

Strategies Governing Software Industries in India

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ABSTRACT

Knowledge potential in India has been a major factor for its success in the software industry. To meet the man power requirements, an explosive growth in technical education was planned and is being executed. Timely policy initiatives of the government of India helped in attracting multinational companies to India to set up development centres. Thrust has been given to develop infrastructure facilities for the accelerated growth of the IT- BPO sector. This paper is concerned with a study of the factors governing the successful growth of the IT Industry in India.

Key words: Indian Software Industry, Information Technology Parks, Technical Education

I. INTRODUCTION

During the last two decades, the Indian Information Technology – Business Process Outsourcing (IT-BPO) sector has advanced to the status of a vital industrial sector of international significance and India has built up a reputation that it is one of the world's strongest software nations. The major contributor to India's software success has been the software services sector. Using a highly educated workforce with excellent English language competence as the major input with relatively little capital, Indian firms could satisfy the foreign clientele (mainly US and other industrialized countries in Western Europe) with cost effective IT solutions. Driving the sector's strong performance is more diversified geographic market exposure and continued expansion of the service portfolio, leading to steady growth in scale by Indian-origin service providers as well as Multinational Corporations (MNCs), having operations in India. Sustained growth amongst indigenous players is being complemented by a continued flow of MNC investments – reinforcing India's growing role in the new world technology order. Now India continues to be the 'nerve-centre' for global sourcing with over 2/3rd of the Fortune 500 and a majority of the Global 2000 firms leveraging global service delivery – now sourcing from India (NASSCOM, 2008). India based delivery continues to grow, driven by local firms reporting steady growth in large contract. While India's own Infosys, Tata Consultancy Services (TCS), Wipro, and Stayam are growing into the role of "global players", world's leading players are entering India in a big way. All major names such as Microsoft, Oracle, Sun Microsystems, Dell, IBM and SAP maintain a significant presence in India.

India offers a unique combination of attributes that has established it as the preferred off shore destination for IT-BPO. A large and growing talent pool, Sustained cost competitiveness, Keen emphasis on quality and security, Key Business Infrastructure facilities, Enabling Business Policy and Regulatory Environment, Enhanced value delivery are some of the factors. The visibly higher preference for India is driven by its unmatched superiority when measured across a range of parameters that determine the attractiveness of a sourcing location. This paper deals with the analysis of attributes that have contributed to the success of IT industry in India.

II. STATEMENT OF THE PROBLEM

India's software industry is one of the world's successful information technologies industries. Begun in 1974, it earned export revenue of \$64 billion in 2008, equal to 3.7% of global software services spending. It is expected to reach \$80 billion by 2010 (NASSCOM, 2008). There are over 900 software companies in India now employing nearly 2 million professionals in the IT sector. Companies such as Infosys, Tata Consultancy Services have over 80000 professionals and have operations in many countries around the globe. But many of the companies are in the Medium or Small scale sector and their business are mostly targeted to the requirements of US, Europe and Middle East.

Large Indian and Multinational companies offer wide varieties of services like consultancy services, Business Processes Outsourcing (BPO), Knowledge Process Outsourcing, Customised solutions in IT and IT Enabled Services (ITES), Engineering Design etc. During the period 2001-2006, India's share in global sourcing is estimated to have grown from 62 percent to 65

percent for IT and 39 per cent to 45 percent for BPO(Business Line, 2006). India currently holds a share of 12% in offshore engineering services, and is expected to corner 30% share in the \$1.1 trillion global spending on engineering services by 2020 (NASSCOM, 2007).

III. GROWTH OF INDIAN IT-BPO SECTOR

The growth of software companies has great impact on the Indian economy. A growth rate of above 8% was achieved by 2006-2007, mainly due to the contribution of the IT industry. The Indian software industry has grown from a mere \$150 million in 1991-1992 to \$64 billion at the end of 2007, registering an annual compound growth rate (ACGR) of about 28% for the past decade (RBI, 2006). The Positive market indicators and a strong track record support the optimism of the industry in achieving its aspired target of \$60 billion in software and services exports and \$73-75 billion in overall software and services revenues, by the year 2010. Figure 1 gives the growth of IT sector from 1997 to 2007.

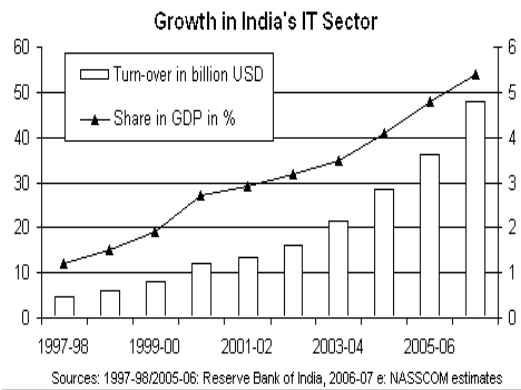


Figure 1: Growth of India's IT Sector and its Contribution to GDP in a Fiscal Year

According to an estimate by NASSCOM (National Association of Software and Services Companies), an association of over 1000 software companies operating in India, the major revenues in the software sector are generated by exporting IT services. Exports accounted for over \$42 billion out of \$52 billion turn-over in fiscal year 2007-2008. Software and services exports, accounting for over 98 per cent of the total exports, are expected to cross \$40.4 billion. US and UK remain the largest export markets (accounting for about 61 per cent and 18 per cent respectively). Banking, Financial Services and Insurance (BFSI) remains the largest vertical market for Indian IT-BPO exports, followed by High-technology and Telecom. These sectors together accounted for nearly 60 per cent of the Indian IT-BPO exports. Manufacturing and Retail followed, contributing 23 per cent to the aggregate. Other key segments include Media, Healthcare, Airlines and Transportation, and Utilities. Complementing the strong growth in IT services and BPO exports, is the continued growth across product development and engineering services, which also reflects India's increasing role in global technology IP creation. Export revenues from these relatively high-value-added services such as engineering and R&D, offshore product development and made-in-India software products have grown about 29 per cent, and reached \$6.4 billion in fiscal year 2007-2008. Technology adoption in the domestic market also reported steady gains in 2007. This segment crossed \$13 billion in fiscal year 2007-2008, reporting healthy growth across all key segments. Hardware remains the largest segment of the domestic market, and has grown over 40 per cent in fiscal year 2007-2008(NASSCOM News line, 2008).

The NASSCOM Survey (NASSCOM News line, 2008) has projected that the overall software and services revenues will increase by 21-24 percent to touch USD 50 billion in FY 08-09. The reversal in Rupee appreciation is expected to lead to higher INR revenue growth figures during the year. At the same time, the focus by the Indian IT-BPO industry on cost and productivity in the recessionary conditions are expected to lead to higher demand for offshore services. Domestic IT services investments are estimated to be growing at about 43 per cent in fiscal year 2007-2008, and are showing strong signs of increasing sophistication as building enterprise IT infrastructures and applications, networking and communication become key priorities for India Inc. Software and BPO spending growth in the domestic market is being supported by increasing adoption, and is expected to grow by over 37 per cent and 43 per cent, respectively. With several large Indian enterprises now counted in the league of multinationals and often in head-on competition with the latter – in India as well as overseas, their technology related demands (in terms of value and scope) are evolving rapidly – in order to deliver world-class services. Table 1 gives the share of export and domestic market from 2005 to 2008.

TABLE.1

EARNING OF IT SECTOR IN \$ BILLION

Fiscal year	2005-06	2006-07	2007-08
Export-software and Services	15.2	18.1	23
Export-IT Enabled services	7.3	13.2	16
Domestic Market	6.0	9.1	14
Total	28.5	40.4	53

III. OBJECTIVES OF THE STUDY

The major objective of this study is to analyze the attributes for the success of software industries in India.

A. MAJOR ATTRIBUTES FOR SUCCESS

i). Knowledge support in IT sector

With over half of the population of India aged less than 25 years; India's young demographic profile is a unique and an inherent advantage. This is complemented by a vast network of academic infrastructure and the unmatched mix and scale of educated, English-speaking talent. The intake capacity of the Indian technical education system has increased over the years. From 337 institutions in 1990, the number increased to 4884 institutions in 2008. As of 2007-2008, the total intake capacity in Government approved institutions is 653,290 students in the 1658 undergraduate degree engineering institutions, 1,21867 students in the 1150 Management institutions, 70513 students in the 1017 MCA institutions, 5272 students in the 81 Hotel Management and Catering Technology (HMCT) degree institutions, 52334 students in the 854 Pharmacy degree institutions, 4543 students in the 116 Architecture institutions and 650 students in the 9 Fine Arts institutions, making a grand total of 8,42,068 intake in 4707 technical institutions. The intake capacities in different courses in 2007 and 2008 are given in Table II. With India having the largest number of technical degree holders passing out of institutions, All India Council of Technical Education (AICTE), the regulatory body is taking efforts to maintain standards in curriculum and Faculty development. Many proposals and suggestions are reported

to improve the status of technical education in India[6,7]. Table III gives the details of intake in past five years

TABLE. II

ADMISSIONS TO TECHNICAL DEGREE COURSES IN 2006 AND 2007

COURSES	INTAKE CAPACITY		NUMBER OF INSTITUTIONS	
	2006-2007	2007-2008	2006-2007	2007-2008
ENGG: DEGREE	627082	653290	1617	1658
MBA	104084	121867	1150	1150
MCA	56004	70513	999	1017
HMCT	5229	5272	80	81
ARCHITECTURE	4707	4543	116	116
PHARMACY	44476	52334	736	854
FINE ARTS	650	650	9	9

TABLE III

ADMISSION TO ENGINEERING DEGREE COURSES IN LAST FIVE YEARS

YEAR	NO.OF ENGINEERING INSTITUTIONS	INTAKE CAPACITY
2003-2004	1200	401791
2004-2005	1208	464743
2005-2006	1475	503250
2006-2007	1617	627082
2007-2008	1658	653290

Apart from the impressive statistics above, the Indian IT-BPO sector has taken the lead in ensuring that requisite remedial actions are undertaken to avoid any form of a talent crisis. Training has become a regular and significant component in the induction process of all IT-BPO firms. Several firms have also established dedicated facilities and teams, for employee skill enhancement initiatives. The software industry is also working with the University Grants

Commission and the All India Council for Technical Education, to encourage and facilitate greater industry interaction, thus helping them share relevant feedback, stay updated on developments in the industry and giving them an opportunity to incorporate positive changes to their curriculum and pedagogy. Further, a chain of 'finishing schools' are set-up, to supplement the graduate education attained by the next layer of candidates considered unsuitable for direct employment in the IT sector. These initiatives are believed to be sufficient to address any potential supply gaps in the medium-term.

ii) Cost competitiveness

India has a strong track record of delivering a significant cost advantage, with clients' regularly reporting savings of 25-50 percent over the original cost base. First, the absolute cost advantage, vis-à-vis other key markets is actually increasing. A 10-15 percent wage inflation in India amounts to a lower dollar value increase in the wage bill, compared to the 3-4 percent average wage inflation in the developed countries. Secondly, there is still scope for further lowering infrastructure and overhead costs. In spite of the rapid decline in telecom costs in India, they are still not at internationally competitive levels. Finally, there is scope for further leveraging operational levers to drive efficiencies in the organization. A detailed industry benchmarking exercise, underway since 2005, has revealed that there is wide variation in the internal practices adopted across the industry, and suggests that the adoption of industry best-practices can further enhance operational excellence in Indian IT-BPO firms. This is also demonstrated by the performance of some of the best-in-class players (Pai, 2006). Contrary to concerns of rising wage inflation eroding the sustainability of India's cost-advantage, especially over the past two years, leading players have managed to grow at an above average rate – while sustaining their high levels of profitability.

iii) Emphasis on quality and information security

Demonstrated process quality and expertise in service delivery has been a key factor driving India's sustained leadership in global service delivery. Since the inception of the industry in India, players within the country have been focusing on quality initiatives, to align themselves with international standards. Over the years, the industry has built robust processes and procedures to offer world class IT software and technology related services. Today, India-based centers (both Indian firms as well as MNC-owned captives) constitute the largest number of quality certifications achieved by any single country. As of December 2006, over 440 Indian companies had acquired quality certifications with 90 companies certified at SEI CMM Level 5 – higher than any other country in the world. The Indian IT-BPO sector is committed to extending its unmatched reputation in quality to information security and is working on a four-pronged program to achieve this objective. This comprises: a) engaging key stakeholders (policy makers, industry players, enforcement agencies, etc.) to build a common understanding of the key issues relating to information security –in the context of global service delivery; b) educating industry constituents about developments in information security policies and practices; c) enactment of policy reform required to ensure compliance; and d) assisting in the effective enforcement of policy frameworks by encouraging the practice of periodic security audits and certification, developing and maintaining an incident response database and facilitating greater cooperation with enforcement agencies. These efforts have been endorsed by customer organizations and by representatives of independent regulatory bodies who have visited the operations of several IT-BPO firms and have found the information security environment in India to match and often exceed the levels in their own home-countries. Notwithstanding the strong track record, Indian

IT-BPO firms and the authorities are aware that vulnerability of information is a global problem and efforts towards minimizing these risks need to be continuous and constantly enhanced.

The National Skills Registry and the Cyber-labs initiatives launched over the past few years are now running successfully and the industry proposes to consolidate these efforts by establishing a Self-Regulatory-Organization that will identify a basic set of security and privacy standards, that member companies will be expected to adhere to. The Data Security Council of India (DSCI) was launched in 2007 to institutionalize efforts to further enhance the information security environment in India.

In the area of Security, NASSCOM's National Skills Registry had gained ground, drawing 2.36 lakh registrations and 57 companies. The target was to achieve 500,000 registrations by December 2008. On the cyber training front, four cyber labs have become operational in Mumbai, Pune, Thane and Bangalore. A Cyber Security Research Centre has been launched at Chandigarh in partnership with the Chandigarh Administration and Punjab Engineering College. Over 4,300 officers and prosecutors had been trained by February, 2008.

The Data Security Council of India (DSCI) has become fully operational with an office set up in Delhi. While in the short term the DSCI was looking at releasing a legal guidance document for SMEs, creating Security Forum chapters in seven Indian cities and launching special interest groups on various horizontal subjects, in the long term the aim was to improve the quality of data security practices and procedures, improve collaboration with international stake holders and provide certification in at least 2-3 different aspects related to Data Security.

NASSCOM's Global Trade Development Program (GTDP) meanwhile has increased its focus on the US and the issues impacting India. It had also begun developing new markets such as Japan and stepped up trade activity by penning new agreements with the European Union

iv) Rapid growth in key business infrastructure

India achieved rapid growth in availability of high quality telecommunication connectivity across the country. Over a span of little over a decade, the Indian telecom market has evolved from a public sector monopoly to thriving free-market competition. Carefully crafted policy has helped drive a balanced agenda for the sector by influencing a decline in pricing and increased affordability on one hand and increasing access penetration and usage on the other, resulting in strong growth. The IT-BPO sector has been a key beneficiary, with the cost of international connectivity declining rapidly and service level quality improving significantly. However, the impact of the telecom revolution on India's development is not restricted to providing international bandwidth / connectivity alone. In fact, the Indian telecom sector has emerged as an example of policy reform driving wide-reaching developmental gains in the country. Telecom penetration in the country has increased from a modest 3.6 percent in 2001 to over 14 percent in 2007, and is targeted to reach to 29.6 percent by 2009. While the wire-line segment continues to witness steady growth, rapid adoption of wireless telephony has made India the fastest growing market in the segment. At the end of 2007, there were over 200 million wireless subscribers in India, from barely 4 million in 2001. The total number of subscribers, including wire line is now over 280 million.

In addition to strong telecom links; cities across the country have witnessed steady growth in office facilities, hotels and other supporting business infrastructure matching global standards.

Importantly, this growth is taking place, not only in existing urban centers – but increasingly in satellite towns and smaller cities, with IT-BPO firms driving much of the demand. Deregulation of the aviation sector has provided a significant fillip to the availability and affordability of airline travel which in turn has also helped to add a larger number to the list of delivery locations for potential expansion. The recent moves to privatize the development and maintenance of airports in key metros, and to develop green field airports in 35 other non-metros are expected to further improve access to domestic air travel.

Recognizing that availability of adequate, quality business and social infrastructure is imperative for continued growth of industry and for overall socio-economic development, the Government has made infrastructure creation a key priority in its planning efforts. It is estimated that India will need investments of over \$300 billion in various elements of infrastructure development. Given the magnitude of investments required, and the strong health of the private sector (vis-à-vis its position at the time of India's independence) – the Government is actively seeking public-private-partnerships to play a greater role in infrastructure development. Public and private enterprise has contributed by building the required capacities of key business infrastructure, helping this sector enjoy world-class facilities and services. Since the response from the private sector (domestic as well as foreign players) has been promising, the Government is working towards ensuring an enabling policy environment to sustain the momentum.

v) Supporting business policy and regulatory environment

The enabling business policy and regulatory environment has played a critical role in the rapid growth of the Indian IT-BPO sector. Policy makers in India have laid special emphasis on

encouraging foreign participation in the IT-BPO sector – recognizing its importance not only as a source of financial capital but also as a facilitator of knowledge and technology transfer. Consequently, IT-BPO firms enjoy minimal regulatory and policy restrictions along with a broad range of fiscal and procedural incentives offered by the central as well as individual State Governments. These measures have earned wide appreciation, which is best exemplified in the fact that several other nations are trying to emulate the policy environment that has helped develop the IT-BPO sector in India.

The Software Technology Parks of India (STPI) scheme has played a pivotal role in catalyzing the growth of this sector and supporting its rapid proliferation across the country. STPI is an autonomous organization under the Department of Information Technology, Ministry of Communications and Information Technology, Government of India. Presently, more than 800 Software companies are registered under the Umbrella of STPI across the country and 90% of Software Exports from India are recorded under STPI. The role of STPI is to promote Software Exports from India and facilitate Data com Services as needed by IT industry through State-of-the-art Communication Infrastructure facilities. STPI is a Licensed International Data com Services Provider and caters to specifically to the IT but also to the ISP markets in general. The operations are wide spread with presence in more than 46 STPI locations across the country including all the big cities in India. STPI is providing Data com services through Satellite as well as fiber to its customers. STPI has set up more than 50 Satellite based gateways across the country and is handling the delivery of about 300 Mbps of data to about 23 countries. The gateways are operated on Intelsat Series, Thaicom, Singtel, Apstar, Asiasat etc. satellites. STPI

has Agreements/ Under-standing with various International Carriers of providing the IPLC services in many countries across the globe.

Another initiative of Government is the tax holiday which has helped to attract much needed investments (MNC and Indian) in the sector and the virtual model has allowed firms to avail benefits without constraints on their choice of location – encouraging entrepreneurship and integrated growth. Although the existing term of the STPI scheme is nearing its end (in 2009) the Government intends to continue the benefits offered, by introducing similar provisions in the Special Economic Zones (SEZ) policy – and further relaxing the minimum area requirements (to qualify for an SEZ status), for the IT-BPO sector.

While welcoming the government's continued commitment to supporting the growth of the IT-BPO sector, experts have cautioned that losing the universal nature of the STPI is a regressive step that is likely to have a negative impact on the growth of the small and medium enterprises (SMEs) in the sector. It is argued that unlike the larger companies, SMEs will not have the capacity to build or occupy independent SEZ units, and will have to settle for sub-optimal (and likely more expensive) alternatives of renting parts of a large multi-product SEZ. The industry has voiced these concerns and is encouraged by the appreciative stance adopted by the government on this matter. Other aspects of continuing policy reform that will aid the sectors growth include the rationalization of international taxation policies, mutual trade agreements with partner nations, and a proactive and positive stance on international free trade.

vi) Enhanced value delivery

Indian IT-BPO is at the forefront of enhancing the global sourcing value proposition. The maturing supplier landscape in India is also helping buyers to explore means of enhancing the global sourcing proposition, by delivering additional business and strategic value beyond the established primary benefits. Indian IT-BPO is delivering this additional value through a combination of improvements in quality, speed and flexibility, productivity and delivery innovation. India-based IT-BPO companies are making focused investments in capability building across domain, process, technology expertise coupled with enhanced flexibility to deliver on this enhanced proposition.

IV CONCLUSION

India is developing as the major destination for Knowledge and Business process Outsourcing. Experiences from the past few years, the drivers for global sourcing are likely to remain strong in the near future. Most environmental factors affecting global sourcing also look favorable despite concerns of a possible economic slowdown in US. Global sourcing penetration is estimated to be growing at nearly four times the rate of absolute technology spends. India is uniquely positioned to take advantage of these opportunities. Key stakeholders need to continue working in a focused and coordinated manner, for India to realize its potential. Indian IT-BPO companies need to maintain a keen emphasis on ensuring that they continue to deliver the core benefits as well as enhance the overall value proposition for their clients.

Continued effort is required to improve the quality of the graduates to equip them to be suitable for employment in IT BPO sector. The interaction between industries and institutions should to be strengthened. Imaginative ways should be sought for and implemented to develop infrastructure in a big way to make India successful in the knowledge economy race.

Significant shift towards more market-facing breakthrough and enhancing innovations will provide the necessary revenue inputs in the medium to long-term. These could include penetrating new customer segments in intellectual asset-intensive service lines like engineering and R&D services, creating IP in emerging technology areas, developing and codifying specific domain expertise to target consulting and system integration services, and generating technical innovations to develop own standards for next generation of technologies.

REFERENCES

NASSCOM (2008), Strategic Review Report Feb 22, 2008.

Business Line (2006) "Off shore engineering services is the next big thing",

NASSCOM (2007): "Indian IT industry: NASSCOM Analysis", 2007

RBI (2006), "Reserve Bank of India Annual Report 2005-06", Mumbai.

NASSCOM News line (2008), "The Indian IT-BPO industry: NASSCOM outlines the road ahead" Issue No. 80, July 2008

Pai, M. A (2006) "Knowledge economy and higher Technical education" Current Science, Vol.91, July 2006

Rama, Rao (2007) "The status of Indian higher education: what is the way forward". The Indian journal of technical education Vol 30 Jan March 2007