Can Chinese and Indian IT Service Providers Cooperate to Compete?

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Abstract:

This paper assesses the competitive nature of two dominant players in international outsourcing of IT services market and argues that there are mutual benefits for China and India to cooperate because of their complementary strengths. By partnering, Chinese and Indian information technology service providers will have access to complementary skills and resources and will be in a stronger position to provide a more complete range of services to global clients.

Key words: International Strategy, International outsourcing, information technology services, Partnering, China, India.

Unprecedented innovations and diffusion of information and communication technologies and the intensification of trade liberalisation over the last decade have made it feasible for firms in advanced industrialised countries to outsource much of their information technology (IT) service needs to comparatively cheaper countries such as India, China, Malaysia and the Philippines. Despite conflicting findings regarding the benefits of outsourcing (Espino-Rodríguez & Gil-Padilla, 2005; Lacity & Hirschheim, 1993; Lewin & Peeters, 2006; Loebbecke & Huyskens, 2006; Serapio, 2005) the international outsourcing of IT services is on the rise (Gartner, 2005) and an increasing number of firms have made it an integral business strategy. As a result, a plethora of research has emerged on various aspects of international outsourcing of IT services but few of these have focused on the topic from the standpoint of the service providers. This paper attempts to contribute to the literature on international outsourcing by focusing specifically on the competitive nature of the IT services sectors of two dominant offshore service providers, namely India and china. The main objective is to assess the competitive strengths of the two countries and evaluate whether cooperation between them is a likely outcome. The paper argues that there is a strong case for the two countries to cooperate given their complementary strengths.

The structure of the paper is as follows. First the paper provides a brief background on the international outsourcing or offshoring market[1] for IT services. Second the methodology and data is discussed followed by a discussion on data analysis in Section 3. The last section discusses the main findings and the implications for managers.

1. GLOBAL MARKET STRUCTURE

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[1] Offshoring refers to the supply of services from abroad either through internal suppliers (international insourcing) or external suppliers (international outsourcing). Outsourcing refers to the supply of services from external sources either domestically (domestic outsourcing) or internationally (international outsourcing). In this paper, outsourcing and offshoring are used interchangeably for comparative purposes..

The international outsourcing of IT services market has grown rapidly over a short period of time. Although no official data is available on the global market for offshoring, recent estimates on this type of international business activity highlight its importance. According to the OECD(2004) , the global services offshoring market[2] in 2001 was estimated at approximately $260 billion comprising of $227 billion for domestic outsourcing and $32 billion for offshoring. Gartner (2005) suggests the IT service market will grow to approximately $800 billion by 2009 of which 10 % is expected to be outsourced (McKinsey, 2005). Similarly Nasscom (2005) predicts global outsourcing of services to grow from $40 billion in 2004 to over $90 billion in 2008 with India accounting for about 50 % of this business. McKinsey (2005) also estimates that by 2008 services offshoring will provide employment to approx. 4.1 million people, representing 1.1 % of total employment in services in developed countries (Farrell et al., 2005) and according to the Forrester research, 3.3 million US business process jobs worth $136 billion in wages will go offshore by 2015 (McCarthy et al., 2002). Clearly, the international outsourcing of IT services has grown rapidly and is predicted to continue its growth trajectory in the future.

The global services offshoring market consists of two sets of main players: IT spenders (demand side) and offshore service providers (supply side). On the demand side, USA (37%), Western Europe (35%), and Japan (14%) are the main IT spenders (EITO, 2006). Other major demand side players include Canada, and selected countries from Latin America, Eastern Europe and Asia Pacific region. On the supply side India, China, Malaysia and the Philippines are the main players. Other services offshoring destinations include Israel, Ireland and Russia. Figure1 shows the relative stature of the main offshore service providers in the world based on local business environment, financial structure attractiveness and the human resource capability.

Insert figure 1 here

Of the main offshore service providers, India is second largest exporter of IT services with $ 24 billion exports of information technology services and along with $ 6 billion of domestic revenues in 2006. India's software and services industry is mainly export oriented towards Europe and USA. By comparison, international outsourcing of IT services is relatively small in China ($2.8 billion) despite having a sizable domestic software market estimated at $ 72 billion in 2004 (People'sDaily, 2005a). The other players are either relatively small or are face constraints to become to major competitors to both China and India. For example, Ireland faces unfavourable cost structures while Malaysia, Russia and the Philippines face people skills and availability constraints. The paper focuses on two main offshore service providers namely India and China. The two countries are widely acknowledged as

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[2] All data throughout the paper is in US dollars unless otherwise specified.

two emerging economic powers. The information in Table 1 summarises some salient feature of the two economies.

Insert table 1 here

2. MODEL AND DATA

We use Porter's (1990) competitive advantage framework to assess the competitive nature of Chinese and Indian IT services sectors. Porter's (1990a) diamond of competitive advantage (Figure 2) considers factor conditions, domestic demand conditions, related and supporting industries, and firm strategy, structure and rivalry to argue that these determinants create a national environment in which firms are born and compete. Factor conditions constitute a country's position in factors of production. Countries with sophisticated industries create and upgrade production factors. The model includes two external influences: role of government and chance events. The home market demand conditions and the presence of globally competitive related and supporting industries contribute to industry's competitiveness.

Insert figure 2 here

The model above is assessed using secondary data drawn primarily from the National Association of Software and Service Companies (Nasscom) website, the directory of Indian software and services industries (2005) for India and the Annual Report of China Software Industry (2006) and Ministry of Information Industry Website for China.

3. CHINA-INDIA COMPARATIVE ANALYSIS

3.1 Factor Endowments

Factor endowments refer to the factors of production essential to compete in the industry (Porter, 1990). In the case of the software and services industry two factors have been identified as being critical for competitiveness (Raman & Chadee, 2007).

Human resources: Human resources have been identified as the most critical source of competitiveness for software and services industry. China with over 1.3 billion populations and India with over 1.1 billion population are the world's most populated countries. But the sheer size of their populations by themselves does not constitute a source of competitiveness. The quality of the labour force also matters particularly in a knowledge based industry. And for IT services enterprises which are highly labour intensive, a sufficiently large population which can be trained is a rare asset.

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India's knowledge professional come from more than 340 institutes of higher education and 16000 colleges with a total enrolment of 9.3 million producing 441000 technical graduates, 2.3 million other graduates and over 300000 postgraduates each year ; and account for 28 % of suitable knowledge workers available to all outsourcing destinations. Although English is a widely accepted medium of the Indian education system, only 10 % of students with general degrees and 25 % of engineering degrees are considered as employable in the industry (Farrell & Grant, 2005). This translates into an annual addition of about 44000 employable technical graduates and about 140000 non technical graduates and post graduates. According to a recent estimate about 850000 IT professionals and 1.4 million IT enabled services (ITES) – business process outsourcing (BPO) professionals will be needed in India by 2010 (Nasscom-McKinsey, 2005). Thus, the basic concern for India is to improve the quality of its knowledge professionals through language and practical skills, which will automatically lead to an increase in quantity and thus reduce the gaps in the demand and supply for knowledge professionals.

According to statistics provided by China Education and Research network, there are about 1400 institutions of higher education with total enrolment of 9 million students at annual increment of about 1.4 million students resulting in an annual outflow of about 1.33 million graduates in the system. Chinese software employees suffer from rigid education at Universities and a lack of training at enterprises resulting in inadequately trained professionals for the industry (People'sDaily, 2005b) . The lack of English language skills and work force immaturity are some of the factors that make China an unsuitable supplier of services particularly to English speaking US or European companies (Wiggins, 2006).

Although India has a slight advantage, over China in human resources, both face critical shortage in the supply of skilled workers because of 'scarcity in abundance' paradox. The software industries in both countries have an abundance of graduates and postgraduates but the employability ratios vary: 10-25 % for India and about 10 % for China (Farrell & Grant, 2005). Thus, improving the employability of their graduates is a key priority for both countries in order to remain competitive.

Infrastructure: Physical, technological and financial infrastructure have been identified as another bundle of critical; factors in the competitiveness of IT services sector. China enjoys overall superior infrastructure than India in terms of electricity generation, roads and number of telecommunication lines. Interestingly, India had more power, road and telecom than China in 1980 but developments in these areas have lagged behind China during the last decade (WorldBank, 2007). It is argued that the technological infrastructure is more important for IT services sector as the services are transferred through virtual networks and not through physical infrastructure. However financial infrastructure provides support to service providers to compete in international markets. The

development of world class technology parks in India provide advanced infrastructural facilities to IT service firms allowing companies to benefit from agglomeration and economies of scale. China also has well developed technology and industrial parks, particularly in the coastal areas which have developed advanced infrastructures such as telecommunications, roads, and ports in Special Economic Zones (SEZ).

The two countries have vastly different financial infrastructures but overall China appears to be ahead of India in providing the necessary financial infrastructure to attract foreign capital to support the development and growth of its enterprises. A cursory look at the performance of the two countries in inward FDI suggests that China has an overall stock of $ 318 billion compared to India with only $ 45 billion However, India's financial sector is more effective at allocating capital, controlling bad debts and efficiency of private and foreign banks (Farrel & Lund, 2005) which is critical in a market based economy. Hence, China is well endowed with capital but is weak in its efficient allocation whereas India has limited capital but is strong in efficient allocation.

3.2 Demand Conditions

The importance of the nature and sophistication of domestic demand (Porter 1990) and international demand (Cartwright, 1993; Kapur & Ramamurti, 2001; Moon et al., 1998) in the development and growth of industries is well documented. Indeed, in the case of India's IT services sector, domestic demand for IT services is underdeveloped while the Industry has established itself as a world leader in the provision of IT services on the basis of growth in international demand. Thus, in a borderless world and industry, the domestic market is almost irrelevant.

The IT services sectors of India and China have followed two distinct growth models. The information in Figure 3 shows that India is predominantly export oriented whereas China focuses mainly on its domestic market for software services. The strength of China is based on the production of software for its large and growing domestic hardware industry. China's strong manufacturing sector, buoyant consumer electronics market, large number of domestic and foreign SMEs, a larger population and rapid economic growth have all contributed to keeping IT services enterprises focused on the domestic market. By comparison India has weak domestic demand and as a result entrepreneurial firms focus on export of software and services for growth. During recent years more than 75 % of the revenues of Indian software and services industry were from export earnings while the domestic market remains small and relatively underdeveloped.

Insert figure 3 here

3.3 Related and Supporting Industries

Internationally competitive related and supporting industries or institutions provide a strong base for innovation, knowledge sharing and technology development (Porter, 1990). The software and services industry broadly consists of three segments; hardware, software and services and information technology enabled services which rely and draw from each other for growth and development and being knowledge based industries their links with the education sector is also critical.

In the case of China, a well established and growing hardware industry provides the main platform for the development and growth of its software services industry and IT enabled services. The larger penetration of personal computers and internet lines in China (Table 1) is a major market segment for its hardware industry which in turn increases demand for the software industry. Kharbanda & Suman (2002) point out that application software consisting of accounting software, word processing packages, translation tools, antivirus developments and publishing software is a dominant segment of China's IT services enterprises and account for about two thirds of the software market. Thus, China's IT services sector is domestically oriented although in recent years the role of exports has been on the rise. Other related and supporting networks include the Chinese Academy of Sciences (CAS), a leading academic research institution in natural science, technological science and high-tech innovation which is frequently credited for the development of the country's IT industry. Founded in 1949, it has a total staff of over 58,000, 108 scientific research institutes, over 200 science and technology enterprises, and more than 20 supporting units.

By comparison, in India, the development of the IT services sector is based largely on private entrepreneurial ventures. And because the domestic market for IT services remains underdeveloped, the industry started with a global orientation. India's IT services enterprises are mostly involved in custom application development and maintenance, and application outsourcing are the main service lines accounting for 88% of total software exports. The Financial sector comprising Banking, Financial Services and Insurance (BFSI) having 39% and 40% of share in software services and exports during 2002-03 and 2003-04 respectively is the main market segment followed by manufacturing and telecom equipment that represent 12% and 9% share in each year. The other emerging market segments are health care, telecom service providers, retail and government. The ITES industry consists of captive units and independent third party service providers. India's IT services sector is also strongly supported by world class educational institutions such as IITs, IIMs, IITMs and a large netwotk of private education and training providers such as Aptech, NIIT[3].

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[3] IIT (Indian Institute of Technology), IIM (Indian Institute of Management), IITM (Indian Institute of Technology and management) NIIT (National Institute of Information Technology).

3.4 Firm Strategy, Structure and Rivalry

Researchers agree in general that firm strategy is an important element of their overall performance (Parnell, 2000). However, little research exists on the link between strategy and performance of IT service providers specifically. In a recent study (Chadee & Pang, 2007) firm technology strategy has been linked to the performance. In this paper, we consider the strategy at the industry level rather than at the firm level.

The structure of the IT services sectors in India and China differs considerably which gives rise to different context in which firms are created, organised and managed, and the extent of domestic rivalry in the two countries. Currently, China is the largest offshore software outsourcing manufacturing base for Japan. In 2005 Japan contributed 59 % to China's export revenue of IT services followed by Europe and America (20%) and rest of Asia other than Japan (14%) (CSIA, 2006). By comparison North America represents 68% of India's export revenue of IT services followed by Europe (23 %) and Australasia (8%) during the same period (Nasscom, 2007). India's English language skills, colonial background, mixed economy with emphasis on western style private sector, and time zone gap are better suited for serving USA and UK markets. China has focussed on its domestic market primarily in order to exploit its strengths i.e. huge untapped domestic market, strong manufacturing base, local knowledge. The major destinations served by China and India are also driven by cultural and linguistic factors. But are they static or bound to change in future? In recent years, China has made substantial efforts in improving its English language competencies while India has ventured in China's markets (e.g. Japan).

India's IT services sector is considered to have a more mature and consolidated industry than China's. In India, there are about 1000 IT companies while in China there are about 8000. India's IT sector consists of a diverse competitive group of companies: top 5 companies contribute about 32% to export revenues with about 245 companies earning revenues between INR 1 billion to INR 10 billion. A strong rivalry also exists among IT services firms in India, particularly in the recruitment of IT professionals. Further, intense activities in mergers and acquisitions of foreign companies by Indian companies such as Infosys, TCS, Reliance and setting up of offshore centres by Global Giants like Microsoft, Oracle, SAP highlight the highly competitive environment the sector operates in India.

China's IT services sector consists of over 8000 companies but the majority are small workshop type operations and almost three fourth have less than 50 employees. Only 6 of the top 30 Chinese IT services companies have CMM[4] level 4 or 5 compared to all of the top 30 IT companies in India (Filippo et al., 2005). By Dec 2003, 275 Indian IT services firms had acquired quality certifications.

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[4] CMM stands for the Capability Maturity Model and is also known as SW-CMM as it relates to software companies.

These companies provide world class quality service and as a result, more than half of the Fortune 500 companies outsource their work to India. China's IT services sector is weaker than India's for software process capability, process experience, and management and marketing capabilities; but is stronger in lab research (Tschang & Xue, 2003). Overall, India's IT services sector is more mature and consolidated than China's.

3.5 Role of Government

According to Porter (1990) **t**he government acts as a catalyst and challenger and it is the firms that create competitive industries not the Governments. Govt policies create an environment in which industries operate and compete. Chadee and Kumar (2001) notes that governments may play role in assisting firms to gain international competitiveness through its policies that stimulate the market where it does not exist and that complement market where there is market failure. Since most IT service providers are from developing countries with week markets, role of the government has become critical for success.

Both India and China have government support in the form of supportive policy frameworks and infrastructure catalysing the efforts of academicians (China) and early entrepreneurial IT professionals (India). Tshang and Xue (2003) identify the origin of China's IT services industry in Universities, China's Academy of Sciences, and government owned companies around the end of the 1970s. With the beginning of China's Open Door Policy, in the mid 1980s several Professors and research fellows from Beijing Zhongguancum left their jobs and started their software companies producing Chinese word processing systems. Sensing the emergence of information technology era, the Chinese government actively supported the development of its software and integrated Circuit industry through various policies targeted specifically at the software and IT industry.

Similarly, in India, Government policy and a global vision have played a significant part in the development of the IT services sector but its growth is the result of pioneering companies in the field. The government of India started promoting software exports as early as 1970 through industry supportive policies. The severe balance of payment crisis of the early 1990s was a turning point in the history of the Indian economy that pushed India to undertake massive economic reforms in 1991. Consequently the industry experienced record breaking growth in software exports during 1990s followed by a boom in the international demand for software services

In general, China has always been a policy driven society where the central government plays a direct role in promoting its industries whereas the Indian government has played a supportive and catalyst role by providing the necessary environment for private entrepreneurs to develop and grow enterprises.

3.6 Chance Factors

The success of the IT services sectors in both China and India can also be attributed to several chance factors. The first, the sheer size of their populations and their relatively young demographic have worked in favour of both countries in becoming leading IT service providers. The IT services sector is labour intensive and only two countries, India and china, have the capacity to supply the scale of IT graduates required for achieving economies of scale in this industry. India's western style economic business system and practices grounded in the British legal system together with the use of English as the international business language is a major chance factor for India's IT services sector growth. Finally, the advent of Y2K which provided many of India's IT service providers with the opportunity to establish themselves as global leaders in their fields represented a turning point in the fortune of India's IT services sector.

**4. CONCLUSION AND MANAGEMENT IMPLICATIONS**

The trends in IT spending and outsourcing clearly signal that the international outsourcing of services is here to stay and grow in the foreseeable future. Although a number of countries have been active in the international outsourcing of IT services, India and China are emerging as two leading players in this rapidly growing market. So far, the two countries have developed complementary strengths and specialise in distinctively different segments and regions of the IT services markets. The information in Table 2 summarises some of the contrasting features of the IT services sectors in the two countries. India is predominantly export oriented with the majority of its business in USA and Europe while its domestic IT services market remains underdeveloped. By comparison, China's IT services market has developed on the back of a strong domestic IT hardware manufacturing industry while its offshore activities remain negligible. Given their complementary market orientations, both countries can benefit from partnering with each other.

Competition between the two giants of this industry is also likely to be altered. China's leading hardware industry and surging software development is putting pressure on Indian companies to develop a China strategy whereas the experience and maturity of India's IT services sector has prompted China to develop an India strategy. India strategy and China strategy are not only for multinationals but for China and India too to reap synergies from globalisation of trade. In this respect, China is more of an opportunity rather than a threat for India given their complementary strengths. India's strong software industry and China's strong hardware industry may create a strong base for cooperation. India may tap into China's huge domestic software and services industry and serve Japan and South Korean markets through its China base whereas China may use Indian companies' European and US networks to enter these markets in an effective way to sell IT hardware. Although 'cooperating to compete'(Chetty & Wilson, 2003; Dayasindhu, 2002; Oum et al., 2004; Yue-Ming, 2005; Zineldin, 2004) is a viable strategy for the two countries, a number of issues need to be

addressed before this becomes reality. First, the Chinese IT industry needs to go through a restructuring and consolidation as it is still too fragment. Government regulation to control piracy needs to be addressed. On the Indian side, bureaucracy and red tape needs to be addressed and economic liberalisation needs to be more fully embraced. Both countries need to improve the quality of their human capital to remain internationally competitive.

This paper may sensitise the management practioners in India and China for the emerging opportunity to collaborate for competing in international markets. The paper highlights competitive strengths and weaknesses of the IT services industry of the two countries which may help management practioners in formulating collaborative strategies.

Figure 1: Key Offshore Service Providers
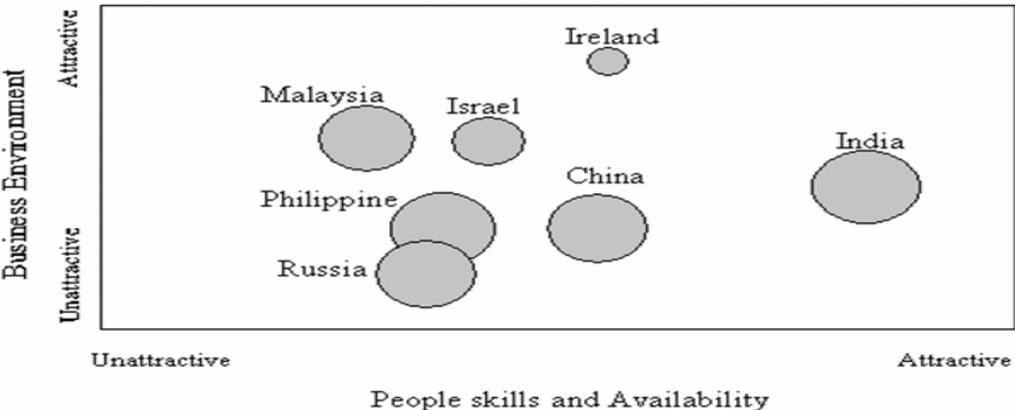
Notes: * People's skills and availability consists of cumulative business process experience and skills, labour force availability, education and language, and attrition rates. **Business environment consists of country environment, country infrastructure, cultural adoptability, and IPR security. *** Size of bubble represents financial structure attractiveness consisting of compensation costs, infrastructure costs, and tax and regulatory costs.
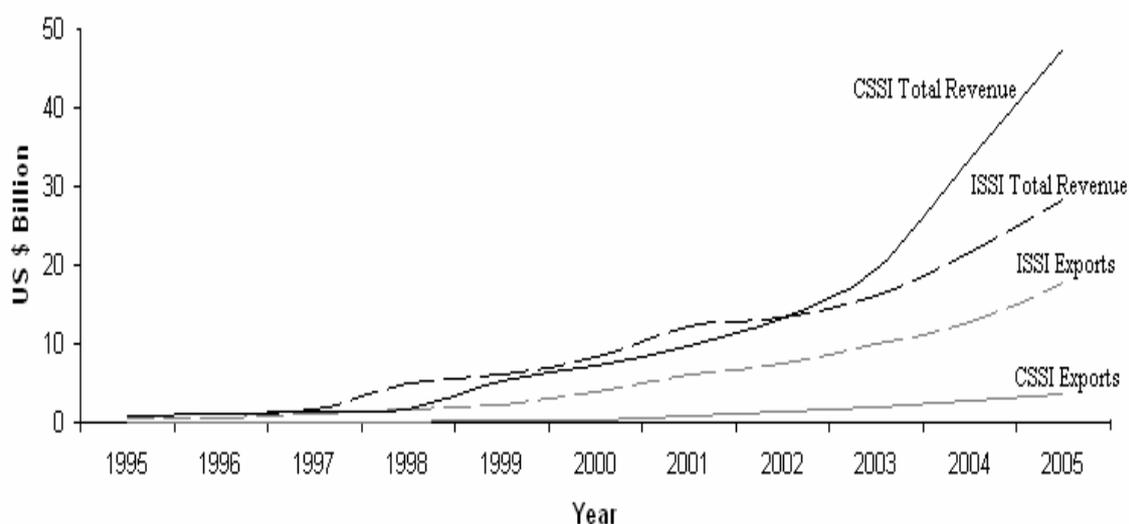
Source: Kearney (2004)

Figure 2: Porter's Diamond of Competitiveness for China and India
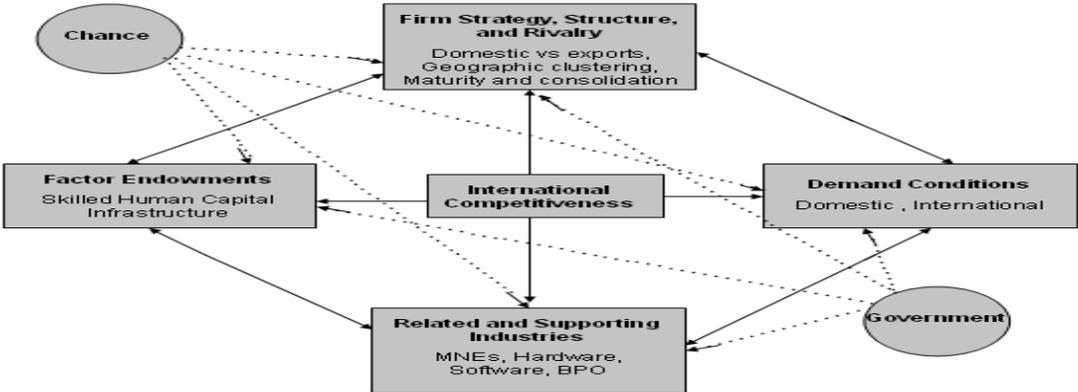
Source: (Porter, 1990b), Adapted

Figure 3: Sources of Revenue for India and China IT sector

Sources: Nasscom (2005a; 2007), CSIA (2006)

Notes: ISSI = Indian software and services industry, CSSI = Chinese software and services industry

Table 1: Salient Features of Chinese and Indian Economies

Indicator	India	China
Total Population (Million, 2005)	1101.6	1316.3
GDP (USD Billion, 2005)	731.0	1955.3
GDP Per Capita (USD, 2005)	663.3	1485.0
Services as % of GDP (2004)	53.2	31.9
Contribution of the industry to GDP (2005) (%)	4.8	2.1
Share in Global industry revenue (2005) (%)	3.6	5.9
CAGR (2000-2005) for the industry (%)	28	??
Ratio of export and domestic revenue (2005)	64:36	8:92
ICT Expenditure % of GDP (2004)	3.7	5.3
E Government Readiness Index	0.57	0.41
Internet Users (Million, Mid 2006)	5 (4.5%)	22.5 (9.4%)
Personal Computers per 1000 people (2004)	11	40
FDI Stocks (USD Billion, 2005)(Inflow / Outflow)	45.3 / 9.6	317.9 / 46.3
Reserves including Gold (USD Billion 2004)	140.076	622.945
USD FX Rate (2005)	44.1	8.1
HDI (2002) (Index value / World rank)	0.595 / 127	0.745 / 94
IT services total revenue (USD billion) (2005)	28.4	47.6
IT services export revenue (USD billion) (2005)	17.7	3.6

Sources:

http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/0,,menuPK:476823~pagePK:64165236~piPK:64165141~theSitePK:469372,00.

html, , http://www.internetworldstats.com/stats3.htm#asia, http://english.peopledaily.com.cn/, www.nasscom.in,

http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1 , CSIA (2006), Nasscom (2007).

Notes: 1. The source web links were assessed on XXXXX

2. GDP = Gross domestic product, CAGR = Combined annual growth rate, ICT = Information communication technologies, FDI = Foreign direct investment, HDI = Human development index.

Table 2: Competitive Strength of the IT Services Sectors of India and China

Competitive Dimension	India	China	Comments
1. Factor Endowment (a) Human Resources	 S	 W	India has highly skilled human capital, English language proficiency and reputable educational facilities. However the employability of human capital needs to be improved in both countries.
(b) Infrastructure • Physical • Technological • Financial	 W W S	 S S W	China dwarfs India on FDI parameters and her superior industrial infrastructure. India has adequate technology parks for software companies and also has a more efficient financial infrastructure. Overall, China has a more developed economy supported by higher quality infrastructure.
2. Demand Conditions: (a) Offshore Demand (b) Domestic Demand	 S W	 W S	China has a large and buoyant domestic market due to its strong manufacturing sector. There is strong domestic demand for software in Mandarin. India has an underdeveloped domestic market and focuses on offshore markets mostly in US and Europe.
3. Related & Supporting Industries	S	S	Strong industrial agglomeration in both countries to support the development of IT service providers.
4. Strategy, Structure and Rivalry (a) Growth strategy (b) Industry structure (c) rivalry	 S S S	 S W W	Chinese growth derived from domestic demand while India focuses on export markets.. India has a consolidated industry with large global companies leading in the field. China's has many small firms and lacks the necessary scale and structure to become serious global players. With two decades of experience Indian industry is more mature with fierce competition and rivalry among firms. China has a large number of very small firms with low process capabilities and rivalry.
5. Government	M	S	In China the government is pro active in developing industry through direct intervention. Indian government acts as catalyst in supporting industry by providing the necessary environment for firms to grow.
6. Chance Factors	S	M	Y2K, English language proficiency and the western style business practices based on English law played a major role in the growth of the Indian IT services sector. The abundance of human resources is a chance factor for both countries.

Note: S = Strong; M = Moderate; W = Weak

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