Chapter Four: Profile of the Study Area & SMEs Considered for the Study
1. **Introduction**

Karnataka, the land of the Kannadigas, is a state in South West India. It was created on 1 November 1956, with the passing of the States Reorganisation Act. Originally known as the State of Mysore, it was renamed Karnataka in 1973.

Karnataka is bordered by the Arabian Sea to the west, Goa to the northwest, Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. The state covers an area of 191,976 square kilometres (74,122 sq mi), or 5.83% of the total geographical area of India. It is the eighth largest Indian state by area, the ninth largest by population and comprises 30 districts. Kannada is the official and most widely spoken language.

The two main river systems of the state are Krishna and its tributaries (Bhima, Ghataprabha, Vedavati, Malaprabha, and Tungabhadra) in the north, and the Cauvery and its tributaries (Hemavati, Shimsha, Arkavathi, Lakshmana Thirtha and Kabini) in the south. Both these rivers flow eastward and fall into the Bay of Bengal.

Though several etymologies have been suggested for the name Karnataka, the generally accepted one is that Karnataka is derived from the Kannada words karu and nadu, meaning elevated land. Karu nadu may also be read as Karu (black) and nadu (region), as a reference to the black cotton soil found in the Bayaluseeme region of Karnataka. The British used the word Carnatic (sometimes Karnatak) to describe both sides of peninsular India, south of the Krishna River.

With an antiquity that dates to the paleolithic, Karnataka has also been home to some of the most powerful empires of ancient and medieval India. The philosophers and musical bards patronised by these empires launched socio-religious and literary movements which have endured to the present day. Karnataka has contributed significantly to both forms of Indian classical music, the Carnatic (Karnataka Music) and Hindustani traditions. Writers in the Kannada language have received the most number of Jnanpith awards in India. Bangalore is the capital city of the state and is at the forefront of the rapid economic and technological development that India is experiencing.
Karnataka, India’s eighth largest State in terms of geographical size with 1, 91,791 square km is home to 5.28 crore people (2001 census) accounting for 5.1% of India’s population. The State has 30 districts and 176 taluks. Based on physiographic features, the State is divided into four regions viz., coastal region, malnad (hilly) region, northern plateau region and the southern plateau region. Historically the population growth in Karnataka has been close to the national average. However, there has been a decline in the population growth rate in the last two decades. The decennial population growth rate in the last decade is 17.51%. The State, with its urban population at 34% of total population, is currently ranked as the fifth most urbanised among all States. The urban and rural population decadal growth rates are 29.15% and 12.30% respectively. By 2011, the state’s projected population is 6.25 crores.

The Human Development Index (HDI) of the State increased from 0.598 in 1996 to 0.658 in 2006 and is above all India HDI of 0.648 in 2006. In terms of Gender Development Index (GDI), Karnataka at 0.647 and is above all India Gender Development Index of 0.633 in 2006.

According to International Food Policy Research Institute, New Delhi, Karnataka State has hunger index of 23.7, which is on par with India hunger index of 23.7, ranking 11th among the states.

**State Income**

Advance Estimates of Gross State Domestic Product (GSDP) or state income of Karnataka at factor cost at constant prices (1999-2000) in the year 2009-10 is likely to attain a level of Rs.1,89,773 crore, as against the Quick Estimates of GSDP for the year 2008-09 of Rs.1,79,809 crore. The growth in GSDP during 2009-10 is estimated at 5.5 per cent as compared to the previous year. This was 4.5 per cent in 2008-09. The ‘agriculture, forestry and fishing’ sector is likely to show a decline of 0.4 per cent in its GSDP during 2009-10. The growth in GSDP of secondary and tertiary sectors is anticipated to be 7.5 per cent and 6.2 per cent respectively during 2009-10.

Advance Estimates of Net State Domestic Product (NSDP) or Net State Income of Karnataka at factor cost at constant (1999-2000) prices in 2009-10 was at Rs.1,68,022
crore as against Quick Estimates Rs.1,59,452 crore in 2008-09, registering an increase of 5.4 per cent.

**Per capita Income**

The per capita GSDP or per capita income in real terms during the year 2009-10 at constant prices is likely to attain a level of Rs.32,411 as compared to the Quick Estimates for the year 2008-09 of Rs.31,041. The growth rate in per capita income is estimated at 4.4 per cent during the year 2009-10, as against the previous year’s estimate of 3.4 per cent.

The Per Capita Net Income (Per Capita NSDP at factor cost) in real terms, at 1999-2000 prices, is estimated at Rs.28, 696 for 2009-10 as against Rs.27, 526 for 2008-09, an increase of 4.2 per cent during the year 2009-10, as against the previous year’s estimate of 3.7 per cent.

**Industry**

The Index of Industrial Production (IIP) is one of the important macroeconomic indicators, the magnitude of which represents the status of production in the industrial sector for a given period of time as compared to a reference period of a time. The general IIP (provisional) for the sectors of mining, manufacturing and electricity with base year 1999-2000 for the quarter ending June 2009, September 2009 and December 2009 stands at 133.90, 141.53 and 148.13 respectively.

The index for Karnataka, which stood at 158.98 in 2007-08 moved up to 166.85 in 2008-09, registering an increase of 4.72 per cent. The Mining sector showed highest index 241.22 followed by manufacturing sector 167.45 and Electricity sector registered index of 146.33. The average annual growth rate from 1999-2000 to 2008-09 is 11.27 per cent for Mining sector, 10.95 per cent for Manufacturing sector and 5.45 per cent in Electricity sector.

The provisional index of industrial production in the manufacturing sector registered an index of 167.45 with a growth rate of 5.51 per cent in 2008-09 as against 7.76 per

In the information technology sector, the software exports has increased to Rs.70, 375 crore in 2008-09 from Rs. 59,500 crore in 2007-08. The exports from Business Process Outsourcing companies have increased to Rs. 15014 crore in 2008-09 from Rs. 7600 crore in 2007-08. Karnataka State Wide Area Network (KSWAN) has been launched on 7th December 2009, with the main objective of providing data, voice and video services across the State. Under this project, communication highway is established by connecting the State capital with all the districts and the taluks. This has connected 2300 offices all over Karnataka.

For the current year, up to October 2009, the State Level Single Window Clearance Committee (SLSCC) has approved 181 projects with an investment of Rs. 4,298.17 crore, generating employment potential of 63,072. In addition, the State High Level Clearance Committee (SHLCC) has cleared 38 projects with an investment of Rs. 51,914.73 crore generating employment potential of 92,354.

In 2009-10, up to November 2009, 10,081 MSMEs were registered involving an investment of Rs. 705.50 crore and employment to 67,162 persons. This represented an increase of 5% over the registrations affected during the corresponding period of 2008-09. There was only one strike during April to November 2009 in which 850 workers were involved and which resulted in loss of 26350 mandays. There were 3 lockouts wherein 1030 workers involved and which resulted in loss of 42100 mandays. There were three layoffs involving 169 workers which resulted in loss of 3682 mandays during the same period.

**Employment**

In 2009-10 an estimated 3.74 lakh of additional employment is expected to be generated in the state. The number of job seekers measured by live register figures of employment exchanges has decreased by 10.64 per cent between April 2009 and November 2009. The organised sector employment has increased by 0.98 per cent.
Provisional figures under various State government programmes show that 9.71 crore mandays of wage employment have been generated between April 2009 and September 2009.

Sectoral composition of employment between 2005 and 2006 reveals that rise in the proportion of primary sector employment from 58.4 per cent to 62.2 per cent and employment in secondary sector marginally increased from 16.1 per cent to 16.8 per cent whereas in tertiary sector employment decreased during this period.

The Fifth Economic Census data reveals that the total number of persons usually working in establishments comprising of agricultural and non-agricultural activities registered an increase of 20.79% from 52.53 lakh persons in 1998 to 63.46 lakh persons in 2005. With regard to female employment, there has been an increase by 30.96 per cent during this period. There has been a decline in child labour by 65.54 per cent during the same period.

Organised sector employment in the state has increased by 0.98% from 22.34 lakh at the end of March, 2009 to 22.56 lakh at the end of September, 2009. Public sector employment accounts for 10.54 lakh (46.69%) and private sector, 12.03 lakh (53.31%). A sum of Rs.1105.50 crore is spent out of Rs.1251.76 crore available for 2009-10 under Mahatma Gandhi Rural Employment Guarantee Scheme up to November 2009 and 870.70 lakh mandays generated by providing employment to 17.73 lakh labourers.

During the year 2009-10 up to end of December 2009, seven job fairs were organised in which 98,155 job seekers and 690 employers participated. 27,485 employments were created through these job fairs.

II. Bangalore City

As the capital of the Indian state of Karnataka, Bangalore, pronounced in local language as Bangaluru, has an estimated metropolitan population of 54 Lakhs (5.4 million) in 2010, which makes it India's third-most populous city and fifth-largest metropolitan area. The city developed as a centre for colonial rule in South India during the British Raj. Large number of immigrants from other parts of the country entered into the city when the
Bangalore Cantonment was established. The city has developed into one of the India’s major economic hubs since 1947 independence. It is today counted among the best places in the world to do business. Several public sector heavy industries, software companies, aerospace, telecommunications, machine tools, heavy equipment, and defense establishments has based their businesses in this city. Known for a long time as the 'Pensioner's paradise', the city of Bangalore has become renowned as the "Silicon valley of India" due to its pre-eminent position as India's technology capital. Moreover, the city is home to some of the well-recognised colleges and research institutions in India, and it has the second-highest literacy rate among the metropolitan cities in the nation.

The metropolis of Bangalore is divided into two main districts, namely, Bangalore Urban and Bangalore Rural. Therefore, the industries located in Bangalore are also divided into the Bangalore urban industries and Bangalore rural industries. Bangalore Urban is the central part of the city, where all the metropolitan landmarks, parks and entertainments are situated as well as all the government and administrative buildings. The city's cultural and commercial life is also concentrated here, including the academic and night life. Bangalore Rural district enjoys an enchanting landscape, dotted with a series of hills and natural waterfalls. There are also several temples and small villages there that contribute to its contrary to the rural district charm. In general, almost all the states in India are facing a challenge of balancing the rural and urban life, to take the state forward in terms of its revenue and image, creating a better life for the people of the state. Karnataka state had been pioneer in this regard in creating the right balance of business, people and governance.

The silicon valley of India, as the nickname of the Bangalore city, indicates that the city is renowned as a hub for IT companies in India and is a comparative reference to the original Silicon Valley, based around Santa Clara Valley, California, a major hub for IT companies in the United States. The prevalence of such nickname commenced from 1990s when companies specialised in R&D, Electronics and software production started to base their businesses in the city. The use of the term “Silicon Valley of India” to refer to Bangalore grew in local media and as time progressed, in international media too. For instance, Business-Week (businessweek.com) published an article entitled “India's Silicon Valley” which traced the growth of the IT industry in India and particularly in Bangalore. Or, an article entitled “Is the Next Silicon Valley Taking Root in Bangalore?” appeared in the New York Times (nytimes.com) in 2006. Indeed, some articles in the western media wondered if the original Silicon Valley would one day be functionally replaced by Bangalore.
Civic Administration

The Bruhat Bangaluru Mahanagara Palike (BBMP) is in charge of the civic administration of the city. It was formed in 2007 by merging 100 wards of the erstwhile Bangalore Mahanagara Palike, with the neighboring 7 City Municipal Councils (CMC), one Town Municipal Council and 110 villages around Bangalore.

BBMP is run by a city council. The city council comprises elected representatives, called “corporators”, one from each of the wards (localities) of the city. Elections to the council are held once every 5 years, with results being decided by popular vote. A mayor and commissioner of the council are also elected through a quota system from a Scheduled Castes and Tribes candidate or to an Other Backward Class female candidate. Members contesting elections to the council represent one of more of the state's political parties. However, elections to the newly created body are yet to be held, due to delays in delimitation of wards and finalizing voter lists. There are expected to be about 150 wards, up from the 100 wards of the old Bangalore Mahanagara Palike. Elections are expected to be held in August 2009.

Bangalore's rapid growth has created several problems relating to traffic congestion and infrastructural obsolescence that the Bangalore Mahanagara Palike has found challenging to address. A 2003 Battelle Environmental Evaluation System (BEES) evaluation of Bangalore's physical, biological and socioeconomic parameters indicated that Bangalore's water quality and terrestrial and aquatic ecosystems were close to ideal, while the city's socioeconomic parameters (traffic, quality of life) scored poorly.

The unplanned nature of growth in the city resulted in massive traffic gridlocks that the municipality attempted to ease by constructing a flyover system and by imposing one-way traffic systems. Some of the flyovers and one-ways mitigated the traffic situation moderately but were unable to adequately address the disproportionate growth of city traffic. In 2005 both the Central Government and the State Government allocated considerable portions of their annual budgets to address Bangalore's infrastructure. The Bangalore Mahanagara Palike works with the Bangalore Development Authority (BDA) and the Bangalore Agenda Task Force (BATF) to design and implement civic projects. Bangalore generates about 3,000 tons of solid waste per day, of which about 1,139 tones are collected and sent to composting units such as the Karnataka Composting Development Corporation. The remaining solid waste collected by the municipality is dumped in open spaces or on roadsides outside the city.

The Bangalore City Police has six geographic zones, includes the Traffic Police, the City Armed Reserve, the Central Crime Branch and the City Crime Record Bureau and runs
86 police stations, including two all-women police stations. As capital of the state of Karnataka, Bangalore houses important state government facilities such as the Karnataka High Court, the Vidhana Soudha (the home of the Karnataka state legislature) and Raj Bhavan (the residence of the Governor of Karnataka). Bangalore contributes three members to India's lower house of parliament, the Lok Sabha, and 28 members to the Karnataka State Assembly.

Electricity in Bangalore is regulated through the Karnataka Power Transmission Corporation Limited (KPTCL). Like many cities in India, Bangalore experiences scheduled power cuts, especially over the summer, to allow electricity providers to meet the consumption demands of households as well as corporations.

**Economy**

Bangalore's Rs. 52,346 crore (US$11.57 billion) economy (2006–07 Net District Income) makes it one of the major economic centres in India, with the value of city's exports totalling Rs. 43,221 crore (US$9.55 billion) in 2004-05. With an economic growth of 10.3 per cent, Bangalore is the fastest growing major metropolis in India, and is also the country's fourth largest Fast Moving Consumer Goods (FMCG) market. With a per capita income of Rs. 74,709 (US$1,651.07) in 2006-07, the city is the third largest hub for high net worth individuals and is home to over 10,000 dollar millionaires and about 60,000 super-rich people who have an investable surplus of Rs. 4.5 crore (US$1 million) and Rs. 50 lakh (US$110,500) respectively. The headquarters of several public sector undertakings such as Bharat Electronics Limited (BEL), Hindustan Aeronautics Limited (HAL), National Aerospace Laboratories (NAL), Bharat Heavy Electricals Limited (BHEL), Bharat Earth Movers Limited (BEML) and Hindustan Machine Tools (HMT) are located in Bangalore. In June 1972 the Indian Space Research Organisation (ISRO) was established under the Department of Space and headquartered in the city.

Bangalore is called the Silicon Valley of India because of the large number of information technology companies located in the city which contributed 33% of India's Rs. 144,214 crore (US$ 32 billion) IT exports in 2006-07. Bangalore's IT industry is divided into three main clusters-Software Technology Parks of India (STPI); International Tech Park, Bangalore (ITPB); and Electronics City. UB City, the headquarters of the United Breweries
Group, is a high-end commercial zone. Infosys and Wipro, India's second and third largest software companies are headquartered in Bangalore, as are many of the global SEI-CMM Level 5 Companies.

The growth of IT has presented the city with unique challenges. Ideological clashes sometimes occur between the city's IT moguls, who demand an improvement in the city's infrastructure, and the state government, whose electoral base is primarily the people in rural Karnataka. The encouragement of high-tech industry in Bangalore, for example, has not favoured local employment development, but has, instead, increased land values and forced out small enterprise. Bangalore is a hub for biotechnology related industry in India and in the year 2005, around 47% of the 265 biotechnology companies in India were located here; including Biocon, India's largest biotechnology company. Infosys, Wipro, Tata Consultancy Services, Accenture and many other high-tech companies have their offices in Bangalore.

**Industries in Bangalore**

After 1947 independence, Bangalore evolved into a manufacturing hub for public sector heavy industries, particularly aerospace, telecommunications, machine tools, heavy equipment, space and defense. After the liberalisation of the India’s economy, software services firms was successfully established in Bangalore, thereby lead to the growth India’s Information Technology industry. Now, Bangalore accounts for 35 per cent of India’s software exports.

Today, the city of Bangalore is not only one of the largest and fastest growing cities in India, but also a heaven for high technology industries. It has been described as “the city of the future, of high-tech, the leading contender for the title of India’s Silicon Valley” (Holmström 1993:20). The city is the home of India’s expanding space programme, a manufacturer of high technology missiles and advanced computer software and Information Technology equipment, many of which are marketed globally. It is, in effect, the scientific and engineering centre of India, both in terms of research and training as well as manufacture. It is believed that much of the recent high-tech industrial success of Bangalore is due to the close ties that exist between various types of large, medium and small firms in a range of technology intensive industries and local specialist research, training and higher educational institutions. Bangalore city has a dense and interconnected network of ties within and between high technology engineering, electronics, telecommunications, computing,

*Analysis of Impact of ICT on Performance of SMEs in Karnataka*
defense and machine tools sectors and local institutions. Therefore, highly skilled human capital base, and the constant generation and flow of technology related production ideas are primary locational advantage for Bangalore’s industries.

As it is mentioned, engineering and electronics related activities constitute the major industries in Bangalore. The state of Karnataka with only 5% of the national population produced 20% of the national output of electronics in 1993 (Holmström 1993:18). The city of Bangalore is home to India’s aeronautics and defense industry as well as its rapidly developing computing (both hardware and software) industry. Leading telecommunication enterprises based their businesses in Bangalore. Moreover, Bangalore is one of the leading centres for machine-tools manufacture in India. The city has been able to attract a number of transnational corporations because of the presence of highly skilled and relatively cheap (internationally) technical personnel, particularly in the information technology and computing software sectors where Bangalore has become an important international location for many leading TNCs, such as IBM, Philips, Motorola, Hewlett Packard, Siemens, 3M, Texas Instruments, Novell, British Aerospace, who either have their own facilities or have set up joint venture units with Indian partners. They select Bangalore not only to exploit the large domestic market opening up in India, but also to use the city as an export production facility. In addition, these TNCs rely on Bangalore based scientists and software experts to develop their global software and computing needs.

The key element in Bangalore’s international competitiveness in the knowledge intensive sectors is the easy availability of relatively cheap, yet highly skilled, technical personnel. Bangalore’s engineers are cheaper compared to their colleagues in the original Silicon Valley, and yet they have brought about a sustained process of technical innovation across a number of local sectors. A striking feature of Bangalore’s industrial landscape is rapid technical development. The city’s traditional engineering, metalworking and textiles sectors are replacing with “firms using newer technologies, electronics component factories, more specialised and high quality metalworking with CNC (Computer Numerically Controlled) and CAD (Computer Aided Design), newly equipped textile and garment factories” (Holmström 1993; 21).

The following table 4-1 illustrates the broad developments in Bangalore’s technology intensive industrial sectors.
<table>
<thead>
<tr>
<th>Period</th>
<th>Main Development</th>
<th>Major Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre 1945/1947</td>
<td>Hindustan Aeronautics and of Indian (Tata) Institute of Science set up in Bangalore</td>
<td>Local pool of skilled technical labour</td>
</tr>
<tr>
<td>Late 1940s &amp; 1950s</td>
<td>Large state enterprises set up by central government: Indian Telephone Industries, Hindustan Machine Tools, Bharat Electronics.</td>
<td>Generates local downstream linkages</td>
</tr>
<tr>
<td>1960s &amp; 1970s</td>
<td>Specialist technical institutions set up: Central Machine Tool Institute (1961). Public sector firms joined by leading private firms in a number of sectors. Large firms encourage the setting up of ‘dependent’ ancillary SME units.</td>
<td>Localised technology cluster takes shape.</td>
</tr>
<tr>
<td>1980s</td>
<td>Trade liberalisation and more competitive product markets. Ancillary SMEs becoming specialised and ‘independent’ of large firms. Emphasis on flexibility, specialisation, precision and quality in ties with SMEs. Use of NC and CNC machine tools grows.</td>
<td>Beginnings of knowledge intensive technical collaboration between large firms &amp; SMEs</td>
</tr>
<tr>
<td>1990s</td>
<td>TNCs enter Bangalore particularly in the computer software industry. The development of information technology and telemetric sectors. Emergence of CAD/CAM technologies locally.</td>
<td>India’s ‘Silicon Valley’.</td>
</tr>
</tbody>
</table>

Table 4-1: Broad Developments in Bangalore's Industries

In the mid-1960s to the late 1970s, large public and private sector firms started to use smaller ancillary units as subcontractors and as specialist component manufacturers in order to cut costs. Such ancillary units were often set up by former skilled workers and managers of large firms with the active support of their former employers, undertaking task specific job-work or manufactured specific components for large client firms as the SMEs, run by technically skilled and experienced engineers and technicians.

It was in 1980s, when the nature of ties large public and private firms had with their ancillary SMEs, started to change. The reason for such qualitative shift in these ties was the India’s trade liberalisation policies which began to alter the domestic product market environment. With increasing competition and greater emphasis on product diversity, quality and design, firms had to improve product range and product quality. This process of upgrading which enabled them becoming demand responsive also raised prospects for exports of products and services for a number of the technically more skilled producers in Bangalore. Large firms started to use more specialised SMEs for specific tasks and to build more flexible production arrangements. While the desire for increased flexibility was still
motivated by cost cutting pressures, the nature of production ties with SMEs became more knowledge intensive.

Furthermore, as part of the wide and dense inter-personal networks, firms use these arrangements to associate themselves with each other and facilitate the flow of technical know-how and marketing intelligence. Among these networks were those built on common schooling and alumni links, built around the many technically specialised private and public training institutions within Bangalore, between skilled workers and engineers across various firms as well as “alumni” bonds between people who had worked together in the same firms at one time or another.

The following cluster map captures some of the local and global ties within Bangalore’s leading high technology industries including backward ties with various types of job-working SMEs as well as providers of producer services. These ties include horizontal ties across sectors, through businessmen’s clubs and via various alumni links, and within sectors, through consortia, associations and trade bodies, forward ties, particularly with international TNCs, and, training and advisory linkages offered by numerous locally based technical support institutions. General technical training, sector specialised training and technical advisory services or a broad range of producer services are offered by these organisations, run by either central or local levels of government or privately operated.

The chart shows production ties between firms in Bangalore operate at a number of levels. There are links both across sectors and within sectors. In links across sectors, one of the most prominent inter-sectorial ties is between local machine tool producers and firms in other sectors in Bangalore. Machine tool makers often custom designed equipment according to the specific needs of client firms in a range of industries in the city in addition to manufacturing, or in many cases “reverse engineering” (or copying) standard machine tools. Moreover, a large number of engineering firms in Bangalore produce specialised components for the telecommunications, electronics, computing and defense related sectors. While there are production ties and technical information flows between local electronics, telecommunications, Telematics and computing firms, the defense and aeronautics industries are closely associated with each other.

**The Role of SMEs**

An array of SMEs undertakes task specific job-work for large firms. This is the most prominent aspect of intra-sectorial production ties within Bangalore’s high technology
industries. Moreover, some SMEs engaged with varying levels of subcontracting arrangements with each other. Holmström distinguishes two broad types of backward linkages between SMEs and large firms in the engineering and electronics industries of Bangalore. Ancillary units operating under close scrutiny and direction of the large client firm is more predominant relationship. Such ancillaries, in some cases, were set up with technical and financial support of the large “parent” firms, to whom they were obligated to undertake job-work on demand.

**III. Mysore City**

As the second largest city in Karnataka state, Mysore is the headquarters of the Mysore district and the Mysore division and lies about 140 km southwest of Bangalore, the capital of Karnataka. Mysore city is spread across an area of 128.42 km² (50 sq. mi) and is situated at the base of the Chamundi Hills. The name Mysore is an anglicised version of Mahishūru, which means the abode of Mahisha. Mahisha stands for Mahishasura, a demon from the Hindu mythology. Mysore is famous for the festivities that take place during the Dasara festival when the city receives a large number of tourists. Mysore also lends its name to the Mysore style of painting, the sweet dish Mysore Pak, Mysore Peta (traditional silk turban) and the garment called the Mysore silk saree. In an exercise carried out by the Urban Development Ministry under the national urban sanitation policy, Mysore was rated the second cleanest city in India in 2010 and the cleanest in Karnataka.

**Civic Administration**

The civic administration of the city is managed by the Mysore City Corporation, which was established as a municipality in 1888 and later converted into a corporation in 1977. The corporation oversees the engineering works, health, sanitation, water supply, administration and taxation in the city. It is headed by a mayor who is assisted by commissioners and council members. The city is divided into 65 wards and the council members (also known as corporators) are elected by the citizens of Mysore every five years. The council members in turn elect the mayor. The annual budget of the Corporation for the year 2007–2008 is Rs. 11,443.89 lakh (US$28.6 million).

The growth and expansion of the city is managed by the Mysore Urban Development Authority (MUDA), which is headed by a commissioner. Its activities include developing
new layouts and roads, town planning and land acquisition. One of the major projects undertaken by MUDA is the creation of an Outer Ring Road in Mysore, which is expected to ease traffic congestion. On the contrary, MUDA has faced criticism from citizens of Mysore for its inability to ensure that sufficient sites are allotted to house residents of the city. The electrical supply to the city is managed by the Chamundeshwari Electricity Supply Corporation.

The citizens of Mysore elect four representatives to the Legislative assembly of Karnataka through the constituencies of Chamaraja, Krishnaraja, Narasimharaja and Chamundeshwari. Mysore city, being a part of the larger Mysore Lok Sabha constituency, also elects one member to the Lok Sabha, the lower house of the Indian Parliament. The politics in the city is dominated by three political parties: the Indian National Congress; the Bharatiya Janata Party; and the Janata Dal (Secular).

**Business & Economy**

While tourism is the major industry in Mysore, the growth of information technology related industry in the first decade of the 21st century has resulted in the city emerging as the third largest software exporter in the state of Karnataka, next to Bangalore and Mangalore. Although lacking an airport, Mysore is connected to other parts of India by railways and road transport. Mysore is also the location of Mysore University, whose alumni include Kuvempu, Gopalakrishna Adiga, S. L. Bhyrappa, U. R. Ananthamurthy and N.R. Narayana Murthy. The All India Radio, the premier radio broadcasting arm of the Government of India had its beginnings here.

The city of Mysore has been home to industries such as weaving, sandalwood carving, bronzework and the production of lime and salt. The planned industrial growth of the city was first envisaged in the Mysore economic conference which was held in 1911, leading to the establishment of industries such as the Mysore Sandalwood Oil Factory in 1917 and the Sri Krishnarajendra Mills in 1920.

According to a survey conducted by Business Today, the business arm of India Today in 2001, the city was ranked the 5th best city in India in which to conduct business. Moreover, it has emerged as the hub of the tourism industry in Karnataka, attracting about 2.5 million tourists in 2006.
The Karnataka Industrial Areas Development Board (KIADB) has established four industrial areas in and around Mysore to enhance the industrial development of the city. The board has recognised the Belagola, Belawadi, Hebbal (Electronic City) and Hootagalli areas as the industrial areas in and around Mysore city. The major industries in Mysore include BEML, J. K. Tyres, Wipro, Falcon Tyres, L & T and Infosys.

Since 2003, information technology companies have been creating bases in Mysore. In the financial year 2006–2007, the city contributed Rs. 760 Crores (US$190 million) to Karnataka's Rs. 48,700 Crores ($12.175 billion) IT exports. Infosys has established one of the largest technical training centers in the world and Wipro has established its Global Service Management Centre (GSMC) at Mysore. Moreover, Non-IT related services have been outsourced from other countries to companies in Mysore.

Yet, when the automobile manufacturer Ideal Jawa and the Sri Krishnarajendra Mills closed their operations, the industrial sector in the city experienced setbacks. Revival efforts, such as the takeover of the Krishnarajendra Mills by the Atlantic Spinning and Weaving Mills Ltd. have been made, but these attempts have run into other problems.

IV. ICT sector and regional economic development: Evidence from Karnataka State

1. Introduction

ICT sector comprises both manufacturing and service activities. On the manufacturing side, it includes computer hardware (i.e. personal computers, notebooks, servers, printers and other peripherals), and telecommunication equipment and networks materials. ICT services include training of persons for manufacture and operations of computer equipment; use of computers in government, health, education and research, and financial services; use of computer technology for IT (information technology)-enabled services (e.g. call centres and medical transcription services); and telecom services (i.e. basic and value added services on narrow and broad bandwidth by fixed and mobile telephony). Further, ICT and electronics sectors are mutually complementary. Thus, ICT may be broadly defined to include IT, communication and electronics in manufacturing and/or service activities.

India is a federal economy. Industry is in the concurrent list of the Indian Constitution. Hence, both the federal (or Central/Union) and State (or regional) governments have
regulatory and promotional/developmental functions through industrial policies and programmes, including for ICT industries. The policy making is competitive at the State level in order to attract domestic and foreign investment and business. Further, India being a mixed and open economy, policies for privatisation, international trade, and investment in ICT sector assume special significance. In fact, planning and development, foreign trade, investment and exchange, and pricing policies for the ICT sector are in the domain of the federal government.

The role of the State governments is most important in providing with infrastructure facilities, and special fiscal and financial incentives, concessions and assistance for the ICT sector. Consequent upon the national level economic reforms since 1991, economic structure of ICT sector has been undergoing changes due to privitisation (e.g. allowing entry of private domestic and foreign players into manufacturing and services), regulation (e.g. establishment of Telecom Regulatory Authority of India), corporatisation (e.g. establishment of Bharat Sanchar Nigam Limited), and globalisation (e.g. bringing trade in ICT goods under GATT and ICT services under GATS in the WTO) policies.¹³

Karnataka is the first state in India to announce a separate policy for promotion and development of information technology in the State (i.e. Information Technology Policy-1997) with objectives to increase domestic and export earnings. Over the years, to encourage information technology in educational institutions, government, industry and infrastructure sectors, separate sub-policies are formulated. In addition, incentives and concessions and special assistance are provided. For instance, special assistance package is formulated by development institutions (e.g. Karnataka State Financial Corporation) for equity contribution in SMEs. Software industries are treated as industrial (not commercial) consumers for tariff purposes and are exempted from pollution control acts. Fiscal incentives and exemptions are given to industries with investment on fixed assets up to Rs.100 crore.¹⁴

Subsequently, the State has announced the Millennium IT Policy in 2000 (called Mahithi) (Government of Karnataka, 2000). The objectives of the policy included important social and cultural aspects.

---

¹³ In essence, these changes are the outcome of the Government of India's National Telecom Policy 1994 and 1999, and Internet Service Providers Policy 1998; and India’s entry into WTO in 1995. An excellent summary of provisions in these policies, and chronology of policy changes, is given by Kathuria et al (2003). Analysis of these national policy reforms is evident in Dossani (2002) and Noll and Wallsten (2004).

¹⁴ At present, 30 ICT products and services are taxable at 4 per cent under the VAT. This list of taxable ICT products and services is available on: http://www.nitpu3.kar.nic.in/ctax/vat.htm

Analysis of Impact of ICT on Performance of SMEs in Karnataka
To utilise the power of IT technology in the overall goal of the Government of Karnataka in eradicating poverty and empowering women.

To promote the usage of Kannada in IT.

To encourage business with non-English speaking countries.

The important areas for use of IT technology included eradication of poverty and empower women, education, and governance (in the departments of registration, revenue, tax and transport, police and silk). To professionalise the policy making, the Chief Minister’s Task Force on IT is set up with globally eminent and successful IT industrialists in the State.

In addition to above public policies and programmes, (a) growth of external market demand, (b) growth and cluster of electrical, electronics and communication technology industries, (c) existence of a large potential domestic demand, and (d) accumulation of a large pool of high skilled, communicative, and low cost technical manpower, are presumed to be the driving factors for growth of ICT industries and services in Karnataka. For instance, with more than 13 universities, 712 general education colleges, 97 medical colleges, 96 engineering colleges, 181 polytechnics, 300 industrial training centres, and several premier institutes of research in pure and applied science, management, and information, manufacturing and foundry technology, the State (popularly called Brain Bank of India) has been providing with technical manpower for growth of ICT sector. Consequently, most of the 20 top IT companies in the country are located in the State. As Bangalore has shown tremendous progress in attracting national and MNCs in IT sector, it is called Silicon Valley of India and IT Capital of India. This has led to the emergence of “New Economy” within the State economy.

---

15 Details of evolution of State policies and programmes for ICT sector is available on: http://www.bangaloreit.com
16 For instance, the Task Force is chaired by Sri N.R. Narayana Murthy (Chairman of Infosys Technologies Ltd) and includes Sri Azim Premji, (Chairman of WIPRO) as a member.
17 In this regard, the role of public and private sectors’ investment in providing with high quality and low cost (or subsidized and/or fee regulated) technical education may deserve a special mention in explaining the growth of State’s ICT sector. However, at present, this comparative cost advantage is questionable due to recent changes in pricing policies for professional education (i.e. cost-based pricing policy, as per the judicial decisions).
18 These companies are: TCS, Wipro, Infosys, HP, IBM, Satyam, HCL Tech, Tech Pacific, Intel India, Redington, HCL Insys, Samsung, Ingram Micro, Cisco Systems, Moser Baer, Patni Computer, Microsoft, NIIT, Mahindra BT and CMC.
19 The measures of New Economy include (a) share of ICT production, exports and employment in nation’s total; (b) use of ICT; and (c) size of Internet. The New Economy measures clearly recognise that ICT is an output (or input) from (or into) the ICT-producing (or using) activities [Pohjola (2002)].
In recognition of the important role of the IT sector for generation of income, employment, investment, and exports, and remarkable performance of the sector in the 9th Five Year Plan period, the 10th Five Year Plan of India has set specific objectives and targets (Table 1). For instance, the targets for (a) production is Rs.2820 billion by 2006-07 (i.e. Rs.2130 billion for software sector and Rs.690 billion for hardware production); and (b) export of software and IT services is $ 87 billion by 2008 (i.e. $50 billion for export of software and $10 billion for export of hardware). Accordingly, software and IT services industry is targeted to contribute 7.7 per cent of GDP in 2008. On the other hand, the Report of the Special Group on Targeting Ten Million Employment Opportunities per year over the Tenth Plan Period (Government of India, 2002) has projected around one million additional employment generation, as direct employment in India’s IT sector, at the end of the 10th Plan.

Studies on India’s ICT sector have focused on national level analysis. This is evident, for instance, in Brunner (1995), Heeks (1996) and Arora and Athreye (2002). On the other hand, regional level studies (including for Karnataka) on ICT sector are a few and do not address the ICT sector in a comprehensive way. This is evident, for instance, in Narayana (2003) with a restricted focus on telecom services. Thus, this part is contributory to regional empirical and policy analyses of ICT sector in India, especially in setting benchmarks for future studies in Karnataka as well as for comparative studies between Karnataka and other States.

---

20 At the nation level, three recent features of ICT sectors are evident, as reported in Dataquest magazine (2004). First, sales revenue of top 20 Indian IT companies is equal to $ 7.5 billion (or 49 per cent of total revenues of the IT industry) or Rs.36930 crore in 2002-03. The annual sales (or annual growth in per cent) of PCs are equal to 2.2 million (or 11 per cent), notebooks is equal to 48247 (or 50 per cent), PC servers is equal to 35147 (or 12 per cent) and printers is equal to 1.1 million (or 33 per cent). Second, the domestic market has experienced shrinkage. For instance, in 1998-99, domestic market share was 67 per cent (= hardware 31%; domestic services 18%; packaged software 6%; and others 2%). In 2002-03, the domestic share has been reduced to 49 per cent (=hardware 20%; domestic services 13% packaged software 3% and others 3%). Third, the shrinking role of domestic market is replaced by the phenomenal increase in exports of software and services (from 43% to 46%), and BPO (from 0% to 15%). Thus, exports of software and services, and BPO activities shall be dominant in India’s IT industry in future. An excellent description of trends in national export of software and IT services is given in Chapter One in NAASCOM (2003).
Table 4-2: Objectives and targets for ICT-sector in India’s Tenth Five Year Plan  
(Source: Compiled from Government of India, 2003)

2. Economic performance of ICT sector in Karnataka

Data on registered companies in the Software Technology Park of India (STPI) and Electronic Hardware Park of India (EHPI) is the basis for the following description of
economic performance of ICT sector by software and hardware companies.\textsuperscript{21} Karnataka has three software technology parks (STPs). This comprises one national centre at Bangalore, and two sub-centres at Mysore, Mangalore/Manipal. In addition, Hubli is identified for development as a sub-centre. Development of these sub-centres is a move towards regional dispersal of ICT sector’s activities in the State. In general, performance data are presented by these centres and for different years by variables. For instance, data on number of registered software companies is presented from 1999-00 to 2002-03, and on exports from 1991-92 to 2002-03. Thus, the data for the latest year for each performance indicator is presented in Table 4-2.

<table>
<thead>
<tr>
<th>Performance indicators of ICT sector in Karnataka State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software companies in Bangalore STP</strong></td>
</tr>
<tr>
<td>- Cumulative number of companies is equal to 1154 with a total investment of US$1.3 billion and employment of 80000 software professionals (2002-03)</td>
</tr>
<tr>
<td>- Composition of 682 companies by their value in US$ million (2001-02): Above 200 million (0.29%), between 20 million and 200 million (1.91%), between 2 million and 20 million (13.93%), less than 2 million (36.07%); and less than 0.5 million (47.80%).</td>
</tr>
<tr>
<td>- Total value of exports is equal to Rs.12350 crore or US$2.67 billion and annual growth is 25% (2002-03)</td>
</tr>
<tr>
<td>- Share in total exports (2002-03): Small and medium enterprises (18.03%), major Indian companies (41.40%), and foreign equity companies (40.57%)</td>
</tr>
<tr>
<td>- Annual growth of exports (2002-03): Small and medium enterprises (63%), major Indian companies (14%), and foreign equity companies (22%).</td>
</tr>
<tr>
<td>- Highest exports (=Rs.7475 crore) among 12 STPs in India in 2000-01.</td>
</tr>
<tr>
<td>- BPO/ITES companies (i.e. banking and financial services, and technical support and insurance claims processing companies) in 2002-03 is equal to 41 (annual growth is 46%) with total investment of Rs.512 crore (annual growth is 46%)</td>
</tr>
<tr>
<td><strong>Software companies – Mysore STP</strong></td>
</tr>
<tr>
<td>- Number of companies has increased from 24 in 2001-02 to 26 in 2002-03.</td>
</tr>
<tr>
<td>- Total exports are equal to Rs.65 crore in 2002-03 (annual growth is 66%).</td>
</tr>
<tr>
<td><strong>Software companies – Mangalore/Manipal STP</strong></td>
</tr>
<tr>
<td>- Number of companies has increased from 13 in 2001-02 to 15 in 2002-03.</td>
</tr>
<tr>
<td>- Total exports are equal to Rs.330 crore in 2002-03 (annual growth is 36%).</td>
</tr>
<tr>
<td><strong>Hardware companies in EHTP – Karnataka State</strong></td>
</tr>
<tr>
<td>- Number of approved companies is equal to 31 in 2002-03 (annual growth is 15%)</td>
</tr>
<tr>
<td>- Total exports are equal to Rs.1403.85 crore in 2002-03 (annual growth is 67.50%).</td>
</tr>
<tr>
<td><strong>Overall export performance</strong></td>
</tr>
<tr>
<td>- Electronic and computer software constitute 53.18 per cent in total exports from the State and 25 per cent in total exports from India in 2002-03.</td>
</tr>
</tbody>
</table>

Table 4-3: Performance indicators of ICT sector in Karnataka State  
(Source: Compiled from the basic data on: http://www.bangaloreit.com)

\textsuperscript{21} http://www.bangaloreit.com gives information, among others, on performance indicators on ICT sector in Karnataka State. The following data description draws heavily from this website as on 31 March 2005, as neither the NASSCOM nor the Electronic and Computer Software Export Promotion Council publish State level data on ICT sector. The Visveswaraya Industrial and Trade Centre have been compiling export data from the State, including electronics and computer software, since 1993-94. This data is not used in this paper, as it includes STPI and EHPI data but no disaggregate information.
This implies that Karnataka has much to contribute in accomplishing the production, export and employment targets for the ICT sector during the 10th Plan period.

3. Contribution of ICT Sector to Economic Growth in Karnataka

Growth and share of ICT sector in the national and State income are important indicators for the sector’s aggregate contribution to national and regional economic development. Data for construction and analysis of these indicators in manufacturing and service sectors need to be combined from different sources, as ICT sector’s contribution is separately available for the communication and IT sector. In particular, the contribution is explicitly (or implicitly) accounted for communication (or IT) services under the tertiary sector.\(^{22}\) In fact, this contribution is estimated at the national level and allocated to States (under supra-regional sectors) by the Central Statistical Organisation (CSO).\(^ {23}\) On the other hand; the contribution is not explicitly accounted for manufacturing ICT sector as a whole, or separately by communication and IT sectors. This calls for approximation in determining the sector’s contribution from the national and State level data in the Annual Survey of Industries.

a. Contribution of ICT Services

Communication services include provisioning of postal and telecommunication services. The contribution of telecommunication services (e.g. telephones, telegrams, and overseas communication services) is separable from the postal services (e.g. postal, and money and postal order services) from the details of estimated GDP from within the communication sector. Further, the contribution of public and private sectors can be approximated from this database.\(^ {24}\)

\(^{22}\) Methodological details of communication and IT services in national accounts are outlined in Government of India (1999).

\(^{23}\) Estimation of national income from ICT sector is based on income method. Allocation for states’ is based on proportion of workforce in the State to the nation’s total.

\(^{24}\) Two points deserve special mention here. First, in arriving at GDP from the communication services, intermediate consumption is deducted from the gross earnings for the sector as a whole. Thus, intermediate consumption is not available separately for postal and telecom services. To overcome this data limitation, intermediate consumption is presumed to be distributed between postal and telecom services in the same proportion as that of the share of postal and telecom services in the gross earnings. Second, private sector (included in the estimation of national income since 1993-94) is dominant in telecom services than in postal services. Thus, private communication services are treated equal to private telecom services.
IT services are related to data processing, software development and computer consultancy services.\textsuperscript{25} These services are implicitly accounted for one of the items in business services.\textsuperscript{26} The contribution is estimated by the CSO. For state-wise contribution of the IT services, the national level estimate is allocated to the States on the basis of workforce data. In the absence of published data on the contribution of IT services, contribution of business services can approximate the share of IT services in national and State income.\textsuperscript{27}

Thus, the sum of contribution of (a) non-postal communication services and (b) total business services in the national and State income is considered below for contribution of ICT services to national and regional economic growth.

\textit{b. Contribution of Manufacturing ICT industries}

Contribution of manufacturing ICT industries is related to production of hard ware. In general, production of electronic, communication and computing hardware are accounted for manufacturing ICT sector. This production may be broadly classified under electronic and communication sector and IT sector. For instance, electronic and communication hardware include the following.\textsuperscript{28} (i) Consumer electronics (e.g. Video and Audio Equipment, Audio Visual Equipment and Consumer Electronic items); (ii) Instrumentation/control instruments and industrial electronics (e.g. test and measuring instruments, medical electronics equipment, analytical instrument, industrial electronic & automation equipment, process control equipment, power electronic, equipment, and office equipment); (iii) Data processing systems and other office equipment, excluding computers (e.g. microprocessor based systems); (iv) Communication and broadcasting equipment (e.g. switching systems, transmission equipment, terminal equipment, signalling equipment, allied communication equipment, broadcasting equipment); (v) Strategic electronics (e. g. electron tubes, semiconductor devices, passive components, electro mechanical components, special

\textsuperscript{25} Thus, IT services exclude computer maintenance and service (e.g. Maintenance and service contracts for computer hardware and peripherals).

\textsuperscript{26} Other business services include services provided on fee or contract basis such as accounting, auditing, bookkeeping, data processing and tabulation, engineering, advertising, commercial art-work and market research activities. In particular, IT services are classified under NIC-892.

\textsuperscript{27} Financial Intermediation Services Indirectly Measured (FISIM) is not separately reported for the business services. Thus, in arriving at the national income from the business services, FISIM is distributed in proportion of business services share in the GDP from the real estate, ownership of dwellings and business services.

\textsuperscript{28} The following classification is compiled from (a) Guide to Electronics Industry in India 1999, Department of Electronics, Government of India, New Delhi; (b) Department of Information Technology’s website: www.mit.gov.in/dbid/; and (c) Indian Electrical & Electronics Manufactured Association's website: www.ieema.org/industry/electronics.htm
components, and electronic components and others); and (vi) Electronic components (e.g. mechanical TV tuners, audio-tape deck mechanism, DC-micro motors, magnetic heads, loudspeakers and their parts, transformers, foils, printed circuit boards, black and white picture tubes, semi-conductor devices, and plastic film capacitors). The IT hardware includes (a) Computer hardware (e.g. personal computers, notebooks and servers); (b) Computer peripherals (e.g. printers and UPS); and (c) Computer consumables (e.g. printer ribbons and paper).

c. **Combined contribution of manufacturing ICT industries and ICT services**

A comparison of contribution of and ICT services to GDP and GSDP and manufacturing ICT industries to GDP and GSDP reveals the following. In all the years, the contribution of ICT services is higher than that of manufacturing ICT industries in the GDP as well as in the GSDP. Thus, ICT services have a dominant contribution in ICT sector’s contribution to the GDP and GSDP in India.

d. **Select international comparisons**

Contribution of ICT sector to Karnataka’s economic growth is comparable with advanced countries. For instance, Jalava and Pohjola (2002) notes that the ICT goods and services typically constitute between 3 and 5 per cent of total GDP (at current prices) in OECD countries. Cohen et al, (2004) studies that the share of ICT sector in total GDP in 1998 was less than 4 per cent in Australia. As compared to these estimates, Karnataka’s performance of ICT sector in GSDP in 2001-02 is higher, than that of Australia and average for the OECD countries.

At present, contribution of ICT sector is not estimated at the national level by the CSO and at the State level by the Directorate of Economics and Statistics. However has developed a simple framework for estimation of this contribution from within the available data in the national income and state income accounts. This framework is useful to separate the contribution of ICT sector by manufacturing and service activities (i.e. by telecom and IT services). The results of these estimations offer evidence for the remarkable contribution of ICT sector to national and State income, and higher contribution of ICT sector to State income than to the national income. In the same way, contribution of ICT sector to State income is higher as compared to available estimates for OECD countries. This underlines the importance of ICT sector to the economic development of Karnataka.
Total number of metered telephone calls by telecom districts is used as a proxy for total usage demand for ICT services and its determinants are estimated with respect to changes in per capita income, teledensity, and share of tertiary sector in State income. Of the estimated panel data models, the log-Linear fixed effects model is chosen on empirical grounds. The results of the chosen model indicate that the changes in per capita income, teledensity, and share of tertiary sector in State income are empirical determinants of usage demand or sources of growth of ICT services. Of the estimated sources, the changes in teledensity have the biggest magnitude and are followed changes in per capita income. Thus, from the demand side, the sources of growth of ICT services in Karnataka State is contributed by changes in per capita income, share of tertiary sector in State income, and teledensity.

ICT sector deserves to be further promoted, as its growth has many positive types of fallout.

First, growth of ICT sector has led to the emergence of a “New Economy” in Karnataka State. This “New Economy” has been a creator of new jobs for technical persons; major foreign exchange earner through exports; and attractor of foreign investment. These performances are conducive for higher national and regional economic development. Second, indicators of ICT sector are included in construction of indices of competitiveness at the international level. These indices include World Economic Forum's Global Competitiveness Indices, International Institute of Management Development's World Competitiveness Indices, World Bank's Competitiveness Indicators, International Communication Union's Digital Access Index and World Economic Forum and World Bank's Network Readiness Index. Further, growth and widespread utilisation of ICT services are contributory to human development, as evident in UNDP’s Human Development Report 2001 [UNDP (2001)]. Thus, growth of ICT sector is contributory to enhance and strengthen the international competitiveness of India as well as Karnataka State.

ICT sector has many indirect effects on economic growth, such as, growth of self-productivity, capital deepening due to high capital investments, and efficiency of ICT-using industries and services. Analysis of these effects require, among others, a disaggregate analysis at the industry and/or firm level. This is an area of future research on ICT sector in Karnataka economy.
Karnataka's experiences in formulation and implementation of policies for ICT in a federal, open and mixed economy framework are of relevance for design of growth-oriented ICT policy in other States in India. In the same way, subject to the comparability of economic structures, Karnataka’s policy experiences are of relevance for other developing countries in world where regional economic growth is driven by ICT industries and services.

Summary of the Chapter

In this chapter, a profile of the study area, that is, Karnataka State, which was confined to two important cities have been presented. The reason for confining the study area to Bangalore and Mysore cities is the time limitation as well as financial limitation of the researcher. Different aspects of these two cities, including, the geographical location, civic administration, transport, company profile and etc. have been presented after presenting an introductory part regarding the Karnataka State.