Development of IT sector in India: Analysis of Reasons and Challenges

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Abstract

IT industry has changed the image of India in the global arena. Today's highly developed IT industry is the result of many external and internal factors which worked over a long period of time. This paper based on Secondary data tries to analyze the growth, features and reasons for the development of IT sector in India. Challenges faced by Indian IT sector too were manifold.

Key Words: IT industry, Software, Export, Employment.

Introduction

Today where the new 'mantra' for the development is 'Information Technology', this 'mantra' has changed the image of India in the global arena. Even if the results of development of IT in India are more visible after globalization, its development got rooted almost before 50 years. The computers and IT materials which were basically invented and designed to solve numerical problems as explained by Majumdar (2007) are facilitating the transition to a global society by encompassing all walks of our life. In the initial stages of IT revolution or computerization there was a fear of increased 'unemployment' and 'workers redundancy' but afterwards the same IT industry became a great employer.   Panchamukhi (2000, 840) noted this potential of IT industry and opined "*If the sectors of agriculture, knowledge and information industries are encouraged to grow in a consistent manner then the problems of poverty, unemployment can be solved*". Further as rightly observed by Unni and Rani (*2000)* IT allows leapfrogging which can help countries skip generations of technology and stages of growth and place them directly in a service-dominated economy**.** That's why even without having a fully matured manufacturing sector, India is experiencing shift in its economy due to its service sector development which is dominated by IT.

 A bird's view of development of IT in India

The industry was started during early 70's by Bombay-based conglomerates which entered the business by supplying programmers to global IT firms located overseas. During that time Indian economy was state-controlled and the state remained hostile to the software industry throughout the 1970s. Import tariffs were high (135% on

hardware and 100% on software) and software was not considered as an "industry", so that exporters were ineligible for bank finance. Government policy towards IT sector changed when Rajiv Gandhi became Prime Minister in 1984. His New Computer Policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software (reduced to 60%), recognition of software exports as a "delicensed industry", i.e., henceforth eligible for bank finance and freed from license-permit raj; permission for foreign firms to set up wholly-owned, export oriented units and a project to set up a chain of software parks that would offer infrastructure at below-market costs. These policies laid the foundation for the development of a world-class IT industry in India. In India, the software boom started in the late 1990s. Most of the Indian software companies at that time offered only limited software services such as banking and engineering software. The business software boom started with the emergence of Y2K problem, when a large number of skilled personnel were required to fulfill the mammoth database-correction demand in order to cope up with the advent of the new millennium.

IT industry's contribution to the key economic indicators

Considering the IT industry's contribution to the key economic indicators Sarkar and Mehta **(2005)** said that there is the emergence of 'New Economy'. It accounts for 1/5th of the total Indian exports. New jobs are created for technical persons; it is the major forex earner and attractor of FDI.

As per NASSCOM 2010 report, during 2009 the overall revenue received from IT-BPO industry was $ 69.4 bn. Out of which $47.5 bn was from exports and $ 21.9bn was from domestic market. Further for the year 2010 expected revenue is $73.1bn out of which $50.1 bn. is expected from exports and $23bn from domestic market. With respect to employment, in the year 2009, IT-BPO employed 2,200,000 directly. Out of which 958000 were employed in IT services, 738000 in BPO and 500000 in domestic market segment. Further for the year 2010 the estimated total direct employment is of 2,290,000 out of which 993000 in IT, 768000 in BPO and 525000 in domestic market. Table-1 furnishes the information regarding the growth of IT industry.

Despite the recent economic slowdown, India's IT-BPO sector displayed resilience to grow by 5.5 per cent India continues to take centre stage with 51% of total sourcing market. The industry has had a significant impact on the Indian economy with 30% of incremental export during 2005-09; providing employment to nearly 8 million people in ancillary industries; and spreading up to the industry to the tier 2 and 3 cities.

IT industry has turned out to be an aspiring industry for the young generation. IT industry with its different emerging branches employed both highly skilled youth in hardware and software sectors and people with less technical and formal education in ITES-BPO industry. Hence it has created employment opportunities for both highly skilled and formally graduated. Some other notable impact on employment are summarized by Kumar and Joseph(2005**)** apart from creating jobs software industry has provided opportunities for expanding the local base of entrepreneurship. Lesser initial start-up costs and insignificant economies of the scale, especially for services enterprises reduced the entry barriers and that induced many technical professionals to start their own. Further the industry helped to reduce the extent of the brain drain by creating rewarding employment opportunities within the country, a trend also supported by availability of venture capital to implement new ideas. The rise of the software industry had also prompted a number of non-resident Indians to return to start software ventures."

Notable features of Indian IT Industry:

Domination of software and BPO operations. Indian IT industry which includes the sub-sectors like Hardware, Software, ITES-BPO and recently KPO is highly dominated by software and BPO operations. The capital intensive nature of Hardware sector is found to be the reason for its declining share where as more of labor intensive nature of software industry and BPO is grooming in India. Software products attract no import duty whereas Hardware products, parts, and peripherals attract import duty ranging from five per cent to 40 per cent.

Upward movement in the value chain is another feature. Early IT sector growth was mainly with 'body shopping' or 'onsite' work which was considered to be in the lower level of the value chain. As Chakraborthy and Jayachandran (2001) put it, the on-site work was characterized by low skill, low-tech, low investments and low-return. But NASSCOM 2003 report visualize upward movement in the value chain and Indian companies offered services such as System interaction package implementation, IT outsourcing and IT consultancy.

Mainly Export driven: The fact observed by Heeks (1996) has not changed much till date and many other researchers like Chakraborthy and Jayachandran (2001), Varma and Sasikumar (2004), Sarkar and Mehta (2005) and others found excess export orientation in the Indian IT sector. The export direction is highly skewed towards U.S. about 60% and Europe about 20%.

Slowly developing domestic market: Despite IT industry being export driven, the glimpses of slowly growing domestic market can be visualized through the development of SOHO (small offices and home offices), banking and E-governance initiatives.

Increasing quality of the products and services: As Indian companies are acquiring global nature as indicated by Bajpai and Shastri they are adopting global practices and increasing the standard of quality. Further, following the global standards as Kumar and Joseph (2005) points out, many Indian companies equipped themselves with international certifications like ISO 9000, SEI level 5, CMM etc.

High-wage industry: Indian IT industry, specifically software industry is rewarding its employees with excellent pay and perks. This is inevitable to retain the short-supplied technical labor and avoid them from being grabbed by some other company.

Attracting Foreign Investment: As observed by Sarkar and Mehta (2005), IT industry is attracting foreign capital in three ways; first, direct FDI is attracted as MNCs start their own subsidiaries or through the joint venture; second FII's are investing heavily in stocks and equities of IT-BPO companies; and third Non-Resident Indians also are investing in Indian IT sector by starting their own units.

Reasons for the Growth of IT industry:

There are various reasons for the growth of IT industry in India. Some were more visible and spontaneous and others were much subtle and in a very slow but steady manner paved way for the development of IT which is now experienced.

Many considered this as a 'demographic dividend 'for India. Availability of manpower at a comparative cheap price was the main factor according to the researchers. India's most prized resource is its readily available technical work force. India has the second largest English-speaking scientific professionals in the world, second only to the U.S. It is estimated that India has over 4 million technical workers, over 1,832 educational institutions and polytechnics, which train more than 67,785 computer software professionals every year. The enormous base of skilled manpower is a major draw for global customers. India provides IT services at one-tenth the price. No wonder more and more companies are basing their operations in India.

Some quote "Indian Education System" which places strong emphasis on mathematics and science, resulting in a large number of science and engineering graduates. Mastery over quantitative concepts coupled with English proficiency has resulted in a skill set that has enabled India to reap the benefits of the current international demand for IT. 'Infrastructure' development too cannot be neglected **as** Indian IT industry gained immensely from the availability of a robust infrastructure (telecom, power and roads) in the country. NASSCOM-Mercer (2003) report recognizes the strong domain knowledge and global exposure along with the above said reasons. As per NASSCOM report Besides the Indian software companies, a number of multinational giants have also plunged into the India IT market. India is the hub of cheap and skilled software professionals, which are available in abundance. It helps the software companies to develop cost-effective business solutions for their clients. As a result, Indian software companies can place their products and services in the global market in the most competitive rate. This is the reason why India has been a favorite destination for outsourcing as well. Many multinational IT giants also have their offshore development centers in India.

But Kumar and Joseph (2005) mentions the governmental institutional measures like STPI policy and other liberalization policy. As Union Minister Jairam Ramesh explained, the role of Indian government's policies cannot be neglected. It may be the highly subsidized education in India because of which many IIT and Engineering professionals were generated. As Indian economy couldn't absorb the excess 'educated' 'technical, and 'professional' manpower created by our education system, the brain drain that was allowed especially to U.S. made

Indians to dominate the Silicon Valley. Then the return of those NRI's powered with money, networking ability, prestige and technology started their units here. Further the liberalization process, establishment of STPI and the IT policy made them to excel along with the MNCs.

Challenges faced by Indian IT Industry

Still this growth is not free from some inherent problems and criticisms**.**

Sustainability of this growth itself is questioned by the researchers for several reasons.

'Too much export orientation' besides the composition and direction is a cause of concern. Extreme export orientation which inherently succumbed to international pressures is highly volatile. It requires diversification in terms of product structure and destination too. Because even today our 60% of the software export is to U.S. Already 2009 and 2010 experienced the surge due to the U.S. crisis.

'Excess dependence on Government concessions' **as** Magazine (2008) reports "despite the various advantages of the STPI policy and its evident success, a major point of contention is that the STPI policy was the inbuilt "Sunset Clause" which stipulates that all incentives offered under the policy will cease to exist s of March 31, 2009 which has recently been extended to March 2010. Any change in STPI policy will lead to the drastic decline in the cost advantage". Even if the STPI policy has been extended for further a year due to the recession definitely one or the other day this provision will be removed.

'Declining technical efficiency' is explored by Reddy and Bhat **(**2007**)**. There lies huge gap between actual and potential performance. On n average the Indian software industry is utilizing less than 50% of their potentiality. The average technical efficiency of Indian software companies recorded highest at 45.22% in 1996 and it declined thereafter. Further they found more of a negative effect on the efficiency of software companies in India due to deregulation.

'Inadequate attention to the domestic market' as Kumar and Joseph (2005) observed, the Enclave nature of the operation of IT industry generated little knowledge spill over for the domestic economy.

'Emerging competitors' like Ireland, Canada, China, Mexico, Russia, Philippines, Thailand and other countries are in the race. It is probing serious threat to the Indian IT industry. Because attrition pushing up the manpower cost which is eroding the cost advantages and other countries are becoming comparatively cheap.

'Problem of attrition and shortage of manpower' is haunting IT industry. After recession again it reached double digit. Shifting of companies from employees in search of better salary, status, growth opportunities and other reason is quiet common. This is increasing the costs of the firms in two ways. To retain the employees firms have to increase their expenditure on pay and perks at another side attrition leads to increased HR costs for further recruitment, training etc. Already Indian IT industry is experiencing the shortage of technical manpower. And as per NASSCOM the shortage is of 2 million for the year 2008.

Further IT is criticized for creating and increasing the 'digital divide' based on

 Region, gender and socio-cultural norms.

Even if as argued by researchers ICT products and services are inherently equalizing tools still the inherent bias to the access and employment opportunities leads to the inequalities. Then ICT enlarges the 'digital divide'.

'Regional divide' increased as Indian IT industry is highly concentrated and clustered around metropolitan cities and suburbs as Varma and Sasikumar (2004) , Kumar and Joseph (2005) found in their studies. IT is developed comparatively more in Southern and western regions. Due to clustering in five cities, Bangalore, Hyderabad, Chennai, Mumbai and Delhi NCR account for 80.5% of the top companies. Jairam Ramesh in his address delivered to the NASSCOM executive board puts forth these bothersome features of glittering IT industry. The slow geographical spread of IT as only 7 cities Bangalore(33%), Delhi(15%), Chennai(14%), Hyderabad(13%), Pune(10%) , Mumbai(8%) and Kolkata(2%) accounted 95% of the total exports and another 7 cities accounted for

3% and four cities accounted for another 0.6%. Furthermore, SEZ appear to be increasing the digital divide as out of total 142 notified SEZs 86 were for IT and ITES. And of these 86, 26 in Andhra Pradesh, 14 in Tamil Nadu, 13 in Karnataka and 10 in Maharashtra, making total of 80% in these four states alone.

'Gender-divide' is already evident as Heeks (1996), Vijaybhaskar et al (2001), Varma and Sasikumar (2004) and many others found male domination in Indian IT industry. Even if NASSCOM claims increasing women employment in IT industry and expects to reach 45:65 male-female ratio at the entry level jobs, that too accepts that less than 4% reach the top level. Top positions are dominated by men whereas lower entry level jobs are filled with women. Especially BPO has seen 60:40 ratio but this sub-sector is in the lower strata. Hence jobs with more status and pay and technical expertise are with men and jobs with less status, pay and technical knowledge are with women.

'Rural-Urban divide' has been widened as Vasanthi and Upadhya (2008) Sarkar and Mehta (2005) explains urban people are dominating the industry. Rural people lacking the required language proficiency, soft skills and access to ICT products, education and training are not making their way to this high-wage industry.

'Division based on caste and other socio-cultural norms too enlarged' Vasanthi and Upadhya et.al. Upadhya (2008) and Vijay bhaskar et.al. found the employment in IT industry is not as meritocratic and equal to all as publicized. There is a more bias in favor of high and middle caste and upper and middle class society. As requisite soft skills require some socio-cultural and economic background they witness inherent bias in the supply pool of labor itself.

'Wage inequality' is evident between IT and non-IT jobs, Within IT again in its sub-sectors like software and BPO, further within sector based on size and form of the companies, education and expertise of the worker pay differentiates. Large companies, MNCs and foreign subsidiaries pay more to the highly qualified and expert workers. Biradar (2009) explains de-skilling (raised unemployment among the illiterates and literates at lower levels), re-skilling (withdrawal of labour force in favor of educational institutions to acquire more knowledge and skills), skill-polarisation (better career and jobs for the skilled workers and leaving the rest of the workforce in dead-end low paid jobs) is witnessed.

IT not considered being the reliable employer:

Even if employment opportunities are created by IT industry compared to the total work force IT employment is not significant. But it has changed the whole set of employment conditions, recruitment pattern, work conditions etc. IT employs minimal as found by Heeks (1996) and Mukherjee (2008) only 0.08% of the aggregate workforce. The remarkable changes to urban lifestyle and landscape it has fostered are responsible for its tremendous visibility nationally and globally. IT employment has changed all the traditional employment patterns and conditions. Neither the industry provides 'employment security', nor do employees want to work for the same company till retirement. Basically IT jobs are considered to be 'Footloose industries' as framed by Ramesh (2009). The main change in the required character of workers today is along with the technical knowledge high level of adaptability and capacity to work in a team. The traditional qualifications of physical strength and individual work ability no longer suffice". There is no longer a guarantee of lifetime employment but lifetime employability is assured through continuous up gradation. The right kind of education in the knowledge society is a new form of security as employability is assured (Low, 2000) recent recession cleared how illusive the bubble was. Many of the employees lost their jobs and highly stressful pattern of work and typical work patterns leading to social and family tensions among employees. There were reports regarding increasing suicide cases among IT employees.

As many Indian companies are acquiring global companies 'Reverse off shoring' is witnessed. As reported by the media Indian companies are hiring aggressively, in US reversing the earlier trend. Tata Consultancy Services Limited, Software giant's Infosys and Wipro re-employing American workers in Indian outfits after training in India.

Doubts the contribution due to high opportunity cost:

Kumar and Joseph (2005), Joseph and Harilal (2001) doubts the contribution stated by the IT industry to the economy. As the government concessions based on which they are stating the revenue the loss of revenue to the

government due to the concessions and tax benefits has been not measured. Further as Joseph and Harilal et.al. Observed, there is an adverse effect on other sectors. As IT industry attracted the talent pool available in other sectors, professions and industries those sectors lost their best talent and IT is growing at the cost of other sectors development. IT development had a high 'opportunity cost' and it grabbed the best talent from other industries due to which others suffered a lot. Any movement of highly specialized personnel from high paying Global companies to domestic firms is impossible hence domestic economy suffers.

Conclusion

Whatever may be the challenges definitely IT industry has changed the whole scenario. Transforming it to be an 'equalizer' depends on government and social system changes, where access to ICT products and employment opportunities to be assured to all. Finally what Jairam Ramesh said in the NASSCOM Executive Board "Competitiveness, we have been led to believe, emanates from technology development. This is true to an extent. My own view has always been that it is technology application that in the long run leads to productivity gains. We have not paid adequate attention to this aspect of technology strategy and all that it entails. Technology is always embedded in a social context and unless we focus on the core, unless we always keep in mind the adage-technology is the answer but what was the question-we are liable to be disillusioned soon".

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Table-1 (Revenue in millions)

Year	Exports	Domestic Revenue	Total Revenue	Manpower	Revenue/Employee($)
1994	330,000	227.900	557.900,000	90,000	6198.5
1999	265,000	125000	3,900,000,000	200,000	19,500
2009	475000,000	219,000,000	69,400,000,000	2,200,000	-----NA--
2010(E)	501,000,000	230,000,000	73,100,000,000	2,290,000	-----NA--

Source- Nasscom and CMU Software Dataset ((1994 and 1999 data were collected by Arora and

Others)

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