Appendices

Box No.1.1

The chronological developments regarding the development of IT in India
1956-65; The beginning:
1956: The first digital computer comes to India, as the ISI in Kolkata installs a Hollerith Electronic Computers, HEC-2M, brought from England. It handled a number of scientific problems from all across the country including trajectory analysis for artillery cannons for the defense. It was, in fact, the first computer brought to Asia, outside of Japan.
1958: ISI installs the URAL digital computer brought from Russia. Both HEC-2M and URAL were used by ISI till 1964 when IBM installed the 1401.
1962: The Defense Ministry sets up a Computer Center under Major Balasubrahmanian from the Army Services Corps; he is also appointed as technical secretary of the Advisory Group on Computers in Defense.
1963: Under the guidance of the eminent economist, John K Galbraith, IIT-Kanpur becomes the first institute in India to start computer science education on an IBM 1620 system. Following Chinese War, the Government feels the need for a strong indigenous electronics base for security and national development. Sets up an Electronics Committee under the Chairmanship of Dr. Homi J. Bhaba.
1965: The Computer Society of India founded in Hyderabad with Prof. R. Narsimhan as the President.

1966-75 (Committees and Bodies)
1967: ECIL set up in Hyderabad with Dr. A.S.Rao as the Founding MD. 10 Honeywell computers installed at the Dept. of Statistics, Cabinet Secretariat. Computing starts in IIT-Bombay with the arrival of the Minsk II computer due to the effort of Prof. J.R.Isaac.
1968: The National Conference on Electronics Convened by the Electronics Committee wherein Vikram Sarabhai suggests the formation of a National Informatics Organization.
1969: IBM 1401 installed at Planning Commission under a grant from Ford Foundation.
1971: Electronics Commission constituted in February in Bombay under the Chairmansip of Prof. MGK Menon. The Information, Planning and Analysis Group of the Electronics Commission constituted in October in Bombay, with Dr. N.Sheshagiri as its Director.

1973: FERA regulations enacted by Indira Gandhi, which lead to the IBM’s exit from India.

1975: CMC incorporated as Computer Maintenance Corporation Pvt. Ltd.

1976-85 (The Big Blue Impact)

1976: The youngest head in DCM DP’s history, Shiv Nadar quits and with his six other friends starts Microcomp with a capital base of Rs. 1.75lakh. The company is rechristened Hindustan Computer Limited.

1977: National Informatics Center set up with UNDP assistance, Dr. N.Sheshagiri is director general.

1978: IBM exists from India on June 1, as it could not agree with FERA. According to many, the first era of Indian IT history comes to an end.

1980: Azim Premji makes Wipro enter into IT with India’s first computers.

1981: NR Narayan Murthy, launches a data center called Infosys in Pune for Rs. 10,000/-. Rajendra Pawar, Vijay Thadani and S. Rajendran start NIIT which later becomes synonymous with computer training in the country.

India’s first computerized coronary care unit for automatic monitoring of heart attack patients set up at the Lohia Hospital in Delhi.

St. Columbas School, New Delhi becomes the country’s first school to acquire a computer in 1981- the HCL System 2.

1983: Dy Governor of RBI appointed as the Chairman of the Rangrajan Committee, formed to advise the government on the computerization roadmap for nationalized banks. Though an agreement is signed between the employees union and the bank management, the National Organization of Banks expresses shock over the decision.

1984: New Computer Policy announced on November 19, days after Rajiv Gandhi assume power. For the first time, IT industry is accorded a special position. Among other things: Import duties for peripherals reduced, foreign equity participation was allowed, import of computers was liberalized and software got recognition as a separate
industry.
Government launches the CLASS (Computer Literacy and Studies in Schools) project with much fanfare.
Rajiv Gandhi invites Sam Pitroda from the US to set up the Center for Development of Telematics
1985: Rangarajan Committee Report on bank computerization is released. Stage I is to cover 2,500 branches and stage II, 6,000 branches.

1986-95 Framing Policies:
1986: Government announces the first software policy on Dec. 19; few key guidelines include making the export commitment of software exporters more stringent, defines software as ‘body shopping’ de-licenses the domestic industry, lays emphasis on training and open up import of software.
1987: The entry of the MNCs through a host of tie-ups with Indian partners: Apollo through HCL, Bull through PSI Systems and DEC through Hinditron Computers. Wipro becomes the first company to receive a DOE certificate for its products.
1988. NASSCOM formation by the efforts of Harish Mehta, Saurabh Srivastava, Prakash Ahuja and Shashi Bhatnagar. The move was spurred by software companies who were unhappy at the representation being provided by MAIT.
Vijaya bank becomes the first nationalized bank in the country to introduce ATMs.
1989: Jack Welch meets Sam Pitroda and Jairam Ramesh and the seeds of offshore outsourcing of software services to India were sown. GE’s tryst with India started in right earnest in 1991.
1990: India gets its first supercomputer as the CRAY XMP-14 installed at the Dept. of Meteorology.
The UK returned Dewang Mehta was appointed as Executive Director of Nasscom.
N. Vittal takes over from R Rajamani as DOE Secretary. He was instrumental in liberalization of the Indian computer industry. Reduction in telecom charges for satellite links, exemption from profit tax on software and services exports, zero exercise rates from software sold were some of his recommendations.
India refuses to sign NPT with the US restricting the sale of advanced computers to
India.

1993: Visa restrictions imposed by the US government. Instead of B1, now needed to take an H1-B which was much more difficult to get.

Indian software professionals brought under the ambit of the Immigration Act of 1990. Under the Act, they would have to pay social security taxes amounting to 21% to the US government.

1994: The National Telecom Policy, NTP-94, is announced. India’s first national information highway is inaugurated.

Wipro sets up R&D center in the US; Infosys too opens a US subsidiary.

HCL Hp delivers India’s first Pentium machine.

1995: India’s first Cyber Café opens at the Leela Kempinski in Mumbai.

Railway reservation system in India goes entirely online.

VSNL launches India’s first full Internet service for public access, the Gateway Internet Access Service (GIAS). It was available immediately from Bombay, Delhi, Calcutta and Madras and subsequently Pune and Bangalore. Users from other locations connected through the I-NET, an X.25 network accessed through leased lines or at a concessional dial-up rate from almost anywhere.

Apple Computer sets up a fully-owned Indian subsidiary.

Union Cabinet approves the formation of TRAI

1996-2005: Global Impact

1996: Rediff.com is launched by Ajit Balakrishnan and friends, it goes on to become India’s premier dotcom.

1997: MNCs overtake local brand as Compaq and IBM replace HCL HP and Wipro as leading PC vendors.

1998: The National IT Task Force formed by the Government of India. Its 108 recommendations are accepted in a record time.

C-DAC under Dr. Vijay Bhatkar builds PARAM 1000, India’s first indigenous super computer.

1999: Infosys becomes the first Indian company to get listed in the NASDAQ.

2001: Dewang Mehta passes away, Kiran Karnik takes over as Nasscom President.

2002: Nandan Nilekani takes over as Infosys CEO from Narayan Murthy.

Microsoft India kicks off project Shiksha in schools.
2003: Bharti signs landmark IT outsourcing deal with IBM.
Wipro acquires Spectramind in the biggest BPO deal till date.

2004: Both Chandrababu Naidu and SM Krishna lose elections; a big disappointment for all pro-IT policies, as the IT initiatives in the two states initially lose steam, best exemplified by the closing down of the Bangalore Action Task Force. Industry leaders concerned about Bangalore’s deteriorating infrastructure.

2005: The image of Indian BPO takes a major hit as data theft scandals hit the country one after the another- it started with Mphasis in Pune, continued with the Sun sting operation, then Intelnet and HSBC among others.
Wipro and TCs lead Indian Companies on an acquisition spree across the world.

(source: Dataquest December 2006 and Yojana Nov. 2007 Vol.51)
Software engineer: Job description and activities

A software engineer is responsible for the design and implementation of a variety of software solutions. They might be involved in the design and testing of anything from computers games and business applications, to operating systems and advanced software for the control of highly technical hardware and equipment. Once the system had been fully designed software engineers then test, debug, and maintain the systems.

The work undertaken by software engineers is generally of a highly complex and technical nature, and involves the application of computer science and mathematics in an environment which is constantly evolving as a result of technological advances. Depending on the type of organisation, software engineers can become either systems or applications specialists. They increasingly need to have knowledge of a variety of computer programming languages and applications; this is due to the wide variety of work that they can be involved in. Software engineering is one of the most popular professions in IT in terms of the numbers employed. Typical work activities will usually include some or all of the following:

- Analyzing user requirements;
- Researching, designing and writing new software programs;
- Testing new programs and fault finding;
- Evaluating the software and systems that make computers and hardware work;
- Developing existing programs by analyzing and identifying areas for modification;
- Integrating existing software products and getting incompatible platforms to work together;
- Investigating new technologies;
- Creating technical specifications and test plans;
- Working with computer coding languages;
- Writing operational documentation with technical authors;
- Maintaining systems by monitoring and correcting software defects;
- Working closely with other staff, such as project managers, graphic artists, designers, developers, systems analysts, and sales and marketing professionals;
- Consulting clients/colleagues concerning the maintenance and performance of software systems and asking questions to obtain information clarify details and implement information;
- Continually updating technical knowledge and skills by attending in-house and/or external courses, reading manuals and accessing new applications.
Karnatak University, Dharwad

Gender Inclusivity of IT Industry

Survey:2010

Type of Research: Research for Doctoral Program, Department of Economics, Karnataka University, Dharwad. Karnataka

Main Researcher: S. Annapoorna, Assistant Professor, Dept. of Economics, Karnatak Arts College, Dharwad.

Thank you for taking the time to complete this questionnaire. This questionnaire aims to analyse the gender inclusivity of the IT occupations at different levels.

Along with the diverse socio-economic background of the employees it tries to investigate the difference in the problems faced while entering this industry and the differences in the growth opportunities, plus the reasons for the attrition and work-life balance problems of IT employees.

There are three types of questions in the survey.

a. Some are open ended where just write directly.

b. Some have options where put √ mark or underline your option.

c. Depending on your circumstances, you may skip a question which is irrelevant to you.

Your answers and personal identity are confidential and will not be conveyed to any other party apart from the researcher. If you have any questions about the questionnaire, please contact S. Annapoorna at 9986741979 or email annapoorna.s754@gmail.com.

The results of this survey will be aggregative and presented for academic study. Your identity will not be revealed.
Personal information: Please underline your option.

1. Name:

2. Age:

3. Your qualification:

4. Name of the present Organization:

5. Present Department: HR / Mktg./ sales/ finance/ Admin/ Technical/ Board

6. Total years of service:

7. Tenure in the present company:

B. Educational issues:

8. Do you think that to enter to this industry medium of education must be English from the beginning? (Yes) (No)

9. Did you study in English medium since beginning? (Yes) (No)

10. Did you have access to appropriate information about career paths and opportunities in college? (Yes) (No)

C. Choice of the career and reasons

11. Did you decide to enter this profession? (Yes) (No)

12. What are the reasons for opting to this particular profession?
13. Do you have any relatives working in this same field? (Yes) (No)

14. “To enter and sustain in this IT field women must have relatives working in this sector”. (Yes) (No)
D. Problems faced at the entry level

15. How did you get your first placement? (Campus selection) (Employee Referral) (Open Advertisement) (Direct interview)

16. At the time of interview did you face any gender specific question? Yes / No

17. A. Did the recruitment committee consist of any women member? Yes / No
   B. If yes, did it help you in facing interview? (Yes, a lot) (Yes, to some extent) (No, not at all)

18. How did you get your present job? (Campus selection) (Employee Referral) (Open Advertisement) (Direct interview)

E. Working conditions at the office:

19. Are your colleagues’ gender sensitive? Yes / No

20. Does your organization have a formal policy for gender issue? Yes / No

21. Among all the facilities provided by your company which facilities you are using most?

22. Do you expect any additional facility from your company? Mention it.

23. A. Does your organization have special initiatives for attracting women. Yes / No
   B. If yes, please mention them.

24. How much is the salary per month received by you? (Below 20,000) (20,001-35,000)(35,001-55,000)(above 55,000)

25. Are you satisfied with your salary level? (Fully satisfied) (Some what satisfied?) (Not at all satisfied)
26. Do you think that the ‘project assignment’ is done only on the basis of merit, or gender implications influence
(Purely on merit) (Sometimes Gender influences) (always influenced by gender)

27. How much time do you spend on actual work per day?.
(Upto 8 hours), (8-10 hours,) (More than 10 hours)

28. For following questions enter ✓ in the relevant column.

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<thead>
<tr>
<th>Items</th>
<th>Always</th>
<th>Frequently</th>
<th>rarely</th>
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<tbody>
<tr>
<td>i. Do you negotiate with your boss about deadlines?</td>
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<tr>
<td>ii. Are you visible and audible in the team meetings and conferences?</td>
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<td>iii. Are you free to choose working hours?</td>
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<td>iv. Do you have to work for longer hours?</td>
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<td>v. Do you involve in informal interaction and networking at the workplace?</td>
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<td>vi. Do you help others in office by sharing the technical expertise?</td>
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<td>vii. Do you have time to participate in the recreational activities and workshops?</td>
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29. a. How many times were you selected for on-site assignment?

b. how many on-site assignments you have completed So far ?

c. Did you refuse any such on-site assignment/training opportunity?
d. Reasons for the refusal.

F. Career advancement opportunities:

30. How many promotions have you received so far?

31. What is the average period of such advancement achieved?

32. Would like to see your self in the technological positions or management positions.

(Technological)    (Managerial)    (Any department)

33. Do you find your present work challenging? Yes/No

34. Are you satisfied with your job?

(Fully satisfied)    (Moderately)    (Not at all)

35. Do you have any career development strategy? Yes / No

36. Are you a member of any e-group for upgrading skills and information? Yes / No

37. Do you feel overloaded at office?

(Yes, always)    (Yes, some times)    (No, not at all)

38. a. Is network essential to get promotion? Yes / No

    b. Do you have such network? Yes / No

    c. Whom your network consists of?

39. “Women themselves are the main reason for their career lag”

(Always)    (Most of the time)    (Rarely)

G. Appraisal system:

40. Does your company practice ‘performance rating’ on a curve? Yes / No

41. How many times your rating was low due to the other members inefficiency?

42. Do you feel that women’s qualities are not considered for grading? Yes / No
43. a. Does your company ‘Evaluation Committee” consist of any female member?

Yes / No

b. If yes, has it helped you? Yes / No

44. Do you feel that men find difficulty in reporting to a woman boss? Yes / No

45. Do you prefer a male boss or female boss?

(Male boss) (Female boss) (Neutral)

H. Attrition

46. Do you find more attrition among male or female?

(Among male) (Among female) (Equal)

47. How many companies you changed so far?

48. What were the reasons?

49. Do you have any plan of starting your own business in future Yes/No

50. “To achieve faster growth, shifting from one company to another is essential” Yes/No

I. Work-life balance

51. “Problem of work-life balance is faced only by women and not by men.” Yes / No

52. How do you manage the household activities at home?

(Self) (Both you and spouse) (Servant) (Parents) (Others)

53. Are you completely free to spend the money you earn? Yes / No

54. Have you purchased any ‘asset’ in your name? Yes / No

55. Who is the ‘role model’ for you in your work?

56. According to you which are the main impeding factors for your career growth?
57. Do you accept that IT is a ‘gender neutral’ industry? Yes / No.

58. Do you experience the guilty feeling that you are neglecting family or not taking proper attention of the family needs? Yes / No.

59. Do you feel that your profession gave you a social status? Yes / No

60. How is the attitude of family members to you?
   (Supportive)  (Unsupportive)

61. Any special experiences/ suggestions/comments that can be shared regarding the gender inclusivity of the IT industry.

Following questions are the basic questions of any social science research. For you it may be irrelevant but for social science researchers understanding the socio-economic background of the employees is must. Provide this information if you are comfortable with it but if answered, definitely this will be a great help for our research.

   a) Place of origin: (Rural) (Urban)

   b) Religion: (Hindu) (Muslim) (Christian) (Others)

   c) Caste: (SC) (ST) (OBC) (Others)

   d) Parental education and occupation:
      Father :
      Mother:
   e) Marital Status: ( Married) (Unmarried) (Live-in-relationship)

Thank You

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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 a 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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18. NASSCOM ANNUAL REPORT 2010

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<th>Domestic Revenue</th>
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<td>73,100,000,000</td>
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Source- Nasscom and CMU Software Dataset ((1994 and 1999 data were collected by Arora and Others)}
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Increasing Women Employment in IT Industry: An Analysis of Reasons

S. Annappoorna
Research Scholar
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Professor
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Dharwad

Abstract

Number of women employed in Indian IT industry is growing. Researchers found the industry’s picturization as ‘gender neutral’, social status, growth opportunities and lucrative salary are the attracting forces. NASSCOM reports and others found strong business case for employing women in the IT industry. This paper based on primary data explains the other reasons that are making more women to enter the IT industry. Due to emerging socio-cultural and industrial HR policies change, technical competence and confidence is increasing among women. Availability of career guidance at colleges, Campus selection method, existence of working relatives in the same industry, presence of women member in the recruitment committee, recruitment of non-technical personnel by the companies and increasing social acceptance of the women as software professional are the other factors which are increasing proportion of women in the Indian IT workforce.

Keywords
Women, IT, Software, NASSCOM, Employment.

Introduction

NASSCOM Mercer (2008) reports increasing employment of women in the Indian IT industry from 421,460 in 2006 to 670,984 in 2008. During 90’s the 20% of the total IT workforce was women, in the year 2010 NASSCOM-PWC (2010) reports it increased to 30% median. Som Mittal, NASSCOM Chairman, expected men-women ratio to reach 60:40 by 2010 in software segment and in ITES already it has crossed in favour of women i.e. 40:60. Number of women entering IT profession (Mallish, Ilavarasan and Vigneshwar (2009) rejects IT employees as professionals and consider them as workers) is increasing. According to NASSCOM-PWC (2010) women constitutes 37% median of the entry level workforce. Even if as Neetha (2009) and Gurumurthy (2003) found women employed in IT sector constitutes very small proportion of the overall employment of women, the study of women employment in IT industry is essential. Because in spite of IT industry in its nascent stage, considered to be important for women empowerment. According to Primo (2003), Pande (2004), Zimmy and Elias (2006) and Mitter (2003) women participation in terms of producer/employee is essential to get the power to influence and to avoid further marginalization due to ‘digital-divide’. Contrary to the developed nations, in developing countries women employment in ICT industry is increasing. This paper tries to analyse the reasons for increasing employment of women in the IT industry.

Objectives

Main purpose of the present study is to analyze the reasons for increasing women employment in the IT industry with in that specially in software companies.

Methodology

Present study utilizes both primary and secondary resources. Primary data has been collected through structured questionnaires, which were directly distributed to software employees at Bangalore, Pune, Hyderabad and Hubli. 128 employees responded. Based on simple averages, analysis has been done. NASSCOM Reports, Journals were used as secondary resources.

Reasons for the Increasing Number of Women

Basically there are two main reasons for increasing number of women in the IT industry. First, many women are aspiring for IT jobs and another is IT industry itself is realizing the strong business case for employing women.

a. Women are aspiring for IT job?

As Parikh and Sukhatme (2008) observed, number of women in engineering courses is increasing. Further most of them are opting for IT related courses. Mukherjee (2008), and Sucheta (2008) explained the reasons like; social status, branding of IT jobs as ‘gender-neutral’ and ‘women-friendly’, westernized work environment, lucrative salary etc. In India women basically work for two reasons. Women belonging to higher socio-economic strata work for ‘social status’ and women belonging to lower-middle economic strata work to support their families. IT industry provides both; economic power and social status. (Cautionously it has to be considered because with in IT industry, software and hardware sector carry higher social status but not the ITES-BPO jobs). Earlier proportion of women working for social status was more as Babu (2004 and 2008) found most of the women were not the prime-bread-earners for their family. But NASSCOM-PWC (2010) reports increasing proportion of prime-bread-earners among women IT employees now.

b. Business case for employing more women by IT Companies.

According to Som Mittal ‘Gender Inclusivity’ is not a CSR activity rather a business imperative and necessary for survival. Employing women is essential for IT companies to reduce the problem of ‘talent crunch’ and ‘manpower shortage’ that it is facing.Attrition being another serious threat, IT companies are considering women to be more loyal and stable. Nascom-Mercer (2009) reports 17% attrition among women compared 19% for men. Further it explains the qualities of women that better suits the job which are now realized by the companies; leadership, motivational strength, empathy, emotional intelligence, management. Loyalty, less attrition, good communicators, strong team players, well-versed in multitasking. Cost advantage is another reason as Hafkin and Taggart (2001) finds “comparative wages of women in developing countries were one-sixth to one-twentieth of those for women in developed countries”. More women in the workforce helps companies to build their brand image, to understand consumer needs better and increased profitability as observed by McKinsey (2008) in terms of higher return on equity, higher return to share-holder value and higher operating margins.
FINDINGS
Along with the above cited reasons, over the time period due to the changes found in social, structural and industries HR policies additional factors due to which women employment in IT industry is increasing are observed. They are as follows,

1. INCREASING CONFIDENCE ABOUT THEIR TECHNICAL COMPETENCE AMONG WOMEN
In European countries inspite of SET (Science, Engineering and Technology) degrees most of the women hesitated to enter the SET profession due to the lack of confidence about their technical capability. Increased unemployment among women engineers was the observed phenomenon even in India. But as showed in Table-1, out of 128 respondents 78.12% said that they themselves opt for their profession compared to 21.88% who didn’t. Even today women’s jobs are decided by their family and not by themselves. But as 78.12% said that ‘it was their decision to enter the job ’, represents increasing ‘job consciousneses’ and ‘confidence about their technical ability’.

<table>
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</table>

2. AVAILABILITY OF PROPER CAREER GUIDANCE
‘Finding first job’ is the main difficulty of women engineers according to Parikh and Sukhatme (2008). But now most of the ‘Technical’ and even ‘non-Technical’ education centers have opened their own career guidance cell and placement sections. Due to the persistent barrier for women’s networking ability and lack of mobility they are able to get necessary information about the employment opportunities and links through these cells. Table -2 explains that nearly 69% of the respondents were benefitted by their College Career Guidance Cell.

<table>
<thead>
<tr>
<th>TABLE-2 AVAILABILITY OF CAREER GUIDANCE AT COLLEGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career guidance at College</td>
</tr>
<tr>
<td>Available</td>
</tr>
<tr>
<td>Not available</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

3. CAMPUS SELECTION METHOD
As Vasavi and Upadhya (2008) explain four important methods for recruitment practiced by IT Companies. They are, Campus Selection, Employee Referral, Open Advertisement and Direct Interview. Primary analysis of the respondents about their method used to get the first job in table-3 show more bias in terms of campus selection as the proportion is 46.09%. Hence through ‘campus selection’ Companies themselves approach the women. Once through this method they enter their ‘first job’, opting for another through other methods is not difficult as they will have some ‘network’ by the time and even their parents will get confidence about their daughters job and safety.

<table>
<thead>
<tr>
<th>TABLE-3 RECRUITMENT METHOD THROUGH WHICH WOMEN GOT THEIR FIRST JOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>First mode of recruitment</td>
</tr>
<tr>
<td>1. Campus Selection</td>
</tr>
<tr>
<td>2. Employee Referral</td>
</tr>
<tr>
<td>3. Open Advertisement</td>
</tr>
<tr>
<td>4. Direct Interview</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

4. PRESENCE OF WORKING RELATIVES/FRIENDS IN THE SAME INDUSTRY
One of the Head of the IT courses of a well known Engineering collage while doing our survey expressed that ‘to enter and sustain’ in the IT profession women require working relatives in the same field. The logic can be traced as it gives them networking ability which can be used to enter the profession through ‘Employee Referral method’. And another advantage for their first employment parents and family members will feel relaxed to send their daughters to distant places if they find already existing working relative in the same place. Their perception about the statement is negative as in table-4, 92% of the respondents disagreed with the statement that ‘for women to enter and sustain in the industry, relatives working in the same industry is necessary’. But practically, nearly 60% of the respondents had working relatives.

<table>
<thead>
<tr>
<th>TABLE-4 RELATIVES AND ENTRY TO THE IT INDUSTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this Necesssary to have relatives?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

5. PRESENCE OF WOMEN MEMBER IN THE RECRUITMENT COMMITTEE
Parikh and Sukhatme (2008) recommended ‘the presence of women members in the recruitment committees’. IT industry images itself as gender-neutral and IT employees reluctant to consider any aspect in terms of gender influence. Still as a ‘Gender inclusivity’ measure many companies have appointed women members in the recruitment committees. Does it have any positive impact on the fresh entrants? For this nearly 60% of the respondents accepted that there was a women member in the Recruitment committee. But whether it helped them or not only 20 (15%) respondents replied that they were benefitted by a woman’s presence in the RC. Even if in percentage terms 15% is not a considerable impact but neither it is possible to neglect.

6. RECRUITMENT OF NON-TECHNICAL PERSONNEL
Earlier companies for recruitment concentrated only on technical degree holders and IIT and IIM students. Till date number of women students is negligible in IIT’s and IIM’s and REC’s (Parikh and Sukhatme, 2008). As their ‘personnel’ requirement increased, companies widened their scope to tier-2 and tier-3 cities where most of the women students are concentrated. When even that couldn’t suffice their requirement, they started employing personnel with any formal education who can be easily trained for the industry requirement based on their reasoning and logical ability. This phenomenon worked out positively for women who are concentrated in social sciences and humanities.

In the present analysis Table-5 shows that 68.75% of the respondents had ‘Technical education’, 7.81% had the ‘professional education’ and 18.75% were formal graduates and postgraduates. Company’s policy of recruiting non-technical personnel enlarged the number of women employees in the industry.
7. INCREASING SOCIAL ACCEPTANCE’ OF WOMEN AS IT EMPLOYEE

'Social status' is already observed reason by researchers. But along with that 'increasing social acceptance' of women as IT employee is reducing the socio-cultural barriers and providing them supportive environment in family and society. 83% of respondents agreed that their profession has given them a social status. And 95% of the respondents said that their families are supportive to them. Obviously this social acceptance will allow parents to help their daughters to study IT courses and join IT sector. But this 'social acceptance' cannot be taken with all IT industry jobs. ITES jobs still are not acceptable in the middle-class societies. And some researchers found that due to their BPO jobs some of the women are not finding matches. Further in spite of being selected in the campus selection many parents are not allowing their daughters to join.

CONCLUSION

In Indian IT industry already ‘gender bias’ is witnessed and there is a concentration of women at the lower level. Industry people attribute lesser number of women in the industry as a reason for their less representation in the top positions. As IT industry still in its nascent stage and as it matures with more number of women employees, influence of women can be expected to increase and stereotypical gender roles may start changing. As Salaas and Accesso(2005) says 'number matters' Hence it is necessary to increase the number of women in the industry at first instance.

REFERENCES

2. Ewa Ruminiska-Zimny and Gretchen Elias, consultant,”Women and ICT use in the UNECE Region”, UNEconomic Commission for Europe Series: Enterpreneurship and SMEs. –

BOOKS


TABLE-5 QUALIFICATION OF THE WOMEN EMPLOYED IN IT

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Technical:</td>
<td>88(68.75%)</td>
</tr>
<tr>
<td>B.E, B.Tech, M.E, M.Tech, MCA, PGDCA, BCA, BCSc, Dip</td>
<td></td>
</tr>
<tr>
<td>II. Professional:</td>
<td>10(7.81%)</td>
</tr>
<tr>
<td>B.F.A., BBA, MBA, BBM</td>
<td></td>
</tr>
<tr>
<td>III. Others:</td>
<td>24(18.75%)</td>
</tr>
<tr>
<td>B.A., B.Com., B.Sc., M.Com., M.Sc., M.A., P.U.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary survey
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Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator