UNIT 9 SOCIAL IMPLICATIONS OF INFORMATION

Structure

9.0 OBJECTIVES

After reading this Unit, you will be able to:

- perceive why information and knowledge are considered as social wealth;
- note the impact of information/knowledge on societal changes, particularly the rapidity of changes in the last fifty years, the single agent of change, being the converging technologies;
- observe the impact of information and knowledge in specific sectors;

- grasp the value of information/knowledge in the changing context of library and information systems and services;
- get an insight into the Indian societal changes; and
- note the overall impact on societies.

9.1 INTRODUCTION

Information and knowledge have always been resources for creating material welfare. Even the primitive man, to survive, has instinctively remained in groups and sustained by getting to know about water availability, moving to safer places to avoid attacks from wild animals and where food could be obtained. Endowed with the divine faculty of intellect, brain-power and astute mind, humans continuously worked towards better living conditions and improvement in living standards, by understanding the environment. Initially the progress towards development was slow because creative and inventiveness were more a matter of hit and miss method, of a few individuals and also because of the lack of communication. Although the new ideas, intellectual and creative abilities were confined only to a few, the benefits of their innovation and invention accrued to the welfare of the entire community.

The Industrial Revolution in the 15th century, however, opened up new vistas for creativity, innovation and invention primarily in the western countries. Scientific and industrial research created an environment to further the frontiers of knowledge, innovation and invention. S&T information and knowledge and their dissemination and diffusion helped and accelerated the creation of new knowledge. The benefits of the application of new knowledge were made available to all in the society, although not equitably. Mass production and mass distribution, drastic changes in the workforce and higher standard of living were the remarkable features of this period of change.

The most dramatic changes, however, occurred in the latter half of the twentieth century with the advent of Information technology, which was a converging technology of computers, communication, media and a host of other microelectronic technologies. There have been remarkable changes in the life styles of people since then, with all sorts of comforts and facilities. The advent of Internet and Web technologies has provided great opportunities to interpersonal interactions for different purposes. All these have percolated to all levels of people, particularly in the western societies.

This Unit analyses these aspects in some detail with particular reference to certain sectors wherein information and knowledge are important components, and also the general life of people.

9.2 INFORMATION /KNOWLEDGE AS SOCIAL WEALTH

Information and knowledge are always considered the root cause for the development of any society, primitive, agrarian, industrial or post-industrial society. Although the creativity and intellectual faculty were confined to a few groups of people, the results of the created information and knowledge have

always benefited the society. In this sense, information and knowledge can be deemed to be social wealth.

The individual and corporate knowledge and information have been accumulating throughout the course of human history. The knowledge reservoir created at different periods of time also includes the continuation, addition or modification of already existing knowledge. Therefore, the treasury of human knowledge is in many ways universal, continuous, cumulative, and ever growing. No final word can ever be said on any aspect of knowledge.

9.2.1 Diffusion and Dissemination

We know how knowledge and information have got to be diffused and disseminated for validating them initially for quality assurance and later applying the validated information and knowledge for various developmental purposes. This process of diffusion and dissemination adds value to primary information through critical analysis. This type of quality control has evolved as an established practice in scientific and technological research and development over the last 300 years. This system of information dissemination and communication has been a standard model in almost every discipline in social sciences and humanities also. However, this system of flow of information and knowledge is not a model in other areas of human activities, such as in business and industry, wherein information is seen in the context of competition and profit making. Yet, if information and knowledge is considered a social wealth and public economic goods, it implies that the stock of knowledge as well as its flow will have to be streamlined to be made available to all for use and exploitation.

In fact, the Internet and Web technologies have removed these barriers to a large extent. Now information is accessible to users irrespective of its location with the least cost. However to protect the intellectual property of those who part with their intellectual outputs, laws relating to patents, designs, trade marks, copyright for books and other intellectual property rights are continuously being regulated and enforced at the national and international levels.

9.2.2 Means and Mechanisms

In the academic and research fields, information and knowledge that are generated have both the disseminating means and institutional mechanisms to make them available to those who want to use them. Institutions that are primarily meant to create new knowledge such as R & D establishments, disseminate their research outputs through primary journals, research and technical reports, conference papers, etc.

Learned societies, professional associations and publishers, both commercial and non-commercial, take up the responsibility for journal publication with a peer review system to ensure quality, hold periodic seminars, conferences, symposia, etc. to get ideas and views exchanged and discussed with peers on different aspects. A host of secondary periodicals in the form of abstracts, indexes, annual reviews, progress reports, state-of-the- art-reports, etc. are being turned out to provide access to primary information. All these processes of diffusion and dissemination have been greatly improved and enhanced for instant accessibility and availability by the electronic media, particularly

Internet and Web technologies. CD ROM facilities have contributed in this process of socialisation of information and knowledge.

Thus, we find that the concept of information and knowledge as public goods and social wealth has a general acceptance in the different segments of society, and investment of resources on the creation of this wealth has been on the increase, particularly in developed countries.

What is most striking in recent decades is the fact that information and knowledge have been the chief cause of bringing about drastic changes in practically every activity in society. We shall examine these changes in society in the other sections of this Unit.

Self Check Exercise

1) State the reasons for considering knowledge and information as social wealth.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.3 DYNAMICS OF CHANGES IN SOCIETIES

Change is the very essence of a growing society. Changes can be visible in life styles of people, their living environments, mode of production of goods and services, places of work, education and training, culture and in many others. However, changes in society that are drastic and far-reaching have generally been identified with three major periods of history viz. i) the pre-industrial agrarian society, ii) the industrial society and iii) the post-industrial society which is also referred to as an information or knowledge society

9.3.1 Societal Changes

In the pre-industrial agrarian society, most people were engaged in the activities of agriculture, fishing and mining. The social structure was fairly simple. Ownership of land provided the power base. Life for the people centered around cultivation of land for raising crops for food; cultural and social life were confined to the environments in which they flourished. In the competition for scarce resources, the mighty took every thing or a major share of every thing.

The industrial society has been organised around energy as the main source of production of goods and services on mass scale. The majority of the workforce was engaged in the manufacturing activities and distribution of the outputs. There was a dramatic change in the social structure. Power and prestige passed

from the landowners to the industrial class. The principle of economic production was influential in shaping the values and ways of life.

The post-industrial society (Information Society, Knowledge Society) has been emerging in the last three decades. The most prominent representatives of this type of society are the United States, Canada, countries of Western Europe and Japan. The attributes of the post-industrial society are:

- The centrality of theoretical knowledge as the source of innovation and polity formulation;
- Distinct change from a commodity producing to a service economy; and
- The pre-eminence of a managerial, professional, technocratic class and knowledge workers.

9.3.2 Rapidity of Changes

The speed with which changes have taken place is vividly portrayed by McGarry in his book entitled *The Changing Context of Information*.

In order to appreciate the relative rapidity of these changes, he writes, by taking communication as an example "let us use a clock as a model to give ourselves an idea of the relative time span. We shall take an arbitrary date of 30,000 years ago, when man began the series of carvings and paintings that led to the cave art. Starting with approximately 30,000 years before the present, let us take 24 hour period starting from midnight and allowing 1,200 years for each hour of the clock so that five minutes equal to one hundred years.

For thousands of years, progress is at a *glacial* speed. The high period of Paleolithic art coming approximately between 10 a.m., in the morning and 2 O'clock in the afternoon. The following evening we have the beginnings of cuneiform writing in the Mesopotamian valleys and hieroglyphics in the Egyptian temples (about 4000 BC). At 9 p.m. (about 1800 BC) we have the famous code of Hamurabi carved on a *stele* – probably the first example of a mass medium for public information. At 10 p.m., the beginning of Athenian and Greek civilisation with its contribution to art, philosophy and mathematics.

At 10.30 p.m., we note the beginnings of the Judaeo-Christian culture in Europe and for the next hour there is relative stagnation, except for the culture of monastic libraries. It is 11.33 p.m., before the invention of printing and the consequent surge of scientific thinking and at 11.48 p.m., Britian is in the throes of the industrial revolution. The communication revolution has taken in the last five minutes. The computer has gone through several generations in the last five minutes. If we speak of the microcomputer we are dealing with the last few minutes of our time. What will have happened by midnight? Who can predict?"

Changing Trends

The striking changes in the Information Society (Post-industrial Society) are pictured dramatically by Alvin Toffler in his three books, each book appearing in three decades 1971, 1980 and 1991.

The *Future Shock* (1971) portrays the process of change affecting people and organisations. It speaks about disorientation and stress brought about by trying

to cope with too many changes in too short a time. The accelerated speed of history brings consequences of its own, independent of the actual direction of change. The simple speed-up of events and reaction produces its own effects, whether the changes are perceived as good or bad.

The *Third Wave* (1980) places the revolutionary changes in technology and society in a historical perspective and sketches the future they might bring. Terming the agricultural era 10,000 years ago as the First Wave, it describes the major technological and social changes beginning in the mid 1950s as the Third Wave of change – the start of the new, post-*smokestack* civilisation. Among other things, it points at new industries to come, based on computers, electronics, information and biotechnology, terming these the "new commanding heights" of the economy. It predicts such things as flexible manufacturing, new markets, the spread of part-time work, and the demassification of the media. It describes the new fusion of producer and consumer and introduces the term *prosumer*, talks about new dwellings of electronic cottages. It speaks of office work being operated from homes and other changes in politics and the nation-state system.

Picking from the earlier works, Power Shift (1991) focuses on the crucially changed role of knowledge and information in relationship to power. It presents a new theory of social power, and explores the coming shifts in business, economy, politics and global affairs. Toffler argues that while headlines are on the shifts of power in the global context, equally significant shifts are taking place in the everyday world. There is a considerable shifting of power in supermarkets and hospitals, banks and business houses, television and telephones. A subtle revolution in the balance of power is transforming finance, politics, the media and even the nature of power.

While these works of Toffler may sound highly exaggerated bordering almost on science fiction, the importance of knowledge and information is forcefully highlighted. In fact, some of the ideas that Toffler has mentioned such as changes in supermarkets, hospitals, banks, business houses, television and telephones, are appearing to be vastly changing with the power of high-technology.

Self Check Exercise

2) State the attributes of a post-industrial society.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.3.3 Agent of Change

We have noted that the powerful agent of change is Information Technology (IT). IT is the convergence of several technologies that provides for interaction and mutual reinforcement, leading to truly qualitative changes in the entire range of new achievements and possibilities. It is also a controlling technology, meaning purposive influence on a pre-determined goal. The goal is socio-economic development and the controlling tool is IT.

National economies area viewed as concrete processing systems engaged in the continuous extraction, reorganisation, manufacture and distribution of various goods and services for final consumption. Industrial revolution brought about drastic changes in national economies through material processing by the application of power, energy and other technologies to manufacturing and transportation. But at this time revolutionary changes in society, innovation in information processing and communication technologies lagged behind those of power and energy and their application. This was, seen as a crisis of control of information processing and communication. But with the advent of IT the vital link of processing and communication of information has been established.

This convergence, in fact, has ushered the information society, in which the bulk of labour force in many of the western developed countries and Japan work primarily at informational tasks such as systems analysis, computer programming, information processing, storing and dissemination while wealth comes increasingly from information goods such as microprocessors and from information services.

While information is now accessible globally and instantaneously irrespective of location, Peter Drucker asserts that the basic economic resource in the knowledge society is knowledge and not information. The wealth creating activities will center around “productivity” and “innovation”, both applications of knowledge to work. It has started in business enterprises but soon will surely engulf all institutions of society. The ruling work group will be knowledge workers, knowledge executives, knowledge professionals and knowledge entrepreneurs who have the insight to apply knowledge to productive use, the way the “capitalists” knew how to allocate capital to productive use. Unlike the traditional employees, these knowledge workers own their knowledge, the new “means of production”, and can take it with them wherever they go. The economic challenge of the knowledge society will, therefore, be the productivity of knowledge.

Self Check Exercise

3) Give reasons for considering IT as an agent of change.

4) What is the real agent of change according to Drucker?

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

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9.4 IMPACT OF INFORMATION/KNOWLEDGE ON DIFFERENT SECTORS

We have so far considered the impact of information and knowledge on society in a general way, giving pointed attention to IT as the chief instrument of changes. In this section, we shall discuss the purposive influence of IT on the following few sectors which are deemed to have a strong information/ knowledge component.

- Education and Training at all levels
- Research and Development
- Media
- Government in all its functions and activities
- Business and Industry
- Life of People

9.4.1 Education and Training

A society's socio-economic growth and development are entirely dependent on the quality of its members' educational prowess that constitutes the intellectual capital. Education is the process of acquiring general and specialised knowledge by means of study and learning that develop intellectual powers and judgement. It also includes acquisition of skills for executing various professional and vocational functions, development of culture which is an expression of the mode of thought and feeling, help build up an aspiration toward and appreciation of high intellectual and aesthetic ideals.

The type of human educational growth and development is indeed a life-long process and at no point of their age or time in the life of a person, education really terminates. However, formal education and skills commences at the primary age level of people through schools and higher educational institutions at subsequent stages. Concurrently educational processes provide for hands-on experience to get practical knowledge to handle a variety of tasks both professional and vocational. In all countries, the educational infrastructure provides, a range of institutions for different levels to acquire knowledge and skills in academic, professional and other types of occupational fields.

Educational learning components include curriculum design and development for various levels, teaching expertise, teaching methodologies, using a variety of educational aids, tools and apparatus, quality control for turning out the right products from institutions, creation of new knowledge through research and development and production of research and scholarly materials, besides educational materials and similar others.

In all these processes IT has enabled several unprecedented facilities.

E-education, the Integrated Internet Educational System, delivers the required courses to students literally at their doorstep, using various multimedia and virtual reality. The local teachers have to act as mere facilitators. Course materials, prepared by experts in the respective disciplines and fields are

available to students through Internet E-mail, chat sessions, videoconferences and videophones. The student-teacher interactions enable proper guidance to achieve desired success. There are universities adopting distance-education systems, providing students course materials, consultation facilities, and even get the formalities of examinations. Virtual libraries provide at higher levels access to global knowledge almost instantaneously through innumerable internet servers.

Self Check Exercise

5) Describe the facilities of e-education.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.4.2 Research and Development

We have learnt that research is a never-ending activity spiral activity. The inputs as well as the outputs of research are information and knowledge. Today, Research and Development (R&D) are deliberate and planned activities undertaken to create the wealth of knowledge. Both government and private industries are investing in R&D for profit or for the benefit of society. While basic research continues to be the responsibility of academic and learned bodies, applied research, which is oriented towards problem solving of various kinds, is supported by government and private industries.

Research quality has increased phenomenally with the introduction of tested research methodologies, actively supported by IT, access to information and knowledge through Internet and a band of highly motivated and talented researchers with expertise in the areas of their specialisation. Writing about advances in Science and Technology, Daniel Bell observes, "the methodological premise of the second half of the twentieth century is the management of organised complexity; the complexity of theories with a large number of variables and the complexity of large organisations and systems which involve thousands and even millions of persons. Since 1940 there has been a remarkable efflorescence of new fields and methods whose concern is with the problems of organised complexity; information theory, cybernetics, decision theory, game theory, stochastic processes. From these have come specific techniques such as linear programming, statistical decision theory, Morkov chain applications. Monte Carlo randomising and minimax strategies, which allow for sampling from large members, alternative optimal outcomes." The methods of this intellectual technology seem "to substitute" an algorithm (i.e.decision rules) for intuitive judgements. These algorithms may be embodied in an automatic machine or computer program, or a set of instructions, a 'formalisation' of judgements and their routine application to many situations. To the extent that

intellectual technology is becoming predominant in the management of organisations and enterprises, one can say that it is as central a feature of post-industrial society as machine technology to industrial society. [Bell, 1979]

Here again we reiterate that a society really progresses only with new knowledge created through R&D appropriate to a country's needs, in particular social needs and their application to the needs.

9.4.3 Media

The news media, the leisure industry and show business are turning to be the most fast developing activities since the beginning of the 20th century and it appears that the 21st century would also be dominated by the media. The newspaper industry, which includes dailies with their various editions (general as well business economics) by-weeklies, monthlies, with their respective supplements, uses all the sophisticated methods of IT for news collection, presentation, editing, production, distribution, etc. They are also available in Internet and in their respective websites. News media seems to be dramatically moving towards a very versatile current awareness service for the masses. Combined with 24 news telecasts channels and broadcasting, the mass media are the most powerful means of political and economic power.

The way cinemas, TV serials and other types of TV programmes and commercial advertisements of all products and services, have a profound influence on every sections of a society in a country.

E-entertainment, e-sports, e-games extend the features that are already available in television shows. Thus the media is creating a new life culture both in developed countries and also in developing countries.

Media being a powerful and influential tool, the western countries dominate the scene with a number of broadcasting and television networks reaching all corners of the world. The developing countries are at a serious disadvantage in this respect. However, in the past few years, Asian and Indian television networks have successfully started serving the Asian and Indian markets with news, views and entertainment and other programs of public interest in regional languages. In a way, these competitive efforts are taking away the monopoly enjoyed by some western mass media. There have been efforts by the developing countries to promote the concept of a New International Information and Communication Order to introduce some balance in the reporting of news and views between mass media.

Self Check Exercise

6) Sketch the impact of media on society with reference to IT.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.4.4 Government

Governments of almost all countries of the world are the largest and biggest generators and producers of information; and at the same time they are the largest consumers of information and knowledge too. The activities of governments span practically every area of human activity. Their commitment to society is to improve the living conditions and create a welfare state for then people.

Governments collect, organise and disseminate statistical data on all activities which constitute the most important and vital information resource for their planning, later, implementation and execution. Volumes of factual and descriptive data constantly released by governments and are published or stored in computer files.

Government must be able to take quick, timely and correct decisions on all issues of governance. IT has provided on-line access to all types of information and data about all matters or events at any time and from any location with government Intranets and Internets. Movements of files that usually create unnecessary delays in decision-making, have literally been eliminated with the files made available online at the same time to all functionaries. This system prevents files getting lost or misplaced. This system makes the whole of Government system transparent. E-government also enables direct participation of a common man in various matters public interest.

Despite the facilities of e-government, government structure and machinery being too slow, the pace of changes is slow. The work culture in most of the government institutions does not change as fast as one would wish. Although the visibility and speed of change is not so striking, particularly in developing countries, changes appear to be inevitable.

9.4.5 Business and Industry

Enterprising industrial and business undertakings show a greater inclination to use tools and techniques to modernise their functions, processes and activities, motivated by either profit or by the desire to be leaders in their fields. Among the various steps to modernise their enterprises business and Industry have adopted the most modern management techniques, applications of IT, and also taking calculated risks in financial investments,

Business and industry were the first to use techniques of management information systems (MIS), to produce and provide access to internally generated information using IT. It is increasingly being recognised today that external information of markets, competitors, customers, social and political environments, government regulations on trade, tariffs, exports, imports are invaluable if an enterprise is to thrive. The concept of knowledge management is new innovative thinking in business and industry. Knowledge is interpreted to include all internal information of the company, in addition to information dealing with competitors, sales, markets, etc. A new workforce referred to as knowledge workers is emerging in business and industry who strategically plan and execute the various functions and activities of the business so that they can be successful in a competitive environment.

9.4.6 Daily Life of People

An ordinary person in his daily life needs to have access to information on many of the daily activities. It may be pertaining to the quality, availability or cost of a number of things like articles of food, health care, education, entertainment, travel, social security, etc. One may need information on cooking, gardening, house decoration and maintenance and a host of other requirements on different subjects. With the advent of IT, access to such information is now provided through Internet and Web pages.

Modern household in the age of IT is a networked house. The unique feature of this network is that everything is available within the premises of the sweet home. Technology has taken away the burden of the routine chores like cooking, washing, traveling for work, shopping, etc. These facilities have created ample time for entertainment. As a result of all these extraordinary and unprecedented conveniences and facilities, life of people in developing countries is totally different compared to what their life was about a generation ago.

The foregoing is rather a cursory account of the impact of IT in some of the areas that have been taken discussion. To have a fuller view of the impact of IT on the areas discussed in the above sections and in addition to other aspects of life, the overviews of IT given every year by Manorama Yearbook is very valuable, particularly because the overviews have an Indian orientation. The pertinent references are given in the section on "References and Further Reading".

9.5 IMPACT OF IT ON LIBRARIES, INFORMATION SYSTEMS AND SERVICES AND THEIR SOCIETAL IMPLICATIONS

In the foregoing sections of this Unit, we have studied the impact of information and knowledge in a general way and also in relation to a few areas in the context of societal changes due to the application of ICT. As libraries and information systems and services have been an outcome of the social milieu, their existence and ability to adopt to the changes are vital for our profession to survive. Not only are they facing a challenge, a new type professional expertise is also emerging who are in the information field competing with us in professional work. In the following sections, we shall study the changes required in our professional systems and services and the challenges we have to face.

9.5.1 Libraries

Libraries and other information institutions have been responding to the information needs of education, research and development, government activities, business and industry and by the general public for a long time. With their collections, responsive and anticipatory services, libraries were able to meet many of the requests for information for different clients. But these conventional services have remained largely passive and limited. Now ICT has provided a new opportunity for libraries to change their approach and offer a client-based active service to keep our institutions alive. The Change is

to be towards electronic libraries whose two main features are library management systems, and online search and retrieval systems CD-ROM and the Internet. This new service environment will lead to changes in the roles of many of the stakeholders to the information market place. Progress towards the information society will be influenced by the way in which issues such as globalisation, standards, intellectual property rights, security and bibliographic control are tackled.

Schools offering professional and training in library and information service, particularly in India, should perceive these changes as new opportunities in the job market and respond to these challenges by developing appropriate curricula and facilities for learning which should result in the quality services are expected. The library and information profession will then have an indispensability and recognition in all developmental activities of a society.

9.5.2 Information Products and Services

Bibliographic activities, providing access to literature in almost all disciplines is a significant feature of information service in the 20th century. Learned societies like the American Chemical Society and publishing houses specialising in secondary services like Wilson and Co., have been pioneers in this type of services.

Today, with the advent of Internet and Web facilities, practically every primary, secondary and tertiary service has been offering access to every requirement at considerable speed and least cost. Libraries and information vendors have been taking advantages of these facilities and concentrating their advantage of these facilities and concentrating their attention on customer-based services. Knowledge management is a newly developing field, particularly in the business context, which is a high-tech based activity. Knowledge workers are the new class of experts who are emerging in this context.

9.5.3 Information Industry and Business

Information industry is defined as a market place marked by the emergence of information content with hardware, software and communication technologies to provide products and services, which enhance the capacity of people, to solve their problems. The Information Industry Association identifies segments of the information industry as given below:

Information Content Business

– Content Services (News, Libraries, Databases, Information Brokers).

– Content Packages (Books, Journals, Newspapers, Films, DVDs, etc.)

– Facilitation Services (Data processing, Time sharing, Networks).

Information Technology Business

– Information Technologies (Computers, Terminals, Office Equipment, Printing, Graphics).

– Integrating Technologies (Packet Switching, Modems, Switch Boards and Digital Switching).

– Communication Technologies (Radio, TV, Telephones and Transmission Systems).

– Communication Channels (Mail, Telephone, Satellites).

– Broadcast Channels (Radio and TV networks, Multipoint Distribution Services).

Information companies can be broadly grouped as follows:

– Primary Information Companies;

– Secondary Information Companies;

– Computer-based Information Providers;

– Information Retailers;

– Seminar and Conference Services; and

– Information Support Services.

Self Check Exercise

7) Name the different segments of information industry and business.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.6 INDIAN SOCIETY

Since independence, over a period of five decades, India has reached the stage of middle-level industrialisation. The developing countries, in general, India in particular, have been forced by history to try to telescope the process of economic development in a few decades that has taken the advanced industrialised countries a few centuries. This is, perhaps, inevitable, otherwise the transition from a dependent to an independent economy could, never be possible. But it is obvious that the socio-economic situation is not the same in developing countries as in the advanced industrialised countries. Our requirements are different and the priorities are also different.

A country's development depends on the combined force of the economic, political, social and cultural systems, which are intimately connected, the economic system being the trigger. It is important to note, however, that the country's transition to an industrialised from a pre-industrialised society does not depend merely on the acquisition of technology but more on the use of technology for industrialisation. The use of industrial technology has to effect

a change in the society towards economic progress in relation to social transformation. Without bringing such a change consciously in the human element, simultaneously with technological and economic structural change, the process of development will only fall very much short of expectations.

Development is the transition from one stage of social progress to another, from a simpler to a complex production, economic and political system and socio-cultural relations. While India is moving towards industrialisation to provide a higher standard of living for her citizens, India is also on the threshold of the information/knowledge society. But the impact of all these developmental processes affects only a segment of the Indian society and not the entire population of the country. But a consumer market has emerged by these processes. Sadly one third of our total population is suffering in abject poverty. All the socio-economic progress taking place currently, do not have any meaning to them as they are totally out of this orbit of progress. Only 40 to 50 percent of the population of our country is reaping the economic and social benefits, which of course, have changed their style of living. We shall discuss some of these changes that we witness today.

9.6.1 Consumerism

Broadly grouping the population who have had the benefits of change, there are the elite super-rich (super-haves), upper middle class, (have-somes), the lower class, (near-haves) and the poverty class, the have-nots. The policy of economic liberalisation of India and the entry of business and industry into global market have brought a number of changes in the economic growth of the country. One striking impact of these, is reflected in the Indian society that it is fast changing into a consumer society. Even the have-nots are getting exposed to affluent life through TV shows and entertainment films which carry a great deal of commercial advertisements, leaving alone the advertisements appearing in Indian language newspapers. These exposures of affluent life have their own negative impact.

The change from the joint family to a nuclear family has now been further strengthened by the double-income (husband and wife working) families. This has caused an increase in incomes and has given some financial strength to go for consumer durables and non-durables. The facility for bank loans, hire purchase systems, bank credit cards, etc. has further temptations for the have-somes, and near-haves, pushing them into the fold of consumer society. Today, most of the middle-income groups do have almost all the kitchenwares and gadgetries, mirco-ovens, refrigerators, washing machines, air-conditioners, and many other consumer durables. The general tendency is to desire more such as seeking exotic food and drink, self-adornment, greater home comforts, fashionable cars for greater mobility and so on. Experts and observers opine, “There is no doubt that the fast development of a consumer society in India, inevitable in the present regime of liberalisation, would determine the investment pattern in the economy, obviously directed towards consumer goods, both durables and non-durables. Given limited resources, a fast developing consumer society in India would also reduce household savings, which have so far been the main source of productive investment. There would be a greater inclination towards increasing the disposable surplus income to satisfy consumption desires, by investing in the share market, either directly or through

the mushrooming mutual funds. In such situation, it would become necessary for the government to discipline the economy and the market in some respects, without going back to the regulatory regime. This would be necessary for the sake of the overall development of the economy in a balanced manner aimed at raising the level of living of the 75 per cent outside the consumer society."(Banerjee)

9.6.2 Sustainable Development

Social development cannot be measured in terms of economic inputs, which give a superior life style. We should realise that we have a very big gap to be bridged i.e. all the sections of the society should be brought into the fold of living conditions that are much above the poverty line. Attention should be turned to the near-haves and the have-nots and new and innovative strategies would have to be worked out to raise the standards of life to all sections of our society. "Sustainable development" is the goal for the rural and urban poor.

An experiment that Dr. Swaminathan, the renowned agricultural scientist, towards sustainable development in some parts of rural India, is important to be noted in our socialisation process, using information and communication technology. The experiment is designed to provide knowledge to twenty isolated villages in India, on demand to meet local needs using the World Wide Web and it does so through bottom-up process. The programme of providing services include women's health information, advice on raising local crops and protecting them from diseases, the daily market prices for their crops, local weather forecast and clear information about the plethora of programmes that are provided by the Indian Government to aid poor families. To operate the system, the village provides accommodation. The village gets the needed hardware and maintenance for the ICT system, specially designed websites in the language of the rural folks.

9.6.3 Towards an Information Society

India is slowly drifting into a information society with her industrialised base. A few sample indicators that are characteristic on information society are given below:

India has developed a universally acceptable software industry, which has become the fastest growing sector of our economy. The manpower strength in this sector is such that India is expected to become a software superpower by 2008. The software exports of 50,000 billion US dollars as compared with manufactured and merchandise products of 45 million dollars. It is expected that India's economic growth will be driven by both the conventional services (Trade, Transport, Tourism, Financial and community Services and IT-related Services.

The manpower force in the Services sector is 52 per cent, as compared to agriculture at 26 per cent and industry at 22 per cent, despite agriculture and industry are also our crucial sectors. This aspect nearly fulfills the attributes of an information/knowledge society that there is a distinct change from a commodity producing to a service economy.

ICT has taken deeper roots in India as is evidenced by its application nearly in all fields. The railway reservations, banks transactions,

e-commerce, e-mail and the increasing use of Internet and Web technologies.

The enterprising business and industry competing in the global business are strengthening themselves with investment in R &D for the creation of new knowledge. E-government is another indicator that the Central and State governments are introducing in governance to make it transparent and for better for interaction with the common people.

These efforts are definite to grow in the future. The 10th Five Year Plan aims at Gross Domestic Product (GDP) growth at 8 per cent, a target ambitious in relation to current trends. Socio-economic observers are, however, hopeful of a steady growth in the country's economy, which will bring about better conditions for social and cultural life of the people.

Self Check Exercise

8) Sum up the societal changes happening in India, drifting the Indian society into an information/knowledge society.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.7 LARGER IMPLICATIONS OF THE IMPACT OF INFORMATION SOCIETY

We have analysed and discussed some of the specific aspects of information and knowledge in the foregoing sections of this Unit. The larger implications of the impact on all aspects of human life may have far reaching effects. Some of these, as seen by experts, are listed below:

- Information and knowledge become the principal generators of wealth in the form of educational institutions, research and development establishments, scientific and technological centers and other similar knowledge-oriented bodies;
- Information and knowledge will grow in volume and variety. Criticism, dialogue and commentary will add value to them;
- Changes in resource structure will obviously bring changes in the power structure. The natural corollary of this is the evolution of a new power elite, leading to anew power structure at the political level;
- An ever-increasing gap will grow between "information rich" and "information poor" among nations and within a nation;
- The actual decentralisation of production and decision-making may provide the basis for a rich, articulate and participatory social system; or effect purely physical decentralisation, combined with centralised decision-

making and organisation, giving rise to an increasingly rigid and monolithic society;

- Changes may lead to increasingly rewarding, qualified, creative and formative, by eliminating repetitive activities (both physical and mental); or develop highly standardised tailored work, offering only the advantage of lessening the burden of various activities, without any corresponding changes in the social structure;
- A better man-machine relationship by exploiting increased capacities for interaction, dialogue, adaptations and intelligence on the part of machines; or a further alienation of the instrument of work, in terms of both ownership and ability to dominate them;
- Increasingly centralised capitalism with a subordinate peripheral system, or horizontal diffusion of a rich and diversified form of capitalism with growing labour participation and, at the outside, direct management by workers; and
- Possibility of increasingly intense interaction between individuals and groups; or a dramatic deterioration in interpersonal relations.

Self Check Exercise

9) What is the total impact of information/knowledge on the society, looking at its impact from a future perspective?

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

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9.8 SUMMARY

Information and knowledge are considered social wealth that should benefit all the sections of a society. Information Technology has enabled the wealth of information and knowledge to become much more easily accessible and available to all. In discussing these, the following aspects of the impact of information and knowledge on societal activities with reference to IT have been discussed in this Unit.

Of the three epoch-making revolutions in human society, the post-industrial society (information/knowledge society) seems to have been very significantly affected by information and knowledge. The rapidity with which changes are taking place figuratively minutes as compared to the time taken for changes in the agrarian or in the industrial society.

The agent of change is primarily IT. But it is only a means to change; the real change has to be in the sphere of socio-economic development.

Changes are very significant and far-reaching in many of the sectors such as Education, R & D, Media, Government, Business and Industry, in the life of a citizen of a country and many othern activities.

The impact of IT on library and information systems and services and information industry will introduce totally new dimensions in every aspect of their functioning.

Very far-reaching and significant effects can be visualized in the way IT affords new capabilities to manage and serve information and knowledge.

Indian Society is also changing fast but the changes are not with every section of the society. The poor see no changes in their life.

The rich and middle class is becoming a consumer society. To bring in better conditions to all sections of the Indian society, a strategy towards 'Sustainable development' is necessary.

Most importantly the power may change with the emergence of a new power elite.

Centralisation of information may lead to control of many kinds. The gap between information rich and information poor will widen.

While all these effects are possible social hazards, IT will surely provide far more facilities to access information and knowledge as never before at every level of use.

9.9 ANSWERS TO SELF CHECK EXERCISES

1) Information and knowledge are generated by individuals and groups in the social environments in which they live. These get disseminated and grow with peer review and criticism to get validated and to ensure quality. These get cumulated to make a reservoir of knowledge. They are available to any member of any society through internet facilities. As the benefits of the application of knowledge to create wealth to the entire community. Thus we can construe that information and knowledge are social wealth

2) The attributes of the post-industrial society are:

   - The centrality of theoretical knowledge as the source of innovation and polity formulation;
   - Distinct change from a commodity producing to a service economy; and
   - The pre-eminence of a managerial, professional, technocratic class and knowledge workers.

3) IT functions as a powerful means to store large volume of information, store it for instant retrieval, provide ample multiple outputs, transmit information irrespective of geographical distances, etc. But the quality of contents has to be ensured by those who input them. While IT provides very powerful machinery to access information with speed and effectiveness, it cannot do anything in the use of the information. The real potential lies in the man-machine interaction with intelligent

terminals that provide great help in testing alternatives and provide adequate facility for decision support. But the means are also invaluable to the humans in order to make use of information.

4) While information is now accessible globally and available without any restrictions, irrespective of their location, Drucker asserts that it is knowledge which is the real change agent and not information. IT, he says, has centered on Data – their collection, storage and transmission, presentation, etc., focusing on the "T" in IT. The focus should be on "I" which should be "Knowledge", information being the raw material to create knowledge which Drucker says is in the minds of persons.

5) E-education, the Integrated Internet Educational System, delivers the required courses to students literally at their doorstep, using various multimedia and virtual reality. The local teachers have to act as mere facilitators. Course materials, prepared by experts in the respective disciplines and fields are available to students through Internet e-mail, chat sessions, video conferences and video-phones. The student-teacher interactions enable proper guidance to achieve desired success. There are universities adopting distance-education systems, providing students course materials, consultation facilities, and even get the formalities of examinations. Virtual libraries provide at higher levels access to global knowledge almost instantaneously through innumerable internet servers.

6) Media with the wide ICT applications is introducing a new culture and life in society both in the developed and developing societies. All the features of print media available through Internet and provides access to a variety of information and news. E-entertainment, e-games and e-sports give add to TV shows and other types of shows.

   Advertisements (ads) of products and services seen through TV. Cinema and heard in broadcasting have profound influence on people, more particularly children. While advertisements increase sales and marketing, and welcomed by the business community, some of ill effects on youngsters and children are viewed with concern.

   In his daily life, an ordinary citizen requires a variety of information on various aspects. No other medium can provide a updated guide to this type of information. Now Internet has successfully filled this gap.

7) The different segments of information industry and business are:

   Information Content Business

   – Content Services (News, Libraries, Databases, Information Brokers).
   – Content Packages (Books, Journals, Newspapers, Films, DVDs, etc.).
   – Facilitation Services (Data processing, Time sharing, Networks).

   Information Technology Business

   – Information Technologies (Computers, Terminals, Office Equipment, Printing, Graphics).
   – Integrating Technologies (Packet Switching, Modems, Switch Boards and Digital Switching).

- Communication Technologies (Radio, TV, Telephones and Transmission Systems).
- Communication Channels (Mail, Telephone, Satellites).
- Broadcast Channels (Radio and TV networks, Multipoint Distribution Services.

8) Structural changes in Indian economy has transformed India from a highly regulated and inward looking to an outward looking economy in which the state domination in most spheres of activity is giving way to private enterprise and contribution. Combined with this economic policy, IT promises to afford a new opportunity for India to effect a socio-economic transformation. It is seen in ICT being used in most activities. Economic benefits, however, have come to only a section of the Indian people. While the poorer section(constituting one-third of our population) of our society continues to struggle to sustain themselves with minimal needs, the upper class and middle class are moving towards a consumer society, acquiring all durable and non-durable goods. Only sustainable development could bring some equity in the manner of wealth distribution in the Indian society. The country is, however, acquiring the necessary economic strength and bring about a social transformation towards better conditions for all its people, using fully ICT.

9) Information and knowledge which will grow phenomenally would be the principal generators of wealth. This change in the resource structure will effect a change in the power structure. An ever increasing gap will grow between 'information rich' and 'information poor' globally and also within nations. The actual decentralisation of production and decision-making may provide the basis for a rich, articulate and participatory social system or effect a physical decentralisation, combined with centralised decision-making and organisation, giving rise to an increasingly rigid and monolithic society. Possibility of increasingly intense interaction between individuals and groups; or a dramatic deterioration in interpersonal relations is visualised.

9.10 KEYWORDS

Agrarian Society : A society in which the work-force is predominantly from the agricultural class.

Industrial Societry : A society in which the work-force is predominantly from the manufacturing class.

Information Industry : A market place marked by the convergence of information content with hardware, software and communication technologies to provide products and services which enhance the capacity of people to solve problems.

Information Technology : The acquisition, processing, storage, dissemination and use of vocal, pictorial,

textual and numerical information by microelectronics-based combination of computing and communication.

Post-Industrial Society : A society in which the work-force is predominantly from the service class.

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