Role of Women in Information and Communication Technologies in India

Rajesh kumar

India has emerged as one of well recognized developing countries that is serving the Globe with its Information Technology Industry contribution. Women personalities like Sarojini Naidu & Indira Gandhi made India proud by leading from the front. Today, there are many such women who have been the backbone of the recognition that India has achieved in ICT business. A silent revolution is taking place with evolution of women empowerment in the knowledge era. They are getting the best access to Information and Communication Technology (ICT) education, employment opportunity & becoming owners of IT companies. The purpose of this chapter is to map the emerging trends in India on the role of Women in Information & Communication Technology and look at what could happen in future, if this trend continues and is maintained with gender equality.

ICT access & emerging trend in education: In the past decades, Indian economy was more determined by Agricultural & Industrial sector growth. However, last 10 Years especially from 1995, the dependency on Information Technology for building its economy is very explicitly visible. This is demonstrated by virtue of IT industry Foreign Exchange earning being the # 2 contributor to Indian Foreign Exchange reserves and comfortable balance of payment position. IT industry turnover of US $ 16500 Million in 2002-03 contributes 3.15% of National GDP. This is higher than the 2.87% in 2001-02 Can Indian men alone could have got the economy spiral to this extent? The answer is an obvious "NO". In a country where 50% of the population is women, who else could have supported this revolution and remarkable turn around!! The obvious answer is "Indian Women in IT".

In the early 80's there were hardly few students who took to Computer Science. Women amongst them were very handful. Communication infrastructure and Curriculum support for literacy in computer was at a nascent stage at that time. Access to Information and Communication Technology itself was limited and was available only to those who could afford its cost. For example getting a telephone line, purchasing a computer & software were not that easy to reach the masses in India. Twenty years down the line there has been dramatic and systematic change in access to ICT. Affordability, Reach, Current Technology, Academic support, Human Resource training, Employment opportunity, Global Connectivity etc in ICT segment have been rapidly transforming Indian economy and its citizen's way of life.

Educated Women have had significant breakthrough by breaking the traditional household, child rearing, socially oppressed life style, because of access to ICT. Testimony to this is the enrollment in engineering education and the growing literacy level even amongst the rural women. Government of India through its "National Program for Education of Girls in Elementary Level (NPEGEL) with an outlay of US$ 230 Million & reach in 21 States has created enough synergy to improve rural female literacy and gender gap in the educationally backward blocks. Co-education in almost all schools, colleges and exclusive women academic institutions has shown the door for more girls to pursue studies of their interest. Prominent amongst the preferred education currently is ICT field. This emerging trend is basically due to "WOMEN" being equally recognized for their ability and contribution in "KNOWLEDGE" oriented industry with less of physical and masculine demands for execution of work.

Consolidation of IT training institutions and enrollment drive from Kids to Moms & Grandmothers to have a go at ICT has ushered a different educational system in India. NIIT through its "SWIFT JYOTHI FOR WOMEN" program will be reaching one million non-computer literate women in India and educate them on ICT. Presently, around 21% of women in the Metros are very much part of the ICT sector. However, comparing the educational intake, this figure at employment level indicates a significant dropout in terms of graduating to ICT working level by women. The cause and concern will be more elaborated while looking at employment of women in ICT sector. 40% of Indian Women were literate as per 1991 census. Literacy level was 64% amongst urban female and 31% amongst rural female at that time. As per 2001 census, 54.16% of female are literate with 72.99% being urban female and 46.58% rural female. Fig-I depicts the female literacy growth.

This certainly indicates a much healthier situation in literacy rate owing to ICT access. In the year 2001, nearly 7929 colleges for general education & 2223 engineering and professional colleges were enrolling 36.9% of women in higher education (degree and above level). Fig-2 indicates the enrollment increase of Girls for higher education. NASSCOM survey indicates that 76% of all S/w professionals are graduate degree holders. This

trend is a sure sign of growing literacy amongst women and the valuable role they will play as major contributors in the economic growth outside the family.
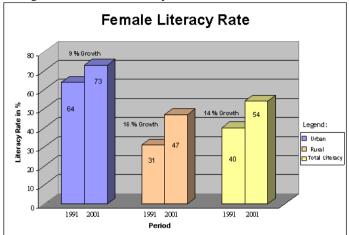

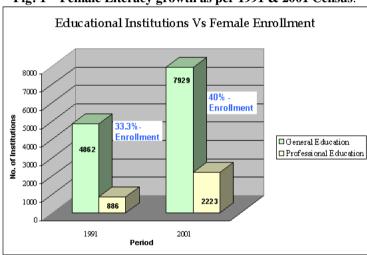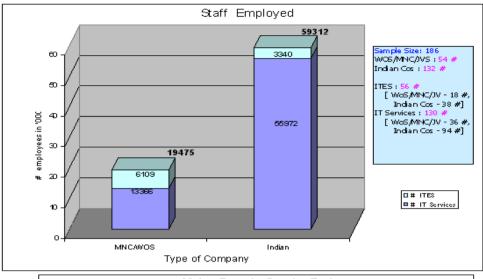**Fig: 1 – Female Literacy growth as per 1991 & 2001 Census**.

Fig: 2 – Increase in enrollment of girls - higher education.

This literacy drive coupled with ICT access has made Indian women to attain certain degree of cultural and economic independence to take their own decisions. Let us look at this trend in the right perspective on emerging trends in employment of women in IT.

WOMEN in IT & emerging trends in work environment-The current trend in employment of women in ICT work arena is with a gender ratio (female: male) varying from a best level of 1:3 to the least level of 1:7 in major organizations with exceptions upto 1:19 in few organizations. The following table is a sample indicative of this trend:

Organization Name	Total Employment	Women Employed	Ratio
WIPRO	12658	2530	1:5
TCS	21800	5450	1:4
INFOSYS	15356	2896	1:5
HEWLETT-PACKARD	2245	320	1:7
POLARIS	4800	1200	1:4
L&T INFOTECH	2250	900	1:2.5
HCL TECHNOLOGIES	5757	1150	1:5
SUN MICROSYSTEMS	596	119	1:5
ORACLE INDIA	2702	540	1:5
PHILIPS SOFTARE	757	190	1:4
SIEMENS INFORMATION	1390	260	1:6
ROLTA INDIA	2346	123	1:19

Fig:3 provides employment in a defined sample size with ITES & Other category segment amongst MNC/WOS & Indian companies. The female versus male gender ratio is also depicted for the sample size of employment.
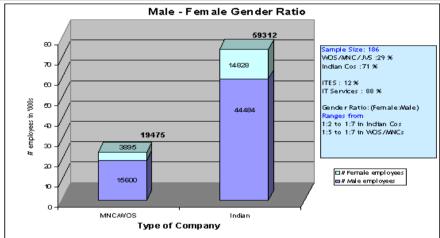

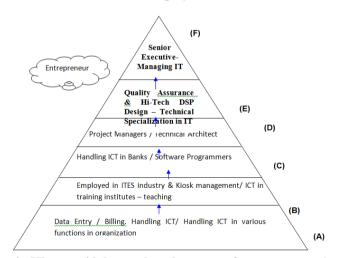**Fig-3 : Female: Male Gender ratio in employment.**

Fig:4   Women in IT pyramidal growth and presence from grass root level of ICT.

It is no doubt that access to ICT education has spurred the employment opportunity for Women in India. Women with basic education & literacy in computer have started handling ICT for simple applications. Fig-4 reveals that from grass root ICT application, women have scaled the pyramidal hierarchy of IT industry:

❖   They have a feel of doing something related to IT such as billing in departmental stores & data entry etc with computers and connectivity just after schooling **(A).**

❖ From this elementary level of working with ICT, educated women are employed in managing Kiosks & in Call centres as part of ITES industry. They are employed in ICT training institutes to teach applications of computers and communication. Women have grown up to handle ICT functions in organization such as HR, Engineering applications in the user Organizations. **(B)**

❖ They are employed in Banks and Financial institutes handling ICT for various applications. They are working as software developers and programmers**. (C)**

❖ They are employed in IT industry to carryout HR activities

❖ They represent in sizeable numbers as Project Managers and Quality Assurance functions in IT industry. **(D)**

❖ They are employed as highly qualified DSP engineers and designers, telecommunication application software engineers in the hi-tech IT value added industries. **(E)**

❖ They have reached the senior executive level to manage IT industry. **(F)**

❖ Last but not least they have become Entrepreneurs, owning and managing IT industry.
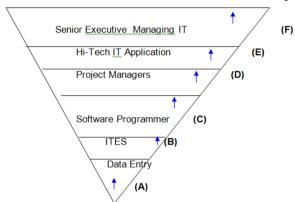
Fig: 5 – Effort & time demands at various levels of IT employment

Fig:5 shows the fact that the effort needed to sustain employment is much more as one climbs the ladder of the organization. Various studies reveal that in women's life the crucial phase is 23 Years to 38 Years. The demand for time, is such that if women can not prioritize between family and work, the drop out is sure to happen. From the below mentioned Fig:6, "Life cycle Diamond" one can infer that when born, male & female child are equal & similarly they are equal at end of the life. ***However, the most divergent part is the age between 23 Year to 35 Years. This crucial phase is where men concentrate on career & women are drawn into marriage-child family web***. Getting through this phase with better support from family and society, will make women more energetic. Beyond 35 years, they will have time and effort to be spared for work & contribute to Nation's economy.
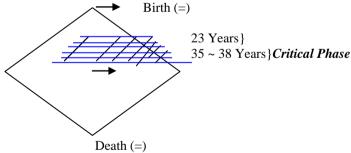

Fig:6 "Life Cycle Diamond"

The emerging trend is such that Women are proliferating at Grass root level of ICT application. Certain percentage of this proliferated segment have found their way onto the highest level of occupation with varied degree and quantum in terms of numbers, growth and sustenance. Their contribution to Indian economy today can not be ignored. However, it is revealed through research that this beginning will create amazing changes where working women will become a reckoning force to measure the economic growth within a decade in India. Indian IT Industry performance in 2002-2003 was US$ 16,500 Million. Software & Services was US$ 9876 Million, Domestic US $ 2583 Million, Training US $ 333 Million & Hardware Peripherals and Networking US $ 3708 Million. Total manpower of 650,000 contributed to this performance from S/w & Services- 205,000, ITES – 160,000, Domestic S/w – 25,000, User Organization – 260,000.

The composition of Male versus Female was at 79% versus 21%. This is anticipated to grow to 65:35 level by the year 2005. This prediction is largely to due to intake of manpower for ITES segment which is at present @ 200 manpower per day. The intake for ITES when looked in isolation will be in reverse composition at 65% women & 35% men. Though the enrollment and literacy level have been showing very positive sign of growth trend, the drop out level after getting employed and not able to sustain employment has been a matter of concern. This drop out effect is because of the cultural & social barrier faced by even educated women today. It is a fact that women deliver 100% both at work & home.

This 200% output makes women burnout easily. Entering a marriage phase or encountering a child birth forces many women to drop out of IT. "Marriage-Baby" phase for women aspiring to grow with self esteem is crucial. To overcome this, the society at large should bring about proper understanding in family life and support work going women in shouldering some of her burdens. In nuclear families, husband has to support this cause. Organizations have to bring about more pronounced flexi timing at work, even to the extent of supporting women to "work from Home", with investment in ICT infrastructure and flexible compensation packages. *This trend is already noticed to tap the vast potential that experienced women would have which otherwise could go untapped, if they drop out due to cultural and social pressure.* This emerging trend shall certainly bring about a substantial decline in Women being unemployed and getting back to house hold chores.

Marriages amongst IT professionals leads to better understanding and it is happening. IT companies are appreciative of this trend, as it ensures sustenance of women employment. Even if demand for time & client interaction issues, travel etc may be a deterrent to career growth, they have the option of dropping out of employment and transforming themselves into entrepreneurs. Mrs.Kalyani Jagannathan of M/s.LUCID Technologies, Mrs.Indira Jagan of M/s.Value Soft & Mrs.Radha Govindarajan of M/s.Archive Systems are few women have climbed the ladder of IT organizations & come out successfully to manage It companies with the support of their husbands. Today they provide employment for women in sizeable numbers. *This trend indicates that women can sustain their interest in IT industry even when cultural and social pressures make them to break their career*.

An excellent example to show case on emerging trend is the response for my case study from Mrs.Sarada Ramani of M/s.Computer International. She was a house wife since marriage from 1983 till 1994. She got her ICT education in 1995 & became an employer in IT industry. In 1997 she became an employee and graduated to a successful entrepreneur. She has traveled widely over the globe and has been successful in meeting the demands of the industry. She acknowledges the fact that access to ICT for women has been in geometrical progression. However, in a traditional and conservative society the progress of Women has been stymied. IT demands client interaction and very small percentages of women who meet this demand have grown up the ladder.

Looking at the 21% women in IT work, it is a fact that this percentage of Women in IT being employed is largely due to the IT enabled services sector growth in the past couple of years. The low end job in IT which is the new branch of IT segment as depicted in Fig:4, is contributing substantially towards employment for Youth between 18 to 25 Years. This trend is positive because of today's women with minimum degree (professional or general) and English language proficiency getting greater job opportunity and reasonable pay with required support to sustain the work pressure. Option of working in shifts has been a boon to this growth in employment. Growing Back Office and Business Process Outsourcing operations by Multinational Companies has created this opportunity. This trend is expected to further enhance the employment prospects of women in IT.

As long as female enrollment in ICT education fulfills the demand for ITES sector, there will not be much of cultural, ethical issues to be faced in future. This is because of the reason that today's youth have adapted to living in cosmopolitan environment. This is much applicable to the urban female in India, before their marriage. Rural female contribution to this trend is at present very negligible but with ICT reach to rural areas it is possible that they would also contribute to sustain the predicted growth in this segment. The projected demand for IT professionals by the year 2008 reveals a shortfall of 235,000 people. Even at a supply level of predicted 885,000 professionals in 2008, this shortfall has been assessed because of the envisaged growth in outsourcing & domestic demand. *The opportunity for Indian Women is wide open to make this shortfall become surplus.*

Women in India have reached certain level in achieving gender equality in Managing IT operations and becoming entrepreneurs. Percentage of such women would be very marginal when compared to men. However the success behind this positive trend is the manner in which they have overcome the cultural and ethical issues in climbing the ladder as narrated below:

- Women have learnt to balance family and work within the concept of nucleus family. They have developed courage to act independently and take decisions of their own.

- Men folk have developed attitudinal change to allow women to go to work. They have realized to support and co-operate with women partners by sharing house hold work burden including rearing of children. This has brought prosperity and peace in many middle class family life.
- Sexual harassment regulations have given adequate security for women to accept organization culture and work climate.
- ***Socializing by women has been accepted as a way of life only by a segment of women with certain social status in present day society. This is yet to catch amongst all levels in the society.***
- Social security is in a much improved situation with late night work becoming common with proper transportation, communication facility. Necessary regulation by government granting permission for women to work in all shifts has been instrumental in creating this climate.
- Flexibility of office hours and work-life balance have been given importance.
- Financial support to start and manage operations under "Women entrepreneur" schemes have provided opportunity for those who aspire to carry out business on their own.
- Salary and compensation have been reasonable at certain hierarchy of organization without much discrimination as compared to men.
- Women prefer to be employed in IT organizations that provide job security and stability with growth opportunity for career development. If number of organizations with such policies would be more, it would encourage more women employment in IT sector.

All said and done, the above positive trend is happening only to a miniscule population of urban literate female. Some of the feedback I received on interviewing few leading ladies establish this trend.

- ❖ Mrs. Dr.M.Revathy Sriram, Director of M/s. Tejas Brainware Systems (P) Ltd who has 40 Years of IT background is proud enough to state that as India's first Woman Computer Systems manager, she has never had any cultural or ethical barriers against surviving in IT industry.
- ❖ Mrs. Sumitra Seshan with an engineering qualification and Masters in Business Administration from Toronto, Canada is presently COO of Fifth Generation Technologies India Ltd. She is of the opinion that quality engineering institutions have given ample opportunity for women to enter IT. Puzzling fact is that though more women get graduated less number of them turn out for work!!

- ❖ Mrs.Kalyani Narayanan, a Computer science graduate from University of Houston, Texas,U.S.A. & currently CEO of Allfons System Private Limited, still feels that the cultural barriers like taking care of family, serve men in life etc. do exist but still opportunities in IT industry befit women as it gives safe feeling for them in this profession. She feels more social reform is required than government policies. Global opportunities for qualified women through marrying men in foreign countries has attracted many women in IT, is her contention.
- ❖ Mrs.Radha Chandrasekaran, with 13 years of IT experience and currently Proprietress of M/s.Shri Dharma Info System feels that IT job demands more than 9 to 5 timings and hence nuclear family system that imposes burden in taking care of husband and children could be deterrent and ethical barrier while working in IT.
- ❖ Mrs.Mallika Subramoniam, a project manager at HCL Technologies with 14 years of IT experience echoes her feeling stating that sexual harassment at work place and late night crimes has been a barrier for working women in IT. However, Government of India passing an act in Parliament to protect women from sexual harassment at work places and making suitable amendments in Industries act permitting women to work after 8 P.M. in IT industry has encouraged women to seek employment in IT.
- ❖ Mrs.Ann Saravanan, General Manager at Curans IT India Pvt Ltd has a firm opinion that traditional role of women in supporting family (husband/in-laws) is still unchanged. She looks forward to more radical change in the form of support from family to women working in office. She firmly believes that there is no need for separate rules / policies enacted by government for women, whereas belief and change should happen at grass root levels in families and society in supporting women to work.
- ❖ Mrs.Naseem Mariam, with 18 years of experience in WIPRO, C-DOT & Future Software Technologies Organization on Telecommunication Software work, shares her feeling stating that late nights, travel and socializing has been a cultural barrier for keeping pace with growth and responsibilities in IT industry for women. Society at large expects women in India to be back at home by 9 P.M., short notice travels and long stay overseas to complete projects bring about a break in family life, socializing by women is looked as an evil by society. Guys overtake women in this aspect. She opines that beyond Rs.5000/- income tax relief the Government should provide more tax relief for women in terms of expenditure on child care, maid servant, infrastructure support etc. thereby encouraging men to allow women to go for work.
- ❖ Mrs. Mythili Ramesh, Vice President & Business Head of 01Markets- Wipro Technologies has spelt that gender is secondary in IT field. Mrs. Mythili Ramesh who has 13 years experience in IT field, says that generally women are more committed than men. Though the acceptability of women peers and bosses has

increased, gender discrimination in terms of attitudes and perspectives still remains. She also feels that understanding boss at the crucial "marriage-baby" phase for women in her career is the most important factor for avoiding drop out. Women give 100% for family and employer and hence faster burnout. This needs to be overcome with flexi-timings and caring organization with differential treatment for women & men.

❖ Mrs.Vidya Basubramanian an accountant by profession and employed with Scope International acknowledges the fact that employers take care of women with apt environment, ensuring pick-up and drop back homes, creating baby care centres within organizations, establishing concierge services for rudimentary household chores etc. Ethics committee within organizations help listen to the voice of women employees. Motivational training for women employees helps them to look at long standing association with the employer.

❖ Mrs.D.Rajashree, Director of Q Soft Solutions (India) Private Limited feels that by nature women being adjustable, can cope well with the demands of IT sector. She is of the opinion that the "taken for granted" approach of women to do justice as a wife, mother & daughter-in-law even after her good professional work need to change with mentality to share in grooming a family.

M/s.Jasmine Infotech is a medium sized organization into "Digital Signal Processing" business. It has successfully employed 30% women. It offers to its women employees during the crucial 1~2 years of marriage-baby phase, flexi-hours at work, less strenuous job & working from home on specific assignment. M/s.Xansa Limited, an MNC organization which is into high end software development activity in mainframe applications, have employed more than 30% women. M/s. e-brahma Technologies, an Indian outfit that serves the embedded technology, employs 60% women. This is a proof that women in IT are very much part of Technology and value added services as compared to any other industry. Work culture is different in IT industry and hence, women can always feel to be at par with men & climb-up the ladder of an organization successfully. In general, mixing with men has been difficult for women in India. However, the transformation of behavioral relationship imbibed from the MNC culture in IT industry, has created an amicable climate for men & women to co-exist with better understanding and without cultural barrier. IT industry has provided a level playing field for women to exhibit her knowledge power and enjoy the empowerment with equal status as men. *As long as competency & work demands are met, IT industry does not differentiate Gender.* Hence, it is time for women to reposition themselves for better growth in this digital era.

Government initiatives and policies:
Government of India has been instrumental in bringing about an IT policy with a vision to make Indian IT sector as a recognized global super power before 2008. The main focus of this vision is on

- Creation of wealth
- Employment generation
- IT led economic growth

The following initiatives have been implemented with positive outlook towards making women contribute to this vision:

➢ 30% employment of women in IT organization will attract capital subsidy of specified amount in certain states.
➢ e-governance and computerization of government organizations through Rural Access to Services through Internet (RASI) projects has created ample opportunity for ICT access.
➢ Setting-up of agricultural kiosks, "rural knowledge centre" with pro-women orientation for effectively enhancing self-esteem and social prestige of women living in poverty. This tool is to cross the social, gender, genetic and technological divide with "New Technologies: Reaching the un-reached" concept.
➢ Exclusive financial assistance through bank loans for women entrepreneur for establishing industry with specific tax exemption limits.
➢ Flexi working times with autonomy for recording attendance under self declaration & relaxation on industries act / labor laws permitting women to work in night shifts.

The initiatives are just the beginning to encourage women to take part in the economic development of the country. Though they would not have created much impact as on date, it is a sure indication that the emerging trend is positive to count on their contribution for economic development of Indian Society from this decade. It is believed that there will be a sea change in the perspective of policy making body to give equal importance to Women in the society to support this cause.

Emerging trend in Indian IT Industry indicates that women have spread their wings into various segments with prominent presence in Financial, Human Resource, Quality, Facility creation and ITES work. Today's successful women are examples of having had the courage and will power to withstand the "Marriage-Baby phase" and build a career.

This trend needs to be taken as a healthy sign for Indian Women to overcome the cultural and ethical barriers for upward mobility. As our famous Nobel Laureate and world renowned economist Dr.Amartya Sen mentioned, the word "gender equality" is a terrible evil and social failure. Indian women require both cultural and economic independence to take their own decisions. They should play major part in the economic growth outside the family to visualize INDIA as a developed nation.

Women in IT shall contribute to this vision of India. The emerging trends are just not indicators but sure sign of "WOMEN IN IT-INDIA" transforming their life style and positioning INDIA in the globe with identity wiping the oppressed women portrayed ever long till date. It is my sincere belief that as Director of STPI, I share the same sentiment as do millions of other Indian Women, that the knowledge era is the most revolutionary period in India than the green and Industrial revolution. The current generation is realizing the benefits of the "forced change" & "chosen change" through the IT revolution. The emerging trends discussed above will make future generation of young women in India not to forget & recognize this fact.