

# CEC Working Paper

## Documentation of Labour Rights Violations in the Information Technology Sector in India

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2000

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## Table of Contents

CHAPTER I: INTRODUCTION .....	5
CHAPTER II: INFORMATION TECHNOLOGY INDUSTRY IN INDIA: AN OVERVIEW .....	9
CHAPTER III .....	34
CHAPTER IV: CONCLUSION .....	53
REFERENCES .....	54



## **CHAPTER I: INTRODUCTION**

### **1.1 BACKGROUND**

Since the late 1970s, an enormous expansion in the export of capital across national boundaries has taken place. Giant transnational corporations have been carrying out a global 'rationalisation' of production and distribution, treating the nation-state as largely irrelevant. Neo-liberalism has developed as a political movement accelerating this process by deregulating the cross-border flow of capital around the world.

An explosive expansion of computer and telecommunications technology has accompanied these developments. By shrinking distances, this new technology has been a major factor in the globalisation of capitalist production. It has also played an essential role in bringing about the domination of networked forms of organisation. Although networks of various kinds have existed for centuries, modern computer technology has allowed them to take on new features and modes of operation, and made them a central aspect of modern capitalism. Against this background, it would be highly interesting to know the general situation of persons who are handling this modern technology or who are in any way related to a sector of this technology.

One reason for choosing the information technology (IT) sector is the recent importance it has started assuming in the Indian economy. It is a sunrise sector with a lot of the government's efforts going into it to make it work. It is a knowledge-oriented service sector where the units of production are human beings. Another reason is the fact that dramatic changes to working conditions are the hallmark of IT. The demand that IT makes for increasingly flexible workers is now overpowering. Thus, this sector has a lot of relevance in the new-age economy and is definitely of immense interest for study.

### **1.2 PURPOSE OF PAPER**

Within the ambit of information technology and the fact that it is a relatively new industry, the study seeks to identify the areas outlined and the corresponding policy environment under which the sectors operate. The study also seeks to identify the new management practices and their effects on the rights of workers. Particularly, this study will discuss the situation of job permanency, unionisation efforts, and industrial relations in the IT sector, as well as the overall situation of wage and working conditions, social security and welfare measures available to the workers. This is expected to help identify and understand the nature and pattern of labour rights violations in India in the era of globalisation and liberalisation, in the areas studied within the information technology sector.

### **1.3 CONSTRAINTS AND LIMITATIONS OF THE STUDY**

Due to the absence of any such study, the nature of this particular study was exploratory in nature. In the event of carrying out the survey, numerous problems came to light. While the initial research objective envisaged the interviewing of all the sectors within the information technology industry, it was found to be extremely difficult to gain access to units in the IT-

enabled sector. It was also found that the study of the entire information technology sector would require more resources in terms of manpower and time since information technology as a sector encompasses a lot of components, each of which is fairly large. Moreover, the interviewing of employers was also faced with a fair degree of hesitation, and employers were not too forthcoming with their responses. Due to constraints of time as also the difficulty in gaining access to workers, only few IT-enabled sectors were studied. The main chunks were from the software sector as well as from the hardware assembly sector, where respondents numbered 82 out of the total of 109. Moreover, due to similar constraints, the geographical spread of the study was curtailed to cover Bengaluru, Delhi and some parts of Chennai. Many interviews were conducted in the presence of the employers, and the answers of the workers at such instances could be controlled due to the presence of the employer. It was also seen that there was very little literature available on labour practices in the information technology industry. Industry associations have employment figures available but very little information on current employment practices within the industry, and were rather tight-lipped about the issue of labour rights in the industry.

#### **1.4 RESEARCH QUESTIONS**

This study tries to look into the following questions:

1. What is the policy environment within which the information technology sector operates?
2. What are the employment practices and the labour processes in this sector? And how are they violative of workers' rights?
3. What is the nature of labour rights violation in this sector?

#### **1.5 METHODOLOGY AND SOURCE OF DATA**

For the purpose of gathering information, a range of research methodologies was adopted. The methodologies were:

- Literature survey and study
- Secondary analysis of available and existing data
- Semi-structured interviews
- Survey

**Literature study and survey/Secondary analysis of existing data:** The project involved study of the relevant literature in order to acquire a broad understanding of the topic. The literature study served as a means of familiarisation with the topic as well as identifying what needed to be done. The literature study also assisted in the supplying of relevant production statistics for the structure of the industry under consideration. The literature study helped in acquainting with work, if any, that might have already been carried out in

the field. Mention may be made of the fact that there were not too many secondary sources of data available on labour practices in the information technology industry.

**People as informants:** The research entailed seeking knowledge not available elsewhere, as well as knowing the perceptions of trade unions, workers, and the management of companies. In the process of finding out information from people, widely diverse responses came to light. As a result, four important factors were taken into consideration:

- a) Defining the population
- b) Deciding whom to speak to
- c) Formulating questions to ask
- d) Analysing the responses

**a) Defining the population**

This entailed identifying the boundary from within which people were chosen to take part in the research. The research boundary encompassed call centres, DTP/job work, hardware assembly and manufacture, internet cafés, marketing of computer and computer peripherals, and software development within the information technology sector.

**b) Deciding who to speak to**

Two distinct approaches were used to generate the kind of information required in the research:

1. *Sample survey* was applied to generate description of a wider population without actually talking to every individual in the population. Here, the workers and the employers were interviewed. Such an exercise was useful to gather information on populations with large numbers of people, i.e., workers in the different segments of IT units. The sampling was judgemental and clustered. A total of 109 respondents working in the information technology industry were interviewed. The sample survey was restricted to the areas of Bengaluru and Delhi, and a few respondents from Chennai, which also has a vibrant software development industry. Bengaluru and Chennai were chosen for their software industries, while Delhi was chosen for its hardware maintenance and assembly industry, which flourishes under the patronage of a huge grey market. The breakup of the respondents is as follows:

Bengaluru: 49

Delhi: 54

Chennai: 6

The breakup of respondents amongst the workers, as per their job professions in various segments, is as follows:

Call centre	8
DTP/job work	10
Hardware	32
Internet café	3
Marketing	6
Software	50
Total	109

2. The other approach used was the *focused interview*. The selection of the informants was governed by the need to identify as wide a range of viewpoints as possible. Here, people associated with the different industry associations connected with information technology were interviewed.

In both the approaches, the sampling frame that was used was *purposive-judgemental, clustered sampling*. Mention may also be made of the use of *key informants* in the focused interviews, chosen simply for their knowledge and distinctive viewpoints.

**c) Formulating questions to ask**

The questions to be asked were formulated on the basis of two main approaches:

- *The structured questionnaire*, primarily of standardised questions; and
- *The semi-structured interview schedule*, which allowed exploration of issues with informants in a more flexible way, using supplementary questions to clarify complex responses and developing new lines of enquiry during interviews.

**d) Analysing the responses**

In the case of structured surveys, the information was recorded on specially-prepared standardised questionnaires, and the responses were analysed thereafter. The responses were also used to document the incidence of the types of labour practices and policies as they exist in various sectors of the information technology industry. The statistics generated were interpreted with the help of the information that came forth from the semi-structured interview schedules.



## **CHAPTER II: INFORMATION TECHNOLOGY INDUSTRY IN INDIA: AN OVERVIEW**

### **2.1 WHAT IS IT?**

The term ‘information technology’ was coined in the early 1980s. IT is business jargon; it means information managed by computers and refers to the technology of information – the application of science to information handling (*Asian Labour Update*, No. 34, 2000, p. 2.).

The expression ‘IT’ itself helps us to see the distinction between computer science – looking at how computers work – and looking at applications for the computer.

### **2.2 THE INDIAN IT INDUSTRY – AN OVERVIEW**

The most potent mantra doing the rounds of the Indian economy is ‘information technology’. Largely responsible for the information technology boom in the country is its vibrant and export-led software industry. The software sector is one of the high value-addition and net foreign exchange-earning industries in the country, and has also created a history of sorts on the Indian stock exchanges. The IT industry with its potential to generate wealth, foreign exchange and employment has already caught the imagination of India’s politicians, bureaucracy, businessmen, economists, and citizens, alike.

India has observed a gradual shift towards usage of information technology in government, public sector, private sector, public services and education. However, the widespread usage of computers is yet to reach a majority of homes in the country. A reason for this is the low penetration rates of personal computers (PC) in the country. The computer as a productivity tool started appearing in the Indian scenario in 1970, but it was only in the 1980s that people started to pay heed to the potential of the Indian IT industry. In 1986, the computerisation of the railway passenger reservation system brought computers closer to the masses. The advent of internet and ecommerce as well as the government of India’s thrust are factors bringing information technology closer to the daily life of the common person in India.

India has many advantages to become an important player in the global IT industry. By marshalling its vast human, industrial and technological resources, especially with expansion of its software sector – the engine of the IT industry, India can raise the productivity of domestic manufacturing and services. Obviously, this will lead to IT in governance, IT in industry, and IT for every citizen of the country. There are even talks of infusing tangible productivity gains amongst various sectors and communities through use of information technology. The domestic opportunity is evident.

#### **2.2.1 Indicators of the Indian Information Technology Industry**

To gauge the dimensions of the IT industry in India, it would be pertinent to look at the achievements, indicators and growth prospects of the industry:<sup>1</sup>

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<sup>1</sup> *Nasscom website*

In the year 1998-99, the Indian IT industry has been estimated to have earned revenues of Rs 24,781 crore, or US\$6.1 billion, a growth of 32.79 per cent over the revenue of Rs 18,662 crore in the year 1997-98. This high growth rate has been achieved in spite of an otherwise slow growth in the Indian economy, an uncertain political situation, and a not-so-healthy GDP growth.

In the last five years (1994-99), the Indian IT industry has recorded a CAGR (compounded annual growth rate) of more than 40.5 per cent, which is almost double the growth rate of the IT industry in many of the developed countries.

In India, IT spending as a percentage of GDP is currently less than one per cent. In the USA, however, IT spending as a percentage of GDP is more than 3.5 per cent. However, with the government of India's resolve to increase IT spending, it is predicted that by 2003, India's IT spending could be 2.5 per cent of its GDP.

The IT manufacturing sector has been growing at an annual average rate of 28-30 per cent over the past decade. The industry has over 135 major hardware players, supported by over 800 ancillary units and small-time vendors engaged in sub-assemblies and equipment manufacturing.

Software continues to contribute a major portion of the Indian IT industry's revenues. During the year 1998-99, the software industry's revenues constituted almost 65 per cent of the Indian IT industry's revenues. The software industry in India grew by 59 per cent in 1998-99 with revenues of Rs 15,890 crore, as against the revenues of Rs 10,040 crore during the year 1997-98.

More than 200 of the Fortune 1000 companies outsourced their software requirements to Indian software houses. R&D spending by Indian software houses reached about 3.2 per cent of total revenues in 1998-99. This signifies ploughing of increasing resources in creating intellectual property rights (IPR) and developing practices and domain knowledge for moving up the value chain.

Peripherals showed significant increase in volumes and a major surge in revenues. The peripherals segment grew at more than 59 per cent, with revenues of Rs 1,433 crore during 1998-99. It was partly aided by higher sales in non-impact printers.

In 1998-99, the IT training segment grew at over 32.7 per cent with revenues of Rs 1,250 crore. The small office home office (SOHO) segment and high-end certifications contributed a significant portion of the IT training industry's total revenues.

During 1998-99, more than 820,000 PCs were sold in India. This took the PC penetration in the country to 3.2 PCs per 1,000 people by the end of 1998-99 (March 31, 1999).

The government has conventionally been recognised as a key driver for the domestic demand of information technology in India and even around the world. For example, in USA, about 23 per cent of total domestic IT spending is derived from government and public sector units. In India, government spending constituted more than 28 per cent of total IT spending in 1998-99.

The major sectors witnessing a special thrust on adoption of IT are central/state administrations, insurance, banks, energy, financial institutions, defence, public tax system, ports, customs, telecom, education, and small office home office/individuals.

The southern and western states such as Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka – in their drive to emerge as the Silicon Valleys of India – contributed a large portion to total domestic IT spending. However, at the same time, many other states of India also announced major computerisation drives. These states included Gujarat, Kerala, Orissa, Delhi, Goa, Himachal Pradesh, West Bengal, Uttar Pradesh, Madhya Pradesh and Rajasthan. As an instance of the endorsement and gravity that information technology has acquired in India, the government of Jammu & Kashmir has drawn up plans to promote the sector by inviting companies to set up IT-enabled services units in the state as well as by encouraging extensive use of information technology in the state administration and the educational system. This further provides a missing link in the vision of making India a world-class IT user.

**Table 2.1: IT Industry in India (1994-99)**

	1994-95		1995-96		1996-97		1997-98		1998-99	
	Rs mn	US\$ mn	Rs mn	US\$ mn	Rs mn	US\$ mn	Rs mn	US\$ mn	Rs mn	US\$ mn
<b>SOFTWARE</b>										
Domestic	10,700	350	16,700	490	24,100	670	35,100	950	49,500	1,250
Exports	15,350	485	25,200	734	39,000	1,083	65,300	1,750	109,400	2,650
<b>Total</b>	26,050	835	41,900	1,224	63,100	1,753	100,400	2,700	158,900	3,900
<b>HARDWARE</b>										
Domestic	18,300	590	35,600	1,037	37,800	1,050	46,040	1,244	42,350	1,026
Exports	5,500	177	1,200	35	10,300	286	7,430	201	155	4
<b>Total</b>	23,800	767	36,800	1,072	48,100	1,336	53,470	1,445	42,505	1,030
<b>PERIPHERALS</b>										
Domestic	4,590	148	6,720	196	6,530	181	8,330	229	13,600	329
Exports	180	6	210	6	520	14	680	19	730	18
<b>Total</b>	4,770	154	6,930	202	7,050	185	9,010	248	14,330	347

<b>TRAINING</b>	3,310	107	4,970	145	6,600	183	9,420	263	12,500	302
<b>MAINTENANCE</b>	4,400	142	5,920	172	6,560	182	8,240	221	9,780	236
<b>OTHERS</b>			970	31	3,800	111	5,390	150	7,150	193
<b>GRAND TOTAL</b>			6,3450	2,041	98,920	2,886	137,000	3,805	186,620	5,029

*Source: NASSCOM – The Software Industry in India – A Strategic Review, 1999*

The reasons are evident. Information technology plays an essential role in information flexibility, product quality, and fast response – factors that are so necessary for being globally competitive. These are some of the reasons why policy formulators in the developed countries and the newly industrialising countries view information technology as a critical input for competing in an information-intensive global economy. India has sufficient advantages to become an important player in the global IT industry. Indian software is recognised for its high qualitative aspect as well as for its low costs. In addition, there is tremendous availability of skilled English-speaking, scientific manpower in India. India's technical base, by virtue of its national institutes, engineering colleges and universities, has laid a strong foundation for technical skills amongst IT professionals. A manpower pool of about 115,000 engineering graduates every year acts as a huge impetus for multinational IT companies to set up development centres, or DCs, in India. Offshore development facility through high-speed datacom links results in tremendous cost savings for firms. Coupled with these is the fact that Indian companies are proving their competence in executing large projects. In addition, the government is providing tremendous encouragement towards the development of the IT sector and has put software on the national agenda. The government has announced a whole host of policies to encourage the growth of the IT sector. Even state governments have announced a large number of IT policies aimed at growing the industry in their respective states.

### **2.3 THE POLICY ENVIRONMENT**

The government of India, recognising that the impressive growth the country has achieved since the mid-Eighties in information technology is still a small proportion of the potential to be achieved, has resolved to make India a global IT superpower. The government considers information technology as an agent of transformation for every facet of human life which will bring about a knowledge-based society in the 21st century. As a first step in that direction, certain revisions and additions are being made to the existing policy and procedures for removing bottlenecks.

The revisions and additions are aimed at accomplishing the following basic objectives:

i) **Info-infrastructure Drive:** This envisages accelerating the drive for setting up a world-class info infrastructure with an extensive spread of fibre optic networks, satcom networks, and wireless networks for seamlessly interconnecting the local informatics infrastructure

(LII), the national informatics infrastructure (NII), and the global informatics infrastructure (GII). This will ensure a fast nationwide onset of internet, extranets and intranets.

ii) **Target ITEX – 50:** With a potential two-trillion dollar global IT industry by the year 2008, policy ambience will be created for the Indian IT industry to target a \$50-billion annual export of IT software and IT services (including IT-enabled services) by this year, over a commensurately large domestic IT market spread all over the country.

iii) **IT for All by 2008:** The programme will seek to accelerate the rate of PC/set-top box penetration in the country from the 1998 level of one per 500 persons to one per 50, along with universal access to internet/extranets/intranets by the year 2008, with a flood of IT applications encompassing every walk of the economic and social life of the country. The existing over 600,000 public telephones/public call offices (PCO) will be transformed into public tele-info centres, offering a variety of multimedia information services. Towards the goal of 'IT for all by 2008', policies are provided for setting the base for a rapid spread of IT awareness among citizens, propagation of IT literacy, networked government, IT-led economic development, rural penetration of IT applications, training citizens in the use of day-to-day IT services (like tele-banking, tele-medicine, tele-education, tele-documents transfer, tele-library, tele-info centres, electronic commerce, and public call centres), and training, qualitatively and quantitatively, world-class IT professionals.

Nevertheless, in spite of the importance that the government of India has laid on information technology, till now the focus of IT research has always been on trade and international division of labour. Information on the working conditions of people in the IT industry has been scant and not very exhaustive. According to the 1997 estimates of Manufacturers Association of Information Technology (MAIT), about 240,000 people were employed in the technical and managerial aspects of IT. Of this, around 100,000 personnel were employed in the IT hardware sector, while another 140,000 were employed in the software sector. This is only in the organised sector, though. If the unorganised/informal sector were to be factored in, the numbers would be much higher. Even with such large numbers of personnel, we have little or no information on the labour practices in these two sectors. To highlight the importance of the trade aspect of information technology as a determinant of the government's policies, a large number of industry organisations come out with trends but with scant information on labour conditions. With the projected growth rates and the numbers of people employed in the industry, the labour practices therein deserve serious consideration.

### **2.3.1 National Task Force on IT & Software Development**

The government of India has resolved to make India a global IT superpower and a frontrunner in the information revolution. Towards achieving this objective, a National Task Force on Information Technology and Software Development was set up in May 1998, with Shri Jaswant Singh, then deputy chairman of Planning Commission, as chairperson. The task force submitted its first report on 'IT Action Plan on Development and Export of Software and Data Communication' on July 25, 1998, and the second report on 'Development, Manufacture and Export of IT Hardware' on November 3, 1998. The final report concerns citizens' IT interface, content industry, IT RD&D, IT HRD, and strategic policies.

The 108 recommendations of the first report and the 81 recommendations of the second report cover a wide spectrum of issues relating to telecom, finance, banking, revenue, commerce, electronics, HRD, defence, and rural development.

The country should aim at an annual export target in excess of US\$50 billion for computer software, and US\$10 billion for computer and telecom hardware, by year 2008. The compounded growth rate of more than 55 per cent between 1992 and 1997 is planned to be increased to 80 per cent by 2008.

The IT Action Plan has suggested conscious efforts to spread the IT culture to all aspects of the country's economic and social life. An 'Operation Knowledge' campaign has been launched for universalising IT education and IT-based education in the country in a phased manner.

A policy framework and industrial strategy has been designed for making the Indian IT industry strong enough to meet the demands of a zero-duty regime under the WTO-ITA. A soft-bonded IT units (S-BIT) scheme will seamlessly integrate local and export productions for maximising the economies of scale, and also substitute a posteriori controls for the existing a priori controls so as to maximise the velocity of business.

Every secondary school, polytechnic, College and University library is planned to be given computer and INTERNET access by the year 2003

The IT Action Plan has brought about a new paradigm in setting up IT software and hardware manufacturing units, for making them viable for meeting local demands as well as export targets by creating a policy ambience and an investment climate in the country comparable to those in Taiwan, Malaysia and Singapore.

Within the 108 recommendations, recommendation no. 23 is directly related to the ministry of labour. This recommendation states:

"IT Software and IT Services companies, being constituents of the knowledge industry, shall be exempted from inspection by Inspectors like those for Factory, Boiler, Excise, Labour, Pollution/ Environment, etc."

The ministry of labour is yet to implement this recommendation.

In the Action Plan relating to hardware, there is a recommendation specifying the labour conditions for the IT product industry.

### **2.3.2 Action Plan (PART II – Hardware): Labour Laws**

As the Indian IT product industry will increasingly have to compete with countries like Taiwan, Singapore, Korea and Philippines, the Indian labour laws in this limited sector should not be adverse as compared to the labour laws in competing countries. In view of this, the following modifications in the labour law specifically applicable to the IT products

manufacturing sector will be enacted in S-BIT units/zones/habitats, with due consideration to the ILO recommendations.

- i. Women shall be allowed to work in three shifts subject to provisions of all the ILO-specified conveniences, including transportation from and to the doorsteps of the employee.
- ii. Temporary status will apply for 720 days out of three years instead of 240 days out of one year, as per the existing labour laws.
- iii. Manufacturers will be allowed to downsize employee rolls by up to 10 per cent of total employee strength in any year without permission.
- iv. Contract Labour Abolition Act will not be applicable to the IT sector.
- v. In order to be able to run three-shift/four-shift operations, labour law should allow up to 12-hour shifts without overtime, as long as the total number of hours worked per week averages the current norm of 48 hours per week.

In this regard, the government of India passed a bill relating to information technology, becoming only the 13th country in the world to have a series of legal provisions devoted exclusively to information technology.

### **BOX 2.1: Gist of the Information Technology Bill**

*Ministry of Information Technology*

*New Delhi*

*“A*

*Bill*

*to provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as "electronic commerce", which involve the use of alternatives to paper-based methods of communication and storage of information, to facilitate electronic filing of documents with the Government agencies and for matters connected therewith or incidental thereto;”*

*E-Commerce and Internet are the two most important developments not only in information technology but in the world of business as a whole. It offers tremendous opportunity for commerce, trade, and business dealings, and also for establishing new kinds of E-business and software development for network and e-business solutions.*

*Proliferation of Information Technology in the society has raised a number of legal issues. Many legal rules assume the existence of paper records and documents, signed records,*

*original records, physical cash, cheques, face-to-face meeting, etc. As more and more activities are carried out by electronic means, it becomes more and more important that evidence of these activities be available to demonstrate legal rights and obligation that flow from them. The Bill proposes amendments in the existing Acts such as Indian Evidence Act 1872 and Indian Penal Code 1860, amendments to Section 2 of the Banker's Book Evidence Act, and amendment of RBI Act, 1934.*

*The Information Technology Bill provides for legal framework so that the information is not denied legal effect, validity or enforceability solely on the ground that it is in the form of electronic records. The Bill provides that, unless otherwise agreed, an acceptance of contract may be expressed by electronic means of communication.*

*The Bill provides to facilitate electronic intercourse in trade and commerce, eliminate barriers to electronic commerce resulting from uncertainties over writing and signature requirements, and promote the development of the legal and business infrastructure necessary to implement electronic commerce. The legal framework for authentication and origin of electronic record/communication through digital signature has been proposed.*

*The Bill provides for appointment of certification authorities for the purpose of licensing, certifying, monitoring and appointment of the Controller to oversee the activities and regulation of Certifying Authorities. Penalties in the form of compensation for computer crimes such as unauthorized access to computer network and computer database, computer virus, damage to computer system, disruption of computer services, and copying of software, and offenses such as tampering with the computer source documents, electronic forgery and other types of computer crimes have been proposed. The Bill proposes to empower Central Government or any officer authorized in this regard to disrupt any message transmitted in the electronic or encrypted form in the interest of sovereignty, integrity and security of State, friendly relations with foreign states, or public order, for preventing incitement to the commission of an offense for reasons to be recorded in writing by order.*

*Penalties for contravention of the regulations made under the Act by way of adjudication by Adjudicating Officers designated or nominated by the Central Government on the pattern of the Adjudication Officers functioning under the Securities Exchange Board of India Act, 1992, together with establishment of Cyber Regulations Appellate Tribunal with the same composition and powers as that of the Appellate Tribunal constituted under the Securities Exchange Board of India Act, 1992, to hear appeals from the decisions of the Adjudicating Officers, have been proposed in the Bill.*

*Source: Website of the ministry of information technology, government of India*

## **2.4 SEGMENTS OF IT**

### **2.4.1 Software**

The term 'software' refers both to the instructions that direct the operation of computer equipment and the information content, or data, that computers manipulate. There are two



general types of software: systems software, which is used to manage the components of a computer system (for example, computer operating systems that control input and output operations), and applications software, which is designed to apply computer power to the performance of tasks such as materials and facilities in hospitals, budget and payroll administration, and computer-aided design of turbines and pumps. Systems integration is the process of identifying and bringing together various technologies in order to define and deliver a complete information package, including large and small computers, and packaged and custom-designed software. (Schware, 1995, p. 416) In the government of India's Information Technology Action Plan, 'IT Software' means any representation of instructions, data, sound, or image, including source code and object code, recorded in a machine-readable form, and capable of being manipulated or providing interactivity to a user, by means of an automatic data-processing machine falling under the heading 'IT Products', but does not include 'non-IT products'.

It is also necessary that the myth surrounding a software professional should be exploded, and for this very reason, it should be noted that a person who enters data or is a user of software products is not considered to be a software professional. *A software professional is a person who is engaged in systems analysis and development, programming and coding, database administration, and project management.* (Rajeswari, 1995, p. 286)

Software package and custom software:

*Software may be produced in a standardised form for general sale to a large number of users, in which case the product is known as a software package; or it may be produced for a single, specific customer, in which case the product is known as custom software.* (Heeks, 1996, p. 28)

Systems integration:

*Selling of any of either software packages or custom software together with the hardware on which to run these is known as systems integration.*

Software industry:

*The companies that produce software are collectively referred to as the software industry. This term includes companies or company divisions that earn the majority of their revenue from sales of software consultancy services or software packages.*

#### **2.4.1.1 Evolution of the Global Software Industry**

The software industry is growing at an increasing rate with new applications being constantly developed. It is, however, imperative to note that the industry went global in a series of steps.

Certain scholars and academicians are of the opinion that the software industry got its start in the late 1960s. Till that time, hardware and software were bundled together into a comprehensive package. It then became apparent that the development and maintenance costs of software were beginning to equal, and in some instances were even exceeding the

hardware costs. Hence, it became essential to separate the software and hardware costs, and assign a commercial price to each.

IBM was the first company, in 1969, to charge the customer separately for software. This move is widely recognised as the first landmark to have led to the creation of the software industry. The shift from software being an integral part of hardware to the unbundling of software is known as *era 1*. The soaring growth rates of software revenues and the outsourcing of software development jobs, both to domestic as well as foreign locations, marked *era 2*. Companies felt the need for customised software to address specific functions. *Era 3* was dominated by pre-packaged software packages that enabled the user to work independently. In recent times, information technology is used in all aspects of business, and firms are making large investments in information technology.

#### **2.4.1.2 Size of the Global Software Industry**

The global software industry is on a high growth trajectory. From being a less-than-\$30 billion industry in 1980-81 to bloom into a \$100 billion industry in 1987, the software industry is estimated to have grown to over US\$400 billion in 1995. In 1994, the OECD countries accounted for 94 per cent of the global market for software packages, and 95.5 per cent for software services.

India has a very low share of the world's software market, but over the past few years the country's software sector has been witnessing growth that cannot be termed as anything but phenomenal. The CAGR has touched 48.26 per cent for the Indian software industry, while the CAGR for software exports stands at 57.44 per cent. Some of the reasons are not very hard to find. India has the world's second largest group of scientific manpower—which is also English-speaking—after the United States. This translates into an advantage over other Southeast Asian competitors who do not have as good a command over English. It may be noted that most of the software operations are conducted in English.

#### **2.4.1.3 Spread of the Global Software Industry**

By the late 1980s, the developed countries had entered *era 4* in the software development process, and the industry thereby became more internationalised. Companies are now concentrating on their core competencies and outsourcing their non-core and lower value-added activities. Such outsourcing – while made necessary by the lower costs of having some amount of non-core activities not undertaken in-house and also by the shortage of qualified programmers, especially in the United States – has been made possible by technological advances in telecommunications. The simple laws of demand and supply are also at work in the field of software professionals. Certain estimates show that in 1992 the gap between supply and demand of software professionals in the United States was nearly 37,000. This lack of manpower also suggests that there are a large number of projects that need to be completed or that need to be initiated but have not been due to lack of manpower.

Although outsourcing is rampant in the software industry, not all activities can be outsourced. Customisation and software solutions and the final details in the design and coding stages can be readily outsourced. Many stages of development such as specification,

preliminary design and maintenance need to be undertaken in close proximity to the final user. In the segment of packaged software, the United States dominates the international market. Incidentally, the United States is also the largest consumer market for packaged software. Success in the packaged software market depends largely on marketing costs – and the cost of marketing the product far outstrips the costs of developing the product. In fact, some studies have shown that the marketing costs for the packaged software market forms 80 per cent of the total cost outlay, while development costs account for only 20 per cent. An inference that can be drawn here is that it is very important to be close to the final market.

#### **2.4.1.4 Some Highlights of the Indian Software Industry**

For the software industry, the year 1998-99 was one of very high growth. While exports showed an impressive 67.5 per cent growth over the previous year's level, the domestic industry demonstrated a growth rate of over 41 per cent.

In 1998-99, the software industry in India was worth Rs 15,890 crore (US\$3.9 billion), and if we add in the in-house development that takes place within the domain of many large commercial/corporate end-users, then the total software industry would be close to Rs 170 billion, or US\$4.1 billion; in relative terms, ten years back the software industry in India was not more than Rs 2,000 million, or US\$150 million.

Despite the growth rates, India's share in the total global software market is low. However, India still enjoys an advantage over most of the other nations, which are trying to promote exports. India commands an 18.2 per cent market share in the global cross-country customised software market. This is due to the fact that India possesses the world's second largest pool of scientific manpower, which is also English-speaking. Coupled with the fact that the quality of Indian software is good and the manpower cost is relatively low, it provides India a very good opportunity in the world market.

As on March 31, 1999, the software industry in India employed more than 250,000 people, and continues to be among the fastest growing sectors of the Indian economy. No wonder, software exports has been identified as a thrust area by the government of India. After showing impressive growth in the export market, the recent trend in the industry has also been to direct increased focus on the domestic market, so that all possible resources may be enhanced for a quantum jump in the international market. Moreover, the government of India has implemented zero import duty on software in an effort to increase the demand for software.

The domestic software market was poised to grow to Rs 200 billion by the year 2001-02. The government of India is contributing to the growth through its policies, such as the allocation of 1-3 per cent of the total spend of each government department towards information technology. Domestic software companies launched over 113 new software products, while overseas companies launched around 140 software products in the Indian domestic market. Industry associations are hoping that increased penetration of computers, strict implementation of the copyright act, and further control of piracy will further strengthen the domestic market.

#### 2.4.1.5 Location of Industries in India

Though the industry has experienced growth across the board, it has been concentrated to only a few cities/hubs such as Bengaluru, Hyderabad, Chennai, Pune, and Gurgaon. The spread of the headquarters (HQ) of the top 500 software companies, according to a survey by National Association of Software and Service Companies (NASSCOM), demonstrated the following trend:

**Table 2.2**

<i>CITY</i>	<i>SPREAD OF HQS OF TOP 500 COMPANIES</i>
Mumbai	104
Bengaluru	97
Delhi	41
Gurgaon & Noida	50
Hyderabad	55
Chennai	52
Kolkata	28
Pune	23
Others	50

*Source: NASSCOM: The Software Industry in India – A Strategic Review, 1999pp:16*

There are currently many companies in India which are involved both in software exports and the domestic software market. The following table lists the top 20 software companies by revenue (exports + domestic). NASSCOM has conducted these rankings.

**Table 2.3**

Figures in Rs crore

<b>Rank</b>	<b>Company</b>	<b>TOTAL (1997-98)</b>
1.	Tata Consultancy Services	1,083.63
2.	Wipro Limited	481.65
3.	HCL Consulting Limited	345.50
4.	NIIT Limited	325.40

5.	Pentafour Software and Exports Limited	284.56
6.	Infosys Technologies Limited	257.66
7.	IBM Global Services India Pvt. Ltd	242.86
8.	Tata Infotech Ltd	211.75
9.	Satyam Computer Services Ltd	178.49
10.	Patni Computer Systems Ltd	137.58
11.	CMC Ltd	123.95
12.	Siemens Information Systems Ltd	117.36
13.	DSQ Software Ltd	116.78
14.	Cognizant Technology Solutions	113.17
15.	International Computers India Ltd	108.87
16.	Mahindra British Telecom Ltd	99.53
17.	Information Management Resources (India) Ltd	97.56
18.	Mastek Ltd	91.79
19.	L&T Information Technology Ltd	87.57
20.	Sonata Software Ltd	84.77

Source: NASSCOM: *The Software Industry in India – A Strategic Review, 1999; p. 25*

#### 2.4.1.6 Size and Profitability

The structure of the domestic software industry in India is a mix of large, medium and small companies. NASSCOM conducted a survey of 500 domestic software companies for the year 1998-99, and the following table gives the breakup of these companies.

**Table: 2.4**

<i>Turnover (in Rs)</i>	<i>No. of companies</i>	<i>% of total</i>
Above 25 million	86	17.2
10-25 million	70	14.0
5-10 million	101	20.2
1-5 million	104	20.8

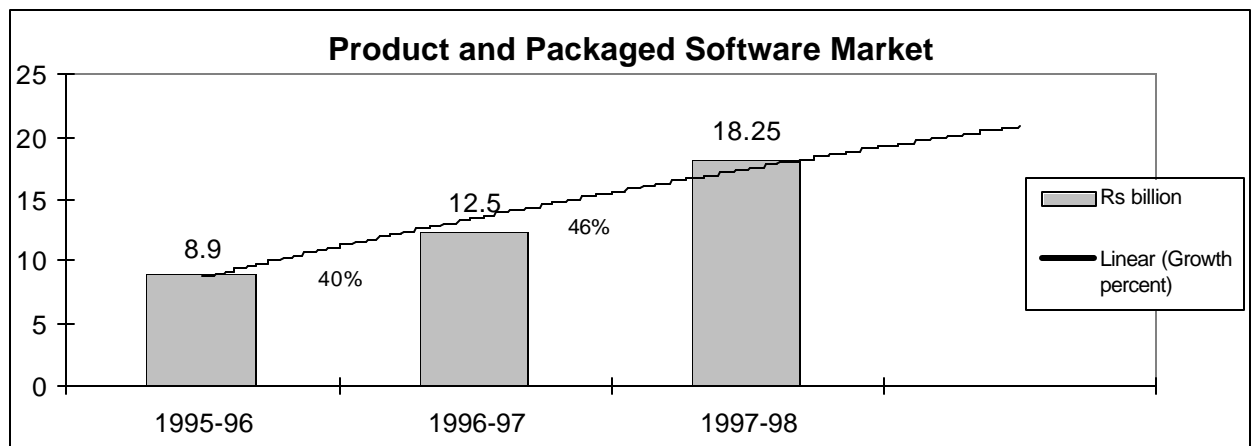
Below 1 million	139	27.8
<b>Total</b>	<b>500</b>	<b>100</b>

Source: NASSCOM: *The Software Industry in India – A Strategic Review, 1999*; p. 40

### 2.4.1.7 Product and Packaged Software Market

The share of the product and packaged software market in the year 1997-98 was Rs 18.25 billion. This particular segment's figures included the sub-segments of imported, replicated and home-grown software and packages.

**Graph 2.1**



Source: NASSCOM: *The Software Industry in India – A Strategic Review 1999*; p. 41

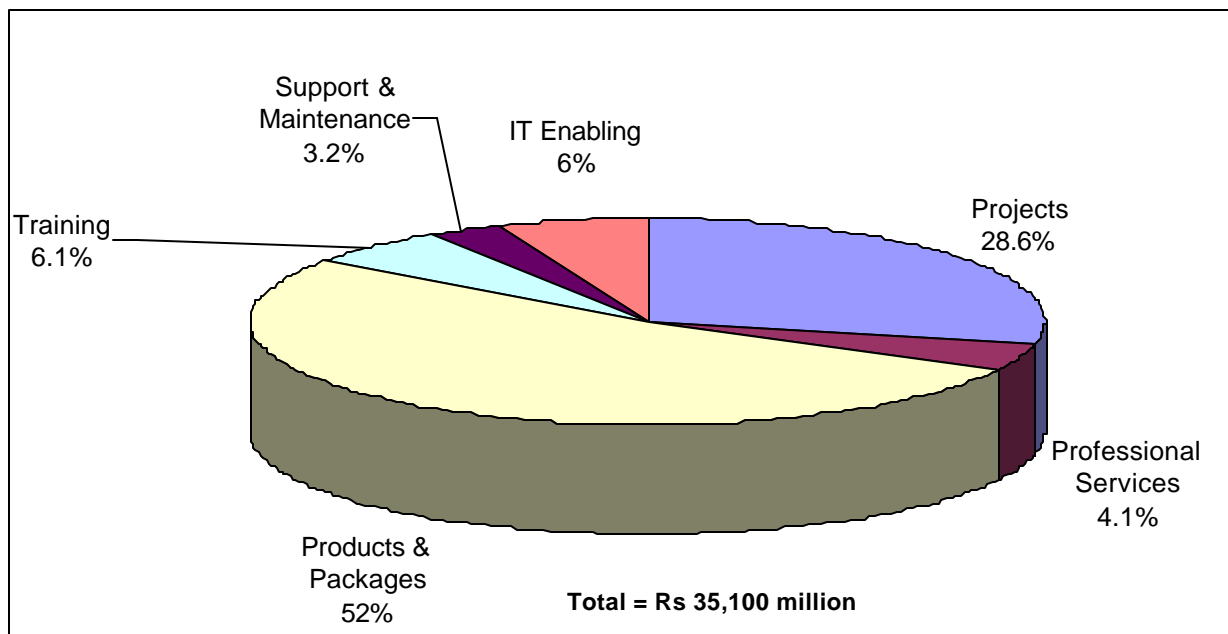
Some of the strengths of the domestic software market are the availability of a large manpower base, a potential internal market, potential computerisation of certain key sectors of the country (such as banking, transportation, power, manufacture and petroleum), and the government policies that have been introduced with a clear thrust of developing information technology as a sector. The industry, however, feels that there remains a lot to be done if the government is to truly grow the domestic software market. Copyright laws need to be enforced to curb piracy; a high-speed digital communication backbone needs to be set up; the penetration of PCs needs to be increased to a figure of 15 per 100 persons; increased internet proliferation must be facilitated; and localisation of software to the vernacular languages needs to be encouraged so that even those who do not know English may be benefited. The industry also feels that there should be no import duties or perhaps a negligible duty on the import of computers.

Additionally, industry associations are of the opinion that the government needs to further incentivise the domestic software industry through:

- Providing income tax incentives on application packages developed in the country
- Tax deduction to the extent of 133 per cent towards R&D expenditure of application packages
- Sponsoring of certain application packages by the government and industry
- Awarding the top 3 to 5 packages developed in a year
- Providing of easy loans by banks/venture capital institutions towards marketing costs of application packages

#### 2.4.1.8 Breakup of Software Activity

**GRAPH 2.2**



*Source: NASSCOM: The Software Industry in India – A Strategic Review, 1999; p. 19*

An analysis of the breakup of software activities of the domestic as well as export industry demonstrated that products and packages top the list with a share of 52 per cent in the domestic market. Professional services lead the list in the export market with a share of almost 48.4 per cent.

## 2.5 HARDWARE AND MANUFACTURING

Hardware refers to the mechanical, magnetic, electronic and electrical devices that make up a computer. (Heeks, p. 26) The IT manufacturing sector is growing at an average rate of 30 per cent annually, and has over 150 major players supported by over 700 ancillary units engaged in sub-assemblies and equipment manufacturing. In 1998-99, manufacturing lost

ground with its share coming down to 9.7 per cent from 14.6 per cent in 1997-98<sup>2</sup>. The hardware industry in India has been steadily losing its share in favour of the software and services industries. A price war has been unleashed with the domestic majors as well as MNC companies promising to give the best deal to the user.

### **2.5.1 Hardware**

The year 1998-99 emerged as a mixed year for the hardware industry in India. While it achieved critical mass in volume terms and value of shipments, it shrank by approximately 18.89 per cent over its performance in the previous year in revenue terms. The revenues of the hardware industry stood at Rs 42.50 billion in 1998-99, as against Rs 52.4 billion during 1997-98. This is partly due to an unexpectedly weak exports performance. The year also witnessed cutthroat price wars, entry of new players, and new introductions in VFM (value for money) segments – all of this resulted in growth in volumes, albeit at reducing margins.

The increasing thrust by the private sector to have a connected enterprise and implement state-of-the-art enterprise computing systems contributed to rapid growth. At the same time, there has been a growing awareness in the small and medium enterprises (SME) and SOHO segment of the benefits of information technology. They contributed about 32 per cent of total hardware shipments. With this contribution, their purchases may no longer be counted as small compared to large corporate groups. SMEs along with the SOHO segment are being credited with driving the domestic IT industry's growth during 1998-99. In fact, it was their preference for the nature of the systems and network architectures that kept the mood buoyant in the hardware industry. They signified a new generation of users who are not looking at using information technology merely for backroom operations, but are using it as a front-end tool in the decision-making process.

During the year 1998-99, the software industry contributed 65 per cent of the Indian IT industry's total revenues. Overall, the hardware industry shrank by about 18.89 per cent in revenue terms in 1998-99, as compared to the revenues in 1997-98. However, PC unit shipments grew by 30.2 per cent in volume terms. The servers market grew by about 8.17 per cent during the period in volume terms.

A highlighted price war was unleashed with domestic majors as well as MNC companies promising to give the best deals to users. With tight money conditions, the market saw buyers being wooed with very competitively priced products boasting of standard international features and quality. It clearly was a factor that helped to improve hardware performance (in volume terms).

It was also a year in succession for the market-share supremacy of Pentium chips. While Intel captured a large chunk of the high-end user market with Pentium II-based systems, Pentium Celeron/II held about 63 per cent of the total microprocessors market.

In a survey titled 'IT Industry Performance Study', conducted by MAIT under the aegis of Indian Market Research Bureau (IMRB), the following figures were revealed:

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<sup>2</sup> Dataquest annual survey of IT industry; Vol. XVII, No. 13; July 15, 1999



**Table 2.5**

Product	Unit			Value		
	1997-98	1998-99	%	1997-98	1998-99	%
<b>Computer</b>						
Desktop	799,058	1,027,190	29	3,700	4,334	17
Notebook	28,753	22,921	(20)	430	298	(31)
Server	25,488	35,870	41	525	716	36
<b>Printer</b>						
Dot-matrix	212,504	187,239	(12)	200	180	(10)
Laser	39,786	53,305	34	165	224	36
Inkjet	132,887	155,825	17	130	125	(4)
Line	2,650	2,900	9	50	61	22
<b>Others</b>						
Keyboard	1,001,126	1,127,929	13	**	**	**
Monitor	1,019,871	1,110,982	9	570	700	23
UPS	112,738	166,124	47	**	**	**

*Source: MAIT Annual Review 1998-99*

## **2.6 PERIPHERALS, NETWORKING, MAINTENANCE, AND TRAINING**

In the year 1998-99, the domestic peripherals industry stood at Rs 13.60 billion, as compared to Rs 8.33 billion in the preceding year. It posted a growth rate of more than 63.27 per cent. The trend of companies moving away from dot-matrix printers became more pronounced in 1998-99, with almost 46 per cent of printers sold comprising inkjet and laser printers (non-impact printers). In fact, even within the non-impact printers segment, inkjet printers emerged as a popular choice.

The training segment of the Indian IT industry had a good year during 1998-99. It sold a potent mix of education and hope. As per industry estimates, this segment aggregated about Rs 12.5 billion worth of revenue, and registered an impressive growth of over 32.7 per cent over the previous year's revenues. With the number of computers installed going up, the gap between demand and supply of trained manpower is increasing steadily. The training segment is expected to continue to boom in the coming years. The growth areas will be

accentuated by high-end, platform-specific, certifications-oriented training for corporate and government users. Many of the leading institutes are in a consolidation phase. They are looking at emerging overseas markets, which are almost nascent, and clearly nurture the objective of being among the world's leading training service providers.

Networking has emerged as a major area of operation in the IT industry. During 1998-99, the segment netted Rs 9.8 billion worth of revenue, a growth of almost 37.06 per cent over the previous year's Rs 7.15 billion.

The next wave of domestic spending will be spearheaded by landmark recommendations of the National IT Task Force as also by the drive in the private sector to establish enterprise computing and electronic commerce systems. For the year 1999-2000, it was expected that the IT industry in India would further improve its performance and garner revenues of Rs 361 billion, or US\$8.39 billion, with the software and services industry continuing to command more than 60 per cent share in the Indian IT industry's revenue pie.

### **BOX 2.2: IT-enabled Services**

*Janet Williams is 23 years old. She works at GE Capital, a division of the giant American conglomerate General Electric. A typical day for Janet begins at 8 a.m. New York time, as she begins phoning GE credit-card holders in places like Boston and Washington to remind them to pay their bills. "Hi. My name is Janet and I'm calling from GE Capital," she says in her friendliest voice. People answering her calls have no way of knowing that Janet is sitting in Gurgaon, a town on the outskirts of Delhi. Or that her real name is Pooja Atri, and that she picked up her American accent partly by watching Baywatch*

*GE Capital's facility in Gurgaon, Haryana, is teeming with pseudonymous 20-something Janets, Als and Sandys. Some take incoming toll-free calls, bounced by satellite to India. Most have never set foot in the United States. But they spend a large chunk of every day (or night) chasing credit-card debtors, assessing medical claims, approving car loans, answering customer queries – in short, acting as cogs in a giant machine that hums along smoothly half-a-world away. Many have college degrees and earn \$3,000-5,000 a year. Their counterparts in the United States are usually less educated, but command wages of \$18,000-20,000 a year, says Raman Roy, CEO of GE Capital Integrated Business Solutions.*

*"...screams a news item in Far Eastern Economic Review", issue dated September 2, 1999*

The above example is just an illustration of the way in which many call centres have started operating in India. However, this revolution is not restricted to call centres, but is spreading to other sections of cross-border IT-enabled services. To explain this further: Cross-border IT-enabled services are functions and services that are provided from a country different from the one where end-products are delivered; are delivered over telecommunication or data networks (wireline and wireless); and are either externally contracted (outsourced) or provided by a remote subsidiary of the same company (outlocated). IT-enabled services do not include remote production or manufacturing units, local branches of global businesses, or businesses on the internet.

Western companies, such as Bechtel, GE Capital, and British Airways, are already benefiting from IT-enabled services provided from India. Bechtel has set up its own engineering design subsidiary in New Delhi. Over 500 employees in this subsidiary provide engineering design services to Bechtel customers over telecom and data networks. The benefits for Bechtel are twofold: the company's transaction and salary costs are greatly reduced; and it can now cover customers in different time zones. GE Capital has also set up a subsidiary in Gurgaon, Haryana, to manage payroll accounting and call centres, and to process mortgage-based loans and insurance claims. The subsidiary employs about 1,000 people; this number was expected to rise to 3,000 by the end of 2000.

Similarly, British Airways' subsidiary, World Network Services, handles an array of back-office jobs for its parent and other airlines, such as dealing with errors in the automatic reservation system and keeping track of frequent-flier miles. It employs some 750 people and is expected to hire 800 more. Other organisations availing of IT-enabled services are US Hospitals, which obtain medical transcriptions services from Healthscribe in Bengaluru; 3Com, which obtains call-centre billing and customer care services from Convergys (in the United States); and several leading US banks, which have outlocated their human resource, customer services, telemarketing, and shared administration for Europe and North America to International Financial Services Centre, Dublin.

It has been seen that there are three factors driving the growth of IT-enabled services: namely, outlocation, outsourcing, and the Worldwide Web.

*Outlocation* is the term used for obtaining services from outside the national borders of a company. Outlocation helps companies to lower costs, take advantage of the global 24-hour clock, find the most optimum global talent, and achieve economies of scale by concentrating resources. A host of companies are now outlocating services.

*Outsourcing* is the term used for obtaining services from another organisation (or third party). Services currently outsourced include processing credit cards, claims, payrolls, etc.; providing information systems, such as data centres, networks, and help desks; and undertaking business processes, such as customer service, finance, logistics, and human resource. Outsourcing has become a large market; currently, it amounts to over \$100 billion in value.

Finally, the *growth of the Web* is stimulating the growth of IT-enabled services by allowing companies to centralise services and/or operations at the globally most optimal location while providing access to customers anywhere in the world. Providing services through the Web is also significantly reducing transaction costs. To illustrate, an industrial company can reduce its transaction costs by 40 per cent by providing customer services through the internet rather than through call centres.

According to McKinsey & Co., IT-enabled services are expected to grow 15-fold by 2008, providing vast opportunities for Indian players. Currently, call centres and animation are the largest opportunities, accounting for 85 per cent of all IT-enabled services. By 2008, the overall market for IT-enabled services will amount to approximately \$142 billion. The top five opportunities and their value-creation potential will be as follows:

**Table 2.6**

1. Human resource services	\$44 billion
2. Customer interaction services	\$33 billion
3. Finance and accounting	\$15 billion
4. Data search, integration and analysis	\$18 billion
5. Remote education	\$15 billion

*Source: NASSCOM: The Software Industry in India – A Strategic Review, 1999*

The spectrum of IT-enabled services already evident in India includes the following broad segments:

- Call centres
- Medical transcription
- Back-office operations
- Revenue accounting, other ancillary operations
- Insurance claims processing
- Legal databases
- Content development/animation
- Payroll
- Logistics management

India offers many advantages as an IT-enabled services destination for major global companies. These include:

- A virtual 12-hour time-zone difference with the USA and other major markets for IT-enabled services
- A huge pool of English-speaking and computer-literate manpower who can continue to cater to the growing demand for professionals in IT-enabled services.
- Cost of qualified personnel among the lowest in the world
- Stable legislative and economic framework
- Support of government of India for all IT-led industries

- Recent announcement by the government of a special policy for call centres in India
- Special incentives and infrastructure by several state governments in India for setting up IT-enabled services
- Thrust by the government of India towards making India an IT-driven nation with focus on the services sector, where potential for value addition is higher
- Strong brand equity in major markets, due to the country's globally competitive software industry

**Table 2.7**

IT-enabled Services	1998		2008 <i>(Projections)</i>	
	Employed	Rs crore	Employed	Rs crore
Back-office operations/revenue Accounting/data entry/data conversion	9,700	420	260,000	19,000
Remote maintenance and support	1,600	65	180,000	13,500
Medical transcription/insurance claims processing	3,800	140	160,000	11,000
Call centres	1,400	40	100,000	6,000
Database services	1,000	45	100,000	6,500
Content development	5,500	270	300,000	25,000
<b>Total</b>	<b>23,000</b>	<b>980</b>	<b>1,100,000</b>	<b>81,000</b>

*Source: NASSCOM: The Software Industry in India – A Strategic Review, 1999; p. 84*

## 2.7 EMPLOYMENT

Most of the research on information technology focuses on market access, technological developments, trade and the international division of labour. Very little is known about the employment implications of the IT industry, where a handful of countries have emerged as substantial users of information technology. An interesting observation is that in a few countries such as Brazil, India, the Republic of Korea, and Singapore, the annual growth

rates of software and computer services have been much higher than in Japan or in the United States.

The rapidly expanding global information industry has led to a corresponding increase in the demand for software programmers and professionals in the IT industry worldwide. Demand for software programming has experienced one of the highest growth rates in industrialised countries, while the shortage of software programmers is providing to be a major bottleneck for expansion in many economic sectors in these countries. This opens new opportunities for developing countries that possess the required skills and can provide new types of services such as software development, data processing and data entry. The thrust is on the export-oriented nature of these services. Countries such as India have actively encouraged the development and export of software. The comparative advantage of India lies in its low manpower costs and the presence of a technically skilled, English-speaking workforce, which is the third largest in the world. The cost comparison of Indian software labour can be gauged from the table below:

**Table 2.8: Cost Comparison (IN US\$)**

	<b>Switzer-land</b>	<b>USA</b>	<b>Canada</b>	<b>UK</b>	<b>Ireland</b>	<b>Greece</b>	<b>India</b>
Project leader	74,000	54,000	39,000	39,000	43,000	24,000	23,000
Business analyst	74,000	38,000	36,000	37,000	36,000	28,000	21,000
Systems analyst	74,000	48,000	32,000	34,000	36,000	15,000	14,000
Systems designer	67,000	55,000	36,000	34,000	31,000	15,000	11,000
Development programmer	56,000	41,000	29,000	29,000	21,000	13,000	8,000
Support programmer	56,000	37,000	26,000	25,000	21,000	15,000	8,000
Network analyst/designer	67,000	49,000	32,000	31,000	26,000	15,000	14,000
Quality assurance specialist	71,000	50,000	28,000	33,000	29,000	15,000	14,000
Data analyst	67,000	50,000	32,000	22,000	29,000	24,000	17,000
Metrics/process specialist	74,000	48,000	29,000	31,000	-	15,000	17,000
Documentation/training staff	59,000	36,000	26,000	21,000	-	15,000	8,000

Test engineer	59,000	47,000	25,000	24,000	-	13,000	8,000
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Source: Adapted from H.A. Rubin et al. (1996) *Worldwide Benchmark Project, Rubin Systems: Pound Ridge, NY*

Note: Figures are average for 1995. They are likely to be 5-10% per annum, with rates being slightly higher in lower-wage economies.

Technological innovations have led the major users of information processing to decentralise certain parts of their operations – within or across the boundaries of their nations. The perceptible move by global companies towards reducing total wage costs has altered the quantity as well as quality of jobs in certain sectors in countries in the developing world. In the complex market of information processing services, software programming indicates the skill and high value-end of the operations. At the other end of the spectrum are the low value-added data-entry jobs, which need little skill beyond keyboard punching.

As on March 1, 1999, the software industry in India employed more than 250,000 people. Software development is a labour-intensive process, but relies on highly skilled and theoretical training of programmers – which is not the same for labour-intensive manufacturing work. Software production is not a homogeneous process and can be broken down into various stages. Software contracts awarded to Indian companies have often been for the coding and testing stages, because of which Indian workers have been mostly used as programmers rather than systems analysts or designers. One of the main reasons for contracting out work to India by western companies is the differential in wage costs. Average monthly pay for an Indian programmer is between \$220 and \$660, whereas a programmer in the United States earns over \$2,500 per month. Average basic monthly software salaries are noted below:

**Table 2.9**

Worker	Salary (Rs/month)	Salary (US\$/month)
Entry-level, non-computing qualification	4,500	102
Entry-level, computing qualification	6,600	150
Programmer – 1-year experience	9,000	205
Programmer – 2 years experience	12,000	273
Programmer – 3-4 years experience	13,500	307
Analyst/programmer – 5 years experience	15,500	352

Systems analyst – 5 years experience	19,000	432
Systems analyst – 8 years experience	22,500	511
Project manager – variable experience	20,000-40,000	455-910
<i>Source: Heeks, 'The Software Industry in India', and Primary Interviews</i>		
<i>Note: 1US\$ = Rs 44</i>		

The presence of women in the software industry is very limited, with 82 per cent employees being men.<sup>3</sup> The sex ratio of IT manpower in the software sector has increased from 10 per cent in 1993, and was projected to further increase to 35 per cent of the total workforce by the year 2003, according to a report by NASSCOM.

There is a surge in demand for qualified and experienced software professionals. Firms experience a very high turnover rate as other firms continuously poach their best and more experienced people. In certain firms, the rates of attrition are as high as 20-30 per cent. Turnover rates are the highest among workers with two to three years of experience. In Bengaluru, the average stay of a software professional is approximately two years. Software firms are reluctant to employ fresh graduates since they need 4-6 months' technical and on-the-job training. High employee turnover rates ensure that firms are reluctant to invest in training fresh graduates since they are not sure that the investment will pay off. The firms at the higher end of the spectrum are of the view that they need to recruit the best, and with their resources they try to ensure commitment on the part of the workforce by providing a more stimulating working environment. (A well-known example here is that of Infosys, where the workplace represents a college campus with facilities of cafeterias and gymnasiums, and even an amphitheatre.) This leads to a somewhat segmented labour market with the top firms harnessing the required commitment and the smaller firms experiencing more unstable working conditions due to the inability to invest resources.<sup>4</sup>

Indian jobs are still very much at the mercy of US-based clients. As wages and costs increase, clients in the United States may shift their businesses to other locations. The types of jobs that are allocated also affect the ability of Indian software professionals to improve their skills and their future opportunities.

Then, there exists the lower end of the spectrum where salaries are not as high and the bargaining powers are also incomparable to those at the higher end of the spectrum, such as software developers. The nature of such work can be in the form of data-entry operations, and the range of such data-entry work can be classified as follows:

<sup>3</sup> NASSCOM: *The Software Industry in India*

<sup>4</sup> Lateef, Asma: *Linking up with the Global Software Industry*



- internal company data storage and records creation, including personnel and payroll records, stock control, financial data, management and staff deployment records;
- inter-firm transactions, including sales records, accounts, orders, service contracting, bills of loading and handling;
- consumer-firm transactions, including product promotions, lotteries, credit card-status records and transactions, financial transfers, customer orders, health insurance applications and records, other insurance records (policies and claims);
- dedicated information services and databases including commodities trading, financial stocks, legal databases, and company databases;
- restructuring, storage and retrieval of existing data sets, including historical archives, library catalogues, periodicals indexes and texts, and social security and health sector records, and microfiching of periodicals;
- ongoing and one-off customised services, mainly based on word-processing text, including company reports and documentation, engineering reports, publishers' manuscript typesetting, legal and court records; and
- non-routine data processing operations, such as auto drafting of engineering and architectural plans, and lithograph illustrations.

In the area of hardware manufacturing and assembly, there exists a tremendously vibrant 'grey market' where the chief attraction the assemblers compete on is price. Without very high fixed overhead costs, which are a concomitant limitation of the bigger manufacturers, the players in the grey market can provide computers at very less cost. In an industry where the grey market accounts for the biggest share in terms of market, the working conditions are very important. The manpower requirement is very less, and the profitability very high. In the Nehru Place area of New Delhi, there are over 400 of these small assemblers who are registered. Unofficial figures put the figure at an excess of 1,000. The technicians are mostly small-time workers, who are often not qualified academically and receive very little benefits in terms of work. They usually work very long hours and do not get adequate compensation either. In addition, there is no permanence since they are at the mercy of the employers, who do not provide them with any kind of employment documents.

## CHAPTER III

### 3.1 DEMOGRAPHIC DETAILS

#### 3.1.1 Gender Composition

In the IT sector in India, women workers are very less in number. Only call centres have a female-dominated workforce: out of eight workers, five are female. (Table 3.1)

Table 3.1: Gender				
Segment	Male	Female	Total	%
Call centre	3	5	8	7.33
DTP/job work	10	0	10	9.17
Hardware	31	1	32	29.35
Internet café	3	0	3	2.75
Marketing	6	0	6	5.50
Software	48	2	50	45.87
No. of workers	101	8	109	100
Percentage	92.66	7.33	100	

*Source: Primary data*

Their work mainly involves responding to customers' inquiries within fixed working hours. Including call centres, there was only one woman worker in the physical operation of hardware assembly and two in software, among the workers who were interviewed. One of the reasons could be that a lot of the work entailed staying back for longer hours since most of the work in the industry was found to be deadline-oriented and, therefore, late hours was not an exception. This was in the case of the software sector, where workers finished their work to meet deadlines. In the hardware sector studied, it was found that workers finished work even if they had to work beyond the stipulated office hours. In such a situation, women often found it difficult to work or keep late hours owing to their also having families to look after.

#### 3.1.2 Age Group of Workers

About 97 per cent of the workforce in the IT sector, reviewed in our study, are below the age of 30 years. Most of the respondents – about 73 per cent (Table 3.2) – were in the age group of 18-25 years, which bears the fact that information technology in India is a relatively young industry that is just about gaining ground.

<b>Table 3.2: Age Group of Workers</b>
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Age group	18-25	26-30	31-35	36-40	No. of workers	Percentage
Call centre	7	1	0	0	8	7.33
DTP/job work	6	4	0	0	10	9.17
Hardware	23	8	1	0	32	29.35
Internet café	0	2	0	1	3	2.75
Marketing	4	0	2	0	6	5.50
Software	39	11	0	0	50	45.87
No. of workers	79	26	3	1	109	100
Percentage	72.47	23.85	2.75	0.91	100	

*Source: Primary data*

The presence of young workers also shows that a career in the IT sector has of late started to become very attractive to aspirants. The tremendous stress laid on information technology by the government of India might also have led to people moulding their aspirations to a career in the sector. Any recruitment section in a newspaper has tremendous stress on IT-related employment.

In our sample, only one worker is beyond 35 years of age. This could be simply due to the industry having taken off very recently. This is further endorsed by the fact that in all the companies surveyed for the employers, the earliest company was found to have been set up in the year 1989. About 73 per cent of the employees are in the age group of 18-25 years, 24 per cent in the age group of 26-30 years, and only 2.75 per cent in the 31-35 years group. (Table 3.2)

### **3.1.3 Educational Qualifications**

The IT sector is basically for a skilled workforce, and they necessarily need technical qualifications and appropriate experiences for hardware and software development. For the lower end of the sector – comprising, among others, DTP/job work, internet cafés and call centres – a simple inter or graduation is sufficient. However, in general, workers in the industry were found to be educated. In our sample, about 57 per cent have technical qualifications such as ITI/diploma, technical graduation like B.E./B.Tech in related fields, and M.Tech/MCA. It is apparent from Table 3.3 that higher technical qualifications such as B.E./B.Tech and M.Tech/MCA were almost confined to the area of software development. This can be attributed to the work entailing a fair amount of technical knowledge. It was interesting to note that even people with diverse backgrounds in engineering had opted to join the IT industry, probably because of the high growth trajectory in careers related to the sector. In hardware, though 13 workers are from ITI/diploma holders (Table 3.3), it can be also observed that there are non-professional qualification holders in more numbers.

Segment	Illiterate	Up to 10 pass	ITI / Diploma	Inter and graduate (general)	Graduate Tech. (B.E./B.Tech)	M.A. / M.Com (general)	Masters Tech (MCA, etc.)	Total	Percentage
Call centre	0	0	0	7	0	1	0	8	7.33
DTP/job work	0	0	0	9	0	1	0	10	9.17
Hardware	1	4	13	12	1	1	0	32	29.35
Internet café	0	0	0	3	0	0	0	3	2.75
Marketing	0	2	0	3	1	0	0	6	5.50
Software	0	0	0	2	35	1	12	50	45.87
Total	1	6	13	36	37	4	12	109	100
%	0.91	5.50	11.92	33.02	33.94	3.66	11.00	100	

This could be because they had, according to the employers, picked up the required traits on the job itself. In fact, there was a propensity among employers in the hardware sector to employ freshers. In the lower-end hardware assembly operations, about 40 per cent of the workers hold a diploma (Table 3.3), with a majority of the workers not holding technical qualifications but learning on the job. Higher levels of education are not required in this segment since the assembly of manufactured components is a fairly repetitive task. For call centres, DTP/job work and internet Cafés, no technical qualification is required. For workers in these segments, an ideal qualification is just inter or graduation in a general field – out of the 21 workers in the sample, 19 possess only inter and graduate qualification in a general line.

Segment-wise variation of professional qualifications also highlights that workers in software development are given good salaries (Table 3.4) and other incentives, vis-à-vis workers in the lower end of the IT segment. The only exception is call centres, where employees receive about nine thousand rupees per month. This is due to the fact that they are employed in multinational financial institutions as direct employees.

### **3.2 WAGE AND WORKING CONDITIONS**

Perhaps no other sector has such variations in terms of wage as the IT sector has. The variation is glaring if one were to consider that employees in segments like DTP/job work and internet cafés get just about Rs 1,000 per month, while their counterparts in the software segment get monthly salaries in the range of Rs 30,000 to Rs 40,000. Café

In our sample, 100 per cent of workers from the DTP/job work and internet café segments get below Rs 5,000 per month. Further, about 53 per cent of workers within these segments

get only Rs 1,000 to Rs 3,000. On the other hand, about 58 per cent of employees within the software segment get more than Rs 9,000 in our sample. (Table 3.4) In software development units, entry-level salaries are quite high. In call centres, some employees get between Rs 3,000 and Rs 5,000. It is interesting to note that these are indirect employees at the American Express bank. Within marketing segment, employees at firms dealing in unbranded and assembled computers get below Rs 3,000, while employees from branded companies normally get about Rs 9,000 and above. CaféIn Delhi, the internet café is not usually exclusive; rather, it is a combination of DTP/job work and internet café, and customers can avail both services. Therefore, the wage in this segment is similar to that in DTP/job work.

**TABLE 3.4: Wage Range (monthly) in Rs**

Segment	1,000-3,000	3,001-5,000	5,001-7,000	7,001-9,000	9,001 +	TOTAL	Percentage
Call centre	0	2	1	5	0	8	7.33
DTP/job work	4	6	0	0	0	10	9.17
Hardware	13	13	4	2	0	32	29.35
Internet café	3	0	0	0	0	3	2.75
Marketing	3	0	0	0	3	6	5.50
Software	2	2	2	10	34	50	45.87
No. of workers	25	23	7	17	37	109	100
Percentage	22.93	21.10	6.42	15.59	33.94	100	

*Source: Primary data*

In stark contrast are workers in the high-end software development industry, who often receive benefits such as employee stock option (ESOP) schemes to augment their wages, though such ESOPs often come with lock-in periods, which implies that these cannot be encashed before a certain time. This effectively locks in the employee to the company for the time that it takes to encash such an option. In such cases, the employees have an incentive to stay in the organisation. One of the features of such human resource policies is that by forging a closer linkage between employees' income and corporate fortunes, it might tend to alter their attitude towards unionisation. Nowhere is this more evident than in the sectors studied, where there was absolutely no presence of unionisation.

### **3.2.1 Normal Working Hours**

Working beyond the normal working hours is a prevalent practice in the IT sector. In our survey, just below 7.33 per cent of workers work up to eight hours a day, while the rest of them have to work more than that. It was found that 73.39 per cent of workers have to put in 8 to 10 hours of work, while 19.26 per cent have to work for more than 10 hours. For the

lower-end segments, more workers work for more than 10 hours: 37 per cent from call centres, 30 per cent from DTP/job work, and 21 per cent from hardware. (Table 3.5) Compared to other segments, a lower percentage (14 per cent) of higher-end software professionals work for more than 10 hours in our study.

**Table 3.5: Normal Working Hours**

Segment	Less than 6 hrs	6 to 8 hrs	8 to 10 hrs	More than 10 hrs	Total	%
Call centre	0	0	(62.5%) 5	(37.5%) 3	8	7.33
DTP/job work	0	0	(70.0%) 7	(30.05%) 3	10	9.17
Hardware	0	(9.38%) 3	(68.75%) 22	(21.87%) 7	32	29.35
Internet café	0	0	3	0	3	2.75
Marketing	0	0	(83.33%) 5	(16.66%) 1	6	5.50
Software	0	(10.00%) 5	(76.00%) 38	(14.00%) 7	50	45.87
No. of workers	0	8	80	21	109	100
Percentage	0	7.33	73.39	19.26	100	

*Source: Primary data*

Workers in the software industry said that they stayed back until their work was finished because they had deadlines to meet. For them, there are even bunks in certain units, so that they can stay back overnight should the work stretch beyond certain hours. Nonetheless, despite the fact that 92.65 per cent of IT workers put in their labour for more than eight hours in our study, only 1.83 per cent (Table 3.6) of them get overtime payment. In fact, the concept of overtime payment does not exist in the IT industry. An estimated 98.16 per cent of workers do not have access to overtime payment. Most of the respondents across segments said that the concept of overtime did not exist, as deadlines were more important. This meant that whatever the amount of time required, it was necessary to finish the work in hand.

**Table 3.6**

**Payment for Overtimes**

Segment	Yes	No	Total	%
Call centre	0	8	8	7.33
DTP/job work	2	8	10	9.17
Hardware	0	32	32	29.35

Internet café	0	3	3	2.75
Marketing	0	6	6	5.50
Software	0	50	50	45.87
No. of workers	2	107	109	100
Percentage	1.83	98.16	100	

*Source: Primary data*

Most of the respondents said that workload peaks were addressed by encouraging the staff to stay overtime and finish the work. (Table 3.7) About 68 per cent of workers accepted this fact. This can also be true because in the presence of stiff competition from other firms, people tend to keep the work to themselves. Firms do not encourage outsourcing to another company since this would have a direct impact on their profit margins. This automatically translates into greater workload for the existing staff, but the employers do not qualify such work as ‘overtime’.

**Table 3.7**

**Company Methods in Dealing with Peaks in Workload**

	Call centre	DTP/job work	Hardware	Internet café	Marketing	Software	No. of workers	%
Encourage to work overtime	5	6	21	3	4	35	74	67.88
Redirect work to another site within	2	2	0	0	0	0	4	3.66
Take casual staff	0	0	0	0	0	0	0	0
Use agency staff	0	0	0	0	0	0	0	0
Outsource or subcontract	0	0	0	0	0	1	1	0.91
Annualised hours of work	1	0	0	0	0	1	2	1.83
Short notice/ad hoc decisions	1	0	0	0	0	0	1	0.917
Don't know	0	1	6	0	1	10	18	16.51
Total							100	100

*Source: Primary data*

### 3.2.2 Status of Job

About 77 per cent of workers in our sample are permanent (Table 3.8) because large numbers of them are from the higher end of the IT sector. At the lower end, such as the DTP/job work segment, only 20 per cent are permanent. In the internet café segment, about 66 per cent are temporary. Even permanent workers in these two lower-end segments openly accepted that being a permanent worker did not mean anything in their case.

**Table 3.8**

**Job Status: Permanent or Temporary**

Segment	Permanent	Temporary	Contract basis	Piece rate	Total workers	Percentage
Call centre	5	3	0	0	8	7.33
DTP/job work	2	8	0	0	10	9.17
Hardware	25	7	0	0	32	29.35
Internet café & job work	1	2	0	0	3	2.75
Marketing	3	3	0	0	6	5.50
Software	48	1	1	0	50	45.87
No. of workers	84	24	1	0	109	100
Percentage	77.06	22.01	0.91	0	100	

*Source: Primary data*

Employers can terminate a worker's service any time and without any hassle. Mr Om Prakash Thakur, a data-entry operator, said, "I have been working for the last five years, and during these years I came to know that the company hardly bothers about the well-being of its employees. Its only motive is maximum profit, even at the cost of its workers. Four-five workers who worked in this company for ten years have been retrenched. The company thinks that employing freshers will cost less money." According to Mr Thakur, the real reason was to get rid of the older workers. In any case, the status of permanency did not afford them any gain of social security and welfare provisions, or entitlement of leave encashment. In the call-centre segment, three out of the eight workers are temporary. All three of them are from the American Express bank. They are not direct employees of the concerned bank, but are the employees of some agency. All of them, however, want to become direct and permanent employees of American Express.

### 3.2.3 Skill Level



More than 85 per cent of IT workers believe that they are skilled in their work. Only 3.66 per cent of them feel unskilled. (Table 3.9) The very nature of IT work implies that the workers have to have a minimum level of skills. In software development and programming, knowledge of various developing computer languages and the connected technologies are essential, while in hardware assembly and manufacturing, knowledge of the various components is necessary to assemble a machine. For the DTP/job work, call centre and internet café segments, workers need to be skilled in computer operation at the least. Very likely, the fact that workers in the IT industry are working on the latest technologies could also have led to the prevalence of a perception amongst the workers that they are, indeed, skilled.

**TABLE 3.9**

**Level of Skills**

Segment	Skilled	Semi-skilled	Unskilled	Total	Percentage
Call centre	5	1	2	8	7.33
DTP/job work	10	0	0	10	9.17
Hardware	24	6	2	32	29.35
Internet café	3	0	0	3	2.75
Marketing	3	3	0	6	5.50
Software	48	2	0	50	45.87
No. of workers	93	12	4	109	100
Percentage	85.32	11.00	3.66	100	

*Source: Primary data*

When asked about employment trends for the future, most of the employers interviewed felt that they would require more highly skilled workers over the next few years. This could be because of the plethora of new technologies coming in with tremendous speed – and, therefore, workers conversant with these new technologies would be required. One consequence here would be a growth in the training institutions offering training tailored to the needs of the industry. Training forms yet another sector of the IT industry, and was worth Rs 12,500 million in the year 1998-99, as shown in Table 2.1.

### **3.2.4 Availability of Regular Increment**

“My company is running on the basis of exploitation of labour, and labour has no option for a better prospect. There is no value for ability and qualifications,” so went the opinion of DTP operator Mr Pradeep Kumar Jha. As is evident from the above statement, there is no consideration for educational qualifications and past experience in giving incentives to IT

workers. It is also a fact that at the lowest end of the IT segment, particularly in DTP/job work and internet café, getting any increment or incentive is rare. In the DTP/job work segment, 9 out of 10 workers are not getting any increment; and in the internet café segment, not a single worker is getting any such benefit. (Table 3.10)

**TABLE 3.10**

**Availability of Regular Increments**

Segment	Yes	No	Total	Percentage
Call centre	5	3	8	7.33
DTP/job work	1	9	10	9.17
Hardware	18	14	32	29.35
Internet café	0	3	3	2.75
Marketing	2	4	6	5.50
Software	45	5	50	45.87
No. of workers	71	38	109	100
Percentage	65.13	34.86	100	

*Source: Primary data*

In the hardware segment, too, a sizeable chunk is deprived of benefits. About 46 per cent workers in hardware are not getting any incentives, though 65 per cent of IT workers overall get regular increment in our study (table 3.10 and 3.11). As is evident from the table, they received increments under the two major heads of annual basis and performance basis – 92.95 per cent of workers got increment on these two accounts. Out of the total number of workers in the hardware segment getting any incentive, 61 per cent are getting it on an annual basis, while 33 per cent are getting the same on the basis of work performance.

About 90 per cent (Table 3.11) of software professionals are getting regular incentives. Mainly, they are getting incentives on their work performance as well as annually. Software development is extremely deadline-oriented in the globalised economy, and employers have to motivate their professionals by various means.

**TABLE 3.11**

**Basis of Regular Increments**

Segment	Performance-based	Past experience	Quarterly	Half-yearly	Annually	Educational	Total	Percentage
Call centre	1	0	0	0	4	0	5	7.04

DTP/job work	0	0	0	0	1	0	1	<b>1.40</b>
Hardware	6	0	0	1	11	0	18	<b>25.35</b>
Internet café	0	0	0	0	0	0	0	<b>0</b>
Marketing	0	0	0	1	1	0	2	<b>2.81</b>
Software	21	0	0	3	21	0	45	<b>63.38</b>
No. of workers	28	0	0	5	38	0	71	<b>100</b>
Percentage	39.43	0	0	7.04	53.52	0	100	

*Source: Primary data*

### 3.2.5 Recruitment Pattern

Getting employment through the informal way – through friends and relatives, for instance – is the dominant trend even in the IT industry. About 65 per cent of employees got their job by this method, as per our study. In the software segment, while 42 per cent of professionals got their jobs through this method, another 46 per cent landed their jobs through employment advertisements in newspapers as well as through internet advertisements. (Table 3.12) In the hardware sector, it has been seen that it is usually a friend who notifies an aspirant about the availability of a job. This is more frequent in the case of people who are relatives or are from the same area of residence or village. In our study, only one worker, out of 32, in this segment got his job through newspaper advertisement, while the remaining 31 got it through word of mouth.

**TABLE 3.12**

**Recruitment Patterns**

Segment	Through employment ads	Through word of mouth	Through agency	Through campus recruitment	Total	Percentage
Call centre	0	7	1	0	8	7.33
DTP/job work	6	4	0	0	10	9.17
Hardware	1	31	0	0	32	29.35
Internet café	0	3	0	0	3	2.75
Marketing	0	5	0	1	6	5.50
Software	23	21	1	5	50	45.87
No. of workers	30	71	2	6	109	100
Percentage	27.52	65.13	1.83	5.507	100	

*Source: Primary data*

Getting employment through recruitment agencies has not taken off yet. Only two workers out of the 109 got their job through this method. (Table 3.12) Campus recruitment was mainly confined to high-end professionals, mainly in software, as 10 per cent of them got their job through this method.

In the case of agency recruitment, the employer specified the eligibility condition to the recruitment agency, which would shortlist the appropriate candidates' profiles from their databases and forward the same to the employers. The employer would then call the candidates for an interview and thereby select the requisite person. The advantage in such a system was that employers would not have to go through countless profiles in their attempt to find the best suited candidate. This was a method normally followed in software units.

Another method of recruitment was interviewing probable candidates recommended by existing staff. This method was mostly observed in the lower-end segments including hardware assembly units, DTP/job work, and internet café. In these segments, it was seen that the process of recruitment was much more informal and relied on sources such as existing workers. This method was also found popular in call centres.

### 3.2.6 Prior Work Experience

In most cases, the duration of prior work experience was less than one year. Though it was not the first job for a majority of the respondents, it was the first job for a fairly high proportion – about 49 per cent specifically. It was evident that the proportion of workers in their second job was slightly above the first-timers. However, in segments like call centres, the proportion of first-timers was fairly high, standing at 75 per cent.

**TABLE 3.13**

**Prior Work Experience**

Segment	First job	Prior experience	Total	Percentage
Call centre	6	2	8	7.33
DTP/job work	5	5	10	9.17
Hardware	17	15	32	29.35
Internet café	0	3	3	2.75
Marketing	2	4	6	5.50
Software	23	27	50	45.87
No. of workers	53	56	109	100
Percentage	48.62	51.37	100	

*Source: Primary data*

In our findings, a majority of IT workers (55 per cent) are currently employed for less than one year. If we keep a two-year demarcation line, 84.39 per cent IT workers in our study are employed for less than this period in their current employment.

**TABLE 3.14**

**Duration of Employment**

Segment	L1Year	1 year-2 years	2-3 years	G3Year	Total	%
Call centre	7	1	0	0	8	7.33
DTP/job work	5	1	1	3	10	9.17
Hardware	16	9	5	2	32	29.35
Internet café	3	0	0	0	3	2.75
Marketing	3	2	0	1	6	5.50
Software	26	19	2	3	50	45.87
No. of workers	60	32	8	9	109	100
Percentage	55.04	29.35	7.33	8.25	100	

*Source: Primary data*

The percentage of higher duration in current employment decreases rapidly in this sector, as only 15.58 per cent of workers are employed in their current employment for more than two years. This could be based on two factors: first, the trend of high mobility in the IT sector, and second, the IT sector being on a high growth trajectory. At least for the software sector, at the higher end, it was extremely easy to change jobs if one had prior work experience of a few years. With the gap between demand and supply, the rapid mobility rate of high-profile software workers is no longer a myth.

**3.2.7 Previous Employment Pattern**

As is clear from Table 3.13, 56 workers out of 109 have worked prior to the current employment. And it seems that most of the respondents who have prior work experience come from IT-related backgrounds, as attested by 71.42 per cent of workers (Table 3.15). They simply chose to switch jobs in search of better opportunities. This is a truism for almost all IT segments including call centres, DTP/job work, hardware, internet café, and software. However, moving to better job prospects is easier for software professionals than it is for workers in other segments. The only exception is marketing, where 75 per cent of workers in their current job have come from some other field, though with marketing as

their line of practice. (Table 3.15) Even in the hardware segment, some 40 per cent of workers have come from a different background.

**TABLE 3.15**

**Previous Employment Pattern**

Segment	IT area	Unrelated to IT	Total	Percentage
Call centre	1	1	2	3.57
DTP/job work	5	0	5	8.92
Hardware	9	6	15	26.78
Internet café	3	0	3	5.35
Marketing	1	3	4	7.14
Software	21	6	27	48.21
No. of workers	40	16	56	100
Percentage	71.42	28.57	100	

*Source: Primary data*

**3.2.8 Workers' Perception of Improvement in Living and Social Standards**

For the majority of workers at the lower end of IT segments, there is no improvement in their social and living standards. Here, out of 45 workers, about 64 per cent do not feel that their status has improved. (Table 3.16) In the marketing segment, an equal proportion of workers feel both ways: 50 per cent acknowledge improvement and another 50 per cent disagree. In the software and call centre segments, a majority of the respondents state that they have undergone an improvement in their living standards after joining their present positions of employment. This improvement is mostly due to more money being obtained from their present jobs and improvement in living standards.

**TABLE 3.16**

**Workers' Perception of Improvement in Living and Social Standards**

Segment	Yes	No	Total	%
Call centre	5	3	8	7.33
DTP/job work	2	8	10	9.17
Hardware	15	17	32	29.35

Internet café	0	3	3	2.75
Marketing	3	3	6	5.50
Software	36	14	50	45.87
No. of workers	61	48	109	100
Percentage	55.96	44.03	100	

*Source: Primary data*

### 3.2.9 Job Satisfaction with Present Employment

In the lower-end segments, where wage and benefits are not satisfactory, workers' job satisfaction is negative. In the DTP/job work and internet café segments, out of 13 workers about 92 per cent are not satisfied at all. (Table 3.17) In other segments like call centre, hardware, marketing and software, a majority of the workers are satisfied with their present job. A chief reason for job satisfaction is the opportunity to learn more, which translates into higher mobility as far as further job changes are concerned. A closely connected reason is career growth prospects. Software workers, for instance, can look at better paying jobs as soon as they garner a few years of experience. This is not the case with workers in DTP/job work, internet café, and hardware assembly.

**Table 3.17**

**Job Satisfaction with Present Employment**

Segment	Satisfied	Not satisfied	Can't say	Total	%
Call centre	5	3	0	8	7.33
DTP/job work	1	9	0	10	9.17
Hardware	25	5	2	32	29.35
Internet café	0	3	0	3	2.75
Marketing	6	0	0	6	5.50
Software	41	0	9	50	45.87
No. of workers	78	20	11	109	100
Percentage	71.55	18.34	10.09	100	

*Source: Primary data*

### 3.2.10 Available Social Security and Welfare Measures

Higher-end IT professionals have access to social security and welfare measures. Medical facility is the single facility that the largest number of IT employees receive. (Table 3.18) About 86 per cent of workers in the software segment and about 75 per cent in call centres get this facility. However, in the lower end of IT segments the percentage decreases considerably. In hardware, just 15.62 per cent of workers have access to medical facility, while no employee in DTP/job work has the benefit of this facility.

A negligible level of social security and welfare measures is evident in the lower segments like DTP/job work, hardware and internet café, where none of the workers or a negligible percentage of them is given benefits like provident fund, insurance and accident schemes. In these segments, the conditions of social security were highly suspect since the status of the workers was not clear. In interviews with employers, most of them agreed that they provide few benefits as part of social security measure. In an instance of an informal sort of social security measure, an employer in a hardware assembly unit said that he deducted part of his employees' salary and put the same into a common fund to be used as a contingency backup whenever the need arose.

**Table 3.18**

**Available Social Security and Welfare Measures**

Segment	Medical facilities	Subsidised food	Transport	Uniform	Provident fund	Gratuity	Insurance scheme	Accident scheme	Festival advances	Total
Call centre	(75.0) 6	(37.5) 3	(12.5) 1	0	(50.0) 4	(50.0) 4	(25.0) 2	(12.5) 1	0	8
DTP/job work	0	(20.0) 2	0	0	0	0	0	0	(10.0) 1	10
Hardware	(15.62) 5	(62.5) 20	(62.5) 20	0	0	0	(3.12) 1	(3.12) 1	(6.25) 2	32
Internet café	(33.33) 1	(33.33) 1	0	0	0	0	0	0	0	3
Marketing	(33.33) 2	(16.66) 1	(33.33) 2	0	(16.66) 1	(16.66) 1	(16.66) 1	(16.66) 1	(33.33) 2	6
Software	(86.0) 43	(54.0) 27	(64.0) 32	(18.0) 9	(78.0) 39	(74.0) 37	(72.0) 36	(36.0) 18	(20.0) 10	50
No. of workers	57	54	55	9	44	42	40	21	15	109
%	52.29	49.54	50.45	8.25	40.36	38.53	36.69	19.26	13.76	100

*Source: Primary data*

### 3.3 HEALTH AND SAFETY

#### 3.3.1 Health Hazards of Working Environment

A majority of the respondents (96.33 per cent) did not perceive their working environment to be dangerous or to have an adverse effect on their health. One of the reasons could be that



employees are not aware of the possible hazards of working in front of a computer monitor the whole day. This lack of awareness can be held responsible for the failure to perceive that the working environment is hazardous to health.

**TABLE 3.19**

**Working Environment-related Problems**

<b>Existence of Hazards</b>	<b>Yes</b>	<b>No</b>	<b>No. of workers</b>	<b>Percentage</b>
Call centre	1	7	8	7.33
DTP/job work	0	10	10	9.17
Hardware	1	31	32	29.35
Internet café	0	3	3	2.75
Marketing	0	6	6	5.50
Software	2	48	50	45.87
No. of workers	4	105	109	100
Percentage	3.66	96.33	100	

*Source: Primary data*

### **3.4 COLLECTIVE BARGAINING AND INDUSTRIAL RELATIONS**

#### **3.4.1 Existence of Trade Unions**

Very few respondents (1.83 per cent) answered in the affirmative when queried about the presence of trade unions in their firms. In general, it was found that there was absolutely no trade union presence in the entire IT sector and the sub-sectors that were studied. Two workers from hardware reported that they are members of an area-based workers' union, but there is no union in their workplace. Moreover, being a union member at the former has nothing to do with relation to the firm where they work as they have not been able to do collective bargaining for common interest. In the other segments of call centres, DTP/job work, internet café, marketing and software, none of the workers reported that there was a workers' union in their firms or that they were members of any workers' organisation.

There are a few reasons for the software workers being non-unionised. The gap between supply and demand gives the workers mobility and bargaining power, and those at the upper end of the service spectrum choose to move on rather than get involved in bargaining or organising movements. In addition, in the software development industry it becomes difficult to distinguish between workers and managers. Instead of workers' organisations, there is the growth of institutions professing to serve the interests of companies as a whole. In the hardware units, a lack of awareness among the workers might have restrained any

attempt at union formation. Also, the fact that there is no evidence of employment in the absence of employment contracts might have led to the hesitancy towards forming unions. More or less, this situation also prevails in other lower-end IT segments, where a highly informal nature of employment contract and work environment exists. Moreover, in some segments the workforce strength is very low, numbering less than 10 in some instances, which also renders the unionisation effort difficult.

**Table 3.20**

**Existence of Trade Unions**

Segment	Yes	No	Total	%
Call centre	0	8	8	7.33
DTP/job work	0	10	10	9.17
Hardware	2	30	32	29.35
Internet café	0	3	3	2.75
Marketing	0	6	6	5.50
Software	0	50	50	45.87
No. of workers	2	107	109	100
Percentage	1.83	98.16	100	

*Source: Primary data*

As expected, employers' perspective on workers' unionisation is negative. None of the interviewed employers accepted the existence of trade unions or workers' organisations in their firms. This was observed through the length and the breadth of the industry. Not a single employer accepted that workers union is conducive for industrial health (Table 3.21) Their observation is that a trade union is more a hindrance than a help. Employers also felt that non-unionisation of IT workers was one of the reasons for the growth of the industry.

**Table 3.21**

**Employer's Perception of Workers' Organisation**

Sl No.	Workers' unions conducive to industry	Percentage
1.	Yes	0
2.	No	53.85
3.	Don't know	7.69

4.	No response	38.46
<b>Total</b>		<b>100</b>

*Source: Primary data*

Some of the HR managers interviewed in the software sector held the view that software workers were more interested in working with the latest technologies than in forming workers' organisations, and also assured that the workers did not have time to indulge in union activities. While this might be a truism for the software units under study, it could not be a plausible reason for the total absence of workers' organisations in the lower-end segments of the IT industry. These segments are predominantly characterised by absence of job security for workers, total absence of social security measures, and little upward mobility.

### **3.4.2 Dispute Settlement Mechanism**

In view of the fact that there is total absence of any representative mechanism in the IT industry, workers have to directly talk with employers/management. In our findings, 61.46 per cent of workers directly discuss their problems with employers (Table 3.22), while 7.33 per cent air their grievances in the weekly or monthly staff meeting. About one-fourth (25.68 per cent) refused to accept that there is any dispute with management. The striking point is that six per cent of workers admitted to their helpless situation, and they are mainly from the lowest end of the IT industry. According to these workers, it is the management who always decides on any matter. From the workers' interview, it also became apparent that workers hardly influence the employers in either direct talk or regular staff meetings. One worker from the DTP/job work segment related that he once talked to his employer about a problem. When he went a second time to raise his concern, the employer became agitated and scolded him. After that, he did not dare to air his grievance to the employer and became completely pessimistic.

**Table 3.22**

#### **Dispute Settlement Mechanism**

<b>Segment</b>	<b>Directly talk to employer/manager</b>	<b>In regular staff meeting</b>	<b>No dispute so far</b>	<b>No say; management always decides</b>	<b>Total</b>	<b>%</b>
Call centre	2	0	6	0	8	7.33
DTP/job work	2	0	3	5	10	9.17
Hardware	27	1	4	0	32	29.35
Internet café	1	0	1	1	3	2.75
Marketing	5	1	0	0	6	5.50
Software	30	6	14	0	50	45.87

No. of workers	67	8	28	6	109	100
Percentage	61.46	7.33	25.68	5.50	100	

*Source: Primary data*

## CHAPTER IV: CONCLUSION

The IT sector in India is fairly large and encompasses software, hardware, training and IT-enabled services, and DTP/job work. There is a propensity for higher-end IT workers to get into this sector due to the growth that it promises both in terms of a career as well as financial well-being. As a result, there is a rise in the number of people opting for these jobs, and a corresponding increase in training institutes for the training of this workforce. However, for lower-end IT segments there is not much enthusiasm among workers; rather, they are highly dissatisfied. They are in this sector due to the compulsion of being job aspirants in a labour-surplus economy, with not much prospect of a better job opportunity. Thus, we can find a highly visible divide between the higher-end professionals and the workers in lower-end IT segments. The former group earns monthly salary in the range of Rs 30,000-Rs 40,000, as well as other benefits such as ESOPs, while lower-end workers such as DTP operators earn between Rs 1,000 and Rs 3,000 per month, with no other facilities of social security and welfare measures. The latter is also vulnerable to random hiring and firing by employers. Also, a majority of the lower-end IT workers are not satisfied with their present employment and feel that their living and social status has not improved yet.

At the lower end of the IT spectrum, there is an absence of HR policies or formalisation of employment. Here, the employment status of workers looks reasonably vague with no clearly defined lines of employment. This leads to workers being in considerable doubt as to their present status of employment. Most of the time, there is no employment contract or employment proof.

Additionally, despite a majority of workers in this sector working beyond the normal hours, there is no concept of overtime payment. In fact, many of the workers in this sector are unaware about their rights to get payment for overtime.

Our findings show that the IT industry is basically male-dominated, with very little female representation. Also, this industry is very young even in terms of its employees, with 73 per cent of workers in the age bracket of 18-25 years. Skilled and technically qualified persons are in demand in this sector. However, a majority of IT workers get their employment through the informal way.

There is a clear absence of unionisation among workers in this sector. They are themselves not much inclined to form workers' organisations – in the higher-end software segment, they are too contented and command sufficient job mobility to think in this direction. In any case, employers view unions as detrimental to the growth of the industry. In the event of any dispute, the worker has no option but to directly talk with management.

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