Chapter-VII
Conclusions

Information Technology (IT) deals with how we use information, how we compute, and how we communicate. IT has a wide range of applications throughout the sciences, engineering, education, the economy, the polity, and culture. The unfolding of the potential of Information Technology is being witnessed by the advanced nations. Recently the developing countries also started recognising the potential of Information Technology and have been evolving policies for the development in diverse spheres of life.

As reviewed in the chapter one and chapter three, the virtual penetration of IT into all the sectors such as military, economy, polity, industry, culture, media, health care, transport, entertainment and education has created conditions for major changes in the developed nations and transformed them into information societies.

To sustain the information society, it is necessary to develop software, hardware, and high skilled human resources. The wider application and rapid penetration of IT in diverse sectors have led to the phenomenal growth of IT industry and IT enabled services with the US Silicon Valley as the hub which is connected by significant number of countries including a developing country like India. Indian cites such as Bangalore, Chennai, Hyderabad, Mumbai and Delhi occupied a place on the global map in the production of IT software and IT enabled services.

The multifaceted developments in the IT industry has led to the severe shortage of software professionals in the developed countries in general and USA in particular.
In order to sustain the IT based economies, most of the developed nations including America liberalized the immigration norms to attract the highly qualified professionals across the world.

These policies led to the flow of IT professionals from diverse countries to America and other developed nations. India with its large scientific human resources responded quickly to seize the opportunities unleashed by the global IT industry. Consequently thousands of personnel trained in a variety of applications in software and IT related areas have started migrating to America, Europe and some of the Asian countries like Singapore, Thailand and Malaysia.

There are multiple factors responsible for the flow of IT professionals to the developed countries: relatively high salaries, high standard of living, and the social prestige and perks associated with the Information Technology jobs. As a result, in India members of diverse social groups have begun to attach a great deal of significance to IT education. The social and economic significance attached to the IT jobs led to the proliferation of thousands of IT education centres ranging from international to local level. Over a period of time IT education emerged as an important segment in IT industry in India.

The trend towards a credential society based on demand for diplomas started since 1980s in India and accentuated by the 1990s with the rise of IT industry all over the world in general and America in particular. The demand for certificate or degree in IT related courses to improve the credentials ultimately led to a huge growth in IT education industry.
Although IT education centres have been flourishing in different regions and pockets, the issue of accessibility to different social groups which differ in terms of socio-economic background have assumed importance. It is quite essential to explore this unexplored area to get better understanding of the issues. The present study is an attempt to address these concerns.

M.S.A Rao (1985) while examining access of educational opportunities to different social groups observed that as part of its functions, education system follows the method of differentiation, and selection. In the process, the education system tends to select students from particular socio-economic strata. Individuals who belong to particular socio-economic background exploit educational facilities of higher quality than others.

In principle, the modern education is open to all individuals irrespective of caste, class, gender, race, and region. However, social factors have been playing a significant role in influencing the access to educational opportunities in general and professional courses such medicine and engineering degrees in particular. Still half of the number of children does not have access to primary education, and less than 7% have access to higher education and only 2% of the students have access to science and technology education in India (Chitnis, 2000).

In this context it is quite important to explore some of the issues of equality of opportunity in the context of growing demand for IT education.

The objectives of the present study were: firstly to study organization of IT education and its implications for accessibility; secondly to understand the socio-economic profile of the students pursuing IT education; thirdly, to understand the
relation between the socio-economic background and access to IT education; and finally, to analyze the perceptions, experiences and anxieties of the students about IT education.

The study hypothesised that the prevalent systems of social stratification influences the extent to which access to IT education is distributed. It thus assumed that the access to the space of IT education is unequally distributed - arising from structured social inequalities such as caste, class, religion, gender, region, and rural and urban distinctions.

The hypotheses of the study are that: there is variability in degree of access to Information Technology education among various social groups; and the variability in the degree of access to Information Technology Education is influenced by position of the social groups in the stratification system (caste, class, and gender).

To explore the above objectives Andhra Pradesh was selected as a study area. Four cities in Andhra Pradesh were selected for conducting the fieldwork. The rationale behind selection of these cities was to cover the three regions of Andhra Pradesh namely coastal region, Telangana and Rayalaseema apart from Hyderabad. One city from each region was selected. The cities are Vijayawada (Costal region), Warangal (Telangana), Tirupathi (Rayalaseema) and Hyderabad (the capital city of A.P and an important city of IT).

**The sample of the present** study is drawn from the students pursuing IT courses in training centers managed by IT education vendors in the non-formal sector. Four centers from each city (in other words, 16 centres) were selected and
15 students from each centre were selected for the study. It was difficult to get the list of all the students pursuing various short-term and long-term courses. It was decided to include students who agreed to participate in the study. In other words, the study adopted a purposive sampling method.

The techniques of questionnaire, interview guides, and focus group discussions were used to collect the data. Statistical Package for Social Sciences (SPSS) was used for statistical analysis of the data. In order to understand the organization patterns of IT education across different parts of India, data on the list of IT centers published by the Data Quest (May, 2001), an IT magazine, was used.

The data on the distribution of IT education and training centers revealed that the highest proportion of IT education centers are located in southern regions, and that the eastern pockets of India are lagging behind in attracting IT education centers. The northeastern regions were virtually excluded by the IT education and training organizations. This trend indicates that IT education is confined to only some regions of India.

Within Andhra Pradesh most of the centres are located in Hyderabad, followed by the coastal region, Telangana and Rayalaseema regions. The study shows that the distribution of IT education and training in India and Andhra Pradesh is skewed in nature. Most of the training centres were located in cities only. The concentration pattern of centres indicates that it is the economically potential regions and IT centered cities that are able to get more number of training centres than other cities.
Data pertaining to the socio-economic profile of the students enrolled in IT education centres, admission patterns, and attitudes on the ongoing developments in IT industry and its impact on IT education, were collected from the students.

The study shows that most of the students enrolled in IT education centres primarily hail from the urban settings. There are multiple reasons for higher proportion of the urban students in IT education: first the concentration of IT education centres in urban areas; second, access to modern means of communications seem to provide awareness about the importance of IT education and prospects of employment opportunities in big cities.

The study finds that the number of students who hail from rural areas is comparatively less. The socio-economic profile of the students reveals that nearly 60% of the student belongs to upper caste background, 30% backward caste, followed by scheduled castes with 9%, and the proportion of the tribal students is negligible. The data clearly indicated that the historical social inequalities have been continuing to influence access to IT education by absorbing only a small percentage of the lower caste groups such as backward castes and scheduled castes into the mainstream system. Although the government agencies such Scheduled Castes Corporation and Backward Castes Corporation provide financial support to these sections, the rural dalits and backward castes are unable to take advantage of financial support due to lack of awareness and lack of optimum educational qualification.

The city-based dalit and backward middle class tend to have greater access to IT education because of their access to resources as well as information about the
government policies and schemes. The proportion of rural students of the upper castes is less when compared to the upper caste students who hail from urban settings.

Students from tribal communities are negligible due to lower economic status and lack of education and lack of awareness about IT education. Thus, they are excluded from IT education to a greater degree. Moreover, urbanization of Scheduled Tribes is relatively low compared to SC groups. Thus, the presence of STs in cities is insignificant.

The study also examined the gender composition of the respondents. It was found that 64% are male and 34% are female. There are multiple factors responsible for the significant proportion of women in IT education. First the concept of career women is gaining importance in the present day Indian society. The mode of selection of the life partner significantly changed over the last two decades particularly since 1990s. Prospective bridegrooms prefer working women. In addition to the above factors, the resemblance of IT jobs as white-collar jobs encourages women to join IT courses. Although IT education attracted a significant number of women students, still the proportion of the female students is less compared to male students.

The proportional representation of the male and the female students significantly varied according to their rural and urban background. It was found that the majority of the female students belong to urban settings, with a very low proportion coming from the rural areas.
The reasons for the low proportion of female students compared to that of male students are multiple: lack accessibility in the rural settings, difficulties in traveling to towns and cities, high fee of the courses. The traditional patriarchal hegemony also restrains female students from pursuing education in general and IT education in particular in the cities and towns. The traditional religious values particularly in case of Muslim women restricted their entry into IT education centers.

The assumption regarding the father's educational qualifications, occupation and income was that these influence children's educational attainment to a greater degree than those of the mother's in the Indian society. The results showed that the father's level of education has significant impact on the access to IT courses. The students whose father's educational qualifications are above bachelors degree account for more than 75%.

The group discussions that were held with the students revealed that there is a great divide between the rural and urban students. It also demonstrated that the urban students whose fathers' educational qualification is higher compared to those of rural students have more awareness about the selection of the educational streams, and about the latest developments on IT industry. This awareness gives an edge over rural students and children of uneducated parents.

The occupational patterns of the respondents' parents shows a greater proportion of students are children of those employed as white and blue collar workers both in the private and public sectors and those who were self-employed.
The educated groups who are employed in diverse institutions and organizations recognized the potential of Information technology and consequently they use the IT education as a tool to improve the socio-economic conditions and esteem by leveraging the potential economic benefits from IT industry and IT-enabled industry jobs.

The quest for social mobility acts as a motivation to join in the IT courses. The possibility of foreign employment, perks and job flexibility also worked as motivating factors for moving towards IT courses.

The level of monthly income of the household has a significant role in determining the degree of accessibility. The study found that respondents whose fathers' earnings fall in the under the category of 5000-15,000 per month constitute the majority (60%). The trend indicates that the middle-income groups attach a lot of significance to IT education compared to other categories, i.e. lower and higher income groups.

The proportion of the students belonging to the middle class is significantly higher compared to other classes. The reason for the low proportion of the higher class in the IT education centres in the study could be understood in their economic potential to bear the high fee and preference to join for IT courses in premier and more expensive institutions rather than IT education centers of the kind included in the study. Many prefer to go to advanced countries to pursue higher education. Since the cost of the IT education at these centres appear to be affordable to middle classes, these sections started making use of the education and training services of the IT centres.
However, a significant proportion of the students expressed that the fees are high and that they find it very difficult to pay. The parents of the students resort to various sources such as loans, credit etc. to meet the costs.

Language is one of the significant factors, which influence accessibility. The study found two kinds of respondents: first category is the students who have pursued studies in a regional language, and the second category is students who continued studies in English medium.

The present study examined the medium of language at different stages, i.e. from primary education to bachelor’s degree of the respondents. It was found there is a gradual shift from education in regional medium to English medium. The students who had education in Telugu medium were faced with acute problem with English language. Further, the jargon and the technical aspects of IT subjects seem to cause problems. More number of students who mentioned language as a problem belonged to the scheduled castes and the lower classes.

The process of language socialization significantly varies from the caste to caste and class to class. The upper castes particularly who belong to urban settings and the middle class in general socialize their children according the norms and values of the educational institutions. The language which is used in day-to-day conversation is compatible with ethos of the educational system.

The study also examined the role of kinship networks of the students who are associated with software industry. It was found that most of the students who had relatives employed in software industry hail from upper castes and middle class background.
It was noticed that the level confidence is greater among the students who had relatives associated with software industry than those who did not have kinship networks associated with software industry. The former section of students seems to have a hope that they will be accommodated in some companies through their kinship networks. But the students who did not have such kinship networks seemed to have less confidence although they possess similar qualifications.

The present study also examined the class background. The majority of the students pursuing IT training are drawn from middle class. It also examined the relation between caste and class. It was found that most of the middle class students also belong to upper caste background followed by the backward castes.

The interviews and groups discussions led us to observe that most of the middle class students attached a great deal of significance to IT education and training compared to the other social classes. The quest for occupational and social mobility constantly motivates them. The social prestige and esteem that IT professional employment acquires is attached a greater value by the middle class population.

The study finds that the young generation belonging to the scheduled castes, backward castes, the rural background, and women students are lagging behind in gaining access to IT education and training. It means that IT education is not equally leveraged by all, and only particular sections of the society who already have had the better social and economic positions became successful in gaining access. The hypothesis proposed is supported by the data.
Contribution of the study to the Sociological literature

The study revealed that the emphasis on tool-based learning, as opposed to concept-based learning promoted by the IT education vendors has implications for gaining competence and consequent prospects of employment. The tool-based learning, that was promoted during the 1990s by the IT education vendors proved to be inadequate for long-term employment. Those who got short-term diplomas were the worst affected by the slowdown in the IT industry. The overemphasis on tool-based education will give undue importance for credentialism.

The present study is a modest contribution to the specialty of sociology of education with a particular reference to IT education. The study could focus properly by employing central concepts in sociology of education. The study showed linkages between market forces and education and the global market tends to shape the education system in the developing countries. The promotion of IT industry and IT education in India seems to be a response to global demand rather than internal requirements. Concepts like credentialism are very useful to understand the situation in India where there is an over supply of graduates. The differential access to education in general and IT education in particular remains a significant sociological question that needs further exploration. The concept of information society is a sociological problematic in the Indian context.

Recommendations

Based on the findings of the present empirical study, it recommends some of the strategies to strengthen the government policies pertaining to IT education to include the underprivileged sections.
First, the pattern of distribution of IT education is skewed in nature. Most of the IT education centres are located in the urban centres, whereas the rural areas are excluded. Here the state has to evolve special programmes for the rural areas to include the majority of the aspirants of IT education.

Second, the state has to design special policies for the dalits, scheduled tribes and women to enhance their economic potential and upward social mobility.

Third, with the growing presence of private sector in almost all the fields the private sector has to take social responsibility in making IT education accessible to all sections.

Fourth, special emphasis should be laid on concept-based training rather than the tool based training, which will help those with IT education and training in gaining overall competence and ability to withstand market fluctuations in the demand for software application tools.

Further research

The future research needs to focus on the perceptions and attitudes of the IT education enterprises to understand the detailed organizational aspects and also their view of social responsibility.

There is a need to study the students' placement after completing their courses from the IT education centres.

The comparative studies are needed to understand the organisation of IT education both in public and private sector.

The implications of the skewed pattern of distribution of IT education in the country for balanced regional development.