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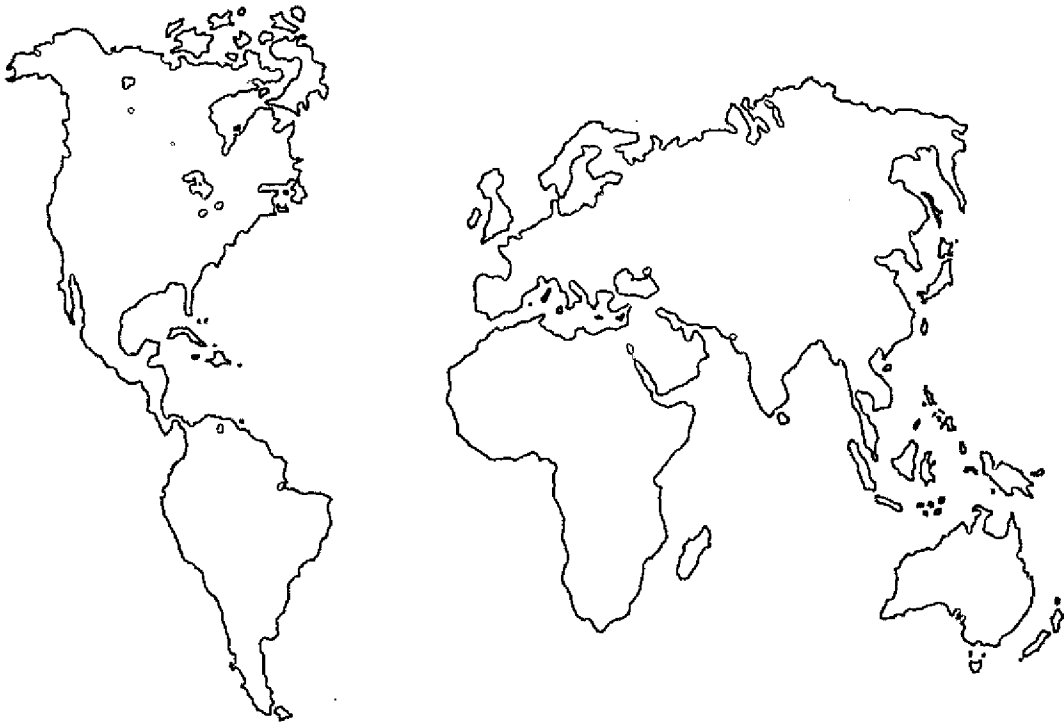
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Bangalore Case
Innovation and IT in

**2nd International Conference
on the Process of Innovation &
Learning in Dynamic City Regions**



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Innovation and IT in India
(Bangalore Case Study)

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INTRODUCTION

Bangalore is the capital and principal administrative, cultural, commercial and high tech industrial city of the Southern India State of Karnataka. Bangalore covers nearly 2,190 square kilometres and is now India's fifth largest city in terms of population. It could be claimed that Bangalore present boundaries exists since the year 1537 when the son of the King Kempe Gowda erected four watch towers to mark the boundaries of Bangalore city.



Map I: Position of Karnataka in India

Bangalore was once a quaint little cantonment town and now it has undergone a remarkable metamorphosis and has emerged as the fastest growing city in Asia.

The first three hundred years of Bangalore witnessed a very slow economic growth. The local economy was predominantly oriented to agriculture and silk culture. The city infrastructure was haphazard.

It was only after the year 1831, when the British took over the administration of the Mysore Kingdom, that Bangalore bloomed with modern facilities like the railways, telegraphs, postal and police departments. That was the turning point in the history of Bangalore as an important industrial city.

The city of Bangalore got a further boost when in the year 1881, the British returned the city to the Wodeyars. Diwans like Mirza Ismail and Sir Vishweshwarayya were the pioneers to help Bangalore attain its modern outlook.

In the year 1537, few families were residents in Bangalore. Thereafter, with the growth of importance of Bangalore as a modern city and a centre of trading and economic activities, the population started growing. However, it was only after *Independence of India* in the year 1947, when Bangalore became the Capital city of Karnataka State. Since then, the Central Govt. started setting up the Govt. industries such as aviation industries, telephone industry, machine and watch industries, electronic industries, research centres like the Defence Research and Development Organization (DRDO), the Indian Space Research Organization (ISRO), Satellite Centre etc...



Map II: Bangalore City Map

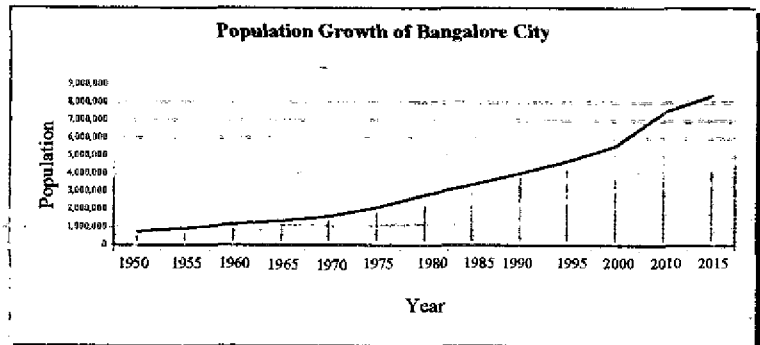
People started migrating from neighbouring states in search of jobs, training and studies. As a result, there was a spurt in growth of population curve in this city. According to the Monthly Review of the Karnataka Economy (April 2004) the population of Bangalore was in the region of 6.2 million.

Many factors helped Bangalore to develop as a dynamic city-region. These factors include, the Bangalore industrial base, the city attraction, infrastructure, local and central governments' policies and governance, incentives and resources, support institutions, entrepreneurship, environmental issues and innovation and learning systems. These factors are discussed in details on the following pages.

Bangalore Demographics Population

Table and Graph I: Population Growth of Bangalore City, show population statistics and population projections for the years 2010 & 2015 for the city of Bangalore:

Year	Population
1950	764,000
1955	947,000
1960	1,173,000
1965	1,382,000
1970	1,616,000
1975	2,111,000
1980	2,812,000
1985	3,395,000
1990	4,036,000
1995	4,745,000
2000	5,567,000
2010	7,469,000
2015	8,391,000



Graph I: Population Growth of Bangalore City

Table I: Population Growth of Bangalore City

Topography Effect

Situated at an altitude of 920-metres above the sea level and on an east west ridge on the Karnataka plateau, Bangalore enjoys a pleasant and equable climate throughout the year. Temperatures vary below 33^oC in summer and 14^oC in winter. Its tree lined streets and abundant greenery have led to name Bangalore "the Garden city" of India. The topography of Bangalore and its resultant comfortable climate are one of the distinct factors influencing local and foreign high tech investors in selecting Bangalore as the place of their IT product, and software development and research centres.

Environment & Lifestyle

Along with its salubrious climate its warm and courteous people with a cosmopolitan outlook, Bangalore offers the foreign tech investors what they need in terms of environment and life style to which they are used for years in their home country. Bangalore offers everything one can expect from a world city in terms of everyday conveniences as well as the overall quality of life.

The city is teeming with restaurants, pubs, clubs, health spas, amusement parks, supermarkets, theatres, cinemas, shopping malls, discotheques, and “necessities” of a modern day cosmopolitan lifestyle.

A plenty of world class housing, some of the finest schools, colleges, and institutions of higher learning are located here. The city boasts of fine well stocked libraries, art galleries and museums. In addition, there are classical music concerts, dance performances, folk festivals, dramas, craft exhibitions throughout the year.

There are excellent golf course, race courses, bowling alleys, gyms, yoga centers, riding clubs, swimming pools, tennis, badminton and billiards clubs etc.

The list of world class facilities and amenities is increasing day by day in tune with the need of the hour.

Besides, other factors such as political stability, no pollution level, no crime rate, no workers’ strike syndrome are favourable so far as Bangalore is concerned.

Quite number of interviews were conducted to prepare this study. These interviews and other interactions with IT companies (both Indian and Foreign) in Bangalore, reveal that some of the above-mentioned parameters might have the lowest billing in terms of growth. This does not mean that they have played any less crucial role in the determination of Bangalore as a good place for foreign investment in the IT high tech.

According to interviewee, Bangalore has constantly been in a flux and creating more and more facilities for after office pastime and leisure. This helped the IT professionals to re-wind and de-stress themselves so that they are equip mentally and physically for the next day for finding solutions to intricate business problems.

Main IT Clusters

The main IT clusters are :

- Software Technology Parks of India (STPI)-Bangalore;
- International Tech Park Ltd. (ITPL), Bangalore
- Electronic City

India has big number of IT Industry Clusters and Export Centers. These clusters and centers scatter all over the country with the Major ones located in the following cities:

Software Technology Parks of India (STPD)-Bangalore

STPI-Bangalore was started in 1991 with Rs. 2.5 Crore¹ investment by the Ministry of IT (formerly known as Department of Electronics). Today, the investment in the Network Operation Centre is in excess of Rs. 40 Crores as this is due to greater level acceptance by the



Map III: STPI coverage in India

¹ Crore = 10,000,000

customers of STPI. It has a microwave network with 140 radios providing services to about 400 customer projects.

Nortel, one of the major telecom equipment suppliers in the world, has located their hub in the STPI-Bangalore in 1997. Presently, the relationship enjoyed between Nortel and other STPI members as well as other International players, is unique. The network of services is operating at a premium quality.

The Network Operations Center has an area of 8,000 sq. ft., with the implementation of different technologies e.g. France Relay, ATM, ISDN, VSAT, FIBRE, Microwave and others.

The entire STPI system is run on Intranet based process meeting ISO 9001 standards. On the Internet, STPI maintains a very healthy quality of services. Today, STPI-Bangalore counts among the premier and oldest ISPs in the country. Notably, since STPI-Bangalore was the first center where Internet was brought up, Bangalore has the distinction of being the first city of communication service in India.

Depending upon the growing demand of the IT industry, the bandwidth operated from STPI has been increased from time to time. They have more than 18 carriers to multiple countries across the world. In tune with the IT industry requirement, STPI-Bangalore has established a large Earth Station facility and VSAT Hub of ERNET.

In August 2000, a cyber Park – Technology Incubation Centre was set up in Bangalore to promote the growth of the IT sector.

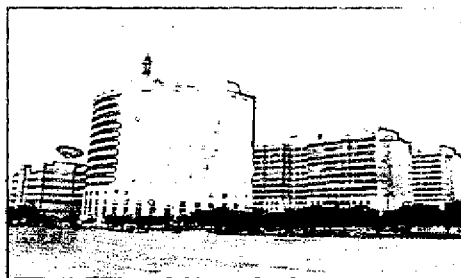
Benefits of Software Technology Park (STP) Scheme

The STP Scheme provides incentives to its members. These incentives include:

- 100% duty free imports
- 100% foreign equity permitted
- 100% corporate Income Tax exemption till 2010
- Excise duty exemption & reimbursement of Central Sales Tax (CST).
- Dedicated Data Communication links
- Single window clearance
- Custom bonding and export certification

International Tech Park-Bangalore

The International Tech Park (ITP) of Bangalore, offers a superb business advantage to the corporate professionals seeking a foothold in India. The ITP has been built applying international standards supported by the state of the art infrastructure. The ITP offers a one stop solutions integrating office, production, commercial, residential and recreational needs in a single location.



The International Technology Park Building, Bangalore

This ITP has been built to suit the requirements of international high-tech companies in the field of information technology, software development, electronics, telecommunication, research and development financial services and other non-polluting high tech industries.

Electronics City is an industrial park spread over 330 acres exclusively meant for electronics industries. It houses more than a hundred industries, including IT industry, leaders such as Motorola, Infosys, Siemens, ITI, Wipro etc... It provides incubation facilities and Data-com services. While Electronics Trade and Technology Development Center provides quality human resources.

All of the service activities for the Electronics City are maintained by a company called Keonics which, provides all the necessary infrastructure.

In addition to the ITP, there are more than 80 private IT parks in Bangalore and in other cities of Karnataka.

In Bangalore there are a number of privately operated world class business centres such as:

- **DBS Business Centre, Bangalore**
This centre is the finest choice for all multi-nationals coming into Bangalore and is the largest business centre in Asia – with choice of private or open offices, executive suites and conference facilities. It is centrally air conditioned and with generator back. All communication (including voice mail and DID) and support infrastructure is available.
- **Globelink Executive Centre, Koramangala**
This Centre includes the professional INSTA-Office at Koramangala, Cabins, Communication facilities etc.

In addition to these two main centres other Business Centres exist in Bangalore. For example, Glenridge Executive Centre, ABC Services – Executive Centre, Brauners Buisness Centre, PAN ASIA Business Services, St. Marks Business Centre, D.J. Business Centre, Golden Square Business Centre etc.

In tune with the requirement of the industry, trade and commerce, the Govt. of Karnataka has embarked on a massive infrastructure expansion programme aimed at providing industry with world class facilities at competitive prices. Some of the major projects on the fast track of implementation are :

- Bangalore International Airport at Devanahalli
- Bangalore Mysore Expressway
- Bangalore Mass Rapid Transit system
- Upgradation of Minor Airports
- Upgradation of existing roads and laying of new ones on BOT/BOOT basis.
- Special Economic Zone at Hassan.

FDI Flow

Given below is a list of sources of FDI flow to Karnataka through multinational companies who have already set up their respective software and services and system development centres:

- USA
- Japan
- UK
- Germany
- France
- Holland
- Sweden
- China

Leading Global IT Operators from Bangalore

Bangalore IT clusters have become popular and are home to an array of IT multinational majors such as:

Integrated Chip Design

- Texas Instrument
- Siemens
- AMD
- Philip
- Analog Services
- National Semi-Conductors
- Intel

Communication Software

- Lucent Technologies
- Nortel
- Siemens
- Motorola
- Cisco Systems
- Kyocera
- Sony

System Software

- Microsoft
- Oracle
- Novell
- Sun Microsystem
- Digital / Compaq
- Hewlett & Packard
- Network Associates

R&D Centres

- Google
- Yahoo
- Textron

- Bose
- Schneider Electric

Besides, Bangalore has emerged as the best place for back office operations. In the case of the ITES segment, the following firms are quite known:

- 24/7 Customer.com
- I Seva
- ICIC One services
- Hinduja TMT
- 1 Back Office
- CLiz
- M Source

In the case of the BPO sector, the following names are well known:

- Sykes
- Axa Business Service
- Ernst & Young
- Swiss Shared Services
- Siemens Shares Services
- DSL Software
- Accenture
- GS Services (Goldman Sachs)

In the captive support sector, the following names are worth mentioning :

- Dell
- Global -e-Business
- HSBC
- GE Capital
- Phoenix Global (Metallife)
- Fidelity

In the case of the technology support sector, the following companies are operating in the field of Technology Support Services:

- Digital Global Soft
- First Ring
- ADDR
- Aveva
- Manhattan

The interactive discussions and interviews conducted with professionals working in ICT units in Bangalore reveal that, based on IT industry needs, the city infrastructure and IT cluster facilities are being expanded regularly. This infrastructure expansion encouraged Indian IT industries to invest more and more in Bangalore and promote FDI flow from overseas. The IT stakeholders at the Central, State Government or local Municipal authorities assess the demand and supply situation of the infrastructure plan. This assessment helps them to create additional facilities to meet the market needs. This has also trail blazing effects in neighbouring cities. These cities are: Hassan, Hubli and Dharwad, Raichur, Mysore, Tumkur, Mangalore, Belgaun, and Manipal.

Additional infrastructure is being constructed in all the above-mentioned 8 cities to expand the momentum of dynamic growth in Bangalore which, in turn helped to create Bangalore as a dynamic City-Region.

Creation of Employment opportunities

With more and more IT companies setting up their software and services development centres, Bangalore has become the undisputed IT nerve centre of ASIA. In fact, Bangalore is fuelling the new phenomenon of "Reverse brain drain" with IT professionals flocking here from all the world.

According to data available, the total number of IT companies in Bangalore during 2004-05 was 1,200, and 115,000 professionals were on the roll.

IT Products Exports from Karnataka

Table II shows export growth of Rs 9,500 (27,600-18,100) which is equivalent to 52% for the year 2004-05 over the year 2003-04 for the Karnataka State alone.

Year	Value of Export
2002-03	Rs. 12,350 Crore
2003-04	Rs. 18,100 Crore (US\$ 4,022 million)
2004-05	Rs. 27,600 Crore (US\$ 6,272 million)

Table II: Software Exports from Karnataka

Table III shows that Karnataka exports its IT products to all continents worldwide with the United States of America having the lead figure of 63%, followed by Europe 23%. Japan has the least figure of 4%. 5% of the Karnataka software exports goes to the neighbouring countries in Asia.

Continent	% export from Karnataka
America	63%
Europe	23%
Asia	5%
Japan	4%
Rest of the world	5%

Table III: Continent wise Exports during 2004-05

52% of Karnataka exports was on Enterprise application as shown on table VI. The technology software was the second in the rank with 33%. The value of the ITES/BPO² exports was 13%. While other IT products valued 2% of the total exports.

IT Segment	% export
Enterprise application	52%
Technology Software	33%
ITES / BPO	13%
Others	2%

Table IV: Segment wise Exports during 2004-05

Table V shows export growth of Rs 1,263 Crores during 2004-05 over the previous year. This is equivalent to 57% export growth.

Year	Value of exports
2003-04	Rs. 2,237 Crores (US\$ 497 million)
2004-05	Rs. 3,500 Crores (US\$ 795 million)

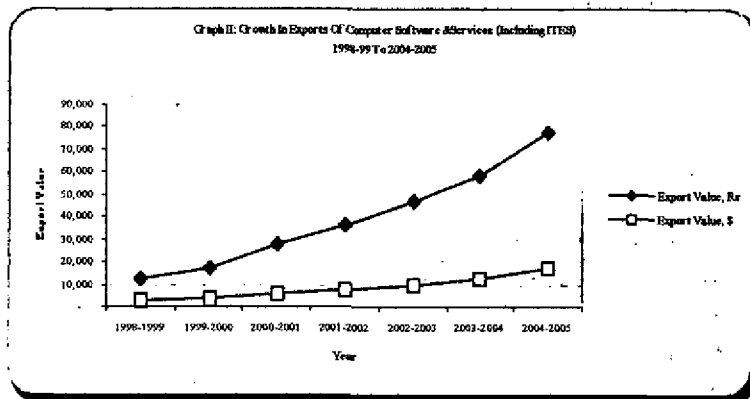
Table V: Export of ITES / BPO Sector

Out of all India's global software products and services exports during 2004-05 which, valued US\$ 17.191 Billion, Bangalore alone contributed 36.48%.

Over 40% of the Bangalore's software exports are in the high technology areas, i.e.:: IT access networks, optical networks, video broadcasting, Bluetooth, WAP, 3-G, Wireless applications, VOIP, ATM Switches, SDH etc.

² ITES = IT enables services. BPO = Business Processing Outsourcing.

Due to the dynamic growth of the Software & Services in Bangalore and the neighbouring cities in Karnataka, India emerged as the nucleus of growth and development. India's IT exports continue to grow phenomenally. In fact, no other sector has grown at such digital pace as IT has. This dynamic growth has helped India to transform from Million dollar baby to Billion dollar IT giant. From a meager 105 USD Million in 1989, India's Software/Services exports have jumped to 17.21 USD Billion in 2004-05. On an average, the growth is plus 30% in the last few years. The growth momentum which started in late 90s, still continues. Indian Software & Services industry is innovating itself to go up the value chain in a big way to position itself significantly in the global markets including US, UK, etc and sustain the lead.



Graph II: Growth In Export of Computer Software

Today, India's share in the world software and services market has increased to 2.4% in 2003-04. Evidently, the IT growth has brought vibrancy in the growth of other sectors too.

Today, the world recognizes India, thanks to the dynamic growth in Bangalore, as an important source of high quality IT manpower. 75 out of total 116 SEI-CMM level 5 certified companies worldwide are Indian. Further, over 300 Indian computer software and services have already obtained ISO 9000 or CMM level 2 certification. One third of the e-commerce start-ups in the Silicon Valley continue to be by Indians. Over half of the Fortune 500 companies are outsourcing their software requirements to India. India has now emerged as the hub of the sun-rise knowledge based and technology driven industries such as information technology, bio-technology, bio-informatics, telecommunications, aerospace.

India has already received recognition as the outsourcing hub of IT Enabling Services, business process outsourcing services, cost effective medical lab, diagnostic, and health services, dental services, automotive parts and ancillaries etc in the world.

Bangalore accounts for more than 36% of India's global IT exports on software products and services including IT enabled services, Business Promotion Offices (ITES/BPO).

Learning and Educational Support Institutions and Infrastructure

Bangalore's pre-eminent position on the industrial and business map of India is based on several factors. Karnataka state is rich in natural resources, and known for its salubrious topography effect. It has a strong resource base of highly educated people, backed by an extensive educational infrastructure comprising world-renowned schools, colleges, institutes of higher learning, research and development centres.

The State of Karnataka is widely recognised as an important centre of learning. The following numbers of institutions are located in Karnataka: 12 Universities, 98 Engineering colleges, 107 medical colleges, 916 General colleges, 184 polytechnics, 188 Information Technology Institutes; and other training institutions

In addition, Bangalore has high-level institutions such as :

- Indian Institute of Management, Bangalore (IIM-B).
- Indian Institute of Science (IISc).
- Indian Institute of Information Technology, Bangalore (IIT-B)
- Institute of Bioinformatics and Applied Biotechnology, Bangalore (IBAB)
- Defence Research & Development Organisation (DRDO)
- ISRO Satellite Centre (ISRO)
- ISRO Telemetry Tracking and Command Network (ISTRAC),
- Indian Institute of Astrophysics.
- Raman Research Institute
- Centre for Artificial Intelligence and Robotics
- Centre for Airborne Systems Studies and Analyses
- Jawaharlal Nehru Centre for Advanced Scientific Research (JNCAR)
- Microwave Tube Research and Development Centre
- Bharat Electronics Complex
- Gas Turbine Research Institute
- National Institute of Advanced Studies (NIAS)
- CSIR Centre for Mathematical Modelling and Computer Simulation (CMMACS)

Analysis, assessments and talks with IT industries and IT software product and design development centres in Bangalore reveal that all these education and research institutions play a significant role in supplying the high quality of IT, design, research and development oriented manpower, which act as a catalyst in development of innovative systems management in the IT industry in Bangalore in particular and Karnataka in general.

It is understood during the interactive meetings with IT companies in Bangalore, that large IT companies are setting up their own specialised IT training centres for their own IT professionals. These training centres help on providing capacity building activities for the development and enhancement of the required skills to meet the new challenge of the ever changing global ICT market. Besides, foreign language training centres are being set up in Bangalore city region for teaching English, Japanese, Chinese, French and Spanish languages.

Electronics & Computer Software Export Promotion Council (ESC) under the aegis of the Department of Commerce, Govt. of India, has been operating two schemes known as LRMAFI-J and LRMAFI-G for encouraging Indian IT software and services member exporters of ESC to get their IT professionals / personnel trained in the Japanese or German language as the case may be, under these two language support schemes. Financial assistance is provided to Indian IT member-exporters of ESC for this purpose. Besides, financial assistance is also provided to IT students for

learning the Japanese and German languages so that the IT industry does not face any language related market access constraint while making efforts to enter these markets.

Besides, Karnataka has always been at the forefront of industrial growth in India. With its inherent capabilities coupled with its enterprising citizens, Bangalore in particular and Karnataka in general provide the ideal choice for investment opportunities. Some advantages include:

- Superior human resources which includes trained technical manpower in engineering, management and basic sciences;
- High level of research and development facilities and research institutions located in Karnataka.
- Favourable climate and habitat.
- Excellent communication facilities and accessibility provided by broad gauge railways, airport, national highways etc.

Governance System

Karnataka is the first state to announce IT policy in the year 1997. The Millennium BPO Policy of the Government of Karnataka was released at the India Business Roundtable in New York, USA on 5th Sept. 2002. These policies, among other factors, have acted as an important catalyst for the growth of IT industry in the State. As a result, IT industry has got an added boost with expansion of the type and nature of the businesses. This policy, among other factors, facilitated Bangalore to become the centre for more and more companies in sophisticated IT products and services.

The value addition from IT professionals of Bangalore is getting at the higher end of the spectrum. Thanks to Moore's Law, the cost of technology is dropping and technology is advancing exponentially. Thus, the prices of the new products are dropping and the same products are becoming more intelligent. The IT usage is becoming more widespread and relevant.

What is Moore's Law?

Moore noted that the number of devices, which then included transistors and resistors, inside chips was doubling every year, largely because engineers could shrink the size of transistors. That meant the performance and capabilities of semiconductors was growing exponentially and would continue to. In 1975, Moore amended the law to state that the number of transistors doubled about every 24 months.

Today, India has emerged as a nation with the most cost competitive technical work force which is conducive to foreign investment environment. It has a very stable democratic political system working over the last 50 years of independence. The huge pool of talented technical workforce is its biggest USP.

The Government has been consistently reinforcing its commitment to the IT industry with its simple and industry friendly policies. As a result, India's high tech landscape is fast changing.

With the availability of all factors of production: land, labour capital and entrepreneurship, India is emerging as a major dynamic IT outsourcing hub in the world.

India - Advantages

- ✓ Vast base of skilled, English-speaking manpower
- ✓ High pace of growth
- ✓ Quality
- ✓ Wide exposure
- ✓ Offshore development
- ✓ Appropriate training – 232 advanced training institutes
- ✓ Government support policy measures
- ✓ Phenomenal growth of it software and services production us\$ 4.20 Billion (1998-99) to us\$21.58 Billion (2004-05)
- ✓ India's experience and wide exposure to various platforms

India provide it solutions globally. Serving over 125 countries across the globe.

Major factors contributing to India's IT success include:

- ✓ IT-education
- ✓ Development of appropriate infrastructure
- ✓ Telecom infrastructure
- ✓ Central and state government policy initiatives
- ✓ FDI flow

E-governance

Karnataka's-IT-policy focuses on using e-governance as a tool and delivering a government that is more pro-active and responsive to its citizens.

Various Departments of the Karnataka Government have introduced electronic means and computerise their activities and take IT to the masses. Each Government Department is conducting related departmental activities in e-governance.

Several efforts for implementing Government projects using electronic means are being carried out, under the umbrella of the Karnataka Government's IT policy.

An Information Guide for Establishing IT industries in Karnataka

To assist the industrial promoters in establishing companies in Karnataka, the Department of IT, Government of Karnataka, has compiled information from various Government departments and agencies to develop the IT Brochure: Guide for Establishing Industries in Karnataka.

This guide includes information about Government policies on foreign investment; forms for establishing a company; software technology parks schemes for establishing companies; description of how to obtain Govt. permits and licences; venture capital funding mechanisms; labour, Govt. incentives for IT companies; Karnataka Udyog Mitra; Karnataka Biotechnology and Information Technology Services (K-BITS); and a list of agencies to be contacted for establishing a company.

How can one set up an IT company in Karnataka

Karnataka Udyog Mitra (KUM) will consider the proposal for starting new industries. KUM will provide escort services for identification of land; getting Govt. clearances,

approvals and licences by charging a nominal fee. Once the clearance and approvals are obtained, the Karnataka IT and Biotechnology Services (K-BITS) will issue an approval certificate based on which the industry will be set up. After setting up the industry, the company should be registered with the Directorate of IT and Biotechnology (DIT).

Once the new company is registered with the DIT, a new registration Certificate will be issued for the company. Only after the issuance of the new registration Certificate the company will be entitled to concessions and incentives pertaining to entry tax, sales tax, and rebates on the costing land, among others.

Government Benefits to investors

The Karnataka Government offers special assistance, incentives, and concessions for the IT industries which have investments in fixed assets up to Rs. 100 Crores. The explosive growth of IT in Karnataka has been helped in no small measure by the progressive policies and investor friendly attitude of the Govt. Some of the benefits which the Government offers include:

- ❖ **Entry tax exemption**
IT industries will be exempt from payment of Entry Tax on Computer hardware, Computer peripherals and other capital goods including captive power generation sets during the implementation stage which can be extended up to 5 years from the date of commencement of implementation of the project.
- ❖ **Power Tariff Concessions**
 - Software industries will be treated as industrial (and not commercial) consumers and electricity tariff applicable to the industrial consumers will be levied on such industries.
 - Software industries, which need electrical power up to 5 KVA, will be permitted to be established without any local restrictions and will be made eligible for all incentives and concessions.
 - As continuous uninterrupted and quality power supply is one of the prime requirements of sustenance and growth of Information Technology industries, these industries will be given priority in sanctions and services of power. The IT industries will also be exempted from power-cuts without any time limit.
 - Captive power generation sets installed by the Information Technology industry will be eligible for total exemption from payment of electricity tax without any time limit.
- ❖ **Quick Clearances from Pollution Control Board**
Karnataka State Pollution Control Board has simplified the procedure for seeking clearances under the Air Act and the Water Act for the Software companies that use captive DG Sets.

Concessions on Company Registration Charges

IT companies taking up expansion, diversification, and modernisation receive concessions on registration charges.

Because of various policy initiatives taken by the Central and local state Governments, Bangalore City-Region offers a world class infrastructure, availability of niche human resources at internationally competitive wage level, pleasant work culture and environment supported by concentration of high tech IT and R & D Institutions. Besides, the city has a cosmopolitan nature. Due to all these factors, Bangalore city region has seen a major technology boom, and it has emerged as the major IT outsourcing hub in the world.

Bangalore City-Region is now home to more than 250 high tech companies such as IBM, Texas Instruments, Hewlett Packard, Intel, Motorola, Cisco Systems, Novell, Sony, Nissan, Sharp, British Aerospace, British Telecom, Bosch, Siemens, SAP, Daimler Benz, Bull, Alcatel, Nortel Networks, Picco, Ericsson etc. including India's home grown IT giants like Wipro, Infosys, TCS etc. Consequently, Bangalore is now called the "Silicon Valley" of India.

Because of Government investor friendly incentives and attitude, Bangalore City-Region has grown in diverse industrial activities, and is now a base for 10,000 small, medium and large scale industries. However, it is the IT and software products and services industry which has raised Bangalore's status as the 4th largest technology cluster in the world.

FDI/Trade Promotion Activities by Department of Information Technology, Govt. of Karnataka

The Department of IT, Govt. of Karnataka has been undertaking various activities to promote Bangalore as the international high tech IT software and services outsourcing hub, and flow of FDI in the IT sector in the state. Their promotional activities include:

- Organization of interaction meetings between Indian IT firms and visiting foreign IT delegations to Bangalore;
- Organization of participation of State of Karnataka in various IT events taking place in the world; and
- Organization of IT.Com Exhibition in Bangalore, every year which is visited by a large number of foreign buyers from all over the world.

IT Trade Promotion Activities by Electronics and Computer Software Export Promotion Council (ESC)

Electronics and Computer software Export Promotion Council (ESC) is an autonomous organization under the Department of Information Technology, Ministry of Communications and Information Technology, Government of India. ESC implement a series of activities to promote India's export of electronics & computer software and services including ITES/BPO services in India and abroad which also include, among others:

- Organization of an international networking event and exhibition called INDIASOFT in February each year in India which is visited by IT buyers/delegates from more than 60 countries in the world;
- Organization of participation of Indian IT firms in international exhibitions such as CeBIT in Hannover, Outsource World in London, ICCM in USA, WESCON in USA, Outsource World in New York, Embedded Technology

- Fair in Yokohama, GITEX, Dubai, Communic Asia/Enterprises IT in Singapore, etc. to name a few;
- Organization of interactive meetings between Indian IT firms and the foreign delegates through its offices in Bangalore, Chennai, New Delhi etc;
 - Inviting IT buyers delegations to India under the MAI programme of the Department of Commerce, Govt. of India to coincide with various Buyer Seller Meets (BSMs) in Bangalore, Chennai, Hyderabad, Mumbai/Pune, and New Delhi/Gurgaon etc; and
 - Dissemination of IT market leads and intelligence, enquiries, live contacts of buyers etc. through its monthly bulletin called "ELSOFTEX" etc.

The ESC's Regional office in Bangalore is assisting IT firms in Bangalore as well the services provided cover the whole State of Karnataka through its various trade promotional activities.

Similar benefits are also available for IT software and services units located in Special Economic Zones (SEZs), Free Trade Zones (FTZs) and Hardware Technology Parks (HTPs), etc.

Rates for Corporate Taxes in India

Corporations resident in India (whether owned by Indians or non-residents) are taxed on their worldwide income arising from all sources.

Non-resident Corporations are essentially taxed on the income earned from a business connection in India or from other Indian sources. A Corporation is deemed to be resident in India if it is incorporated in India or if its control and management is situated entirely in India.

If a tax treaty exists between India and the country in which the tax payer is resident, the provisions of the treaty or the Act, whichever is more beneficial, will apply to the tax payer.

Foreign Corporations are subject to a basic tax rate of 40% enhanced by a 2.5% surcharge. Further, the tax payable by all the Corporations is enhanced by an education cess at the rate of 2% on the payable tax, including the surcharge.

Liability for Income Tax of non-residents

Non-residents are taxed on the following income :

- Accruing or arising in India
- received in India; and
- deemed to accrue or arise in India through a business connection, through or from an asset or source of income in India, or through the transfer of a capital asset situated in India (including a share in a company incorporated in India or from other specified sources.

Individuals are considered as "non-residents" if they do not meet either of the following criteria :

- They stay in India for 182 days or more during the tax year (1st April to 31st March).

- They stay in India for 60 days or more during the tax year, and have stayed in India for at least 365 days in aggregate during the preceding four tax years.

Expatriate employees of a foreign enterprise are not subject to tax, with the obligation of satisfying the following conditions :

- The enterprise is not engaged in a trade or business in India;
- The employee did not stay in India for more than 90 days (generally extended under tax treaties to 183 days) in a tax year.
- The compensation paid is not liable to be deducted by the employer from his taxable income in India.

India has taxation treaties with a large number of countries to avoid double taxation.

VISA and Registration Requirements

Foreign nationals can secure visas to enter India in the applicable categories such as:

Tourist Visa – Persons wishing to visit India for tourism or for meeting friends and relatives would be granted six month's tourist visa. Tourist visa is non-extendable and non-convertible.

Business Visa – Visitors travelling to India on business visa for up to 6 months. Long-term business visas for up to 5 years validity with multiple entry can also be granted to frequent travellers and technicians/experts going to India in pursuance of bilateral agreement or joint venture projects having Government of India approval.

Student Visa – Can be obtained on furnishing proof of admission to recognized Universities/Institutions in India for the duration of the course of study.

Employment Visa – Employment visa can also be obtained on furnishing proof of employment from employing company in India.

Residential Permit

All foreign nationals are required to register with the local immigration authorities called the Foreign Regional Registration Office (FRRO) within 14 days from their date of arrival, if their visas are valid for longer than 6 months. A foreign national holding a visa valid for 6 months or less who stays in India beyond the period of validity must register within 14 days after 180 days from the date of arrival in India subject to holding a visa for the extended period.

Work Visas for family members

Entry visas are issued to accompanying family members of individuals visiting India on business or for employment.

Inter-Corporate transferee Visa

These visas are granted to inter-corporate transferees on fulfilment of the criteria prescribed in this connection.

Analysis and discussions with the IT industries in Bangalore City-Region about the support and co-operation being extended by different Government and Non-

Government agencies in Bangalore in particular and Karnataka in general, reveal that the industry is appreciative of the Government's industry and investor friendly altitude and co-operation, and they feel that the industry, trade, stakeholders, Government, and Non- Government agencies together have made Bangalore City-Region as dynamic, and ever-evolving with the need of the hour, and thus, have made it the major IT outsourcing hub in the world.

Access of Venture Capital

Banking and Finance

Banking and Finance plays a vital role in evolution of entrepreneurship, leadership and innovation of an integrated system management in technology oriented industries. Bangalore in particular and Karnataka in general offers strong financial support to entrepreneurs through several state govt institutions like KSIDC, KITVEN AND KSFC and Govt. of India financial institutions such as IDBI, IFCI, SIDBI, NABARD and ICICI. Four (4) of the country's major nationalised banks, namely, Corporation Bank, State Bank of Mysore, Canara Bank and Vijaya Bank as well as one of India's largest private banks, Vysya Bank, have their headquarters in Karnataka. Besides, World's leading banking corporations like Citibank, Bank of America, Standard Charter Bank, HSBC, Deutsche Bank, Bank Muscat, Nova Scotia and several others have set their branches in Bangalore, Karnataka.

Karnataka Information Technology Venture Capital Fund (KITVEN), Bangalore

The primary object of KITVEN is to provide long-term funds to IT based units. The investment will be in the range of Rs. 25.00 Lakh³ to Rs. 150.00 Lakh with the duration of 5 to 7 years. The investment may be in one or more of the following form:

1. Preference Shares (Redeemable / Convertible)
2. Debentures (Convertible / Non-Convertible)
3. Conditional Loans
4. Conventional Loans

The fund will enter into a Partnership Agreement with the promoter specifying the terms and conditions, funding partners etc.

The Small Industries Development Bank of India (SIDBI) provides Venture Capital Funds to the new IT start ups.

Bangalore Stock Exchange

The stock exchange market plays a distinct role in raising capital for the entrepreneurs. Bangalore has its own stock exchange know as the Bangalore Stock Exchange Ltd. It is a self-regulatory organization located in the "Silicon Valley" of India itself. The Exchange is managed by a Council of Management of members nominated by Securities Exchanged Board of India (SEBI), public representatives, elected members, and Executive Director. The Exchange was set up in 1963 now enjoys number 1 position in South India.

³ Lakh = 100,000

Entrepreneurships

Success breeds success. In Bangalore one can witness the success stories of home grown IT icons and legends like Wipro, Infosys, etc. and their fastest growth and migration from the SME level to giant multi-national companies. Also one can witness a combination of a variety of local factors of production as well as growth oriented industry with friendly enabling Government policy framework. The Government Policy Framework tend to create a favourable ambience for growth of a new generations of entrepreneurs and leadership in the high tech IT software and services sector. This can be clearly observed in Bangalore and its neighbouring cities. The driving force for these cities, including Bangalore is a set of factors spelled as the genius creativity, integration with the global IT trend and technology, development of matching skill sets, value added IT activities required now and in the future, and orientation of IT service supply model to suit the customers' requirements.

As a result, Bangalore boasts of having as many as 32 SEI-CMM⁴ certified IT companies as against the tally of 63 SEI-CMM certified IT companies all over India and 87 SEI-CMM certified IT companies all over the world.

The new entrepreneurship generation in the IT sector has been constantly building up their intrinsic strengths by upgrading themselves in terms of technology, expanding their skills even by way of merging and/or acquisitions of IT companies in India and abroad. Sometimes, such newly acquired skills and services are market specific, depending upon the IT opportunities emerging in the specific market/region.

All these management related issues and factors have helped the entrepreneurs in designing new forms of innovative integrated management systems which, can take care of not only constant human resource development to match with the IT business trend, but also new forms of working culture and highest productivity oriented employer-employee relationship. Also they create systems of recognition for creative talent, and drive for finding solutions on the spot to intricate problems in the IT services sector; Customers' satisfaction; business development and revenue growth in the company.

Because of this new entrepreneurship and leadership, Bangalore is recognised as the "IT Capital of India". In 1998, News Week magazine ranked Bangalore among the world's "*Hottest Tech Cities*". Business Week placed Bangalore among the "*Global Hot Spots of the 21st Century*".

Further, the United Nation's Human Development Report-2000 recognises Bangalore as the fourth leading hub of technological innovation, ahead of many cities in USA, Europe, Japan, China and South East Asia.

A recent research study based on various parameters ranks Bangalore as the India's top tech cities, with the highest rates of Manpower availability, Environment & life style and ICT Infrastructure availability and usage.

⁴ SEI-CMM = Software Engineering Institute - Capability Maturity Model

SUMMING UP

To sum up, the following factors have contributed significantly to change the high tech landscape of India and the dynamic city region of Bangalore:

- IT vision and policy initiatives of the Govt. of India in general and Govt. of Karnataka in particular;
- Creation of ICT infrastructure, IT and Electronics clusters such as Software Technology Parks of India, International Tech Parks, Electronic city.
- Setting up of privately operated world class business centres.
- Incubation facilities in STPIs.
- Govt of India industry friendly foreign investment policy and programme.
- Learning and education support institutions and infrastructure.
- Setting up of technical and scientific research institutions.
- Setting up of premier business management schools of international repute.
- Setting up of CSIR Centre for Mathematical modelling and computer simulation.
- Industry user friendly Central and State Governance systems.
- State Govt's single window clearance and simplified procedure.
- Central Govt's tax benefits.
- State level incentives such as entry tax exemption, power tariff concession, quick clearance from Pollution Control Board, concessions on company registration charges etc.
- Availability of all the factors of production : Land, high tech manpower, capital and highly motivated local entrepreneurship
- Access to venture capital fund through Karnataka Information Technology Venture Capital Fund (KITVEN), SIDBI Capital Venture Fund;
- Access to Bangalore Stock Exchange, leading banking and financial institutions in Karnataka.
- Success stories of home grown IT giants such as Infosys, Wipro, TCS, HCL Technologies, Satyam etc.
- Salubrious climate and environment, recreation and pastime facilities and availability of necessities of a modern day cosmopolitan lifestyle such as restaurants, pubs, clubs, health spas, supermarkets, shopping malls, theatres/cinemas, art galleries, museums, golf courses, race courses, swimming pools, billiard clubs etc.
- Warm and courteous people of Bangalore with a cosmopolitan outlook.
- Above all, working together of the industry, trade, academia, and both the Central and State Govts. to make Bangalore as the fourth leading hub of technological innovation, ahead of many cities in USA, Europe, Japan, China and South East Asia, according to the United Nation's Human Development Report – 2000.

Concluding Remarks

This case study presents how over a period of 466 years i.e. from 1537 till 2005, a massive metamorphosis has taken place from a primary agro-based economy to a modern high tech economy. It is a radical evolution indeed, and the process of change-over has been facilitated by the far sighted policy initiative undertaken by the Government of India. This growth was also facilitated by the enabling market and conditions created in every stage of evolution which can be summarized as follows:

1. creating the right kind of infrastructure and clusters;

2. setting up the right type schools, general colleges, technical/engineering institutions, R&D institutions;
3. focussing the right kind of cultural environment and life style;
4. evolving the right kind of integrated innovative management and technological systems;
5. enlightened entrepreneurship to encourage creativity, research and development, business and revenue growth generation;
6. expansion of technology, knowledge and requisite skill spectrum to be at par with the ups and downs of the global economy, industry, trade, academia; and
7. coordination between the Central and State Governments have worked in tandem.

This set of factors has made Bangalore not only a dynamic City-Region but also a world wide recognised brand name.

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