Information as an enabler for improving the social status of citizens

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Compares the status of India with USA, South Asia and the World based on selected social parameters. Education has emerged as a very active and investment intensive area in India. Some statistics on the education scene are presented. Provides an illustrative list of information transforming projects as well as people. Finds that the neo-rich in India are more convinced about the need of technology to address socio-economic problems and are aware of the value of information in tackling social issues. Discusses some of the possible challenges and probable solutions that come in the way of information being used as an enabler for improving the social status of citizens.

Introduction

India has an unhindered history of human civilization for the last 5000 years. It accommodates over 17 percent of the world population in less than 2.5 percent of the land area with 1.79 percent of the GDP. One reason for the country to be at the bottom of social indicators list is the large population with over 35 percent illiterates although the literacy rate has increased from 18.33 percent in 1951 to 64.84 percent in 2001[1]. India ranks 7th in the world in terms of geographical area (after Russia, Canada, United States, China, Brazil and Australia), whereas population-wise it stands next to China[2]. About 71 percent of its population lives in the rural areas with comparatively weak infrastructure and social care facilities. It is also a country with over 22 languages included in the 8th Schedule of the Constitution. The GDP at current market prices is projected in 2007-08 by the Central Statistical Organisation (CSO) to cross US$ 1 trillion. The (per capita) GDP at purchasing power parity, a conceptually better indicator of the relative size of the economy, is estimated at US$ 5.16 trillion (third largest economy in the world after the United States and China) or US$ 3.19 trillion (fifth largest behind United States, China, Japan and Germany) depending on whether the old or new conversion factor is used[3]. This shift in growth indices may be a result of the effort put in by persons or organisations in transforming information by processing and adding value to the same to achieve various social objectives and in solving social problems.

India in the global village

Table 1 presents selective social indices for selected regions or countries. It can be seen that India holds 17.18 percent of the world population which is 73.33 percent of the South Asian population and this would mean over 370 times the population of the USA. Population growth is 87.5 percent of the population growth in South Asia and 116 and 140 times the population growth in the world and the USA respectively. The surface area of India is 2.47 percent of the world area, 34.37 percent of the area of the USA and 64.71 percent of the area of the South Asia. School enrolment in India is better than the South Asia average. In case of phone lines and internet users, India is better than South Asia averages but lower than the World and the USA.

Education scenario in India

Education has emerged as a very active and investment intensive area. India had a handful of universities at the time of its independence and these institutions registered consistent growth in the coming decades and now there is a thirteen fold increase in 6

Table 1—Selective social indices for World, USA, South Asia and India*

	World (2005)	USA	South Asia	India (2005)
Population	6.4 billion	296.4 million	1.5 billion	1.1 billion (17.18 % of World, 371.12 % of USA and 73.33% of South Asia)
Population growth (annual percent)	1.2	1.0	1.6	1.4 (116.67 % of World, 140 % of USA and 87.5 % of South Asia)
Surface area (sq. km)	133.8 million	9.6 million	5.1 million	3.3 million (2.47 % of World, 34.37 % of USA and 64.71 % of South Asia)
School enrollment, secondary (percent gross)	66.0	94.7	51.1	56.6 (85.76 % of World, 59.77 % of USA and 10.76 % of South Asia)
School enrollment, tertiary (percent gross)	24.3	82.7	9.7	11.4 (46.91 % of World, 13.78 % of USA and 117.53 % of South Asia)
GDP (current US$)	44.8 trillion	12.4 trillion	1.0 trillion	805.7 billion (1.79 % of World, 6.49 % of USA and 80.57 % of South Asia)
GDP growth (annual percent)	3.5	3.2	8.6	9.2 (262.85 % of World, 287.50 % of USA and 106.97 % of South Asia)
Agriculture, value added (percent of GDP)			19.1	18.3 (95.81 % of South Asia)
Industry, value added (percent of GDP)			27.1	18.3 (100.74 % of South Asia)
Services, etc., value added (percent of GDP)			53.7	18.3 (101.30 % of South Asia)
Exports of goods and services (percent of GDP)			19.8	18.3 (102.53 % of South Asia)
Imports of goods and services (percent of GDP)			23.9	18.3 (97.49 % of South Asia)
Military expenditure (percent of GDP)	2.5	4.1	2.8	2.9 (116 % of World, 70.73 % of USA and 103.57 % of South Asia)
Fixed line and mobile phone subscribers (per 1,000 people)	522.2	1,070.0 (2000)	118.9	127.7 (24.45 % of World, 11.93 % of USA and 107.40 % of South Asia)
Internet users (per 1,000 people)	136.5	439.4 (2000)	49.0	54.8 (40.15 % of World, 12.47 % of USA and 111.84 % of South Asia)

*Based on World Development Indicators database, April 2007[4]

decades with over 400 university level institutions. The number of colleges registered an increase from 600 to 16000 during the same period. About 12.76 percent of total government expenditure or 3.68 percent of GDP is spent on education out of which 17.84 percent is exclusively for technical education[5]. The Central Government alone spends 8.71 percent of its budget for education where as it spends only 6 percent each on health, and communications & IT; and around 4 percent for science and technology[6]. There is an increasing emphasis to take up engineering (around 6 percent of overall enrolment in higher education and about 8 percent of those who pass graduate examination) and management education along with new areas like fashion designing, media studies, computer and information technology enabled services (ITES) as they offer better job opportunities on completion. The test for admission to Indian Institutes of Technology (IITs) is among the toughest in the world for any similar course with a success rate of 40:1[7]. After the IITs, similar competition prevails to gain admission to NITs (National Institutes of Technology), engineering colleges run by Government as well as private managements.

Education is also an area which is witnessing considerable investments from private players who charge higher fees from students and channel a part of the fees for infrastructure improvement and capacity building in the education and training. Apart from on-campus education facilities, distance education is fast emerging as a viable alternative to offer cost effective education in many disciplines with a national open

Table 2—Education landscape of India

Universities	311 (30 in 1950, 80 in 1970, 180 in 1990, 250 in 2000, and 300 in 2003)*
Deemed Universities	96*
Research Institutes	136*
Colleges	16009 (600 in 1950, 3300 in 1970, 5800 in 1990, 10100 in 2000)*
Enrolment in Higher Education	11777300 (Engineering- 696600)*
Graduate Exam Passed in 2003	1235000 (Engineering – 101000)*
Post Graduate Exam passed in 2003	317000 (Engineering -10000, Management-22000, Commerce-37000)*
Engineering Colleges	1346**
Engineering Course Seats	439689**
Competition in B. Tech Admission to Indian Institutes of Technology	198,000 students appeared for 4935 seats in the IIT JEE of 2005 (40:1)***
Competition in Civil Services Examination	417 candidates recommended out of 138240 appeared for preliminary examination in 2001 (331:1)****

Based on
National Level Educational Statistics – at a glance (2004-05)[5]
***AICTE approved list of engineering colleges*[8]
****Why the IIT-JEE pattern changed*[7]
*****Overview of civil services examination*[9]

Table 3—Expenditure on education

Total Expenditure on Education during 2004-05	Rs. 1054.59 billion (12.76 percent of Total Government Expenditure and 3.68 percent of GDP)*
Total Expenditure on Higher and Technical Education during 2004-05	Rs. 188.13 billion (17.84 percent of Total Expenditure on Education)*
Central Government Allocation for Education (2007-08 revised)	Rs. 254.53 billion (8.71 percent of total Spending) (12.82 percent for Higher Education)**
Central Government Allocation for Communications and IT (2007-08 revised)	Rs. 183.23 billion (6.27 percent of total Spending)**
Central Government Allocation for Health (2007-08 revised)	Rs. 191.83 billion (6.56 percent of total Spending)**
Central Government Allocation for Science, Technology and others (2007-08 revised)	Rs. 110.29 (3.77 percent of total Spending)**

National Level Educational Statistics – at a glance (2004-05)[5]
***Union Budget 2008-2009*[6]

university, 13 state open universities and over 100 directorates of distance education in the campus based and/or affiliating universities. In 2007-08, education accounted for around 9 percent of total spending by the Central Government out of which 12.82 percent was spent for higher education[8]. Education has also emerged as a major employment option for many educated in teaching, research and training fields. Table 2 presents some statistics on the educational scenario in the country and Table 3 highlights the financial implications for education and training.

IT and IT enabled services sector

The purpose of education is to groom good citizens who practice human values and lead purposeful life to contribute towards positive development of the nation by engaging in various occupations that add value to society and societal systems. Information technology (IT) and IT enabled services has emerged as a potential career option for many youngsters, especially after Business Process Outsourcing (BPO) opportunities evolved many jobs and processes being done at places where human resource is not costly. For a large population of unemployed youth with educational qualifications and vocational skills, BPO provides better career options. Indian software and services export registered 32 percent growth and 21.8 percent growth in production of electronics and IT industry over the previous year in 2005-06. As on March 2006, this industry provides direct employment

Table 4—India's IT industry

Indian software and services export in 2005-06	US$ 23.4 billion (32 percent growth from previous year)*
Production of the Indian electronics and IT industry in 2005-06	Rs 1856.6 billion (21.8 percent growth over the previous year)*
Number of professionals employed in IT and ITES sectors (as of March 2006)	1.29 million (additional 3 million job opportunities through indirect and induced employment)*
Number of Employees in 125844 Industrial Establishments	7870081 (77.34 percent are workers)**
Book Production (1998)	14085*** (68175 for USA in 1996)
Total Average Circulation of Daily Newspapers per 1000 inhabitants (2004)	70.94*** (193.19 for USA in 2004)
Researchers per 1000000 inhabitants (1999)	115*** (4605 for USA in 2002)
Expenditure on R&D as a percent of GDP	0.6***(2.7 for USA in 2004)
Rural Population	71 percent*** (19 percent for USA)

*ITES and BPO services[10]
**Annual Survey of Industries[11]
***UNESCO Institute of Statistics in Brief[12]

to 1.29 million persons with additional 3 million job opportunities through indirect and induced employment[10]. Table 4 provides a bird's eye view of India's IT industry.

Few other areas which registered significant growth in recent years which offer gainful employment are:

- Education
- Agro-industry
- Retail and wholesale trade
- Tourism
- Construction-Housing and Infrastructure
- Small scale & medium industries
- Health
- Financial services
- Transport

With private sector providing better jobs, a large number of youngsters prefer to work with private and multinationals whereas the craze for government employment is still not over. There is acute competition for few positions advertised in various Government organizations. Reservation in Government jobs is impacting society in two ways:

those castes/tribes without reservation seeking the same for benefits accrued with reservation and many others trying for private and corporate jobs.

Transformational e-Initiatives

1. Computerized railway reservations and including internet reservations.
2. ATMs and e-banking
3. Cyber cafes
4. Mobile phones and laptops are emerging as access devices to tide over the digital divide
5. Integrated services center with a view to enable a smooth and transparent Citizen to Government (C2G) interface for payment of utility bills. Some examples are eSeva [13] of the Government of Andhra Pradesh and FRIENDS (Fast Reliable Instant Efficient Network for Disbursement of Services) of the Government of Kerala[14].
6. GIS projects like computerization of land records like the Bhoomi project launched by the Government of Karnataka[15]
7. Community information centre projects which help to provide value added information that touches the day to day lives of citizens such as Community Information Centre for North East[16], Lokmitra Soochna Kendra of Himachal Pradesh[17], e-Mitra of Rajasthan[18], e-City and e-Dhara projects of Gujarat[19], NAI-DISHA of Haryana[20],

Gyandoot of Madhya Pradesh[21], Village Information Projects of M S Swaminathan Research Foundation (MSSRF)[22], Village Information Centre (VIC) of the Tamil Nadu Veterinary and Animal Sciences University (TANUVAS)[23], Sustainable Access in Rural India (SARI) project, a collaborative and interactive research agenda drawing on the expertise of Harvard's Centre for International Development, IIT Madras and the MIT Media Laboratory[24], Dairy Information Services Kiosk (DISK)[25], Indian Tobacco Company's (ITC's) eChoupals[26].

8. Traditional Knowledge Digital Library: When the new technology oriented development model fails to conserve natural resources and ensure food security, traditional and indigenous knowledge emerge as inspiring and practical at the village level in different parts of the country. The problems with traditional knowledge are they are not available in a properly written form, transmitted predominantly in vocal form and are not tested and validated scientifically in many cases. The Council of Scientific and Industrial Research (CSIR) of India is involved with a major project to map the traditional knowledge of the country with the Traditional Knowledge Digital Library (TKDL)[27].

9. Mobile Digital Library: The Centre for the Development of Advanced Computing (C-DAC) developed an Internet enabled Mobile Digital Library for common citizen, for promoting literacy and for making books available to schools in villages and remote areas using Mobile Van with satellite connectivity to Internet and fitted with printer, scorer, cutter and binding machine for providing bound books to the end user from a single point[28]. Books in digital formats of audio and video may take the luxuries of reading or knowledge access to the large mass of illiterates, disabled etc.

10. Digital Library of India: A collaborative project between Indian Institute of Science, Bangalore and Carnegie Mellon University with partners from Government, Academia and Religious Institutions. The main objective of the project is to digitize all the significant literary, artistic, and scientific works of mankind and making them freely available, in every corner of the world, for education, study and appreciation and for all future generations[29].

The list provided above is indicative only and there are many more e-initiatives in recent years by many of the Institutions, State Governments and Central Government.

Transforming of information by people

Citizens: The majority of people transforming information are ordinary citizens who have gained the education overcoming all the barriers of caste, creed, ethnicity, language, rural-urban and rich-poor divide. They then compete with the toughest of constraints to achieve the best possible employment opportunity thereby further improving the social status of their family, community and region. They are the people who have processed the available information and transformed it to achieve personal goals thereby improving societal well being. There are cases where passing an examination like IIT JEE, Civil Services or UGC NET would substantially improve the future of a person and his/her family. Two students identical in intelligence and other educational attributes may perform differently in such a crucial exam and one major reason for that performance variation is the level in which the candidates made use of the information available to them and transformed the same by adding value to it by establishing proper connections with the knowledge and wisdom they have.

Media: Media disseminates all sorts of information on entertainment, education, employment, leisure, etc., which helps the public to make right and informed choices concerning their day to day lives and future plans. Sometimes sensationalizing issues and shifting from crucial problems are to be addressed for positive use of media for societal development.

Library and information personnel: They are the people behind library support and information services in public, academic and research libraries. With domain knowledge in the information storage, processing and disseminating area, they transform information in a manner which is ideal for their clients in their diverse information requirements. They are the best in resolving information crisis of

clients with the help of pragmatic application of IT for user oriented library support and information services.

Investors: They invest money to fuel India's development expressing confidence in its people, development policies and government regulations. They come from foreign institutions, international agencies like World Bank, Asian Development Bank, governments of other countries through mutual, bilateral and multilateral arrangements, private parties, corporates etc. You need today's money, which comes only from investors, to invest tomorrow to develop future infrastructure, be it roads, rail network (especially the metro rail projects planned in each major city of the country after the huge success of Delhi Metro) and airports for transport infrastructure, similar enthusiasm is required in healthcare, education, agriculture, employment generation etc.

Industrialists: They provide jobs to people, manufacture products and offer services at affordable prices, and contribute to the nation's progress. Industries are also major job givers which employs a large number of vocationally trained citizens. Together with retailers, industrialists feed the emerging consumer market in the country. There are also new services like mobile telephony, cable television etc., which help in improving communication infrastructure, connecting people and informing and entertaining them.

Role Models/Peers: They have a large fan following and wield sufficient support from the public who can better channel the human resources to achieve different social goals and in ameliorating the living standards. Be it scientists, statesmen, artists, there are specialists and perfectionists in each area of human endeavour who have a deep impact on public.

Neo rich in India

The new rich in India come from non-traditional backgrounds with new skills, able to take up challenges and invest their talent to pursue their dreams thereby making the country a better place to live. They are more confirmed about the need of technology to address socio economic problems and are aware of the value of information in tackling social issues. Some of the visible trends of these happening are evident in few of the following:

1. State board exam toppers are now not confined to capital cities or major cities of the state but sometimes even from smaller towns and relatively disadvantaged backgrounds.
2. Persons from humble origins occupying better jobs and positions by virtue of education and turning limitations to assets as a result of better information processing.
3. Civil services and other major competitive exam toppers and qualifiers emerging from hitherto unknown backgrounds.
4. Well educated and hence better employed first man/woman in the family influencing the household and locality.

Challenges and solutions

There are still many especially those in the rural areas where developments in information and communication technology do not have an impact on the livelihood or day to day lives. Infrastructure improvement in the rural areas is a continuous process and improvements in education, health and employment are taking place at a pace slower than needed. There are also inequalities in the spread and depth of educational facilities so that it is comparatively easy to gain access to Engineering education in Delhi/NCR or other metros than obtaining a seat for B Com course. The situation may be the opposite in smaller towns. Distance education (especially for continuing education) is a viable alternative to provide value addition to rural industries and rural products by innovating, automating and modernizing different areas of rural artisanship.

The IT and IT enabled services (ITES) must look seriously at offering local solutions than catering to the vast BPO requirements. Only then the industry would be able to sustain the growth and be a catalyst for the country's development in the event of a scenario like dot com burst or international slowdown.

Information is yet to become a deciding factor in day to day decision making in the developing countries

due to illiteracy, under development, and lack of vocations to many of the population lacking information processing and consumption skills. Socially relevant and purposeful content in networks would improve the use of information. These issues need examination and proper follow up from the Government and societal levels and as such social change is a slow but continuous process particularly in democratic countries.

Integration of world economy (rich economy) with developing economies in the aftermath of liberalization and globalization sometimes hurt the traditional lives and systems of poor counties. This may be overcome by cushioning the local economy from global economy against adverse policy decisions that may be taken to honour international commitments. A nation can be integrated with the global economy without forgetting or alienating from the traditions as demonstrated successfully by China, Korea and Japan.

Conclusion

Information and knowledge have emerged as significant components in India's overall progress today. Barring few exceptional and extreme cases, the neo-rich in India has emerged as path breakers in charting a new development paradigm for the country by pragmatic application of information and communication technology with determination to change their own destiny and those of fellow countrymen. Educating and training its large population and investing their talent in education, employment, industrial production, social services, etc., are important issues that need to be addressed from various angles. With world economy getting more integrated and competitive on regional and local lines, every country has to be partners in the global arena without sacrificing self interests. Transforming and value addition of information by its people, institutions and projects guide a country in better realizing this integration without compromising on competition.

Some of the issues discussed in the paper need more studies with live data to assess the impact of information and how its purposeful transforming have improved the social services in India and the lives of its citizens. This may also involve multidisciplinary studies involving economists, management experts, sociologists and information scientists. The paper has also avoided discussing wider issues like health care, poverty alleviation, women and child care which are crucial in judging a country's development status. But these issues also require judicious application of information and IT apart from domain expertise in these areas.

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