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INFORMATION TECHNOLOGY AND INDIAN ECONOMY: A DISCUSSION

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ABSTRACT

The Information Technology is now a great help to the development of Indian Economy particularly in service sector. It's effectiveness is felt in each and every sector. Starting from Education to Tourism in all field it has a great role to play. This article discusses the growth of Information Technology and its impact on Indian economy}

KEYWORDS

information technology, software, hardware, development, economy.

INTRODUCTION

Indian economy is now a fast growing economy. With the changing scenario of the entire world. Indian economy is now advancing with this information technology due to its young working force. Information technology essentially refer to the digital processing, storage etc. An example of IT's broader impact comes from the case of so called IT enabled services, a broad category includes different kinds of data processing and voice interactions that use some IT infrastructure as inputs, but do not necessarily involve the production of IT inputs.

DEFINITIONS AND MEANING

Information technology can be defined by what it does. The meaning as well as definition of Information Technology can be defined as follows;

The technology used for the study, understanding planning, design, construction, testing distributing support and company related systems for the purpose of data, information and knowledge processing.

It also can be referred to as an industry that has evolved to include the study, science and solution for all aspects of data information and knowledge management and processing

The organization is an enterprise or business that is held responsible and accountable for the technology used for planner, design connections, distribution support and operations of software, computers and computer related systems that exist for the purpose of data information and knowledge, management and processing. (Vijayosri G. V.)

Information Technology as meant in India is an act of processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronic based combination of computing and telecommunication. Information technology (IT) is the industry, which through the use of computer and other supplanting equipment's helps in the spread of knowledge. IT for some time was synonymous to computer. But the rapid and advancement in various information delivery system such as Radio, TV. Information Technology refers to the entire gamut of Media and devices used to transmit and process information for use by various target groups in the society. It has therefore been right trend at information and combination revolution. (Vijayosri G. V.2013)

The Information Technology Association of America (ITAM) defines it as the technology (hard ware and software) require for in processing of data that encompasses all forms of use to store exchange and use information in its various forms (business data, voice conservation, still images, motion pictures, multi-media presentation and other forms including those not yet concerned. It is a convenient term for industry both telephone and computer technology in the same word. It is the technology that is deriving what has often been called "the information revolution"

These definition shows the importance and impact of Information Technology Sector. This study aims at analysing the role of IT sector in Indian economy by taking into account secondary data. The data referred for IT sector decomposition is from 1994-95 to 1999-2000, and for comparison with GDP the period of 1994-95 to 2000-01 is taken which is just after the reform period in India. The objective of study is as per following:

- to know the importance of IT sector in Indian market structure
- to examine the role of IT in Indian employment sector
- to know the present status of IT sector in India
- to discuss the future of this sector in context of Indian Economic progress.

DISTINCTION BETWEEN HARDWARE AND SOFTWARE

The basic distinction between hardware and software is the former refers to the physical components of processing storage devices and communication devices, the latter refers to the instruction that govern the flow of processing of information in digital form within and between hardware devices and components. The design of hardware actually involves the development and use of appropriate software code, so they have definite overlaps in the two categories. It is also possible to substitute software for hardware in the basic design of it. The actual production of hardware is classified within the manufacturing sector and is more distinct from development of software preferably manufacturing semi produce and other sophisticated hardware components that require infrastructure large scale investments capacity and accumulated expenses that India does not possess and is not in a position to acquire easily. India's development path despite its emphasis on impact substituting industrilisation has not supported the growth of a robust worldwide class manufacturing industry such as has arising in many East Asian countries. (Singh N. 1014)

TABLE 1: INDIA'S IT SECTOR DECOMPOSITION (Rs. billion)

Year	Hardware	Software	Other	Domestic	Export
1994-95	23.8	26.1	13.6	34.6	21.1
1995-96	36.8	41.9	20.2	59.0	26.6
1996-97	48.1	63.1	25.8	68.4	49.8
1997-98	52.4	100.4	33.8	88.4	73.4
1998-99	42.5	158.9	36.4	105.4	110.3
1999-2000	65.7	243.5	61.6	152.7	176.3

Source: www.nasscom.org/it_industry/index_statistics.asp.

SOFTWARE EXPORT

India's software export went from a five million dollars by 1995-96 and \$4.2 billion in 2000-01. despite the global slowdown, software exports exceeded the 2000-01 figure by 31% dollar terms crossing 68 billion. While growth has slowed down from the earlier 50% rate the dollar increases are as high while the NASSCOM Mckinsey target of \$50 billion in software exports revenue by 2008 may be overoptimistic the resilience of software exports in a difficult economic climate has proved pessimist wrong. (Singh N. 2002)

IT Enabled services: IT enabled services are not necessarily related to the production of software or IT in general but use IT to make the provision of services possible to consumer call centers as for one example where India's have been training to speak with American ascent, in order to deal with customer queries from

the US. Accounting services are a 2nd example. NASSCOM provides a categorization of 10 different type of IT enabled services varying wider in terms of skills required and value added. The ten categories overlap to some extent but they give a good idea of the scope of the industry. (Singh N. 2002)

- Customer interaction services
- Business Process Outsourcing/ Management Back office operation
- Insurance claim processing
- Medical Transcription
- Legal Database
- Digital content
- Online Education
- Data Digitalisation/GIS
- Pay bill/ HR services
- Website Services

IT industry in the country has played a major role in placing India on the international map. The Indian IT industry mainly comprises of instance system Integration Software experiment, Custom Application development and Maintenance (CADM) network and IT solution. According to the analysis done by the annual report 2009-10 prepared by the Department of Information Technology (DIT) the IT-BPO industry was expected to achieve a revenue aggregate of US \$ 73.1 billion in 2009-10 as compared to US \$ 69.4 billion in 2008-09 growing at a rate of over 5%. The report even produces that the Indian IT-BPO revenue may reach US \$225 billion in 2020. (Singh N. 2002)

HISTORY

The Indian IT industry comprises of software industry and information technology enabled source (ITES) which even includes business process outsourcing(BPO) industry. Indian industry is considered as a pioneer in software development and a favourable destination for IT enabled services. In 1974 the origin of IT industry in India can be traced when the main frame manufacturer Burroughs asked its India sales agent Tata Consultancy Service (TCS) to export programming for installing system software for U.S. client. (Singh N. 2002). The Indian IT industry was began by the Bombay based conglomerates that entered the business by supplying programmers to global IT firms located overseas. During 1970s the Indian economy was state controlled remained hostile to the software industry. Even the import tariffs were high like 135% in hardware and 100% on software. Even the exporters were ineligible for bank finance. In 1984 Rajiv Gandhi became Prime Minister and the government policy towards IT sector changed. The New Computer Policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software which reduced to 60%. Even during this time, the recognition of software exports as a “delicious industry” was done so that banks were eligible for finance free from license permit raj, there was even the permission for foreign force to set up wholly owned subsidiaries. All such policies are reason for the development of a world class Indian IT industry. Tata consultancy Services(TCS) Wipro, INFOSYS, HCL are well known in the global market for their IT competency. Metro cities like Bangalore, Mumbai, Delhi, Chennai and Hyderabad has become the favorite destination for all the big banners like HSBS, DELL, Microsoft, GE, Hewlett, Packard and several Indian multinationals like Infosys, Techno, Wipro and Micro band have set up their offices in those cities. As the cities offer good infrastructure with large flow space and great telecom facilities. This could be reason for the basis of the high growth. Status of India and the changing outlook of the companies towards India. The Indians IT industry has grown up to US \$5.7 billion in 1999-2000 with the annual growth rate, not sliding below 50% since 1991. (Singh N. 2002)

INFORMATION TECHNOLOGY IN INDIA

IT comprises of two major components, IT services and business process outsourcing (BPO). The sector has increased its contribution to India's GDP from 1.2% in 1998 to 7.5% in 2012. According to NASSCOM the sector aggregated revenues of US \$100 billion in 2012, where in exports revenue stood at US \$ 69.1% billion and domestic at US \$ 31.7 billion growing by over 9%. India's economy underwent economic reforms in 1991, leading to a new of globalization and international economic integration. Economic growth of over 6% annually was seen during 1993-2000. The economic reforms was driven in part by significant the international usage in the country. The Atal Bihari Vajpayee 1991 government which placed the development of Information Technology among its top five products, forward the Indian National Task Force on IT and software development. The new telecommunication policy 1999 (NTP 1999) helped further, India's telecommunication sector. The Information Technology Act 2000 created legal procedure for telecom transaction and e-commerce. Throughout the 1990s another waves of Indian professionals entered the US. The number of Indian American reached 1.7 million by 2000. This immigration consisted largely of highly educated technologies knowledge prefer workers. The success of IT in India not only had economic repercussions but also had far reaching political consequences.

Recently IT committee was set up by the Ministry of Information Technology. Govt of India, comprising Non residential Indians (NRI) professionals from U.S. to seek expertise and advice also to step up U.S. (Singh N. 2002)

GROWTH IMPACT OF INFORMATION TECHNOLOGY ON INDIAN ECONOMY

India's IT industry recorded phenomenal growth over the last decade. During the period from 1991-2001, the component annual growth rate of the Indian IT services industry has been over 50%. The software sector in India has grown at almost double the rate of the US software sector. The IT industry in India has seen massive change, growth and development over the year. The future of this industry seems bright with more growth being predicted.

- ❖ Promoting the growth of human resource development in the IT sector with the aim of creating quality based industry
- ❖ Promoting R & D in the sector by education identifying thrust areas and drawing up a blueprint for action

India's most prized reason is today's knowledge economy to its readily available technical work force. India has over 4 million technical workers over 1832 educational institution and polytechnics, which retain more than 107,755 computer software professionals every year. Government of India is stepping up the number and quality of training facilities in the country to capitalist on this extraordinary human resource. It is the knowledge industry that will help to take the Indian economy to a sustained higher rate of growth and the policy makers are fully aware of this. (Vijoyosri G. V. 2012)

FINANCIAL CONSTRAINT: A striking feature of the Indian economy pre-reform was its inefficient use of capital. Relatively high savings rates were associated with relatively low growth rates. Financial sector reform on India has focused on making the country's organized capital markets more efficient. Simple institutional improvements such as electronic trading and settlement, guidelines for corporate governance have been introduced. An important beginning was made by a committee, on ventures capital appointed by the Securities and Exchange Board of India (SEBI), India's chief financial regulator investment in India's sector. The committee is chaired by Minister of Information Technology Government of India, and the members include secretary, Ministry of Information Technology and a large number of important Indian American IT entrepreneurs.

LATEST DEVELOPMENT: As per confederation of Indian Industry (CII) Report, the Indian IT industry is growing at an annual rate of 35%.

NATIONAL e-GOVERNANCE PLAN (NeGP): The government of India plan together high priority to improve the quality to the citizens by providing basic services at their doorstep for which it has formulated a NeGP covering IT mission made projections.

STATEWISE AREA NETWORK(SWANS): The Governemnt has started a scheme for establishing SWANs across the country in 29 states with a total estimates of US \$ 682.27 million over a period of five years.

STATE DATA CENTRES (SDCs): SDCs have been identified important core infrastructure of supporting e-governance initiative under NeGP.

COMMON SERVICE CENTRE (CSCs): The main objective of CSCs is to develop a platform that can enable government private and social sector organisation to cater to the social and commercial goals for the benefit of the rural population in the country with a combination of IT based as well as non -IT based services.

COMMUNITY INFORMATION CENTRE(CIC): Government has initiated the CICs in the hills and far-dwelling rural areas of the country with main objective to bring benefits of ICT to the people for the purpose of socio-economic development.

NANOTECHNOLOGY Department of IT started nano-technology development programme during the 10th plan with the aim of creating infrastructure for research in non-electronics and non-meteorology at National level.

FUTURE USE OF IT IN DIFFERENT SECTOR IN INDIA

Former Indian Prime Minister Sir Atal Bihari Bajpayee once described IT as "India's to-morrow". With the convergence of computing, communication and electronics. The scope of IT is changing as the key industries such as following:

Transportation (road, rail, air, sea and urban transport)
Financial services (banking, insurance and stock trading)
Hospitality (hotels, restaurants and tourism)
Automatic and Aerospace
Core industries (oil, gas, steel and mining)
Services (education and health care)

CONTRIBUTION OF INDIA'S IT INDUSTRY'S TOWARDS ECONOMIC PROGRESS

The flourishing Indian economy has helped the IT sector to maintain its competitiveness in the global market. The IT and IT enabled service industry in India recorded a growth rate of 22.4% in the last fiscal year. The total revenue from this sector has valued at 2.46 trillion Indian rupees in the fiscal year 2007. Out of this fiscal the domestic IT market in India accounted for 900 billion rupees. So the IT sector in India has played a major role in drawing foreign funds in to the domestic market.

RURAL DEVELOPMENT

There are many efforts underway in India and other developing countries to demonstrate the concrete benefits of IT for the rural population and to do so in a manner that makes economic sense. The general presumption behind these efforts is that resources spent in this manner have a positive return on development large enough to justify a possible diversion from other users that directly address those basic needs. (Singh N & S. Singh 2014)

e-COMMERCE

It can be interpreted broadly to include business to business transaction on even internal process. In fact, developing countries have the opportunity to leap frog over older, more expertise approaches such as Electronic Data Interchange which represent significant legacy investments in countries such as the U.S. Indian e-commerce sites have to adopt to the Indian Scenario in terms of logistic payments systems and legal mechanisms. The use of cash on delivery in private companies and the important thrust and reputation have allowed e-commerce transaction to gain a foot holder in Indian retailing. Recent moves to allow FDI in multi-brand retail in India. One area where e-commerce can have some impact on rural India is not from the perspective of consumer but of producers. It is possible to use IT specifically the internet, to market rural handicrafts to widely disbursed consumer in developed countries. (Singh N. 2014)

MANUFACTURING SECTOR

Compared to many other developing countries India's manufacturing sector has played an unusual role in the natural growth experience. In 1950-51, the first year for which comparable data available, manufacturing was approximately 9% of GDP. By 1979-80 the rate had risen close to 15% but thereafter has hardly increased. The highest share of manufacturing year was in 1991-97 at 16.6% after then the figure has hovered either side of 16% even in the year where India's GDP grew at over 9% annually. In the context the new National Manufacturing Policy (NMP: 2012) explicit goal of increasing manufacturing share to 25% by 2022 is extremely ambitious. (Singh N. 2014)

e-GOVERNANCE

There are many examples of IT use in governance in India and we will discuss some of them briefly especially in the context of their impacts on expenditure quality and service delivery. Citizen facing public service delivery from two potential problems. First all transactions costs are often quite high, relatively uniformly across use and independent of the effort of services providers (Government officials). In the language of economies, the production technology is inefficient. If IT can be implemented to reduce these transaction costs by making access to information easier or executing procedures (e.g. application, for documents and certificates or making payment for facilities. This could be reason for the basis of the high growth status of India and the changing outlook of the companies thereby India. The Indians IT industry has grown up to US \$ 5.7 billion in 1999-2000 with the annual growth rate, not sliding below 50% since 1991

THE ROLE OF THE INFORMATION AND COMMUNICATION TECHNOLOGY

Unbound from the structure of the PTI days ICT has become the foundation of every sector of every economy. (Kremer J.W, Jenkins B. Kate R.S. 2007)

- Offer immediate connectivity, voice data visual, improving efficiency transparency, such as physical transaction
- Substitute for other: more experience means of communicating and transactions, such as physical trade
- Increase choice in the market place and provide access to otherwise unavailable goods and service
- Under the geographic scope of potential market.
- Channel knowledge and information of all kinds
- Reduce transaction costs and there by improve productivities.

NEW AND EXPANDING MARKETS

Low income individuals and households based on household income survey 110 countries and standardized expenditure survey in 36 countries, the World Resource Institute and International Finance Corporation estimate that the four billion people worldwide currently earning less than \$4 a day have a collective purchasing power of around \$ 5 trillion. The market for ICTs among these four billion is fast growing. It is still relatively small to be sure, according for just over \$50 billion or rough 1% of total purchasing power in these segments.

MOBILE TELECOMMUNICATION

It took 20 years to reach One billion users, but only three years to reach two billion and forecasts suggest, another two years to reach three billion. Nine of the 10 markets for new connections are emerging markets.

SMALL AND MEDIUM SIZED ENTREPRENEUR

SMEs are the backbone of all economic large and small developed and developing countries. While the precise causal relationship between SMEs growth and poverty have not been conclusively determined, the number do reveal some close interaction between SMEs and overall economic health. It appears that the more advanced a country, the larger the formal sector SME sector. In developed countries SMEs contribute 60% of employment and 50% of gross domestic product (GDP). In developing countries, the figures are only about 30% and 17% respectively. (Kramer W. J., Jenkins B, Katz R. S. 2007)

CREATIVE INCLUSIVE BUSINESS MODELS

Inclusive business models in the ICT sector seem to take one of two primary types, they can target local individual, household and SME market for sales of technologies and services. They can also support the development of local partner networks in developing countries, creating opportunities for local business to start up and grow.

DEVELOPING LOCAL PARTNER NETWORKS

Like other large firm, large ICT companies today have extensive value chain, often referred to as partner networks or ecosystems spanning from component and equipment manufacturer to independent software developers and vendors to distributors and retailers to systems architects to technical support services. Mobile telecommunication earners also funding a great deal of scope for local partners in developing countries. In the Philippines, SMART and Globe have created a business worth more than \$200 million a year to more than a million small retailer by adopting business models based on prepaid, rather than subscription based usage. These air tune retailer, found in Kiosks and shops all over the country, play many roles for their larger partner.

The table below shows the GDP at current prices and on comparative statement of IT sector in rupees and dollars.

TABLE 2: INDIA'S GDP AND IT SECTOR

Year	GDP Current Prices (Rs billion)	IT sector (rs billion)	IT sector(US \$billion)
1994-95	9170	63	2.0
1995-96	10,732	99	2.9
1996-97	12,435	137	3.8
1997-98	13,900	187	5.0
1998-99	16,160	248	6.1
1999-2000	17,865	371	8.7
2000-2001	19,895	554	12.2

Source: GDP www.adborg.IT sectorwww.nasscom.org/it_industry/ india_statistics.asp

RESEARCH AND DEVELOPMENT

The research in the industry was earlier concentrated towards programming technologies like JAVA in the recent times, the research focus changed towards technologies like mobile, company drawn computing and software as a service. This shift is attributed to preference of checks towards the ubiquitous computing over stand alone, computing and the growing demand for low cost computing solution.

IMPORTANCE OF INFORMATION TECHNOLOGY

1. IT has entered almost all industry verticals for instance railways, airways and sea networks are connected with the help of IT, as information plays a vital role in the smooth functioning in those sector and lack of even for a second can create havoc
2. Banking is another sector that depend a lot on IT. From carrying out imported transfer to storage of confidential data.
3. IT has made several complicated and time consuming work a lot simple and faster with considerable amount of safety. In fact, e- commerce has made on line banking as well as outline purchase and selling of commodities and service much easier and faster adding to the commerce of the common man.
4. The travel and tourism sector all over the world has benefited a lot from the development of IT industry.
5. IT plays a major role in simplifying various organizational process. Most business enterprises rely on the power of information technology for carrying out their daily tasks conversely and faster
6. The field of education has also been blessed with the benefits of IT. Online application to universities, checking results, study materials and much more has made the reach of education broad and easier. (Vijoyosri G.V. 2013)

The growth and prosperity of India's IT industry depends on some crucial factor. This factors are as follows.

- India is home to large number of IT professionals, who have the necessary skill and expertise to meet the demands and expectations of the global IT industry
- The cost of skilled Indian work force is reasonably low compared to the developed nations. The Indian IT services highly cost efficient and this is also the reason as to why the IT enabled services like business process outsourcing and knowledge process outsourcing have expanded significantly in the Indian job market
- India has a huge pool of English speaking IT professionals. This is why the English -speaking countries like the U.S. and the U.K. depend on the Indian IT industry for outsourcing their business process. The IT enabled sector of India absorbs a large number of graduates from general stream in the BPO and KPO firms. All these have solved to some extent the unemployment problem. The industry continues to be a net employment generator expected to add 2,30,000 jobs in FY 2012 thus providing direct employment to about 2.8 million and directly employing 8.9 million people. However, the sector continues to face challenges of competitiveness in the globalised and modern world, particularly from countries like China and Philippines. The Indian IT market currently focuses on providing low-cost solution in the services.

DIGITAL INDIA

Digital India is an initiative by the Government of India to ensure that Government services are made available to citizens electronically by improving on line infrastructure and by increasing internet connectivity. It was launched on 1st July 2015 by Prime Minister Sri Narendra Modi. The initiative includes plans to connect rural areas with high speed internet network.

Digital India has three core components

- The creation of digital infrastructure
- Delivering services digitally
- Digital literacy

A two-way platform will be created where both the service providers and the consumers stand to benefit. The scheme will be monitored and controlled by the Digital India Advisory Group which will be chaired of the Ministry of Communication and IT. It will be an inter-Ministerial initiatives. Where all ministers and departments shall offer their own services to the public health care, Education, Judicial services etc. The Public – Private partnership model shall be adopted selectively. In addition, there are plans to restructure the National Information Centre. The project is one among the top priority projects of Modi Administration

There are nine pillars of Digital India programme

1. Broadband Highways
2. Universal Access to mobile connectivity
3. Public Internet Access Programme
4. e-governance- reforming Government through technology
5. e-kranti electronic delivery of services
6. Information for all
7. Electronics Manufacturing
8. IT for jobs
9. Early Harvest programme

DIGITAL LOCKER

Digital locker facility will help citizens to digitally store their important documents like PAN card passport, mark sheets and degree certificate, Digital locker will provide secure access to government issued documents. IT users authentically service provided by **Aadhar**. It is aimed at eliminating the use of physical documents and enable sharing of verified electronic documents, across government agencies.

The average purchasing power of the common people of India has improved substantially. The consumption spending has reached as all-time high. The aggregate demand has increased as a result. All these improved the gross production of goods and services in the Indian Economy. Even a common man in India is using the facility of Information and Technology Starting from a child to adult all are now exposed to some extent about this technology. IT sector is now linked with education, health, public services and other basic services. It is linked with market. So in the conclusion it can be said that the growth of IT industry has been instrumental in facilitating the economic progress of India.

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