulations, political and economic stability and infrastructure.

¹⁶ For a more detailed list of success factors, see the appendix.

- Mixed factors that combine effects of the previous categories, such as sources of funding, public and private project initiatives, trade facilitation, funding availability and the availability of technological resources.

According to the interviewed firms, success mainly depended on organizational factors (95%), followed by mixed factors (30%), public policies (27%) and, finally, external factors (14%). Moreover, 41% identified at least five success factors in the development of their IT services: knowledge leadership in terms of IT services, good customers, services that meet the consumer's or client's needs, cross-cutting services for all types of enterprises from any industry and service quality.

Organizational factors focus on service characteristics, such as export strategies, customers and management. These factors reveal the extent to which clients abroad value the quality of the delivered services. Consequently, some firms place a priority on providing cross-cutting IT services, highly specialized support for IT services, services with a high degree of innovation and development and the use of information technologies in all processes.

Another determinant is export strategies. A company has different tools for improving its internationalization process, such as business networks, international development strategies, promotional marketing and resources devoted to the conquering international markets.

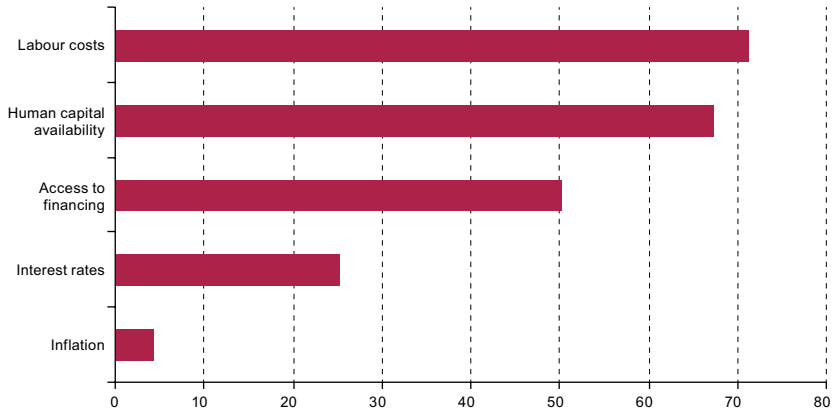
Most of the firms that answered the IT questionnaire (77%) reported they exported continuously.

5. Main barriers to the development and internationalization of IT services

Finally, we asked the firms about the main barriers for the development of their business (figure VII.4) and exports (figures VII.5).¹⁷ Regarding the former, firms mentioned that labour costs and availability of human capital are the main barriers. The main barriers to business development were access to distribution networks in destination markets, marketing and access to export financing. The latter factor is also frequently mentioned by other export sectors.

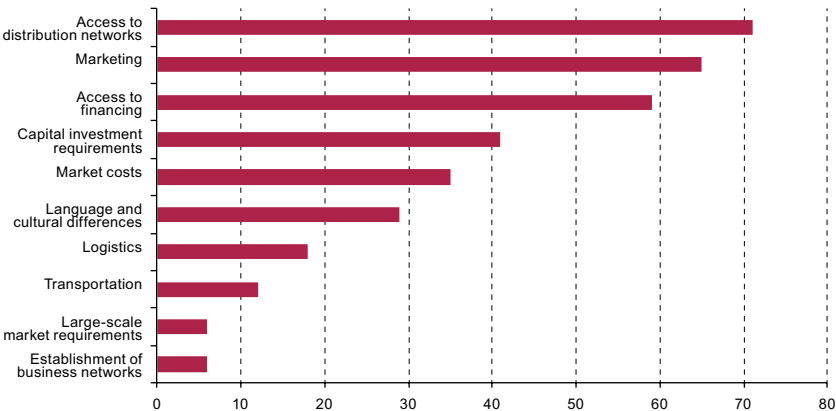
¹⁷ Lopez and Muñoz (2008) find that 65% of SMEs that export ITC services consider that financing is the main obstacle for export, versus 50% of large companies.

Figure VII.4
Main barriers to IT services development, 2012
(Percentages)



Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

Figure VII.5
Main barriers to the export of IT services, 2012
(Percentages)



Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

D. Promoting IT services

Increasing the share of exports in total sales is a challenge for the IT services industry. This issue is also important for the Chilean economy, as the IT industry offers relatively good-quality jobs.

Because the IT sector in Chile is still in its infancy, it probably requires further public support to consolidate its development. This is corroborated by the fact that 94% of the enterprises consider that public support is needed to increase exports (based on answers to our IT questionnaire, administered in 2012). One example of public support for the internationalization of the IT sector is Chile's 2004-2006 Digital Agenda, which delegated to ProChile the responsibility of promoting the internationalization of the IT and communications sectors (Grupo de Acción Digital, 2004, p. 37).

ProChile (in coordination with the private sector) implemented an action plan involving a series of promotion activities. These included trade missions and participation in world-class fairs to introduce the country's IT sector abroad. ProChile also promoted partnership relationships between IT enterprises (ProChile, 2008):

The goals of the IT industry promotion plan, which included IT services, was to increase ITC firms' exports and improve the positioning of Chile as a location for ITC multinationals. The plan also aimed to incorporate new enterprises in the customer base of ProChile; increase exports to IT niche markets; develop competitive clusters and ITC solutions for the region; identify firms with a homogeneous supply for vertical sectors (financial, retail, government sectors, etc.); increase presence abroad, especially in the Latin American market; obtain information on new markets; and develop a sectoral image together with the country's image (ProChile, 2008).

Currently, the main instrument through which ProChile supports Chilean IT enterprises is competitive funds. These aim to increase transparency and improve the coverage of the services of the promotion agency. Almost three quarters of all firms that participated in the IT questionnaire had received support from the public sector during their internationalization process. The quality of this public support was rated as regular, good and very good.

E. Final considerations

This chapter has characterized the sophistication process of Chilean IT services. This sector is becoming increasingly internationalized, as reflected in the continuous growth of its exports. Furthermore, the international demand for this type of services is expanding rapidly. IT services are being outsourced and offshored by a growing number of firms, and they are less subject to economic cycles than other sectors.

The sophistication of IT services in Chile is evident in their level technological support and the relatively abundant presence of qualified and specialized human capital, with employees who completed a university degree. Additionally, the high level of business differentiation

and specialization and the intensity of innovation in several IT services are signs that these exports are internationally competitive. The main barriers to future IT services growth and exports in Chile are high labour cost and the lack of human capital.

Our IT questionnaire, administered in 2012, identified an interesting number of small and medium-sized enterprises that are internationalizing their services. Some SMEs are not yet exporting, but have the potential to do so (ACTI, 2010). The sector thus offers an opportunity to incorporate SMEs into the Chilean export supply and make it more inclusive.

Another important point in the internationalization of IT services is the variety of destination markets. The average company is currently exporting its services to two or more countries. Export market diversification contributes to diversifying export risks, which increases the country's resilience to adverse international cycles. Most IT services exports are directed to other countries in Latin America, which helps promote regional trade.

Most firms that filled out the questionnaire identified organizational factors, which depend on the firm and are the main determinant of its competitiveness, as the main success factor in their exports. The export capacity of IT services does not only depend on the internal capacity of the industry, but also on the political, economic and social stability of Chile. Additionally, Chile has low levels of corruption and good levels of security, which are relevant attributes in the business world.

This does not mean that there are no challenges for the future. Many of these challenges are not exclusive to the Chilean IT service industry, but rather cut across the Chilean economy. Examples include the low investment in research and development, the lack of institutional support for the service export strategy, inadequate intellectual property rights protection and the low level of English proficiency of professionals.

Some efforts have been made to create an institutional framework to support IT services exporters. For example, the Public-Private Strategic Council for Global Services was set up in 2007, but it was disbanded in 2010 when a new government took office, which abolished most support measures to the IT industry.

To ensure the expansion of the IT-enabled services industry and exports, public policies need to be stepped up, with an emphasis on a strategic vision and coordination among public and private actors. The absence of these policies reduces the probability that these services exports will substantially expand in volume and quality and limits their contribution to the diversification of the Chilean export supply and the development of the country.

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Appendix

Surveyed companies: factors in the success of their internationalization processes

	Organizational factors	Governmental factors	External factors	Mixed factors
Leadership in IT services knowledge	X			
Good clients	X			
Services meet the clients' needs	X			
Cross-cutting services for all types of companies from any sector	X			
Quality services in terms of sales effectiveness (competitive advantage)	X			
Competitive cost	X	X		X
Promotional marketing activities	X	X		X
Financial capacity to have presence in every market	X	X		X
Selection of trusted distribution channels	X			
Export promotion activities		X		
Innovation and development of new services	X			
Working capital	X			
Market knowledge (contacts)	X			
Local partner	X			
Language	X		X	X
Understanding the culture of the countries that request their services	X		X	X
Adapting to each market needs	X		X	X
Financing	X	X		X
Government support		X		
Human capital dedicated to the international area	X	X		X
Resources to devote to the international market	X	X		X
International development strategy	X	X		X
Scalable services	X			
Company's global vision	X			
Service quality	X			
International demand			X	
Highly specialized support service	X			
Business perseverance	X			
Knowledge of Chile's target market, which is instrumental for designing the export	X			
Commercial relations with international providers	X			
Good positioning of Chile abroad		X		
Management	X			
Fulfilment of quality standards			X	
Use of IT in all processes	X			
Market knowledge	X	X		X
Having business networks	X			
Having dedicated and trained personnel	X			

Source: Prepared by the authors, based on an original IT questionnaire administered in 2012.

Chapter VIII

Scientific-technical services for the pharmaceutical industry in Mexico

María de los Ángeles Pozas

Introduction

The offshoring of services is one of the most dynamic activities of the twenty-first century. Offshore services associated with R&D have grown 27.1% since 2000, ranking second only to services associated with information technologies (IT), which grew 33.6% in the same period (Bureau of Labor Statistics, 2011). While such services are typically associated with countries like China, India, the Philippines, the United Kingdom and the United States, employment in this sector has also grown significantly in Argentina, Brazil, Chile and Mexico (Gereffi and Fernandez-Stark, 2010).

The pharmaceutical industry requires a high level of investment in R&D and is a major user of so-called scientific-technical offshore (STO) services,¹ which can be considered a type of advanced industry-specific vertical activity. Countries that are able to develop activities in the fields of bio-technology and pharmacogenomics are better prepared to meet this demand.

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¹ This type of service is also called scientific and technical consulting services.

This paper explores and documents how Mexico's public research centres and laboratories have developed the means and absorptive capacity to insert themselves in value chains in these activities. A country's absorptive capacity is measured by the existence of qualified human resources, scientific experience, accumulated technical abilities, infrastructure, and models of cooperation among universities, research centres and health institutions (hospitals and clinics), all of which are key determinants of the structure of a country's health system.

In Mexico, as elsewhere, official statistics do not single out STO services as a specific value-adding economic activity in their own right. As a result, their growth and impact on development cannot be easily assessed. Using a network analysis and a case study, this paper shows that while Mexico does enjoy a critical mass of researchers, technology, and resources and can offer STO services, it lacks both an adequate regulatory framework and models of collaboration between public research centres and the private sector.

A. Scientific-technical services as advanced industry-specific vertical activities

The factors that trigger the growth of offshore services are usually associated with industry restructuring. The past few decades have witnessed a reorganization of the world production system into global networks. The fragmentation of production within industrial value chains is today a generalized phenomenon which allows transnational corporations (TNCs) to plan their production processes on a global level and capitalize on the comparative advantages of the countries in which they set up their subsidiaries and affiliates. Activities and processes that companies once carried out in-house are now routinely outsourced to specialized third-party firms. In the process, such activities become manufacturing-related services. The outsourcing of services involves administrative processes of production and the governance of global value chains which can be shared by multiple industries. These services can be classified into three groups. A first group consists of business process offshoring (BPO) services, which includes activities such as enterprise resource planning (ERP), finance and accounting, logistics, hiring, training, advertising and sales, distribution and call centres. A second group consists of information technology offshoring (ITO) services and includes information services and computer- and communications-related services in general, through which enterprises maintain and update their information technology. A third group consists of knowledge process offshoring (KPO) services, which includes

complex activities that require higher levels of education and knowledge, such as consulting, business analysis, market intelligence and legal services (Gereffi and Fernandez-Stark, 2010).

In addition, there is a fourth type of outsourced services that is not common to all enterprises, since the services are not related to the administration and global governance of transnational companies, but to specific activities within them. Such activities are more complex and require experts possessing advanced degrees, highly specialized knowledge and cutting-edge equipment and technology. Emerging economies can benefit from supplying such services, which generate above-average value. Their level of customization demands strong interaction between the client and the service provider, which tends to heighten scientific and technological diffusion to the host country (Gereffi and Fernandez-Stark, 2010; Pozas, Rivera and Dabat, 2010). Offshoring such advanced services encompasses what this paper calls scientific-technical offshore (STO) services.

The rising demand for such services has paralleled the recent global reorganization of production. The process is rooted in the technological revolution, which began in the early 1980s but crystallized and spread in the first decade of the twenty-first century as a result of the convergence of innovations in the fields of biotechnology, nanotechnology and information technology. By their very nature, these innovations are increasingly making their way into a growing number of industries, where they become key inputs of the production process because of their impact on different areas of economic activity (Lundvall and Borrás, 2005; Krüger, 2006; Jiménez-Sánchez and others, 2012).

According to the product innovation cycle theory, when an invention or discovery leads to a larger process of innovation, the entire technological system is modified, allowing a set of new services and products to emerge. These, in turn, modify relative prices and market structures (Freeman, 1987; Pérez, 2004). The new technological and productive system forces certain industrial sectors to modify corporate strategies and business models, adapting them to market changes. This typically requires a period of major investment in R&D to adapt the innovations to their products and processes.

In the specific case of the pharmaceutical industry, the redefinition of the global market and a steady increase in research costs have led TNCs to outsource certain research activities in developing countries. In recent years, many emerging economies have accumulated a critical mass of highly qualified and often underutilized scientists and professionals whose labour costs are significantly lower than those prevailing in advanced countries. By outsourcing research activities,

pharmaceutical companies can also develop products that are better adapted to host-country contexts, thus reducing the time needed to introduce innovations in local markets. Activities such as clinical trials and the development of new products have been carried out in value chains in the industry for some time now. The monitoring of clinical trials requires qualified physicians and nurses, while higher levels of activity in the chain, such as identifying molecules for their use in drugs, can only be carried out by scientists with advanced qualifications and experience. The cost of clinical trials in developing countries is approximately one-tenth of the cost in developed countries, and R&D costs are close to one-eighth of what they are in the United States (Rao, 2008). Yet another advantage is the greater ease of access to patients in public hospitals in developing countries.

The definitional boundaries applied to outsourced services such as ITO, BPO, and KPO are generally well understood, but this is not the case for the advanced activities of specific industries. For Latin America in general and Mexico in particular, national accounts systems adopt a traditional definition of the service sector, which complicates the identification and measurement of STO services. However, STO services provided by public research centres to the pharmaceutical industry are often labelled research projects. It is possible to identify which projects are in fact STO services because the contracts establish specific objectives to be developed over short periods of time (generally not exceeding one year), and they routinely include confidentiality clauses. The research is done by doctoral and postdoctoral scientists working with cutting-edge equipment and technology. In the case under study in this paper, the scientists involved in the project carry out genomic sequencing, proteomic analysis² and genetic expression³, among other highly specialized tasks.

B. The pharmaceutical industry and the new paradigm in drug discovery

The pharmaceutical sector has a series of particular characteristics that distinguish it from other industrial sectors. For many years, only a very small group of companies in a few countries led the process of pharmaceutical innovation. This was largely due to the sector's particular structure and market dynamics, the nature of the research itself and the

² Proteomic analysis is often used for protein purification and mass spectrometry.

³ Genetic expression is a process that takes inherited information in someone's genes (DNA sequence) and uses that information to make a specific functional product (sometimes called a gene product), such as a ribonucleic acid (RNA) or protein.

market's fragmentation. The pharmaceutical industry typically tops any ranking of investment in R&D. However, the successful introduction of new chemical entities (NCEs) is quite rare. Estimates suggest that for all new compounds that are discovered, only one in 5,000 reaches the market (Matraves, 1999). Innovative new drugs arrive quite rarely, but after arrival they experience extremely high rates of market growth. Consequently, a few blockbusters dominate the product range of all major firms. This results in a natural barrier to market entry. At the same time, the drug market is highly fragmented and divided into *therapeutic categories* that do not compete among themselves. For example, products designed to treat cardiovascular conditions do not compete with those developed to treat cancer. Finally, the limited duration of patent protection leads to imitative research by companies that manufacture generic products, which represent large segments of the global health market (Malerba and Vonortas, 2009).

Over the past decade, the pharmaceutical sector's stability has been perturbed by far-reaching developments in biotechnology and the sequencing of the human genome, both of which have favoured the emergence of pharmacogenomics.⁴ This field is based on research on the adverse effects of drugs and the development of treatments targeted at the specific genetic group of the patient. Because a given gene can codify multiple proteins, pharmacogenetic research based on the "one gene, one illness, one treatment" paradigm is progressively being replaced by genetic tests that determine configurations or genetic systems in human groups which, even if they share the symptoms of the same illness, respond differently to the same drug: one group may have an excellent reaction; another may rapidly eliminate the drug and not be cured; and a third group may actually present adverse, even fatal, reactions.

The adoption of the new paradigm by the pharmaceutical industry only became apparent towards the end of the last decade, when companies shifted from research centred on illness towards research based on molecular pathways. In only nine short years, this approach has changed the way scientists think about illness, and it tends to modify the discovery process. Knowledge about these patterns and how they interact helps researchers identify the best target for drug development. This method affords a better understanding of the mechanism of an illness and thus considerably reduces the amount of time between the discovery of a protein and a drug's subsequent appearance on the

⁴ Pharmacogenomics is that part of pharmacology that deals with the influence of genetic variations in individuals' response to drugs, as it correlates genetic expressions with the efficiency of a drug or with its toxic attributes.

market, which used to be longer than ten years.⁵ This new method of discovery is one of the central factors explaining the observed increase in outsourcing R&D services.

Once a technique is developed in pharmaceutical companies' laboratories, part of the process can be carried out by doctoral scientists working in laboratories in different parts of the world at comparatively lower costs. This multiplies a company's research facilities through outsourcing and shortens the time it takes for drugs to reach the market. To participate in the value chains of these kinds of services, a country must have adequate absorptive capacities and offer an innovation-friendly ecosystem. As noted earlier, this includes the existence of qualified human resources, scientific experience, accumulated technical expertise, proper research infrastructure and collaborative arrangements among universities, research centres and health institutions (clinics and hospitals). When combined with an efficient regulatory system, these capacities shape the structure of a host country's health sector.

The molecular pathway approach may be a way out of the crisis that has afflicted much of the world's pharmaceutical industry since 2000. Adopting a new paradigm may be a slow process, but major changes have become apparent in the industry since 2005. Even before pharmacogenomics was widespread as a generalized practice, the growing ability to test and control for adverse effects was radically changing the posture of agencies in charge of approving drugs and treatments, especially the Food and Drug Administration (FDA) in the United States and the European Medicines Agency (EMA) in the European Union. In particular, the criteria for authorizing products have become noticeably stricter. The average number of drugs approved on a yearly basis has fallen to levels below those observed in the 1970s. The FDA approved only 24 new products in 2008, 25 in 2009 and 21 in 2010. At the same time, the public health policy objectives of numerous countries were increasingly oriented towards lowering the cost of drugs, which stimulated the generic industry to compete in the same market with traditional pharmaceutical companies, whose blockbuster drug patents had expired or were coming to an end (see table VIII.1).

Research on new drugs and treatments is being carried out in the context of the new approach described above, which exponentially increases research costs. Over the past decade, the pharmaceutical industry experienced an international adjustment that modified the global strategies of TNCs.

⁵ Personal interviews with pharmaceutical laboratory scientists in Mexico, May–June 2012.

Table VIII.1
Patent expiration dates of major products for R&D-based pharmaceutical transnational corporations

Patent owner	Drug name	Indicated use	Patent expiry
Abbott	Kaletra	HIV/AIDS	2016
	Norvir	HIV/AIDS	2014
Astellas	Prograf	Transplant rejection	2008
	Protopic	Dermatitis	2014
	VEScare	Overactive bladder	2015
Astra Zeneca	Crestor	Cholesterol	2016
	Seroquel	Schizophrenia	2012
Boehringer Ingelheim	Flomax	Prostatic hypertrophy	2009
Bristol-Myers Squibb	Efavirenz	HIV/AIDS	2012
Daiichi Sankyo	Cravit	Infectious disease	2010
	Mevalotin	Cholesterol	2006
	Olmotec	High blood pressure	2016
Eisai	Aricept	Alzheimer's	2010
	AcipHex	Gastroesophageal reflux	2013
Eli Lilly	Zyprexa	Schizophrenia	2011
Glaxo Smith Kline	Epivir	HIV/AIDS	2014
	Relenza	Influenza	2014
	Seretide/Advair	Asthma	2010
	Hycamtin	Cancer	2010
Johnson & Johnson	Cozaar	High blood pressure	2010
Merck	Diovan	High blood pressure	2010
	Singular	Asthma	2012
Novartis	Zometa	Cancer	2013
Pfizer	Lipitor	Cholesterol	2011
	Viagra	Erectile dysfunction	2012
	Xalatan	Glaucoma	2011
Sanofi-Aventis/Bristol-Myers Squibb	Plavix	Anticoagulant/heart disease	2012
Sanofi-Aventis	Taxotere	Breast cancer	2013
Takeda	Actos	Diabetes	2011
	Blopress	High blood pressure	2012
	Leuprorelin	Prostate cancer	2014
	Prevacid	Ulcer	2009

Source: United Nations Conference on Trade and Development (UNCTAD), *Investment in Pharmaceutical Production in the Least Developed Countries* (UNCTAD/DIAE/PCB/2011/5), Geneva, United Nations, 2011.

Note: Trademark registrations compiled by UNCTAD from United States Patent and Trademark Office, Trademark Electronic Search System; patent expiry dates compiled by UNCTAD from various sources, including investors reports and Internet searches (2011).

Given the steady increase in research costs, the large pharmaceutical TNCs have engaged in a process of merger-led consolidation. They have done so for two main reasons: to acquire research capabilities and to control a greater number of global markets and the niches of different therapeutic categories (see table VIII.2). The sector's consolidation process has thus increased industry concentration: global sales by the world's ten largest pharmaceutical companies as a share of the global market grew from 20% in 1985 to 48% in 2000; (Santos and Cuaron, 2009). More recently,

a 2013 report by the World Health Organization notes that the global pharmaceutical market is worth US\$ 300 billion a year, a figure expected to rise to US\$ 400 billion within three years. The 10 largest companies control over one third of this market, several with annual sales of over US\$ 10 billion and profit margins of about 30% (WHO, 2013)

Table VIII.2
Pharmaceutical M&A deals

Date	Company	M&A target
1995	Glaxo	B. Wellcome
1999	Astra	Zeneca
2000	Pfizer	Warner-Lambert
2004	Sanofi	Aventis
2006	Bayer	Schering-Plough
2006	Merck & Co.	Serono
2007	Astra Zeneca	MedImmune
2008	Novartis	Alcon
2008	Teva (generics)	Barr Pharma
2008	Roche	Genetech
2009	Pfizer	Whyeth
2009	Merck & Co.	Schering-Plough
2009	Sanofi-Aventis	Zentiva (generics)
2009	GlaxoSmithKline	Stiefel Laboratories
2009	Sanofi-Aventis	Merial (animal health)
2009	Abbott Laboratories/Solvay (pharmaceutical division)	Solvay (pharmaceutical division)
2010	Merck-German	Millipore
2010	Teva	Ratiopharm
2010	Astellas Pharma	OSI Pharmaceutical
2011	Sanofi	Genzyme
2011	Bristol-Myers-Squibb	Amira Pharma
2011	Johnson y Johnson	Synthes
2012	Bristol-Myers-Squibb/Astra Zenca	Amylin Pharma
2012	Glaxo Smith Kline	Human Genome Sciences
2012	Bristol-Myers-Squibb	Inhibitex
2012	Novartis	Fouguera Pharma
2012	Astra Zeneca	Ardea Biosciences
2013	Astra Zeneca	Omthera

Source: Compiled by the author from various sources, including companies' websites and Internet searches (2012).

Beyond the recent wave of cross-border mergers, pharmaceutical companies have also sought to acquire or become associated with producers of generic drugs in order to transform drugs whose patents were close to expiring into branded generics and thus extend their share in the sales value.⁶ Such acquisitions were designed to increase market presence

⁶ However, the generic industry has also entered into an internationalization process: in 2005, Teva, the giant Israeli generic drug manufacturer, bought Ivax, a United States company; and in 2006, Dr. Reddy, an Indian company, bought the German firm Betapharm.

in the so-called pharmerging countries considered to offer the highest future growth prospects. These include Brazil, China, India, Mexico, the Russian, the Republic of Korea and Turkey.⁷

Mexico has not experienced the same volume of mergers and acquisitions (M&As) seen in other Latin American countries such as Argentina and Brazil. However, both Opko Health and Valeant Pharmaceuticals, two active pharmaceutical companies in Latin America, completed Mexican acquisitions in the period under study. First, Opko Health added an ophthalmic brand and other pharmaceutical products through its acquisition of Pharmacos Exakta, a privately owned Mexican pharmaceutical company. Second, in July 2009 Valeant acquired Tecnofarma S.A. de C.V., a producer of generic pharmaceuticals with a number of manufacturing sites, to reduce its dependence on third-party manufacturers in Latin America. As a result of the merger, Valeant acquired 80 registered products, many of which were introduced into its branded generic platform in Mexico. In April 2012, Valeant acquired certain assets from Atlantis Pharma, a branded generics pharmaceutical company in Mexico with products in the gastrointestinal, analgesics and anti-inflammatory therapeutic categories, for approximately US\$ 71 million. J. Michael Pearson, chairman and chief executive officer at Valeant, described the acquisition as follows, "Atlantis Pharma's well-known brands in Mexico, and the potential to expand our export business to Central America and the Andean region, make this a strong addition to our current operations in Mexico" (Bourne Partners, 2012).

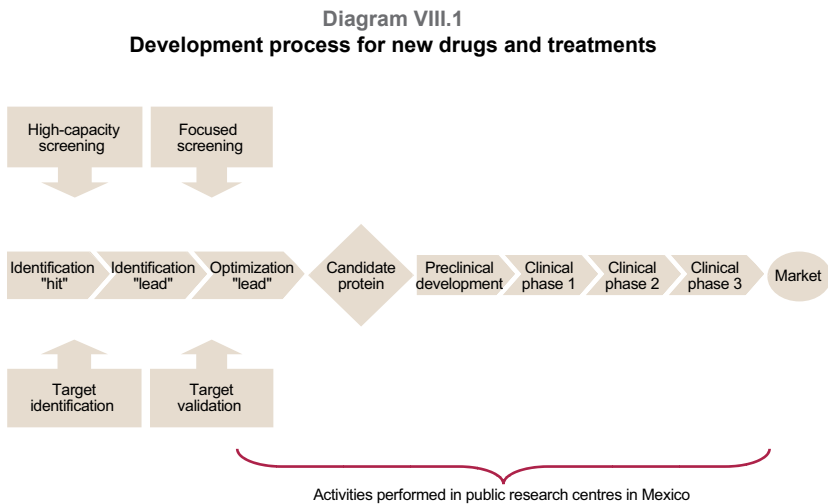
The reconfiguration of the international pharmaceutical industry has also included the incorporation of new research and marketing strategies. For example, companies are pursuing molecular pathway research, which opens the possibility of relaunching drugs that were withdrawn from the market because of reported side-effects. If researchers can identify those genetic groups that would not experience such adverse reactions, the drugs could be targeted to that population. Finally, pharmaceutical companies are developing so-called combo drugs, which combine several drugs into one medication. This allows them to launch new products without having to invest in basic research costs. In what follows, this paper explores the

⁷ The experience of Argentina confirms this trend, as multinationals acquired Argentine companies in the 1990s and modified the sector's national profile. In 1996, Merck Química acquired Volpino, and Ciba Vision acquired Argentia's ophthalmological line; Bristol-Myers Squibb later acquired Argentia, thus dividing the company into two transnational operators. In 1996, the transnational Ivax Corporation merged with Elvetium and Alet. In 1997, Armstrong acquired Syncro, and Armstrong itself was then acquired by Laboratorios Chile, which also bought its production plant, Acopharm. That same year, Sanofi Winthrop acquired Gramon's plant.

strategies that are leading to an increase in the demand for STO services from the public sector in Mexico.

C. Research services rendered by the health sector to the pharmaceutical industry

Universities and pharmaceutical industry laboratories carry out R&D directed towards transforming molecules into innovative products. These products must be tested on humans, first with clinical research in clinical pharmacological units and later in hospitals and health centres (see Diagram VIII.1).



Source: Adapted from E. Ratti and D. Trist, "Continuing evolution of the drug discovery process in the pharmaceutical industry", *Pure and Applied Chemistry*, vol. 73, No. 1, International Union of Pure and Applied Chemistry, 2001.

The clinical research survey carried out by the Mexican Association of Pharmaceutical Research Industries (AMIIF, 2009) registers the accelerated growth of investment in clinical research in the country. In 2003, there were fewer than 100 clinical studies. By 2005, these had increased to 2,025, grouped into 425 protocols for 22 therapeutic areas. Investment in these studies grew at an annual rate of almost 15%, reaching US\$ 86.21 billion in 2008 and US\$ 105.81 billion in 2009. According to the AMIIF survey, more than 2,000 researchers have participated in these projects, and more than 80% of the participating institutions and research centres were public.

This accelerated growth in outsourcing clinical tests largely reflects the shift that pharmaceutical TNCs have made towards the Mexican market. In 2011, the value of sales by the 186 companies established in Mexico (47 of which are subsidiaries of large TNCs) increased by 6.4% relative to 2010. From 2007 to 2012, sales in the sector grew by 12% a year, on average. Sales in 2012 reached \$14 billion, of which \$1.2 billion were exports, mostly to Latin America. These companies invested \$2.0 billion dollars in 2011 and \$2.5 billion in 2012 (CANIFARMA, December 14, 2012).

The increase in investment and drug sales was accompanied by a parallel increase in the demand for clinical studies, which are needed to authorize distribution in Mexico. Drugs are regulated by the Federal Commission for Protection against Health Risks (COFEPRIS), which requires that drugs be tested within the Mexican population before they are authorized for marketing in the country. The growing demand for clinical tests also resulted from important changes in health regulations. In particular, the duration of health authorizations for drug distribution was reduced to five years, whereas previously they were indefinite. Consequently, Pharmaceutical companies must constantly update the information generated by their clinical studies. To obtain the required authorizations, drugs are subjected to bio-availability and bio-equivalency tests, whose costs range from US\$ 100,000 to US\$ 200,000 for the initial test and as much as 75% of the initial cost for renewals. The structure of the industry was also affected by a presidential decree published in August 2002, which eliminated the “plant requirement” that had prevented laboratories with no manufacturing facilities in Mexico from importing drugs. This decision favours TNCs and, when added to the high cost of clinical studies, constitutes a strong pressure on generic drug companies to sell their operations or become more closely associated with TNCs.

Another factor driving the increasing demand to outsource clinical testing is the trend towards reformulating existing drugs. Under this strategy, pharmaceutical companies combine active ingredients that have been on the market for ten or fifteen years —typically patented at that time by the same company— and package them in a single dose. This practice has become so common that COFEPRIS regulated their authorization in 2012, establishing “requirements to include combo presentations or a combination of two or more drugs made for a single dose.” This decision was based on the fact that combo drugs entail a “modification of the health authorization conditions of a drug without a change in the manufacturing process, but based on a new therapeutic dosage approach.” The new norms establish that in order to receive authorization for distribution, a combo needs “technical and scientific

justification or medical information that justifies the combined-dosage therapeutic approach, as well as the clinical information that justifies the therapeutic directions, dosage and side effects” and verification that it does not infringe on intellectual property rights. This has naturally led to an increase in the demand for clinical trials and studies. The Mexican case study suggests that clinical testing services have a high degree of formalization in the country and are also adapted to current international norms. Doctors and nurses from hospitals, clinics and health centres across the country participate in these activities.

To comply with COFEPRIS requirements, pharmaceutical companies need to document the efficiency of the molecules and components included in the drug formulas they want to market. For years, they have relied on public sector research institutions to provide them with a systematic analysis of the scientific literature published in specialized journals at a much lower cost than market prices for this service.

Both the clinical studies and the review of scientific literature are regulated by the Department of the Treasury, which sets a limit on the amount that a public sector institution can charge for these services. However, the recent changes in the global strategies of pharmaceutical TNCs have led to a growing demand for new services that depend on the scientific and research abilities of highly qualified personnel and cutting-edge technology, both of which are available in Mexican public sector research centres. Mexican manufacturers of generic drugs and private clinics also ask these centres to carry out applied scientific research in order to develop diagnostic methods and specific treatments for the illnesses they treat. The rising demand for these services is very recent, and precise information on the trend remains scant. Examples can be found, however, in the scientific and technical services rendered to the pharmaceutical industry by researchers at the National University of Mexico (UNAM) and in various technological facilities that have opened throughout the country in recent years.⁸

This paper focuses on four public research centres at the National Institute of Public Health (INSP), which illustrate the growing demand for advanced scientific-technical services by both national and transnational companies. The analysis is based on research agreements established from 1999 to 2012 between researchers from the centres and different types of organizations, which are supplemented with interviews held in various laboratories. The research centres included in the sample specialize in infectious diseases, endemic illnesses, nutrition and public health systems. Institutions active in these fields

⁸ For example, the Parque Científico-Tecnológico de Morelos and the Parque Tecnológico Cuernavaca-ITESM.

employ scientists and highly qualified personnel and are equipped with state-of-the-art technology that enables them to engage in genomic sequencing, genetic expression analysis and proteomic analysis and to conduct scientific research in related fields.

The first difficulty that public research centres face is a regulatory framework that has not been adapted to respond to this new service demand and that seriously hinders any attempt to obtain authorization to supply such services. In practice, such difficulties can be overcome by labelling services "research projects." This complicates attempts to identify and measure STO services and renders the recent growth spurt of this sector virtually invisible in national accounting systems.

From 1999 to 2012, research centres supplying STO services signed a total of 554 short-term research agreements (mostly one-year contracts), which led to the production of 383 published scientific papers (INSP, 2012).⁹ The agreements were with different types of national and international institutions, such as public and private research funds, public health institutions, public offices and foreign universities (see table VIII.3). Most of these research agreements concern projects that fit the particularities of the individual centres. However, the list of funding institutions includes private clinics and domestic and foreign pharmaceutical companies that commission research strongly linked to the products they market (see table VIII.4).

Table VIII.3
Network for the development of technological and scientific projects in a network
of four public research centres, 1999-2010
(Number of Projects)

	Type of organization	CISEI	CINYS	CISS	CRISP
1	Public health institution	6	4	18	2
2	Public research centre	-	-	-	1
3	National public fund	3	6	10	4
4	Mexican private foundation	2	2	1	-
5	Mexican company	5	4	-	-
6	Mexican university	-	1	-	-
7	International organization	2	8	8	1
8	International foundation	3	5	2	2
9	Foreign health organization	3	3	1	4
10	Foreign university	5	10	5	1
11	Foreign company	7	7	4	2

Source: Prepared by the author, on the basis of information from INSP.

Note: CISEI, Centre for Research on Infectious Diseases; CINYS, Centre for Research on Nutrition and Health; CISS, Centre for Research on Health Systems; CRISP, Regional Public Health Centre.

⁹ Data taken from www.insp.mx/lineas-de-investigacion.html (September 2012).

Table VIII.4
Type of scientific and technical knowledge commissioned from Mexican public research laboratories, 1999–2012

Company	Type	Project
Clínica de Reproducción Asistida S.A.	Health clinic (Mexican firm)	Analysis of endometrial genetic expression
Sangre de Córdón S.A.	Health clinic (Mexican firm)	Development of a new method to control cervical-uterine cancer
Laboratorio de Reproducción Asistida S.A.	Health clinic (Mexican firm)	Proteomic analysis and techniques of assisted reproduction
Banco de Semen Mexicano S.A.	Health clinic (Mexican firm)	Proteomic analysis of spermatozoon
Laboratorios SILANES S.A.	Pharmaceutical company (Mexican firm)	Development of a serological testing system for the early detection of human papillomavirus (HPV) antibodies
Astra Zeneca Laboratory	Pharmaceutical (TNC)	Clinical trial for diabetes mellitus control
Bayer	Pharmaceutical (TNC)	Evaluation of penetration effectiveness of pesticides for vector control
Abbott Laboratories	Pharmaceutical (TNC)	Evaluation of automated polymerase chain reaction (PCR) tests for the detection of HPV
The Pfizer Global Investigator-Initiated Research (IIR) Programme. Pfizer	Pharmaceutical (TNC)	Home perimeter infection as a determinant of dengue transmission
Sanofi Pasteur	Pharmaceutical (TNC)	Clinical trial phase II to evaluate vaccine immunogenicity and security
Steri-Pharma	Pharmaceutical (TNC)	Evaluation of inhibitory activity of antiseptics and disinfectants in clinical bacterial insulation in hospitals
Wyeth Pharmaceuticals	Pharmaceutical (TNC)	Sensitivity to broad-spectrum antibiotics in clinic insulation of entire bacterium responsible for nosocomial infections; sensitivity to broad-spectrum in vitro antibiotics in clinic insulation; effect of supplementation with polyunsaturated fatty acids in neurologic development
Laboratorios Roche	Pharmaceutical (TNC)	Identification of individuals with high probability of HCV infections
Danone S.A.	Food company (Mexican firm)	Randomized clinical study of a complementary diet programme in adult Mexican women
Nestlé	Food company (TNC)	Food intake of urban Mexican population
UNILEVER	Food company (TNC)	Evaluation of fatty acids intake by the Mexican population
LICONSA S.A.	Food company (Mexican firm)	Evaluation of the impact of fortified milk on the nutritional condition of beneficiary children
Tresmontes Lucchetti	Food company (TNC)	Viability of school programmes in the National Strategy against obesity and excess weight
Mead Johnson Nutrition	Food company (TNC)	Evaluation of the efficacy of increasing milk intake in children with severe malnutrition; effects of vitamin D on the health of pre-school children.
Harvest Plus S.A.	Food company (TNC)	Efficacy of consuming iron-enhanced beans for humans
Kellogg's S.A.	(TNC)	Intake of a diet high in vitamins and minerals in Mexican women

Source: Prepared by the author, based on information from INSP.

Although most of the agreements follow a standard format, a significant number of contracts signed with domestic and foreign enterprises include a clause whereby the research laboratory agrees to give the enterprise all the information generated during the research process. These contracts

also typically feature a confidentiality clause, so they do not appear to be associated with academic publications. Such developments imply that STO services are indeed being commissioned and that the companies contracting these services also purchase the rights to the products resulting from the commissioned research.

As noted earlier, the public sector sells STO services to the pharmaceutical industry as research projects, because the legal framework that regulates the sale of these services was not designed with such activities in mind. For example, a public institution must currently ask the Department of the Treasury—one year in advance—to include specific services in its sales catalogue and estimate their price. The institution must then wait for approval and for the publication of the price list, a process that would delay a service contract signature by as much as two years. Given the nature and heterogeneity of STO services, this procedure is unacceptable for private companies.

D. Conclusion

This paper has shown that the host country's institutional and regulatory framework is a determining factor in establishing a sustainable STO industry. A detailed analysis of research agreements—who requests them, who finances them, who uses their findings—provides a basis for evaluating the potential supply of services to the pharmaceutical sector. This would help public sector research centres to find a balance between basic research to develop knowledge for public health and specialized research to support the private sector in general and the pharmaceutical sector in particular.

Our case studies of four Mexican public health research centres indicate that Mexico needs to increase its absorptive capacities in order to better insert the centres in evolving scientific and technical services supply chains. These research institutions have qualified human resources, scientific experience, accumulated technical abilities and infrastructure, but the country lacks a system for promoting collaborative arrangements between universities, research centres and health institutions. Furthermore, the prevailing regulatory framework governing these institutions is no longer adequate for the efficient supply of STO services. In part, these deficiencies stem from the perception that it is somehow not right to employ public resources (both physical and human) to provide services to the private sector. However, other countries' experience shows that such agreements are a novel and efficient means to transfer knowledge, in light of the resulting interaction between TNCs and the research centres from which they commission work. The revenue stream from STO services can be used to fund the procurement and upgrading of equipment and cutting-edge technology, to train human resources and to cross-subsidize research relating to public health priorities.

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Chapter IX

Winning through specialization: The role of the business model in value creation

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Dimária Silva e Meirelles

Abstract

This paper presents a case study on a recent venture in the enterprise system market in Brazil, reporting on the company from its discovery phase through its development into a successful consulting company. The objective of the study is to identify the company's business model and determine how this model relates to business performance. The paper contributes to the literature on business models by providing foundational information that both contributes to practitioners' understanding of technology-based benefit generation and opens an avenue for further research on business models in the software industry.

Keywords: Business model, value creation, enterprise system, ERP

Introduction

The software industry originated in the late 1950s and early 1960s. Entrepreneurial computer software and service companies grew dramatically in the following decades, and by the 1990s, they were an important market force on par with computer hardware companies and a major source of technical know-how for people and organizations (SI-SIG, 2012). One type of software designed specifically for companies is enterprise system software. Enterprise systems are integrated software packages that support most of an organization's operations in a seamless, integrated manner, promoting process optimization and cost reduction (Davenport, 1998; Hendricks, Singhal and Stratman, 2007; Nah, Lau, and Kuang, 2001). Enterprise system software was introduced in the market in the early 1990s as enterprise resource planning (ERP); it is an evolution of the material requirements planning (MRP) systems created two decades earlier. The enterprise system fulfils its intended purpose when it is installed in the information technology environment of a firm.

Enterprise systems are developed by computer software companies (or software houses), which are sometimes also responsible for the implementation of the software. More commonly, specialized computer service companies (or consulting companies) are in charge of implementing the enterprise system for the customers. Consulting companies are organizations or business units that are devoted to consulting services, which may involve business process modelling (management consulting), enterprise system implementation (implementation consulting), system development and system maintenance services.

Several consulting companies compete in the Brazilian market. Despite having a similar organizational structure (they are all consulting firms), they differ in terms of size (small to large), geographic scope (local, regional or global), nationality and technological coverage (providing services for one or more technology platforms). Most importantly, consulting companies differ in performance.

The increasing adoption of enterprise systems has attracted much attention in the practitioner literature, especially regarding the challenges faced by adopters in extracting the planned benefits from the technologies and the strategies of the chain players (such as software houses and consulting companies) that are successfully promoting those benefits. However, this area appears to be underinvestigated in scholarly research. There is even a lack of common definitions in the business

model literature.¹ In response to this research gap, this paper reports on a promising consulting company in Brazil with the aim of identifying its business model and the relationship of that model to the consulting company's performance. In doing so, we hope to bring foundational information that might both contribute to a broader understanding of technology-based benefit generation and open an avenue for further research on business models in the software industry.

A. Conceptual background

1. Business model

The topic of business models has become very popular in the academic arena since the emergence of the Internet as a business platform in the mid-1990s (Demil and Lecocq, 2010). The construct is based on core ideas of business strategy and related themes (Camisón and Villar-López, 2010; Casadesus-Masanell and Ricart, 2010; McGrath, 2010; Morris, Schindehutte and Allen, 2005), although scholars have yet to reach an agreement on what a business model is (Zott, Amit and Massa, 2011). Academic efforts to deepen the discussion of business models have produced a diversified set of definitions, many of which concern value creation, but few of these definitions have identified key performance indicators.²

Doganova and Eyquem-Renault (2009) define two types of business models: essentialist, in which the business model is "a description, or representation, of a reality that exists beyond it: the firm" (p. 1560); and functionalist, in which the business model is the method of doing business, articulating the value proposition, targeting markets, and mounting cost and revenue structures. Essentialist models, then, are based on the description of the business *corpus*, with a static view of its components. Functionalist models view the dynamics of the components, expressed as functions, as they contribute to producing business. Table 1 provides a comprehensive list of business model definitions and their respective characteristics.

¹ For example, Demil and Lecocq (2010); Doganova and Eyquem-Renault (2009); Malone and others (2006); Morris, Schindehutte and Allen (2005); Zott, Amit and Massa (2011).

² See, for example, Amit and Zott (2001); Camisón and Villar-López (2010); Chesbrough (2010); Demil and Lecocq (2010); Dubosson-Torbay, Osterwalder and Pigneur (2002); Gambardella and McGahan (2010); Morris, Schindehutte and Allen (2005); Osterwalder, Pigneur and Tucci (2005); Rappa (2010); Teece (2010); Wirtz, Schilke and Ullrich (2010).

Table IX.1
Business models: definitions and major characteristics

Type of model and source	Definition	Dimensions	Indicators
Essentialist models			
Camisón and Villar-López (2010)	A business model is the standard generated by the corporation to organize its processes and tasks with a specific internal configuration of its value chain, manage its assets, realize transactions with external agents and determine the market in which it intends to compete. There are four types of business models: multidivisional, integrated, hybrid and network-based.	Hierarchical structure, degree of formalization, degree of centralization, productive process, coordination mechanism, degree of diversification and degree of vertical integration.	Not defined.
Chesbrough (2010)	A business model fulfils the following functions: (a) articulates the value proposition; (b) identifies a market segment and specifies the revenue-generation mechanism; (c) defines the structure of the value chain required to create and distribute the offering and complementary assets needed to support the position in the chain; (d) details the revenue mechanism(s) by which the firm will be paid for the offering; (e) estimates the cost structure and profit potential; (f) describes the position of the firm within the value network linking suppliers and customers; and (g) formulates the competitive strategy by which the innovating firm will gain and hold advantage over rivals.	Value proposition, market segment, revenue-generation mechanism, value chain structure, cost structure and competitive strategy.	Not defined.
Demil and Lecocq (2010)	A business model describes the articulation between different model components (or building blocks) to produce a proposition that can generate value for consumers and thus for the organization.	Resources and competencies, organization, value proposition, volume and revenue structure and volume and cost structure.	Revenue, costs and margin.
McGrath (2010)	A business model is a powerful idea for strategic thinking and strategic research, which shifts management focus from a preoccupation with the firm's resources to an emphasis on how those resources are used.	Basic unit of business and key metrics of process or operational advantages.	Not defined.
Osterwalder, Pigneur and Tucci (2005); Osterwalder and Pigneur (2010)	A business model is a conceptual tool containing a set of objects, concepts and their relationships, aimed at expressing the business logic of a specific firm. The firm must identify which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this provision is implemented and what the financial consequences are.	Customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships and cost structure.	Not defined.

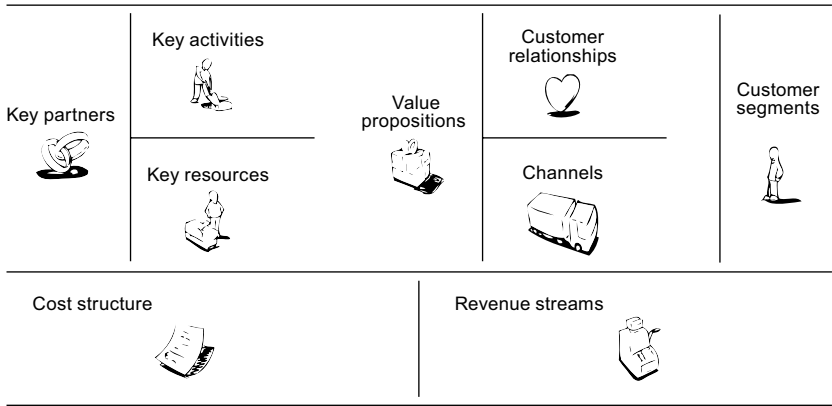
Table IX.1 (concluded)

Type of model and source	Definition	Dimensions	Indicators
Functional models			
Amit and Zott (2001)	A business model depicts the content, structure and governance of transactions designed to create value through the exploitation of business opportunities.	Efficiency, complementarities, lock-in and novelty.	Not defined.
Casadesus-Masanell and Ricart (2010)	A business model is a reflection of the strategy carried out by the company. It consists of a set of choices (policies, assets and governance) and their consequences (price and scale), governed by a theory.	Choices (policies, governance structures and assets) and consequences.	Not defined.
Doganova and Renault (2009)	A business model is an intelligent device in a context of collective uncertainty. It works both as a narrative form and as a calculator to bring innovations to life.	Calculations, narratives and circulation.	Not defined.
Malone and others (2006)	The paper defines 16 types of business model: entrepreneur, manufacturer, inventor, human creator, financial trader, wholesaler/retailer, intellectual property (IP) trader, human distributor, financial landlord, physical landlord, intellectual landlord, contractor, financial broker, physical broker, IP broker and human resources (HR) broker.	Rights to be negotiated and types of assets (financial, physical, intangible and human).	Market value, profitability and operational efficiency.
Morris, Schindehutte and J. Allen (2005)	A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture and economics are addressed to create a sustainable competitive advantage in defined markets.	Foundation, proprietary and rules.	Operating leverage, volumes, margin and revenue.
Teece (2010)	A business model articulates the logic and provides data and other evidence that demonstrate how a business creates and delivers value to customers. It also outlines the architecture of revenues, costs and profits associated with the business enterprise delivering that value.	Technologies and features, benefits to customers, market segmentation, revenue stream and mechanisms for value capture.	Not defined.

Source: Prepared by the authors.

Among the essentialist models, Osterwalder and Pigneur define a business model as a description of the rationale of how an organization creates, delivers and captures value (Dubosson-Torbay, Osterwalder and Pigneur, 2002; Osterwalder, Pigneur and Tucci, 2005; Osterwalder and Pigneur, 2010). It has nine dimensions, called a business model canvas, which provide “a shared language for describing, visualizing, assessing and changing business models” (Osterwalder and Pigneur, 2010, p. 18). The canvas begins with (1) customer segments, a way of grouping customers that have common needs, behaviours or other attributes; followed by (2) value propositions, which consist of a selected bundle of products and/or services that caters to the requirements of a specific customer segment; (3) channels, which describe how a firm communicates with and reaches its customer segments to deliver a value proposition; (4) customer relationships, which classify the types of relationships a firm establishes with specific customer segments; (5) revenue streams, which represent the cash a firm generates from each customer segment; (6) key resources, which refer to the most important assets required to make a business model work; (7) key activities, which depict the most important tasks a firm must perform to make its business model work; (8) key partnerships, which are the network of suppliers and partners that make the business model work; and (9) the cost structure, which describes all costs incurred to operate the business model. Diagram IX.1 illustrates the business model canvas.

Diagram IX.1
Business model canvas



Source: A. Osterwalder and Y. Pigneur, *Business Model Generation*, Hoboken, John Wiley & Sons, 2010, p. 44.

2. Value creation

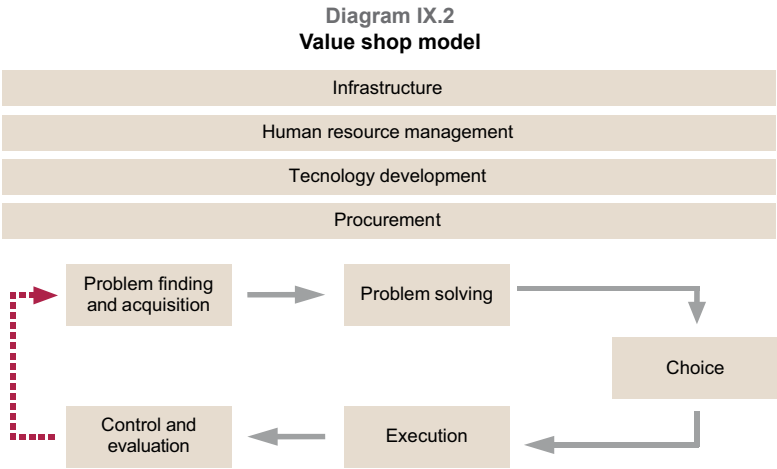
A significant number of business model definitions cite value creation as a major objective or purpose, but with different meanings: some are referring to a producer surplus, which is the value generated for the producer of the product or service; others discuss the consumer surplus, the value created for customers (see Peteraf and Barney, 2003).

The value chain framework (Porter, 1998) analyses value creation at the company level (producer surplus). The analysis consists of breaking down a company into strategically relevant activities to obtain perspective on the impact on cost and value (Stabell and Fjeldstad, 1998). This process requires four steps: (1) the definition of a strategic business unit; (2) the definition of critical activities; (3) product definition; and (4) the determination of value of activities. Porter (1998) defines value as “the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue, a reflection of the price a firm's product commands and the units it can sell. A firm is profitable if the value it commands exceeds the costs involved in creating the product. Creating value for buyers that exceeds the cost of doing so is the goal of any generic strategy” (p. 38).

Differentiation is one means to achieve value creation, through activities that deliver products that reduce buyers' costs or improve buyers' performance. According to Porter (1998), product differentiation is a result of policy choices (the type of activities to be executed and the resources to be employed), linkages (within the value chain or with suppliers and channels exploited), timing (when a firm began performing an activity), location, interrelationships, learning and spillovers (know-how) and integration (organizational cohesion). Barney and Hesterly (2012), who draw on Porter's work, divide differentiation into three categories: (1) product/service (characteristics, complexity, launching timing and location); (2) customer relationships (customization, consumer marketing and reputation); and (3) intra- and interrelationships (internal function association, partnerships and alliances, product mix, distribution channels and customer care).

Value creation for service companies can be analysed from their value chains. Although Porter's value chain model was considered a perfect match for production and manufacturing companies, it does not capture the essence of value creation for companies that “rely on an intensive technology to solve a customer or client problem” (p. 420). Stabell and Fjeldstad (1998) thus designed a value chain model more suitable for service companies, which they call the value shop. In value shops, value creation is the problem-solving service that advances the customer to a

better state. Service differentiation occurs by mastering value information asymmetry; tailor-made deals (configured to address unique cases); activities that are cyclical, iterative and interruptible (not linear flow); significant sequential and reciprocal interdependence between activities; multiple disciplines and specialties intertwined in activity cycles; problem-independent information acquisition; expertise leveraging; co-performance of support and primary activities; and reputation and relationships (Stabell and Fjeldstad, 1998). Diagram IX.2 shows the model structure with its five primary activities: (1) problem-finding and acquisitions, which encompasses activities related to recording, reviewing and formulating the problem to be solved and the choice of the general approach to solving it; (2) problem-solving, which involves the generation and evaluation of alternatives for the solution; (3) choice, or the selection of one alternative; (4) execution, comprising activities related to the communication, organization and implementation of the chosen solution; and (5) control and evaluation, which includes activities associated with measuring and evaluating the outcomes against expectations.



Source: C.B. Stabell and O.D. Fjeldstad, “Configuring value for competitive advantage: on chains, shops, and networks”, *Strategic Management Journal*, vol. 19, No. 5, John Wiley & Sons, 1998, p. 424.

Customer value (consumer surplus) is defined by Woodruff (1997) as “a customer’s perceived preference for and evaluation of those product attributes, attribute performances and consequences arising from use that facilitate (or block) achieving the customer’s goals and purposes in use situations” (p. 142). Woodruff’s definition allows the identification of one source of value generation that is specific to information technology (IT) consumers: IT uncertainty mitigation. IT uncertainty is the risk that an investment made in IT assets (computer hardware, software, communication

infrastructure, etc.) may not meet the planned performance targets on time. The risks include (a) implementation difficulties that prevent obtaining anticipated IT results; (b) higher implementation costs than planned; (c) longer implementation time than planned; (d) technical performance below what was planned at the outset of the investment; and (e) hardware and software incompatibility (Barney and Clark, 2007). The mitigation of the aforementioned risks can facilitate the timely achievement of planned performance targets or prevent difficulties from occurring.

B. Data and methods

This is a short-term project that aims to consolidate business model knowledge discussed in classroom sessions. The research strategy adopts an exploratory approach to collect information about the role of the consulting company's business model in creating value for all three parties: customers, software houses, and the consulting company itself. Drawing on the literature about case study research and qualitative methods (Collis and Hussey, 2009; Flick, 2009; Yin, 1994 and 2003), we structured the research strategy to provide descriptions of a Brazilian consulting company's business model of technology (enterprise system) implementation services. The exploratory approach is appropriate because the business model literature is still developing its theoretical foundation (Collis and Hussey, 2009); the case study aims to contribute based on its materiality and use.

The first step of the research process was to interview the consulting company's founder to collect raw information about the business model related to the technology implementation services. The interview was complemented with other data sources (internal documents, published data, company website, etc.). The collected information was consolidated and analysed from the perspective of business model structure (Dubosson-Torrey, Osterwalder and Pigneur, 2002; Osterwalder, Pigneur and Tucci, 2005; Osterwalder and Pigneur, 2010). The last step was a discussion to clarify the methods and processes involved in the consulting company's value creation.

C. In search of value creation

Software houses believe that their innovations can generate value (producer and consumer surpluses) by making organizations more productive, better managed, more sustainable and more innovative through the use of their software technology. Consulting companies have the same perspective about their services. However, neither of these company types, alone, can make their innovations a source of

value creation for customers, for partners and for themselves. Software houses might deliver implementation services, but on a small scale due to limited resources; consulting companies may bid for implementation opportunities in the open market, but the number of opportunities is decreasing because customers are more attracted (especially in terms of IT uncertainty mitigation) to value propositions that embrace the entire project instead of individual bids. Therefore, a partnership between the software house and the consulting company is an important condition for value creation. Accordingly, we centred our case study on a consulting company that has a formal partnership with a software house.

1. The company

Founded in 2006 by three entrepreneurs, Finity Consultoria is a local, private Brazilian firm specializing in consulting services for business processes that include business process modelling and the implementation of enterprise systems. The firm has 225 expert consultants with more than 15 years of experience in the business process development and technology fields. It has offices in three different states in the country, serving large national and international customers that are present in the Brazilian market (including Johnson & Johnson, Arcelor Mittal, Itaipu Binacional, the Votorantim Group and Gerdau). The consulting company expects to close the current fiscal year with revenues of US\$25 million and is preparing to double that revenue by the end of 2015.

Since its foundation, Finity has used its deep knowledge of financial services to successfully position the company as a specialist in management consulting services, enabling the implementation of technology required to facilitate proposed organizational changes for its customers. Over time, Finity has expanded its portfolio of services to enter other industry segments. For example, the company started a software license sales business, which has generated additional growth, albeit at the expense of specialization.

However, specialization is still the core strategy for Finity. Employees are key resources for achieving company targets, and there is thus an explicit concern for professional growth, focusing on knowledge sharing and expertise building that encompasses technical, business and soft skills to deepen the specialization in all industry segments covered. Consequently, Finity creates real and sustainable value for its customers through business process enhancements and developments that will eventually contribute to the growth of their companies. Finity also continues to establish strong and durable relationships with partners and customers based on the company's ethics, respect and high-quality deliverables, which generate growth and profitability for all parties (Finity, 2012).

The complexity of the organization now requires a higher level of management maturity, and its growth analysis must consider not only organic development, but also market share expansion that may include acquisitions.

2. The business model

Finity’s business model was identified using an essentialist approach (Doganova and Eyquem-Renault, 2009) and drawing on concepts from Osterwalder and Pigneur (2010). We defined nine dimensions for this consulting company, as follows:

- Customer segments. Table IX.2 shows the company’s declared business segmentation. However, this so-called segmentation appears to actually be the portfolio of service offerings. The firm is internally organized by what it calls industries (such as financial services, manufacturing and automotive), and its consultants specialize in the business processes of a given industry and in specific technologies that fit within that industry. To express its true customer segments, Finity should prepare a tailored set of service offerings for each industry segment.

Table IX.2
Finity Consultoria’s declared business segments

Business segment	Target service areas
ERP	Shareholding reorganization; Finance and auditing; Logistics; Implementation, rollout and migration; Product life cycle; Human resources; Shared services
Business Intelligence	Information systems; Corporate planning; Balanced scorecard; Consolidation
Business process management	Process design; Process office; Administration and support; Process intelligence
Outsourcing	ERP; Mentoring; Business process management
Technology and development	Web applications; ERP Applications; Integration and interfaces
Governance, risk and compliance	Access control; Identity management; Internal control; Risk management
Environmental health and safety	Workplace safety; Occupational health; Waste management; Dangerous goods management; Hazardous substances management
Product life cycle management	Project management and engineering; Occupational health; Complementary solutions
Project management Office	All of the above
Corporate mobility	All of the above

Source: Finity, “Finity Consulting: The Company, Mission, Values, Market Positioning, and Main Business Areas”, 2012 [online] <http://www.finitycons.com/empresa.html>.

- **Value propositions.** The value proposition of Finity is new service offerings that are highly specialized and customized and that promote the customer's performance transformation.³ At the same time, the service offerings aim to provide innovation (high value added) and lower prices than competitors. The offered services related to software implementation aim to reduce IT uncertainty (Barney and Clark, 2007).
- **Channels.** Finity has two types of channels: direct (owned) and indirect (contracted). Direct channels are used for software and service sales and for service delivery. Indirect services are sold through contracts established with software houses and other consulting companies.
- **Customer relationships.** One of the characteristics of the enterprise system market is the long-term relationship that the players establish with their customers. Finity devotes dedicated personal assistance to its customers (see Osterwalder and Pigneur, 2010), establishing relationships with customers that are longer than two years on average (some of these relationships are as old as the firm). Service delivery typically requires heavy customer participation (at least 60% of the time), but there is space for co-creation (Osterwalder and Pigneur, 2010) during the services' architecture phase; delivery is pure execution.
- **Revenue streams.** Revenue is produced by selling software and services. Software is a licensing business in which the consulting company sells licenses on behalf of the software house; these licenses have a fixed price, similar to an asset with a list price (Osterwalder and Pigneur, 2010). Services are sold as projects in the majority of cases (70%); their prices are fixed (in the 70% of cases), and payment is due on delivery of milestones. The remaining 30% of the projects have floating prices, related to the consumption of consulting hours, which practitioners refer to as time material and Osterwalder and Pigneur (2010) call a usage fee. It is rare but possible to have projects that combine fixed and floating prices. Additionally, services can be sold as an outsourcing of customers' operation segment, which represents 30% of Finity's revenue. This approach has characteristics similar to a subscription fee (Osterwalder and Pigneur, 2010), as customers pay a certain amount per month to have Finity operate and maintain an IT system, for instance.
- **Key resources.** The business in which Finity operates relies heavily on intellectual capital; thus, the major resource is skilled experts who can manage people, projects, change and

³ See Osterwalder and Pigneur (2010) on the concept of newness.

relationships. In addition to these human resources, financial resources are required to allow the firm to operate and expand.

- **Key activities.** Finity sells enterprise system software and related services, ranging from business consulting services (especially business process modelling) to implementation services, with a specialization in financial services, business intelligence, and governance, risk and compliance. In terms of services, Finity provides customized problem-solving services that advance the customer to a better state (Stabell and Fjeldstad, 1998).
- **Key partnerships.** Finity has two forms of partnerships with SAP, a giant software house in the enterprise system space: as a service partner providing software implementation services (the more important partnership in terms of revenue generation) and as a software channel responsible for selling SAP software. The company has the same types of partnerships with Software AG, which produces business process modelling software. The firm also has some partnerships with other consulting companies for enterprise system implementation services in areas where there is complementary fit, for example, because Finity is very specialized in some areas of the SAP technology portfolio.
- **Cost structure.** Finity's cost structure can be considered a value-driven cost structure characterized by "premium value propositions and a high degree of personalized service" (Osterwalder and Pigneur, 2010, p. 41). However, due to market pressures, the company tends to blend this strategy with a cost-driven approach for part of the business to promote differentiation. This phenomenon can be observed in some offerings and their components: cost centres are dispersed among internal business areas, controlling each area's production costs, pre-sales and sales costs, idle costs (consultants who were not allocated) and operational and non-operational costs.

3. Value creation

The business model literature emphasizes the value that a firm creates for itself.⁴ For the service business in which Finity operates, the value-creation processes for the firm and for the customer are interdependent. Problem-solving services (Stabell and Fjeldstad, 1998) that reduce technology risk for customers are delivered in a way that (a) overcomes implementation

⁴ For example, Amit and Zott (2001); Casadesus-Masanell and Ricart (2010); Demil and Lecocq (2010); Malone and others (2006); Morris, Schindehutte and Allen (2005); Osterwalder and Pigneur (2010).

difficulties and obtains anticipated IT results; (b) keeps implementation costs on budget; (c) keeps implementation time as planned; (d) achieves technical performance at or above the level planned at the outset of the investment; and (e) ensures hardware and software compatibility (Barney and Clark, 2007). Along with intellectual capital transfer, these services will eventually facilitate the customer's goals (Woodruff, 1997), thereby strengthening the consultant-customer relationship, enhancing the consulting company's reputation and establishing differentiation in the market (Barney and Hesterly, 2012). The revenue generated by the accomplishment of a task is a short-term, Porterian value that only satisfies the firm's short-term necessities. The key to sustainable, long-run growth is reputation: namely, "a set of economic and non-economic attributes ascribed to a firm, inferred from the firm's past actions" (Gemser and Wijnberg, 2001, pp. 565-566).

Finity prepares to capture value early in the sales process. The consulting company analyses the market, searching for opportunities that are derived from economic conjuncture (for instance, an economic downturn increases the demand for financial and risk management), technological tendencies and recurrent necessities of the installed technology base (such as process enhancements, changes as a result of regulations or new software versions). Offerings are designed, and related investments in intellectual capital are established. This process, in turn, allows the firm to build customized value propositions that possess up-front, major project targets supported by quantitative and qualitative indicators that will eventually define the value captured with respect to both the Porterian value, after delivering the project milestones, and reputation, after delivering on time, on budget, and on value.

The business relationship between Finity and the customer is governed by a formal contract (90% of the occurrences). Projects below US\$50,000 only require the proposal documentation and do not require a formal contract.

4. Performance indicators

Performance indicators are seldom found in the business model literature.⁵ Osterwalder and Pigneur (2010), for instance, does not identify performance indicators.

Finity has 15 performance indicators. The 10 most important indicators are distributed across the business model dimensions, as presented in table IX.3.

⁵ For indicator examples, see Demil and Lecocq (2010); Malone and others (2006); Morris, Schindehutte and Allen (2005).

Table IX.3
Business model's performance indicators

Dimension	Indicator	Definition
Customer segments	N/A	
Value propositions	Win rate	Number of projects sold over total number of project proposals developed
	Sales cycle	Total time consumption from deal prospection to closing
Channels	N/A	
Customer relationships	Customer life cycle	Duration of active relationship
Revenue streams	Total revenue	Sum of all revenue streams
	EBITDA	Earnings before interest, taxes, depreciation and amortization
	Project revenue	Revenue monitoring by project
	Net margin	Net profit over total revenue
Key resources	Idle rate	Number of consultants not allocated over total number of consultants
Key activities	Project delivery performance	Project delivery on time, on budget and on value
Key partnerships	N/A	
Cost structure	Project costs	Cost monitoring by project

Source: Prepared by the authors.

D. Discussion

The rapid pace of technological developments in the enterprise system industry, coupled with its increased adoption, has given rise to business transformation in many economic sectors all over the world. The issue has thus received considerable attention in the practitioner literature, which discusses the challenges faced by adopters with respect to extracting the expected value from the technology. In the majority of cases, the systems are implemented by consulting companies.

In this paper, we have attempted to identify how consulting companies generate value for customers and for themselves by drawing on the business model and strategy literature and applying the concepts in a study of one promising Brazilian consulting company, Finito Consultoria, in its local market.

Specialization is a clear strategy of Finito for sustainable growth. Finito consultants' deep knowledge of the business processes of a set of industries allows the firm to provide customers with problem-solving services that overcome the challenges to obtaining expected value by reducing technology risk for customers and transferring intellectual capital. In other words, business models are responsible for the translation of strategy into action. Using the business model canvas, we identified how this consulting company is structuring its operations for value generation.

The analysis of a consulting company's strategy and the business model canvas led us to regard the business model as the bridge that connects resources to strategy, aligning these aspects to transform strategy statements into activities.

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Observatorio demográfico / Demographic Observatory

Edición bilingüe (español e inglés) que proporciona información estadística actualizada, referente a estimaciones y proyecciones de población de los países de América Latina y el Caribe. Incluye también indicadores demográficos de interés, tales como tasas de natalidad, mortalidad, esperanza de vida al nacer, distribución de la población, etc. Desde 2013 el Observatorio aparece una vez al año.

Bilingual publication (Spanish and English) providing up-to-date estimates and projections of the populations of the Latin American and Caribbean countries. Also includes various demographic indicators of interest such as fertility and mortality rates, life expectancy, measures of population distribution, etc. Since 2013, the Observatory appears once a year.

Notas de población

Revista especializada que publica artículos e informes acerca de las investigaciones más recientes sobre la dinámica demográfica en la región, en español, con resúmenes en español e inglés. También incluye información sobre actividades científicas y profesionales en el campo de población.

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A new driver of structural
change in the region?

Economic Development

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