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THE IT INDUSTRY OF TELANGANA

A LITERATURE REVIEW

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In collaboration with



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INTRODUCTION

The IT industry has been one of the highlights of the economic growth in India in recent decades, and Telangana's contribution to it has been a major one. The overall economy of Telangana has seen a significant shift in the trends of industrial and economic development due to a variety of economic, socio-political, and historical events. The present study tries to examine the changing economy and the trajectory of the IT industry in India, with a focus on Telangana from 1920 to 2020. The IT Industry has become a multi-billion market over the past six decades. The review also focuses on the growth of the IT Industry in Telangana from being the home to India returned engineers' startups to a global IT hub. The study also illustrates how the evolution of the IT sector in Telangana impacted other sectors such as infrastructure and education.

The academic research in this milieu provides an extensive array of viewpoints and multiple facets. (Narayan, 1950) explores the economic conditions of the Hyderabad state, focusing on population trends, natural resources, and agrarian reforms, which serves as a compendium for further research and understanding the early history of the provincial state. (Shah, 1974) examines India's industrial revolution to reveal a detailed narrative of the composition and state of the industries pre-and post-independence, focusing on industrial development and policy resolutions. (Barnes, 2013) examines the reason for the state's industrial and fiscal support to the IT industry irrespective of its limited impact on economic development, as argued by many scholars. (Hauge & Chang, 2019) assessed the role of manufacturing versus services in economic development which is a well-discussed phenomenon, and it serves as a link in connecting certain aspects of this study. (Ghani & Kharas, 2010) suggested that subsequent growth labelled as service revolution, including rapid income growth, job creation, and poverty reduction led by services, was possible in India and other South-Asian countries. (Menon, 2018) critically observes how statistician P. C. Mahalanobis and Indian Statistical Institute strived to haul India into the computer age by significantly influencing India's Second Five-Year Plan (1956-1961).

An intriguing narrative that has been curated from all these areas of study maps out the nature, state, trends, and demographics of the Indian IT industry, especially Telangana. It also tells us about the existing challenges and opportunities, which are unique and give certain aspects to gauge.

HISTORY

The present-day Telangana state was formed as a result of various political movements and struggle over the years. India was ruled by the British empire from 1858 to 1947. Telangana was a part of Hyderabad State before 1947. When India achieved independence from the British Empire in 1947, Hyderabad remained an independent princely state for a period of 13 months. The etymology of Telangana comes from the times of the Trilinga Desha, three temples bordering the then Telugu speaking regions.

As a geographical and political entity, Telangana was born on June 2, 2014 after being separated from the north-western part of Andhra Pradesh with Hyderabad as its capital. It is the 29th state and youngest in the Union of India. The history of the state has its origins dating back to at least two thousand five hundred years or more and is unique. There is an essence of Buddhism in its early history. For instance, it was believed that Kondanna, one of the first five disciples of the Buddha, was a typical name from Telangana. The earliest known Buddhist township of Kondapur in Medak district is believed to be named believed to be a typical name after Kondanna. There is also a narrative in Buddhist history that says Bavari, a Brahmin from Badanakurti in Karimnagar (a district in the Telangana state now),

sent his disciples all the way to north India to learn Buddhism. In the historical age, Telangana had seen the rule of mighty empires and kingdoms like the Satavahanas, Vakatakas, Ikshvakus, Vishnukundins, Chalukyas, Kakatiyas, Qutb Shahis and Asif Jahis.

Since the timeline of our study is from the beginning of the early twentieth century, it makes sense not to stray with all the components of history but to engage with only those which will serve as the means to a better understanding for further comprehension. The early part of the twentieth century in India was under British rule for almost half of the century. It impacted the Indian economy in many ways, while Telangana experienced a chaotic rule of Nizams before becoming a province, and it's important to highlight the implications of the same.

TELANGANA BEFORE 1920

In 1724, Asaf Jah, the viceroy of Deccan province with the title 'Nizam-ul-Mulk', reclaimed Hyderabad and named the area Hyderabad Deccan. Hyderabad was established as an autonomous province under the Mughal empire. It was the inception of the Asaf Jahi dynasty. Subsequent rulers retained the name Nizam-ul-Mulk and were called Asaf Jahi Nizams or Nizams of Hyderabad. Asaf Jah I died in 1748, which led to the political unrest for the contention of his throne among his sons and the neighbouring colonies and kingdoms, and Hyderabad city became the formal capital of the Nizams in 1769.

In 1799, Asaf Jah IV (Nasir-ud-dawlah) signed the 'Subsidiary Alliance' with the British and lost control over the state's defence and foreign affairs. Subsidiary Alliance was a treaty between the British East India Company and the Indian princely states, which required the states to pledge allegiance to the British Empire by losing their sovereignty. This led to the building of the British Empire in India which turned Hyderabad State into a princely state among the presidencies and provinces of British India.

During the British rule or pre-independence period, the state of India's economy was near to stagnation. India was caught up in a vicious circle of poverty due to a low level of savings and capital formation among the countries of the world. In terms of per-capita income and standard of well-being, there was no exception in the performance of the Indian economy. Moreover, the size of the market was limited and did not have further avenues to grow at the time, mainly because of a lack of incentive to invest by entrepreneurs in diversified fields. The Indian subcontinent showed all the signs of an under-developed economy (Kapila, 2008).

AGRICULTURAL ECONOMY IN THE EARLY 1900s

To get a better understanding of the economic state, it is crucial to emphasise the region's occupational structure. India has always been an agrarian economy, with agriculture being the major occupation of most people like most developing nations. Early scholars have conducted various research and investigations with a focus on agriculture to chronicle the development and state of the economy mainly because agricultural activities constituted most of the economic activity. Since Telangana has been a part of such a diverse socio-economic history, mapping out the agricultural state and natural demographics would serve as a yardstick for linkage to the other aspects of our study.

'Agricultural Development in the state of Hyderabad 1900-1956' (Narayan, 1950) is an extensive study done in a similar milieu. According to the 1951 census of Hyderabad, the total population of Hyderabad (of which Telangana was a part back then) was 18.6 million. The classification of people according to their livelihoods showed that 12.7 million were dependent upon agriculture while

5.9 million were engaged in non-agricultural occupations. This equated to 68.2 per cent of the population sustaining agricultural gains. There was a rise in the population trend for both India and Hyderabad between the years 1891- 1951.

As cited in (Shah, 1974), the decade from 1911-1921 experienced a massive outbreak of diseases like influenza, malaria, and plague, and the population trend saw a dip by 6.7 per cent. All other decades ending in 1931, 1941 and 1951 saw a subsequent increase in population. There was a varied composition in the structure of agricultural employment which could be categorised as cultivators of wholly or mainly owned land, landless agricultural labourers and rent receivers. The data depicts that the percentage of rent receivers as well agricultural labourers increased throughout the six decades. (The Census of India, Hyderabad Volume, 1891-1951).

There is no reliable data to map the area under cultivation for the Hyderabad state from 1900 to 1920. The staple crops of Telangana were rice, sugarcane, castor and jowar. In Marathwada (which was a part of Hyderabad state), the major crops were cotton, wheat, groundnut and jowar. Jowar as a food crop constituted most of the area under cultivation amongst the total food crops with 93.55 lakh acres of cultivated area out of 203.90 lakh acres of total area. Other major food crops consisted of rice, bajra and tuvar and moong. Apart from the food crops, Hyderabad also produced oilseeds, cotton, sugarcane, and other crops. The economy of India and Hyderabad were not regulated in the early decades of the twentieth century due to a variety of events. The first world war had taken its course between 1914 to 1918. The prices of food grains soared during that period and saw a decline in the later decades. Due to the lack of market regulation, information asymmetry and absence of policy measures, there could not be a normal price level for the entire country. (First Five-Year Plan, Summary of Progress, Hyderabad Government).

INDUSTRIAL SECTOR

The industrial or manufacturing sector is the backbone of any economy. Nations, whether developed or developing, laid emphasis on the manufacturing sector as early movers or in later stages of planning because it was evident that industrialisation was the means to produce more, generate employment and a way to the overall economic growth and glory. The industrial sector in India has played a vital role in shaping the Indian economy what it is today, making it the sixth-largest economy in the world in terms of nominal GDP and the third-largest in terms of purchasing power parity (PPP). However, the industrial sector has experienced interrupted growth since the beginning of the twentieth century, varying in proportions.

(Shah, 1974) uses the industrial revolution concept to give a narrative of the industrialisation process, its challenges and scope for the future in India. Pre-Independence, most of our industries were light, like cotton textiles, jute textiles, sugar, paper, cement, and some simple engineering industries. Heavy industries like steel were not in great shape, and the steel output was less than one million tonnes. Also, we just stepped into the modern chemical industry. The engineering industry at the time was almost non-existent. Small units manufacturing miscellaneous engineering products and some workshops constituted for what could be called an engineering industry. During the British regime, India did not manufacture even good needles or cycles, and these had to be imported from Japan and the United Kingdom. But the picture has evolved today, the present-day Indian economy has transformed itself into a solid manufacturing nation producing an array of products ranging from pins to automobiles to jet planes. It shows a great trajectory of growth for any developing nation.

In 1947, there was a good deal of pessimism due to the highly unfavourable conjugation of circumstances because of the Independence movement. The country had just emerged from the Second World War during which the manufacture of capital goods within our country was negligible—in fact, the entire requirement of capital equipment for industrial investment, basic raw materials and producer goods had to be procured from abroad. Spurred by fabulous war-time profits, our industries had overworked their plants with woefully inadequate maintenance. Some implications took their course during the partition of India and Pakistan in 1947. With the separation of Pakistan, India's cotton and jute industry experienced a blow when the areas producing a major proportion of cotton and jute went to Pakistan and Bangladesh, respectively. The time saw industrial unrest, shortage of goods, price inflation, the menacing posture of the Nizam of Hyderabad and other princely states of India, which had to be dealt with in order to have an industrial revolution. (Shah, 1974).

POLICY RESOLUTION AND FIVE-YEAR PLANS

After independence, the government's focus to achieve industrialisation on a big scale was through a conscious effort to enhance manufacturing and, thus the economic activity. The government's policy towards industrial development was first introduced in the historic Industrial Policy Resolution of 1948. This policy ushered India into a mixed economy system, which focused on increasing the production of capital goods and intermediate goods. Under this policy, the large industries were classified in four categories viz. strategic industries, basic industries, important industries, and other industries referred to public sector; public-cum-private sector; controlled private sector and private & cooperative sector. This resolution formed the basis of India's First Five-Year Plan. First Five-Year Plan was covered the period from April 1951 through March 1956 which promised a growth in the national income by 11 to 12 per cent.

FORMATION OF THE UNITED TELUGU SPEAKING ANDHRA PRADESH - 1956

The ending of the First Five-Year Plan is also an important aspect to look at because it is when the formation of the united Telugu speaking Andhra Pradesh took place. The state of Andhra Pradesh (AP) was created on November 1, 1956 with Hyderabad as its capital, by merging the nine Telugu-speaking districts of the old princely state of Hyderabad with the 11 districts of the Andhra state. The latter had been formed on 1 October 1953 by separating the districts from the Madras state. The non-Telugu speaking parts of Hyderabad were merged with Bombay state and Karnataka. (Janardhan & Raghavendra, 2013).

Thus, before 1947, Telangana was part of the Hyderabad state. In 1948, the union government integrated the Nizam state into the Indian union after an armed action known as 'Police Action'. According to provisional totals of the 2011 census of India, AP is the fourth-largest state in India, with an area of two lakh seventy five thousand and sixty eight square kms and a population of eight crore forty six lakhs approximately. The state ranks fifth in terms of population. It comprises 23 districts: 10 districts of Telangana, namely Adilabad, Hyderabad, Nizamabad, Karimnagar, Khammam, Mahabubnagar, Medak, Nalgonda, Ranga Reddy and Warangal; nine districts of coastal Andhra which are Srikakulam, Vijayanagaram, Vishakapatnam, East Godavari, West Godavari, Guntur, Krishna, Prakasham and Nellore, and four districts of Rayalaseema Chittoor, Anantapur, Cuddapah and Kurnool. (Janardhan & Raghavendra, 2013).

SHIFT OF FOCUS FROM AGRICULTURE TO INDUSTRY

During this bifurcation, Telangana experienced this major transformation in geography, population, and linguistic demographics. All this while, India's Second Five-Year Plan was in the making, and it came into existence in April 1956. It led to the revision of a new Industrial Policy in 1956 by revising the Industrial Policy Resolution of 1948. The new policy re-affirmed the freedom of the private sector to develop, subject to certain limitations. (Shah, 1974).

This shift from agricultural to industrial development was crucial to set the next stage for development and progress within the Indian subcontinent and Telangana. There has been a long-lasting attempt to find causalities between the nature of the industry and economic growth. Underdeveloped economies such as India, being an agrarian nation, measured the progress of its economic state through agricultural output. But, with time manufacturing and services sector had also caught up and constituted a significant amount of the national income. The policy resolution of 1948 and the revised Industrial Policy Resolution of 1956 highlighted the government's emphasis on focusing on manufacturing industries' growth.

THE LEAP TO THE SERVICES SECTOR-THE SERVICE REVOLUTION

It was also a period when the service industry was emerging and seemed to have a bright future ahead of it. The role of manufacturing versus services in economic development is a subject that many scholars have vastly studied. Many economic development theories have been formed, keeping it a central theme. These pro-industrialisation development theories started emerging in the 1950s and 1960s and became the subject of utmost importance.

However, not long after the publication of 'pro-industrialisation' theories by many scholars and economists, the traditional view of the manufacturing sector as the driving force of economic growth and development came to be challenged. As cited in (Hauge & Chang, 2019), 'Coming of Post-Industrial Society' by Daniel Bell in 1976 was the first attempt to bring up this argument. In the book, Bell put up an argument stating that the wealth of future societies would rely less on the production of goods and more on the provision of services and the spread of a 'knowledge class'.

The services sector was gaining importance in the economic structure of many economies of both developed and developing nations in the latter half of the twentieth century and even more so in the twenty-first century in terms of both output and employment. This trend could be observed in several developed and high-income countries with the rising share of the services sector, the share of manufacturing sector comparatively declined in the contribution to Gross Domestic Product (GDP). (Hauge & Chang, 2019)

India had all the incentives to get on board with the emerging service industry with its rising population and workforce. (Ghani & Kharas, 2010) investigated the idea of a 'Service Revolution'. The study examined that the services industry could achieve growth, employment, gender equality, and other avenues of development. It stated that the services-led industry could be the way ahead for many developing nations, relevant for India and some other South-Asian economies. The share of the services sector in India and other South Asian countries is much bigger than in China, given the country's stage of development. If we compare the growth patterns of India and China, both of which have seen enormous economic growth over the years, the pattern is dramatically different. As a global manufacturing hub and the exporter of an array of manufactured goods, China experienced tremendous growth while India achieved the same by exporting modern services. India has

sidestepped the manufacturing sector and leapt straight from agriculture into services. The differences in growth patterns between China and India are striking, and it raised a big question of whether developing economies can directly take a leap from manufacturing to services. The empirical evidence in the study showed a positive relationship between overall economic growth and the growth of services. (Ghani & Kharas, 2010)

SERVICES AND BEGINNING OF THE IT INDUSTRY

This makes evident that services-led growth was sustainable, and the old notions of non-transferability, non-tradeability, non-scalability of services do not apply to the current context. Services have transformed and moved across borders via the internet and global digitisation. India was not behind in adapting with the services and innovation.

India's first stride towards technology services happened when the bengali statistician Prasanta Chandra Mahalanobis in the 1940s embarked on a campaign to bring computers to India, at which time India had none. He founded the eminent Indian Statistical Institute (ISI) and was the director of the same. India's first analogue computer was developed in ISI in 1953, and a digital computer was finally installed in 1956. It was the first digital computer to be introduced in India and Asia, except in Japan, which was technologically ahead of other Asian countries. Mahalanobis was a visionary who foresaw the role of computers and technology in planning the development of the state. Mahalanobis and the ISI persistently pursued computers across the world. He tried to harness computers towards creating an idealised economy, the one in which numerical omniscience allowed optimal outcomes. Mahalanobis over the years established himself as a prominent statistician and became the statistical advisor to the government. In 1955, he became a member of the Planning Commission and designed a 'Draft Plan-Frame' which became the template for India's Second Five-Year Plan during 1956 to 1961. (Menon, 2018)

GROWTH OF SERVICE INDUSTRY IN TELANGANA

The growth of service industry, especially the IT industry, was one of the cornerstones of the economic betterment in Telangana. However, there have been arguments by many scholars and researchers about the limited development impact of IT industry on the grounds of redistribution of income and wealth and little employment generation for the privileged which was a valid concern. Some of these arguments made sense in the normative sense. The government and other stakeholders in action have looked over these contrasting opinions due to specific reasons. These relate to the ability of the IT firms to utilise existing reserves of skilled workers and the contribution of software services in India's macro-economic stability. IT industry, a significant constituent of the service industry, has been a focal point of the government in enhancing economic activity and is bolstered by several liberal reforms and policies over the years. These fiscal sops and incentives by the state to the industry created IT clusters such as Hyderabad and Bangalore, which further had huge implications.

NASSCOM (The National Association of Software and Service Companies) was an organisation that was particularly sensitive to criticisms that the IT industry has a limited impact on employment creation. In response, there have been claims that the sector generates substantial direct and indirect employment through backward and forward linkages. As cited in (Barnes, 2013), a study co-sponsored by NASSCOM claimed that every high-tech job translates into about four jobs outside the sector (Gokarn et al. 2007). This claim has been repeated in industry reports (NASSCOM-Deloitte 2008), academic studies (Deokar 2007; Maheshwari 2006) and government documents (Government

of India 2007, 2010; OECD 2010). Gokarn et al. (2007) argue that every rupee spent by the IT industry translates into the total output of two rupees in the economy as a whole.

The age of service revolution not only bought a considerable transformation in terms of output generation and employment, but it also changed the perception of people and their notions of occupational thought. There was an upcoming wave of opportunities within the service industry. Healthcare, education, financial and banking services were some areas where the forecast of output and employment was shining. Unlike the industrial sector, these new-age services and employment opportunities needed a unique set of skills, where the emphasis was on getting the work done and learning by apprenticeship. A change in education reforms was needed to capitalise on this opportunity. The education industry could cater to this need by incorporating a diverse learning pedagogy in its curriculum, combining theoretical knowledge, skill development, technical training, and other marketable skills.

Considering Telangana's education scenario, it lacked skill-based and vocational education, just like any other Indian state. Skill development could serve as a tool to tackle the challenges common to many high school pass-outs and college graduates in the view of securing decent jobs and choosing career paths. Vocational education was a better pathway for students towards better and more abundant employment opportunities through their specialised knowledge and skillset. An emphasis on the development of fundamental technical knowledge, occupational information, and vocational training could serve as a better stimulus for learning than traditional theoretical evaluation.

The state of Telangana had certain beginnings in skill development training initiatives in its erstwhile Hyderabad state. Post-integration-and-merger, following the Government of India initiatives on vocational training institutes, ITIs were set up in the combined state of Andhra Pradesh. Further, following the NEP 1986, certain measures were undertaken to introduce vocational education in secondary schools. For the purpose of enhancing technical education, there was a proactive effort made by establishing several polytechnic and engineering colleges for vocational education and training. Post-bifurcation, the Telangana state now has 289 ITIs. Also, there are 146 polytechnics, 186 engineering colleges for technical education, along with medical (67), pharmacy (119), management (285), MCA (36) and B.Ed. (128) colleges other professional education. (Rao, 2021)

EMERGENCE OF IT INDUSTRY IN INDIA - THE 1970S

In the early 1970s, the government's attempts to regulate the IT sector worsened, and India became technologically backwards as Indian computer users preferred using refurbished machines rather than importing newer models (Dedrick and Kraemer, 1993). In response to this, the Bhabha Committee and Sarabhai Committee argued that India should foster an electronics industry that "will have built within it the capacity to pioneer and develop so that dependence on foreign assistance will have been eliminated within ten years" (Yolen, 1977). The committee recognised that foreign electronics firms are necessary. Still, it argued that such ties should result "in the establishment of a definite base for indigenous development and production and obviate further foreign collaboration" (Grieco, 1984). In addition to this, the Department of Defense Supplies had a backlog of over 150 IT project license requests, and the government was criticised for this. As a result, in 1970, the Indian government initiated building a self-reliant electronics industry in the country, the Department of Electronics (DoE), with the recommendation of two Indian electronic committees, the Bhabha Committee and the Sarabhai Committee (Dhar and Joseph, 2019).

In 1971, the Electronics Commission was set to lay down policies and guide India's future development. The Central and the State government highly supported this sector. The Electronics Corporation of India Limited (ECIL) has been in existence since 1967 under the Department of Atomic Energy (DAE), but in 1971 ECIL became a computer manufacturing unit fully supported by DoE (Agarwal, 1984, p.283).

In 1975, the DoE was given the power to license computer imports. With this, the DoE now had the authority and capability to establish control over the development of IT in India. One of the initial steps of ECIL was the establishment of the Santa Cruz Electronics Export Processing Zone (SEEPZ) in Bombay. The primary function of the SEEPZ was to offer Indian and foreign investors incentives to establish an export base in India, including tax breaks, cheap land, duty-free imports of inputs, and a streamlined permit process. In return, the government asked that as much of the Indian components be used and most of the production be exported.

The second order of business by the ECIL was to create state-owned ECIL as a national leader for minicomputer production. To achieve this, ECIL was fully funded by the government, and in addition to this, DoE made it difficult for a private competitor to get operation licenses. This period post Emergency was popularly known as the 'License Raj'. The government's main motive was to permit imports of mainframes and large minis, by giving the small mini market to ECIL and allowing the private firms to compete in the macro sector (Dedrick and Kraemer, 1993). Due to this support, ECIL had 40% to 53% of the market share in India between the years 1973 and 1977 (Dedrick and Kraemer, 1993).

Despite this, the company had two major weaknesses: the company "worked more like a cottage industry", and the company was unable to find a market to sell the product and "by about 1976, it had become obvious that ECIL was not able to meet domestic computer demand with competitive prices and technology" (Brunner, 1991, p. 1742). Due to these reasons, the government decided to open doors to the private sector in the computer industry by announcing the Minicomputer Policy in 1978. This policy allowed companies such as Hindustan Computers Limited (HCL), Operations Research Group (ORG), a subsidiary of Sarabhai Enterprises, a joint venture between Indian firm and the Uttar Pradesh State government, and DCM Dataproducts (DCM), a subsidiary of Delhi Cloth Mills to own a significant share in the market (Grieco, 1982, p.614).

During this time, in 1995, a US computer manufacturing company, Burroughs, entered a joint venture with Tata Consultancy Services (TCS) to export software and printers from SEEPZ (Dedrick and Kraemer, 1993). The third action taken by the ECIL was to challenge the position of multinationals the company, they did by using Foreign Exchange Regulation Act (FERA) which was passed in the year 1973, to pressurise IBM and British-owned ICL (International Computers, Ltd.) to dilute their equity to 40% in their Indian operations. While ICL agreed to this proposal, IBM refused (Dedrick and Kraemer, 1993). After further negotiations with IBM in 1976 and 1977, in 1978, IBM finally decided to exit India altogether.

During the 1970s, there was another primary concern, India was losing its educated workforce to the West, especially to the United States. This phenomenon was known as the 'Brain Drain' (Chacko, 2007). Meanwhile, Hyderabad became home to numerous heavy industries in the public sector, which were set up during the 1960s and 1970s (Ramachandraiah and Prasad, 2008). The location of these industries resulted in several employment opportunities, which led to the in-migration of skilled workers and their families to Hyderabad. Due to this, Hyderabad had witnessed a massive influx of people searching for better living conditions and opportunities from the surrounding districts. (Ramachandraiah and Bawa, 2011).

In the mid-1970s, post-emergency, it became challenging to import computers when the license raj came in. It took around three months to a year to import the computers. By the time they reached the customs, the computers were outdated. Getting the new replacement parts, which were expensive combined with the international transportation charges back in the day, was an extensive process. In addition, importing the parts would again take the same amount of time. Due to this, companies across the state pooled up their resources and set up a shared computing center in Bella Vista for their Administrative Staff College of India (ASCI) in Panjagutta. ASCI soon became a place where the state's administrative bureaucracy was trained.

THE ERA OF IT EXPORTS AND PARTIAL LIBERALISATION - THE 1980s

Despite the unceasing efforts of the government, India was still technologically backwards. India's IT policies in the 1980s were aimed at modernising the IT industry that was estimated to be about 15 years behind the current frontiers of research and production (Girdner, 1987). In the early 1980s, some liberalisation and trade took place, but there was no relaxation of the FERA restrictions on foreign investments (Dedrick and Kraemer, 1993). These government restrictions were considered as an advantage to the IT industry in Hyderabad, being at the right place at the right time; with the setup of ASCI in the late 1970s, the government considered computing as a tool for administration. During the same period, Personal Computers (PC's) were invented. The trade and investment liberalisation policies primarily impacted the development of the IT industry in the early 1980s. The IT industry experienced a temporary boost in 1984 when then Prime Minister identified telecommunications and information technology as a "core sector," together with traditional industries such as electrical power generation, steel, oil, and automobiles (Wolcott and Goodman, 2003).

Two new policies were announced later that year: the New Electronics Policy (NEP) and New Computer Policy (NCP). The main objectives of NEP were facilitating technology transfer in the electronics industry, importing computers for government departments, establishing 'science cities and science parks' to encourage expatriate Indian technicians to return to the country, and setting up free-trade export processing zones. The NCP was announced by DoE and their main goal was to remove the institutional barriers for "transforming the IT industry into a 'virtuous circle' competitive prices/costs-higher demand-higher scale of production-higher efficiency-competitive prices/costs'. This marked a departure from the erstwhile policy that restricted entry of companies that were a part of 'monopoly houses' (Dhar and Joseph, 2019).

Later, in 1986, DoE announced The Policy on Computer Software Export, Software Development and Training. This policy facilitated the growth of the software industry. The policy underlined five key objectives: (i) software exports to achieve a quantum leap and obtain a sizeable share of the global software market; (ii) to target an integrated development of software for national and export markets; (iii) simplification of procedures to accelerate the growth in the industry; (iv) establishment of a firm base within the national software industry; and (v) increased utilisation of computers in decision-making and enhancing efficiency (Lakha, 1990, p. 49). According to Dr Seshagiri of DoE, the policy was a "flood-in, flood-out strategy" which meant that at the beginning, there would be a flood in imports, resulting in an even greater flood out of exports software services (Dedrick and Kraemer, 1993).

In 1988, NASSCOM (The National Association of Software and Service Companies), a non-government organisation, was founded. NASSCOM played a vital role in establishing a brand image

for India in the global software services market by participating in international trade fairs, events and organising learning events in India that featured experts from significant markets. (Bhantnagar, 2006).

LIBERALISATION AND ECONOMIC REFORMS - THE 1990s

Liberalisation in India brought a massive influx of opportunities and scope for the services industry, especially IT. The software technology parks (STPs) in 1990 by the DoE (Barnes, 2013). These parks provided software exporters access to free water and electricity. Wholly export-oriented firms were given additional benefits such as tax-free status and duty-free purchases of capital imports. Due to establishing these parks, India had seen a rapid increase in the number of software firms, from 50 firms in 1986, to over 140 firms by the end of 1990. Few companies relocated to Special Economic Zones (SEZs), which became individual STPs (Pínglé, 1999, p. 141).

The economic reforms of 1991 had a significant impact on the Indian software sector. Now, the software firms that found it difficult to finance their firms through debt due to the lack of collateral could raise resources quickly through equity. Although the 1991 reforms signaled that India has become receptive to foreign investment, low fixed costs, export orientation, India's comparative advantage led many Multinational Companies (MNCs) to open their branches in India (Kapur, 2002).

In 1994, wages for software programmers and systems analysts in India were less than one-tenth of those for their US counterparts. It was comparatively lower even than other developing countries such as Mexico. Indian programmers also had the unanticipated advantage of familiarity with the Unix operating system in the 1990s. Computer manufacturers in India in the 1980s had no alternative but to rely on Unix (the first portable, machine-independent, multi-user operating system) even though foreign companies were developing proprietary systems at the time. But this turned out as an advantage for them as by the 1990s, when Unix became the system of choice for personal computers and workstations, Indian Unix programmers had a skill that was extremely rare to find anywhere else in the world (Saxenian, 2015). The Indian software firms have grown from 430 in 1996-97 to over 620 in 1997-98 (NASSCOM, 1996-97, 1997-98). By 1999, over 95 MNCs in India, 70 entered India after 1990 (Kapur, 2002).

Liberalisation in the 1990s also had a massive impact on Telangana. It began with the IT Industry's origin in Hyderabad in 1990 in Maitrivanam, which was also India's first IT incubator. It was due to the Y2K making Hyderabad the poster child for the global IT market. In 1992, the Hyderabad IT hub moved from Maitrivanam to Madhapur. From 1990 to 1995, the number of engineering colleges that were offering computer applications in Andhra Pradesh has gone up to 107 from just 32, and 30 new engineering colleges were added shortly after, to keep up with the growing demand of the IT industry, especially software in the country (Kapur, 2002). The state's GDP was far below the national average in 1995- 1996 as the state government's expenditure on warfare and subsidy comprised 10% of the state GDP (Y.V. Krishna Rao et al., 2002). To help the state from the crises, the then Chief Minister utilised the liberalisation policy to reform the state economy (Naidu and Ninan, 2000). This was done by attracting foreign investments to Andhra Pradesh for various banking and finance, biotechnology, and information technology industries (Das, D., 2015).

The next mission of the government was to turn Hyderabad into an engine of growth (Kennedy, 2007). This was achieved by initiating a USD 350 million erudition enclave called HITEC City (Hyderabad Information Technology and Engineering Consultancy City) (Das, D. 2015). Soon after, in the year 1998, the first phase of HITEC City, the 'Cyber Towers', was inaugurated. The Cyber Towers was the

headquarters of numerous multinational IT companies. Hyderabad soon became an international hub for the IT industry and was later known as India's 'Software Training Capital'. This growth was majorly due to the Information and Communications Technology (ICT) Policy, as this was the time when there was a vast supply of cheap labour and high demand for an educated workforce from leading national research and academic institutions. In 1998, the country's first department of information technology was formally established in Andhra Pradesh to exclusively focus upon information technology and give the sector the impetus it deserved.

SOFTWARE TECHNOLOGY PARK (STP) IN TELANGANA, THEIR ROLE AND COMPOSITION

Software Technology Parks of India (STPI) is an autonomous society established in 1991 by the Ministry of Electronics and Information Technology (MeitY), the Government of India, to enhance and uprise software exports from the country. These tech parks provide the necessary infrastructure and building assets for usage administration. The aim of these parks aligns with the advancement of IT/ITeS industry, innovation, R&D, aiding the start-ups, creating technology assets and products in the field of emerging technologies like IoT, blockchain, Artificial Intelligence (AI), Machine Learning (ML), computer vision, robotics, Robotics Process Automation (RPA), augmented & virtual reality, animation & visual effect, data science & analytics for various domains like gaming, FinTech, agritech, medTech, Autonomous Connected Electric & Shared (ACES) Mobility, ESDM, cyber security, industry 4.0, drone, efficiency augmentation, etc. (STPI Portal)

The objective of STPI is the development and promotion of exports relating to software services, information technology and ITeS. STPIs have provided data communication services and various other value-added services to IT and related industries. These parks have also contributed to providing statutory and other promotional services by implementing schemes formulated by the state. These statutory services include the Software Technology Park (STP) conspire and the Electronics Hardware Technology Park (EHTP) plot to advance the ITeS industry. STP Scheme is an interesting plan intended to advance the software business and development of new companies and SMEs with no locational imperatives. At present, more than 3,800 units are enrolled with STPI. During the FY 2016-17, IT/ITeS send out made by STPI enrolled units are ₹ 3,50,680 crores and electronics hardware fare of ₹ 8,554 crores under EHTP conspire. Promotion of micro, small and medium enterprises (MSME) and boosting entrepreneurship is also a significant role in STPI's mission and vision. (Yadav & Lal, 2021)

STPI Hyderabad was started in 1992 with 11 STPI-registered units operating from the main complex and 6 operating from outside. STPI Hyderabad is one of the ten STPI jurisdictions having its main centre in Hyderabad, Telangana and five sub-centres located at Kakinada, Tirupati, Vijayawada, Visakhapatnam, and Warangal. The centre has been the major constituent for the growth of the software and hardware industry in the combined Telugu states and now in Telangana for the last three decades. This establishment has enabled Hyderabad to emerge as an IT hub in India. STPI-Hyderabad has warranted the growth of software exports from Telangana & Andhra Pradesh region and created multitudes of opportunities by buoying the economic progress. During 2020-21, STPI-registered units under STPI-Hyderabad jurisdiction contributed ₹ 72,457 crores IT/ITeS/ESDM exports.

Y2K AND THE IT RISE IN INDIA - THE 2000s

The Y2K (the year 2000) glitch had a significant impact on the Indian IT industry. In the year 2000, the Indian IT industry was worth over ten billion dollars, of which the hardware industry owned two-thirds of

the market and the rest one third was owned by the software industry (Computers Today, July 1-15, 2001). In the early 2000s, there was a significant spike in IT startups owned by the middle class in India's major cities like Bangalore, Pune, and Hyderabad. The growth rate of the IT industry declined sharply in 2001-02. IT Industry sales grew only by 23.1%, raised by a 63.9% growth (from a small base) in IT-enabled services; software sales increased 21.7%. Development of domestic sales fell even more drastically to 10.7%. These declines are partly due to a fall in charges for services; the real growth has been higher than these figures suggest. But there has been a slowdown even in absolute terms; the almost complete cessation of campus recruitment in 2002 is one indicator (Desai, 2003).

A survey conducted in 2002-03 among small and medium-sized software companies in Bangalore (Upadhyaya, 2003) revealed that almost all founders were from the middle class. Still, they were highly educated professionals with years of work experience to back them up. The rest came from business communities and others who had trapped 'old economy' capital to start their businesses (Upadhyaya 2004a).

And soon after, in the late 2000s, many Indian IT firms started marketing themselves based on their ethical standards and cultural values alongside their technical expertise and labour cost differential. These ethical and cultural standards were popularly known as the "traditional middle-class values" (Upadhyaya, 2003).

"The new millionaires did not inherit wealth. They have risen on the back of their talent, hard work, and professional skills" (Das 2002b: xv-xvi). In 2005, India owned 3.3% of the market share for the global market for outsourced IT services. This was close to half the stake held by Fortune 500 companies, and in addition to this, India's market share stood second in terms of share position after the United States (Bhatnagar, 2006). The NASSCOM membership grew from 38 members in 1988 to over a thousand firms in 2005 (Bhatnagar, 2006).

The Y2K had not only a significant impact on India but also Hyderabad. The problem helped open the world markets to Hyderabad. Hyderabad was soon dubbed the 'Silicon Valley of the East' by Bill Clinton during his visit to South India in 2000. In the early 2000s, the education infrastructure in Hyderabad was closely integrated with the IT and Information Technology Education Services (ITeS), the economy that has constituted nearly 99% of the state's exports for the past five years (Government of India, 2010). By the end of 2000, Andhra Pradesh had 96 engineering colleges offering computer-related courses, 469 colleges (excluding the engineering colleges) offering Bachelor of Computer Application (BCA) degree courses, and 161 offering Master of Computer Applications (MCA) (Xiang, 2011). A total of 100,000 students in the state were enrolled in the IT or IT-related courses in 2000-2001 (Xiang, 2011). The sole purpose of all these courses was emigration to the United States, and the curriculum for these courses was specifically designed according to the American need. It was adapted from American textbooks (Biao, 2007).

IT POLICY AND ELECTRONICS

In the late 1990s, the then Chief Minister of Andhra Pradesh (now Telangana) formed a Special Interest Group comprising government officials and officers from the nascent local IT industry. The group's main recommendation was to formulate a new IT policy for the state. Before releasing the policy, the government officials looked at the information and communication technology sectors in developed countries as models. After further research, the mechanism of Citizen's Charter, which helped in applying the International Standardization Organization's (ISO) standards to the British government,

especially from the perspective of providing services to consumers, was considered most applicable from Andhra Pradesh (Dabla, 2004). In 1999, the Vision 2020 policy was released to define the vision for Andhra Pradesh. The main aim of this policy was to improve the lives of citizens by using IT to promote employment, electronic government services, education, and economic well-being.

The Andhra Pradesh First Information Technology Policy 2000 was the first official policy catering solely towards the IT sector and was released in 2000. This policy aimed to make the state globally competitive in the IT sector and cultivate strategic collaborations with other countries. In addition to this, the objective of this policy was to use IT to foster economic development in the state, and this was achieved by the growth of the IT industry in the state along with software exports, more employment opportunities, the attraction of foreign investments, high-quality services and by promoting knowledge as the critical resource for the economic progress of individuals and institutions. In 2002, a new Information and Communication Technology Policy, 2002-2005, was released, which was to be effective till 2005. This policy aimed to attract foreign companies and promote private IT companies in the state (Dabla, 2004).

The electronic sector was the third primary sector promoted by the IT policy. Andhra Pradesh government wanted to bring its citizens a 'SMART' government – a simple, moral, accountable, responsive, and transparent government. This was achieved by decentralizing planning and admissions, revising performance evaluation mechanisms at all levels of the government functions and integrating services provision with IT. The state tried to use all its IT resources to usher in electronic government by designing a framework for Public-Private Partnership (PPP). To enable PPP, the state planned to create suitable applications, initiate proposals for electronic government services, and then open the bidding process to information technology companies. Companies that won contracts could then collect user fees for the electronic government services they provided under this mandate (Dabla, 2004). Between the years 1994 to 2002, various government programs were implemented such as:

- (i) Computer-Aided Administration of Registration Department (CARD) in 1998, its functions were the registration of documents; valuation of immovable properties; a collection of revenue stamp duty, transfer duty and registration fee; preservation of copies of documents; issuance of certified copies of documents and encumbrance certificates; and registration of societies, firms, chit funds, non-trading companies and marriages.
- (ii) Multi-purpose Household Survey (MPHS) in August 1998, and the objective of this program was to computerize operations at the pivotal field unit of administration, namely at local revenue offices; create databases on socio-economic information of all citizens of the state; create details of all agricultural landholdings in the state; create a unique ID for each citizen; and issue various certificates relating to land and socio-economic status of citizens.
- (iii) eSEVA in 1999, aiming to provide efficient services to citizens in an integrated manner.
- (iv) Fully Automated Services of Transport Department (FAST) in May 2000. It focuses on improving services to the citizens by issuing learner licenses, driving licenses, tax tokens, permits and international driving permits; renewing driving licenses; registering vehicles, and endorsing purchase agreements.
- (v) Andhra Pradesh Network known as MANA TV (APNET) in October 2000. Its goal is to develop an information technology infrastructure for social development in the state.

- (vi) And Saukaryam, through PPP arrangement, enables Vishakhapatnam to deliver a host of civic services such as online payment of municipal dues, payment of trade license fees, advertisement charges, building license fee and other registration charges (Dabla, 2004).

PARTITION OF ANDHRA PRADESH AND UNCERTAINTY- THE 2010s

Andhra Pradesh was ranked fourth for its share in software exports in the IT sector in India, and it owned 15% of the market share by 2010. Fortune 500 companies such as Microsoft, Infosys, Tata Consultancy Services (TCS), Capgemini, Amazon, Google, etc., started their operations in India. The IT parks and Special Economic Zones (SEZ), which were situated in Madhapur, expanded to various areas in Hyderabad, such as Nanakramguda, the Financial District and Gachibowli (Prathyusha, 2019). In addition to this, the early 2010s was a difficult time for the IT industry in Hyderabad as the agitations of Telangana picked up. Until it was inevitable for business if the state would be united or split up, many companies began operations from Bangalore. The IT Industry, which was booming till then, had come to an unexpected halt. In 2014, the state was finally split into Telangana and Andhra Pradesh. And now Hyderabad, after being the joint capital of both the states, was soon the capital of Telangana. When it was made sure that the state was bifurcated, IT companies started flooding back into the city. The IT industry generated employment to 43,417 professionals in one year, taking the total number of employees from 4,31,891 in 2016-17 to 4,75,308 in 2016-17. The IT industry's state exports achieved a healthy and impressive growth rate of 9.32%, better than India's IT industry's national average of 7-9%. State IT sector exports accounted for approximately 49% of all sectors' total exports. In 2018-19, Telangana State's position was second in the country in terms of total revenues from the IT sector (Telangana IT Department Annual Report 2016-17).

The Andhra Pradesh government saw a significant benefit of promoting the IT industry in the state. The sector needed technically skilled labor, which led to higher education institutions that provided technical education and training. Due to the growing demand for technical education and the magnitude of the task involved, the state felt it could undertake all the interventions required on its own. Hence, it decided to encourage private investors to partner in its effort. Soon, the State Board of Technical Education and Training was constituted to give adequate control over the maintenance of quality and technical education standards and promote and coordinate training services. This phenomenon resulted in compulsory computer education for all degree-granting colleges from 2003-2004. Two new degrees were introduced to keep up the demand: a bachelor in Computer Application (BCA) and Bachelor in Business Management (BBM). In addition to this, two technical higher education institutions were created with the aid of the state: The Master of Science in Information Technology Program (MIST) was set up in collaboration with the United States-based University- Carnegie Mellon University and the local IT companies. MIST aimed to groom and prepare IT professionals to gain employment in the IT industry and take up entrepreneurial ventures. IIIT (International Institute of Information Technology) Hyderabad aims to train engineers at undergraduate and postgraduate levels, help them with advanced research and development in the information and software technologies, and work closely with IT companies for employment opportunities for their graduates (Dabla, 2004). In the academic year 1994-1995, there were 32 engineering colleges and 9335 students, and in over a decade, from 2001 to 2005, there was 245 engineering colleges education over 70768 students (Sudan, 2001).

The success of the IT industry in Hyderabad was due to the local collective. The Hyderabad Software Enterprise Association (HYSEA), a city-based IT company collective that facilitates the industry to interact

with the government and global players, is the only regional body in India. The rest of the states have NASSCOM. HYSEA accounts for 10% to 15% of the total number of IT companies in the cluster (Gulati, 2012).

CONTRIBUTION OF IT SECTOR IN EMPLOYMENT GENERATION

The tertiary sector has played a significant role when it comes to employment generation. The entire service revolution changed the course of India's industrial structure and brought along multitudes of opportunities in terms of employment, equity, and overall enhancement of the state and its people. This recent transformation of IT as a mass employer has undoubtedly uplifted the aspirations of the middle-class.

The Business Process Outsourcing (BPOs) in India began in the late 1980s by British Air and American Express for back-office operations. Soon after, in the 1990s, a new milestone was achieved with the entry of GE as GE Capital International Services (GECIS) by opening low-cost service verticals. This became a massive success in a short period, which resulted in creating a separate legal entity in 2004 called GENPACT. By the end of the 2000s, the Indian ITeS/BPO companies were offering services such as finance and accounting, knowledge services, customer services, human resources, and procurement for a wide variety of sectors such as telecom, manufacturing, healthcare, retail, media, and utilities. India, in the present-day, owns over one-third of the global BPO market. This is achieved by creating business value from captive and third-party service delivery to service optimisation, access to talent, productivity, and new business facilities for skill and knowledge cost arbitrage. The diversification in the sector had helped build its capacity to offer process and knowledge-based solutions for a specified industry or vertical. This rapid growth has resulted in both a high turnover and labour shortage at the same time. This provided employment opportunities to a new generation of graduates. Global giants were attracted to India for its quality services and affordable workforces, such as Apple, WNS, Infosys, TCS, and Wipro. In the Indian market, Genpact, TCS BPO, Wipro BPO, Aegis BPO, WNS Global Services, Firstsource Solutions, IBM Daksh, Aditya Birla Minacs, Infosys BPO, Accenture India, HCL BPO would lead the market including few more and hold the significant share of the business (Sheth and Singh, 2012).

The inception of BPO and Information Technology Enabled Services (ITeS) industry in the early 2000s was the coming-of-age event that encouraged innovation and employment generation.

BPO's have employed 7 lakh people in India since 2000. Meanwhile, cities like Bangalore and Hyderabad emerged as hubs for the BPO services with an influx of people from all over the country searching for jobs.

The BPO/ ITeS industry has been known by different names throughout its course of existence. It began with the popularly known name as the 'Call Centers' in 1999. Later, BPO caught up, which included both backend office and call center work. Eventually, Knowledge Process Outsourcing (KPO) emerged, which was the outsourcing of information-related business processes. This type of work can be carried out by the subsidiary of a company or any different company altogether. These companies could also operate in other countries or offshore locations to save cost and avail cheap labour. Most recently, the abbreviation BPM (for Business Process Management) is commonly used, and customer-facing businesses are sometimes referred to as contact centres.

BPOs have enabled companies and their employees to operate and function cross-border with efficient use of the latest technologies such as high-speed telephone lines, the worldwide web, and satellite communication. Recently, consumers' shift to new technology platforms like mobile phones and tablets has lent greater importance to apps, text messages, and artificial intelligence. (Mankekar & Gupta, 2017)

The employment from the IT industry was not only confined to the BPOs, but it also had other components like packaged software products, engineering services, R&D, product development, hardware, e-commerce etc. In their different capacities, these components contributed to the employment and output generation over time. For a long time, India remained an exporter of services and cheap labour. With a mass population and increasing number of graduates every year, there was a solid lot of workforce in place, eager to be employed. With the aid of state-promoted bodies and other professional institutes with advanced curricula, it enabled a competent workforce of IT/ITeS trained graduates and professionals.

As cited in (Barnes 2013), a survey of over 6,000 IT firms sponsored by the Reserve Bank of India concluded that 77 per cent of export earnings came from 'computer services' and 23 per cent from 'ITeS/BPO' firms (RBI 2009: 1519). NASSCOM claims that employment in the IT industry grew by eight times between 2000 and 2009, reaching about 2.2 million. It has also been claimed that the industry has generated indirect employment for around 8 million people (Government of India 2007, 2010; NASSCOM 2010).

PRESENT-DAY SCENARIO AND ENTREPRENEURSHIP - THE 2020s

By the beginning of 2020, Hyderabad was recognised as one of the leading IT hubs globally. It was home to over 1200 IT companies, including startups, small, medium, and large firms, which combined, employed over 4,50,000 IT professionals, supporting indirect employment of over 7,00,000 people. For the development and promotion of the IT Industry in the state, the Andhra Pradesh government announced the Information and Communication Policy (ICT) in 1999, 2002, 2005 and 2010. After the separation in 2014, the Telangana government declared the ICT policy 2016 at the Hyderabad International Convention Center (HICC). The main objective of this was to make "Telangana the most preferred technology investment destination in the country" (ICT Policy, 2016).

In the present times, with the rise of the entrepreneurial wave across the globe, any assessment made for measuring growth would be incomplete without taking into account the role of startups and entrepreneurship. Schemes like 'Make in India' have encouraged innovation and self-belief among small business owners. Engineers, technology experts and people from several domains are proactively coming up with new products and services which show remarkable potential. These innovations in the form of technological assets, services and platforms have also rendered of utmost use in government and state administration. With global digitization, several e-governance initiatives have come up in recent years, making both administration and consumption of services easier. This new direction towards innovation and creation has been made viable with efficient adaptation to technology.

The two metropolitan cities have adapted to this trend better than others namely Bangalore and Hyderabad. The roots of this entrepreneurship foundation were planted in Hyderabad in the 1990s with liberalisation reforms and direct inducing factors such as the government's industry and infrastructure policy, the establishment of research institutions and immigration of talent. All these

factors along with the positive responses from market forces made Hyderabad a modern industrial cluster which later transformed into an IT cluster.

There was an emergence of triple helix model in Hyderabad, similar to that of Bangalore, which had government, industry and academia working together. All this gradually led to the nurturing of different components of entrepreneurial ecosystem for the startup scene in Hyderabad. This triple helix model consisted of a nucleus comprising technology startups and prospective technology startups, surrounded by the existence of indispensable factors (finance, market, human resources, support systems, and mentors), and supplementary factors involving supportive culture and media. (Subrahmanya, 2017)

Covid-19 had a widespread impact on economic activities globally. IT sector has become the most prominent internal function in the aftermath of Covid-19, with business and other functions expecting IT services and support like never before to adapt to this normal. Indian IT firms did not have the adequate infrastructure to deal with a covid-like situation; therefore, they had to set up covid response teams and come up with action plans to navigate through this crisis.

(Ramasamy, 2020) in his paper tried to map out the different challenges faced by IT companies during the covid pandemic by collecting data from IT professionals and using a sampling technique. The outcome of the study highlighted some common points pervasive in all IT companies. Productivity of the employees was affected at a large scale, and some of them were not honest and genuine in their working patterns. It was found that not all employees were capable of working on their own and needed supervision. In foreign countries, people were aware of the work from home model, and they have been practising it for some time now with proper infrastructure, but the readiness level in India is very different.

The biggest challenge that came across was the setting of the work from home model with proper infrastructure for each employee. IT companies had to provide laptops and other devices, ensure proper bandwidth and power backup for avoiding availability issues of the employees. This sudden shift resulted in an additional financial burden on organisations. The financial burden also increased because of the fixed costs like rent of the vacated buildings these firms had to bear. Firms saw a delay in deliverables and projects because of work from home model; this affected the IT business severely as new clients would not easily sign up due to inefficiency. (Ramasamy, 2020)

Another similar study was conducted by (Singh & Kumar, 2020), which tried to explore the emerging trends and impact of the pandemic caused by novel coronavirus on working professionals of the IT sector in Bengaluru. The first objective of the study was to analyse the working culture, and it had some startling results. Employees were spending more time working from home than in the office, and yet most of them were able to maintain a healthy work-life balance.

Some employees also felt insecure about the future of their jobs due to the economic downturn that covid-19 brought. The market saw a decline during the pandemic and many organisations resorted to salary cuts for their employees. The study also highlighted that there was a communication gap between the employees as virtual and video conferencing tools were not as effective as real-time meetings and interactions. The organisational culture and values took a hit in this WFH model, and employees faced psychological stress due to this sudden change in the ambiguity of the working process and job security.

The study also examined the emerging trends due to wider acceptance of work from home. The aspects covered and the results were different from the previous study. The study highlighted that the employees were able to save the time of commuting by working from home, and they preferred a hybrid model of working where they were given a choice to decide when to work from home and office and didn't want to settle for a permanent place of work. (Singh & Kumar, 2020)

The entrepreneurial pursuits across various industries also took a hit during covid. Many small businesses and startups faced a significant reduction in revenue streams due to the impact on the global supply chain of both goods and services. Loss in productivity, global supply chain disruptions, reduced customer and investor demand, has adversely affected the entrepreneurial practices and morale of business owners and entrepreneurs across the globe. (Meahjohn & Persad 2020)

Indian economy and businesses faced some adverse impacts of the pandemic. The state of the Indian economy suffered critically with the contraction of 24.4% in GDP from April to June 2020. Pandemic led to a 4% permanent loss to real Indian GDP. The most disrupted sectors were tourism, aviation, automobile, telecom, and retail sectors. Automobile Industry faced disturbances in the supply of raw materials as 25% of India's automotive parts are supplied by China. Suspension of manufacturing abilities largely affected functioning telecom industries. In the retail sector, food categories like tea, meat, spices that are exported to the US, Europe and China were heavily impacted due to a decrease in demand and domestic supply chain issues. (Das & Patnaik, 2020)

CONCLUSION

The IT industry of India has seen an eclectic nature of events and policies through the course of 50 years. Various policy measures were introduced aiming at the betterment of overall development emphasising on different sectors in accordance with state of the economy at various stages of planning. The growth of non-traditional services sector transformed India, an agrarian economy into an exporter of modern services over the years. The boom of IT industry in India, that can be seen today was not instantaneous. Rather, it was a result of subsequent policies, laws, and reforms which gave birth to IT hubs like Hyderabad and Bangalore. Such pattern of growth for a nation whose independence is not even a century old shows remarkable potential.

From the Mahalanobis's foresight to inculcate computers in planning reforms of India during 1950's, the formation of Department of Electronics (DoE) in the 1970's, the New Electronics Policy (NEP) and New Computer Policy (NCP) in the 1980's, the liberalization reforms of the 1990's, to the startup spike in the 2000'. An amalgamation of all these events led to the IT revolution in India and established Telangana as a solid player in worldwide IT market. There is no doubt that IT industry and technology services are going to shape the global future. To capture the essence of this upcoming growth, automation and artificial intelligence could be good focal point for further research.

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