

Also, several critics contend that Porat's classification of information workers needs to be narrower to be meaningful and does little to suggest the social implications of the shift to an Information Society (Bates, 1985). Bates, for example, has noted that according to Porat, factory workers assembling information transmission equipment are considered information workers, just as are university researchers. This does not appear to be logical.

He felt that such a categorisation may weaken the social distinctiveness of the information sector. Other types of objections and criticisms exist in Porat's analysis. However, such objections may not entirely invalidate Porat's findings and are not intended to do that.

Marc Porat has been able to distinguish two information sectors, primary and secondary, then consolidate them and separate the non-informational elements of the economy. By re-aggregating national economic statistics, Porat can conclude that the information sector accounts for 46% of the US GNP. "The United States is now an Information based economy". As such, it is an "Information Society (where) the major arenas of economic activity are information goods and service producers, and the public and private (secondary information sector) bureaucracies".

Occupational Perception

Another popular measure of the emergence of an information society is the one that focuses on occupational change. The contention is that we have achieved an information society where the predominant occupations are found in information. In the Information Society, the number of people employed in occupations such as teaching, research, and development and in activities associated with creative industries (media, design, arts) outnumbers those employed in factories. The main characteristic of these people is the high level of education. The occupational definition of information society is often combined with an economic measure. Porat calculated that by the late 1960s, a little under half of the US labour force was to be found in the information sector. Porat connects the growth in economic significance of information with changing occupational patterns. Most identifiers of an Information Society draw on occupational changes as indicators of the approach of a new age, which reflects the introduction of new technologies. In other words, the shift in the distribution of occupations is at the heart of the theory of the Information Society.

Spatial Perception

This perception of the Information Society has a distinctive stress on space. Here, the major emphasis is on the Information Networks that connect locations and, as a result, greatly affect the organisation of time and space. This aspect has been considered an index of the Information Society in recent years. The centrality of information networks linking locations within and between towns, regions, nations, continents, and the entire world is an important consideration from a spatial perspective. In many writings, the technological bases of information networks are emphasised because these networks provide the infrastructure that enables information to be processed and distributed. These developments may lead to an emerging networked

society. The salient idea here is of information circulating along electronic “highways”. However, no one has quantified how much information must flow along these routes and at what rate to constitute an Information Society. Though no one can deny that information networks are an important feature of modern societies and facilitate instantaneous communications around the globe; databases can be accessed from any place to any place, so some people would ask, “Why should the presence of networks lead analysts to categorise societies as information economies?”. It may be stated that the question of what constitutes a network is serious and raises the problem of distinguishing different levels of networking and how we stipulate a point at which we have entered a Network/Information Society.

Cultural Perception

Developments such as the invention of radio, television, and computers, coupled with the recent advances in telecommunication networks and media technologies, are having a great impact on the lifestyles of people. It is stated that we live in a media-laden society, and the informational features of our world are more thoroughly penetrative now than in earlier times. The informational environment is much more intimate and more constitutive of us. For example, the informational dimensions of the clothes we wear, the styling of our hair and faces, and how we work make one aware that social intercourse nowadays involves more informational content than before. According to Webster,

“contemporary culture is manifested by more heavily information laden than any of its predecessors. We exist in a media-saturated environment that means life is quintessentially about symbolisation, about exchanging and receiving messages about ourselves and others. It is acknowledgement of this explosion of significance many writers conceive of having entered an information society”. But no writer attempted to measure this development in quantitative terms and only describe our living in a sea of signs one fuller than at any other epoch. In other words, “we are surrounded by more and more information and less and less meaning”.

Reviewing the different definitions of the Information Society, it emerges that they are underdeveloped or imprecise. Whether technological, economic, occupational, spatial, or cultural perspectives, we are confronted with highly problematic notions of what constitutes, and how to distinguish, an Information Society. We must be aware of these difficulties. Though, as a heuristic device, the term Information Society might have some value in helping us to explore and analyse the features of the contemporary world, it cannot be accepted by all as a definitive. In other words, though one may acknowledge that information plays a vital role in contemporary society, one has to remain cautious regarding the information society's scenarios and assert that information has become the chief distinguishing feature of modern times.

Check Your Progress: 4

Note: 1) Use the space provided below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. Briefly explain the essence of the “Information Society” concept as reflected in the conceptual analysis of literature.

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2. State the attributes of an Information Society.

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3. What are the economic implications of an Information Society?

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12.8 KNOWLEDGE SOCIETY

Change is the essence of a growing society, and Information and Communication Technologies (ICT) are seen as the facilitators of change. It is a decisively qualitative change in information which marks a break with the past. Information is viewed as a disturber of traditional relationships, alignments, and the future basis of financial, political, and societal power. A new class structure is being created around the wealth of information. Understanding and anticipating the consequences of such a new class structure of society is important both for the First and Third World countries.

From this point of view, the Information Society is regarded as one in which theoretical knowledge takes a preminent position. Theoretical knowledge is an arresting idea that does, prima facie, define a new type of society that hinges on generating and using information/knowledge. If theory is at the point of initiating developments, in contrast to one-time practical demands, then such knowledge could be said to herald a new type of society. However, the major difficulty with this notion is defining with precision what theoretical knowledge means. Theory evokes abstract and generalisable rules, laws, and procedures. Advances in knowledge have resulted in their codification in the form of texts learned and used by the would-be practitioners, and their experiences would be integrated into the body of knowledge. If we state that we now inhabit a knowledge society, knowledge has become constitutive of how we live.

12.8.1 Definition of Knowledge Society

“The transformation of existing societal structures – by knowledge as a core resource for economic growth, employment and as a factor of production, constitutes the criteria for designating advanced modern society as a “Knowledge Society”.

In a “Knowledge Society”, the traditional measures of competitiveness, such as labour costs, resource endowments and infrastructure, are replaced by new dimensions (indicators) such as patents, research, and development (R&D), and availability of (or capability to afford) knowledge workers. In other words, knowledge exists in the people's minds. It becomes a productivity factor when such knowledge is combined with capital, labour, existing (recorded) knowledge and other inputs to produce goods and services.

The people of developed countries are very much conscious of the pivotal role of information/knowledge and exploit this resource for developmental activities. The human brain is a valued resource in such countries. The new trend is the transformation of global economies into knowledge-based economies. It may be mentioned here that transforming global economies to knowledge economies does not guarantee economic growth with “equity” either within or between nations, and a gap will exist between knowledge-rich and knowledge-poor countries. This is because knowledge, despite its public good characteristics, becomes a much-valued resource to be possessed and harnessed for economic benefits. Further, the value accrued to individual users through the availability of information differs for different people as they are not conscious of absorbing the available information.

Suppose we desire to create an equitable knowledge society. In that case, we must strive towards a perfect society where all forms of knowledge are recognised and valued, especially from where they originate, and benefit that society. In other words, it is a dynamic process in which not only the people who access the information and knowledge will be the beneficiaries but also the probable users.

12.8.2 Features of Perfect Knowledge Society

In a perfect knowledge society, all people have:

- open and timely access to information and knowledge
- the capacity to absorb and interpret information
- Avenues and opportunities to use knowledge for informed decision-making and transformation to a higher quality of life.

12.8.3 Developing Countries

As part of economic history, the knowledge era has unfolded remarkably. Consequently, most basic tools for creating and managing wealth have lagged far behind the need. This is true of most of the developing countries. Knowledge has become the cornerstone of wealth creation in a knowledge society. Intellectual capital comprises three primary types of capital: human, structural, and customer. Of these, human capital is the most important.

Developing countries need to recognise and value their human resources capital and capitalise on it to amass a wealth of knowledge that works for the poor and promotes social equality. The wealth of knowledge will enable developing countries to emerge as strong economies independent of low-cost labour, increasing productivity and income. Therefore, it is necessary to open avenues for knowledge incubation to be supplemented by capacity-building support and enabling policy frameworks. These policy frameworks are intended to provide opportunities for people to use the power of knowledge to advance their growth.

Check Your Progress: 5

Note: 1) Use the space provided below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. Discuss the important characteristics of “Knowledge Society”.

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2. What steps should the developing nations take to progress towards a knowledge society?

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12.9 LET US SUM UP

In this Unit, an attempt has been made to explain the basic facets of information and its related concepts. The difficulties associated with defining the term precisely have been discussed. Concepts like the Information Generation Process and Information Transfer Chain have been briefly described and explained. The significance of information and its impact on society have been discussed to help you understand the importance of information and its use in modern society.

The concept of Information Society and its different ramifications, including the main factors responsible for its formation, have been analysed and briefly explained to you. The technological, economic, occupational, spatial, and cultural aspects influencing the formation of the Information Society have been described. The meaning of what constitutes a Knowledge Society and the centrality of theoretical knowledge in such a society has been briefly introduced to you. The concept of a Knowledge-based economy and how developing countries must strive to recognise and value ‘human resources capital’ to transform into knowledge economies has also been briefly discussed.

By studying the contents of this Unit, you will be able to understand the vital role of information/knowledge wealth in modern society in enhancing the nation's economy.

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12.11 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. Information is a popular and most used word in the English language. Many writers have attempted to define the concept, so the term has many definitions in the literature. However, there is not one agreed-upon definition that is acceptable to all. Each definition gives the concept its contextual meaning depending upon the author's subject specialisation and the use to which it is put.

Information is made up of symbolic and descriptive elements that communicate knowledge. It refers to the substance or contents of documents and their physical existence; the term is also used to designate both the message (substance and form) and its communication. A distinction is generally made between raw information (namely facts, concepts, and representation) and the documents in which it is recorded.

Though the two terms data and information are commonly used interchangeably, one for the other, there is a difference between the two. For example, data are discrete and unorganised pieces of information. Data becomes information when these pieces are processed, interpreted, and presented in an organised or logical form for better understanding and analysis, leading to valid inferences.

Knowledge is an organised body of information that can be used as the basis of further knowledge. Information which removes uncertainty and brings about change in concepts is considered to be knowledge. The other related terms for information are facts, intelligence, and wisdom.

Check Your Progress: 2

1. Generation of Information: Information results from different human activities and events. Activities are undertaken by individuals and organisations with definite objectives. On the other hand, events are things that occur, happen, or take place.

All intellectual activities pursued and systematically completed give rise to useful information. R&D activity is such an activity. Research and

development organisations in science, technology, social sciences, and humanities have been established to conduct research. Research in any subject is a creative activity and contributes to the growth of existing knowledge to benefit society. Research is a highly organised activity worldwide that continuously creates large quantities of information. Academic institutions such as universities and colleges also undertake research as part of their educational programmes and contribute to the growth of information and knowledge.

Government activities and organisations that collect statistical information are also involved in generating and producing information. The entire activity relating to the production of information is known as the generation of information. In other words, the generation of information means the creation of information. This is accomplished both by individuals and organisations. The table given below indicates some of the organisations which generate information.

Sl. No.	Organisations Institutions
i)	The Meteorology department
ii)	Reserve Bank India
iii)	Research Organisation Like the National Chemical Laboratory

Check Your Progress: 3

1. In the definition of the words "Information" and "knowledge" is hidden or implicit, the concept that an item of knowledge becomes an item of information when it is “*set in motion*” when information enters the active process of being communicated or transferred from one or more persons, groups, or organisations (sender) to one or more other persons, groups, or organisations (receiver). Many argue that knowledge or information has no *intrinsic value*. Its value will be realised when it is successfully transferred or communicated.

Information transfer refers to sending information from a source (sender) to the receiver. In other words, it goes from the generator to the user. This can be done with the help of different channels or paths. The different points through which information passes before it reaches the end user are known as links. When interconnected, they form a chain known as the information transfer chain or information transfer model. Figure 2.2 on page no. 35 depicts the process of information transfer from the generator to the user through different links which form a chain.

Check Your Progress: 4

1. Everybody needs information for some purpose or the other. Researchers (or scientists) need information for three purposes;
 - i) to keep up with new developments taking place in their areas of interest and specialisation;
 - ii) to get acquainted with the state- of- the art of the subject;

- iii) to collect specific data and information needed at different stages of their work.

Keeping up with current developments is one of the key factors for success in the career of a research worker. This activity not only updates his/her knowledge but also stimulates his/her thought process and often suggests new ideas and methods of experiments.

Before a researcher decides on a new project, he/she needs to undertake a thorough literature search, i.e., he/she must examine the various documents containing information on the topic. He/she does this to get acquainted with the state of the area's knowledge and identify gaps and shortcomings, thus assessing further scope of work in that area. Information will also help him/her to avoid duplication in research. Thus, a research worker always requires information, though the nature of the information required may change occasionally.

- 2. Several scholars, scientists, and philosophers have predicted a revolutionary transformation of modern industrial society. Many causes have been identified and attributed as the driving force behind such a transformation. However, most people opine that "information" is the defining feature of the modern world. We are told that we have entered an information age and are rapidly moving towards a "global information economy". Many writers identify an entirely new phenomenon called Information Societies – the examples of which are found in the United States, Britain, Japan, and Germany.

The "Information Society" concept envisions the transition of an Industrialised Society into one in which information—in its broadest and most diverse forms—is the key driving force.

Two major factors underlying the Information Society's claims. First, society is becoming increasingly centred on information handling, processing, storage, and dissemination using microelectronics-based technologies made available through the convergence of computers with telecommunications, namely ICT. Second, this shift is reflected in an emerging occupational structure in which the "information workers" category has become predominant. In other words, the Information Society appears to be an outcome of technological and economic changes.

Attributes of an Information Society are:

- i) Shift from an industrial economy to an information economy. That is to say that in an industrial economy, capital is the strategic resource, while in an Information Economy, information becomes the strategic resource;
- ii) a telecommunication-based information service infrastructure;
- iii) a high degree of computerisation, large volumes of electronic data transmission and employment of IT;
- iv) characterised by the fact that the rapid and convenient delivery of needed information is the ordinary state of affairs.

3. Economic Implications of Information Society:

Different dimensions might characterise Information Society. One of these relates to the economic structure. We come across several references in literature to the economic implications of the Information Society.

The state of information in the economy generally has pervasive effects on its functioning. It greatly impacts sectors that provide information products and services, such as the press, television, radio, film libraries, and other information providers.

Machlup initiated studies analysing the growth of the "knowledge Sector" in the US economy. The knowledge industry includes the educational system, media, communication, libraries, information, and research institutions. Machlup found that this sector's contribution to the Gross National Product (GNP) was 40% in the early 1960s and is growing at a rate higher than that of the industrial sector.

Marc Porat, who continued the research in this direction, enlarged the scope of information work to include all the jobs falling within the information or knowledge sector as defined by Machlup. According to Porat, information activities include all resources consumed in producing, processing, and distributing information goods and services. Porat estimated that these activities amounted to 45 % of the GNP in 1967.

In conclusion, the contribution of the information sector to successful economic function is beyond doubt. However, this is not the same as saying that information has become a primary output of all developed economies. We may say that we are moving towards information Economies. However, we are not wholly dependent on producing, selling, and exporting information goods and services to preserve our economic well-being.

Check Your Progress: 5

1. Characteristics of Knowledge Society

One of the most popular themes discussed in general literature for more than a decade has been that technologically advanced economies are moving beyond industrial capitalism to information that will bring profound changes in the form and structure of the economic system.

Economists long ago recognised that the most important resource determining the economic efficiency of any economy, industry, productive process, or household is *information and its effective communication*. Information's characteristics define the state of knowledge that underlies all economic processes and decision-making structures.

The transformation of societal structures – by knowledge as a core resource for economic growth and employment and as a factor of production- constitutes the main criteria for designating a modern society

as a “Knowledge Society”. In a knowledge society, the traditional measures of competitiveness, such as labour costs, resource endowments, and infrastructure, get superseded by new dimensions such as patents, research and development, and availability of knowledge workers. In a perfect knowledge society, all people have:

- open and timely access to information and knowledge;
- the capacity to absorb and interpret information;
- avenues and opportunities to use knowledge for informed decision-making and transformation to higher quality lives.

2. Knowledge exists in people's minds, and when combined with capital, labour, existing knowledge, and other inputs, it produces goods and services and thus becomes a factor of productivity. Many developed nations have realised this fact and have transformed into knowledge-based economies where conventional raw materials and physical labour (Brute-force economy) are being replaced by a brain-force economy. Developing nations need to recognise and value their human resources capital and capitalise on it to amass a wealth of knowledge that works for the poor and promotes social equality. The wealth of knowledge, in turn, will create opportunities for developing countries to emerge from dependence on low-cost labour as a source of comparative advantage, increasing productivity and incomes. Avenues need to be created for knowledge incubation (growth) to be supplemented by capacity-building support and enabling policy frameworks that provide opportunities for people to use the power of knowledge to improve their growth.

UNIT 13 KNOWLEDGE SOCIETY: DEVELOPING COUNTRIES PERSPECTIVE

Structure

- 13.0 Introduction
- 13.1 Learning Outcomes
- 13.2 Information Society and Knowledge Society
 - 13.2.1 Information Economy and Wealth of Nations
 - 13.2.2 Digitally Empowered society and knowledge economy
- 13.3 Characteristics of Change: Some Indicators
 - 13.3.1 Production to Demand-based Economy
 - 13.3.2 Mass Society and De-massification
 - 13.3.3 Technology, Innovation and Workforce Changes
- 13.4 Information Access: International and National Aspects
 - 13.4.1 International Flow of Information
 - 13.4.2 ICT and Development
- 13.5 Digital Divide
 - 13.5.1 Data security
- 13.6 Economics and Policy Issues
- 13.7 Let Us Sum Up
- 13.8 Keywords
- 13.9 Further Readings
- 13.10 Check Your Progress: Possible Answers

13.0 INTRODUCTION

Human beings have changed the course of nature in the name of development for many centuries. Our earth has been exploited and contaminated by the end products of industrialisation and globalisation. These two concepts were proudly celebrated and highlighted by every human for being able to live an enhanced and developed life. All these developments became possible when humans used their knowledge, which played a crucial role in evolving us and enabling the development of our lifestyle. Knowledge differentiated us from our cousins – the apes- and aided in creativity, logic, and critical thinking when deciding right and wrong. There is a big debate on defining knowledge by various philosophers over thousands of years, but the essentials of knowledge reveal its nature. Knowledge is something we know already or the complex ideas we try to learn. Plato defined knowledge as attainable, which is the truth; Socrates says it is the awareness of one's ignorance, which possibly be the truth, and Aristotle believed knowledge must be objectively true and necessary. Knowledge serves as a foundation for effective communication between human beings. The ability to communicate verbally was one of the major reasons for the evolution and development of humans.

Human communication uses a combination of verbal and non-verbal cues, alphabets, codes, and various symbols. For the past two centuries, electronic communication helped us to communicate faster, and it evolved to the recent technology of the Internet and social media.

13.1 LEARNING OUTCOMES

After completing this Unit, you should be able to;

- Understand the relationship between the Information Society and the Knowledge Society
- Know the types of economy and access to knowledge.
- Understand Agrarian, Industrial, Information/Knowledge, and Internet economies.
- Understand international and national aspects of knowledge access.
- Assess information needs for national development, especially in developing countries.
- Assess the cost of information support in developing countries.
- Understand international cooperation in information.
- Analyse technology transfer communication cost and its impact on developing economies.
- Understand information support for development planning, including rural planning.
- Understand the digital divide and its attempts to bridge it.

13.2 INFORMATION SOCIETY AND KNOWLEDGE SOCIETY

13.2.1 Information Economy and Wealth of Nations

'Information is power' is an adage. There are several historical examples when an information-rich society, advanced in technology and industrial development, with the capacity to produce an abundance of material wealth, had become predatory and arrogated to itself the control of and dominance over other societies, eventually turned self-destructive. Therefore, in recent years, the issue of 'Which is it knowledge or information?' has arisen from the point of contribution to real sustained societal benefits. Hence, the associated terms Knowledge Society and Information Society are also used.

The scope of the terms 'Information Economy' and 'Economics of Information' indicate that they are related and not mutually exclusive. However, in their scope, they can be differentiated. The former concept relates to the macro-level (cf. agrarian economy and industrial economy) to a country as a whole; the latter, on the other hand, is more applicable to the micro-level, dealing with, for example, the efficiency or input/output ratio of a specific information service, such as selective dissemination of information, online access, etc. The relationship between the wealth of nations and the information economy impacts various factors such as globalisation, Human

capital development and overall infrastructure that fosters growth and wealth.

British economist Adam Smith wrote that a nation may lose its physical material wealth. Still, if it could save and retain the knowledge by which such material wealth was produced, it would be possible to create it again. Still, if the knowledge produced by material wealth were lost or destroyed, everything would be lost. The growth of a knowledge-based society will bring about fundamental changes in the production, distribution, and exchange of information, and almost every social and cultural institution will change in some way.

The 20th century is called the Information Age, which experienced a rapid shift from traditional methods of communication to electronic and Digital methods. The invention of the Internet is seen as one of the greatest of all, as it allows us to communicate faster and more efficiently. Internet technology has contributed to the knowledge society through enhanced applications such as Web 2.0, enabling unbound possibilities of creating and sharing, unrestricted time, and physical constraints in accessing information.

13.2.2 Digitally Empowered Society and Knowledge Economy

In today's techno-centric world, Digital literacy and competency are essential to accessing information and the knowledge economy. However, digital tools are not yet fully accessible to millions of people. Digital literacy consumes digital communication tools, applications, and networks to access information in a knowledge society. The Internet has transformed from a medium of information dissemination to a platform of content creation, reproduction and sharing, enabling users to create, reproduce and gain information. Globalisation and other technological developments have paved the way for digital information flow, but knowledge may have yet to reach many people. Without Knowledge dispersal to the right receivers, the digital divide is the greatest challenge in underdeveloped and developing countries. Many researchers have argued across disciplines that knowledge plays a major role in sustainable development.

UNESCO aimed to foster knowledge societies by providing access to information with the help of technologies for economic development and intercultural dialogue. Countries like Estonia, Singapore, and South Korea have implemented a comprehensive e-governance system enabling citizens to include digital signatures in documents, and smart cities have high-speed internet facilities. In 2015, the Indian government initiated the Digital India programme to transform our nation into a digitally empowered society and knowledge economy. The program focused on digital infrastructure, digital literacy, and digitalised payments to utilise the power of digital technologies for the nation's development. However, there are challenges in this programme, such as the digital divide, data theft and privacy issues.

Check Your Progress: 1

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1) Discuss the role of knowledge in human evolution.

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2) Explain the role of Digital empowerment in development.

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13.3 CHARACTERISTICS OF CHANGE: SOME INDICATORS

13.3.1 Production to Demand-based Economy

For centuries, human beings have depended on nature to provide for most of their needs, so the production level determines the level of consumption. Applying knowledge, especially scientific, technical, and managerial, to development has changed that scenario.

One characteristic of the change is the increasing proportion of returns to a given effort and investment (a value-added return) and a subtle shift in the axis of economics from a supply base to a demand base. A demand-based economy now experiences a shift from a production-based economy to a demand-driven approach that focuses on consumers' preferences and needs. Understanding consumer behaviours is essential for strategic decision-making in the business environment. The dependent nature of humans has changed over time, with knowledge application shifting from supply-based to demand-based, which has enabled the mass production of demands from society. Knowledge-based economy indicators reduce environmental deterioration by transforming demand culture with the help of technology. Technology helps people's lives by improving the quality and ease of access to various applications and modernisations and educating society. Education thus enhances productivity and creativity, facilitating knowledge efficiency.

13.3.2 Mass Society and De-massification

Mass Society and De-massification concepts are widely used in cultural studies and sociology to illustrate cultural patterns and social structures. Urbanisation and industrialisation crafted a social condition of homogeneity among people. Problems of modern societies arise from their growing complexity, that is, multiple interactions and interdependence, thanks in large measure to developments in ICTs and transportation. The resolution of the problem calls for formulating appropriate policies, creating political and administrative structures responsive to the new scales of social demands, and developing more comprehensive, secular, and integrated goals that diverse people can share. The characteristics of Mass society include mass

production, consumption, centralisation of power, making the public consume similar products on a mass scale, and generalisation in opinions created by Mass media.

The main characteristic of a second-wave industrial economy is the mass production of large quantities of goods using machines that repeat rapidly predefined actions. The third-wave information economy is characterised by information-intensive, robotised manufacturing systems capable of endless, cheap variations and customised end-products to meet customers' special needs and micro-markets. This enables small, specialised units to compete with larger general production units or obtain contracts from the latter to produce value-added products and services. Smaller units, like those in developing countries, can create niche markets. All these are changing the nature of market competition and mail-ordering systems. It is revolutionising and de-massifying production and distribution systems. De-Massification involves customising and personalising products and services based on individual/customer needs and preferences. The concept extended its arms when the Internet and digital technologies were invented. Decentralised applications and network platforms like social media enable customers to access information and content based on their needs and preferences.

13.3.3 Technology, Innovation and Workforce Changes

In an information economy, the main trade items are information and data, the products of the information industry, hardware and software, and related knowledge and expertise. More enterprises can access data and information about their competitors and customers. Customers can access and receive information about competing firms and their products and services. Loyalty, trust, and open communications will reshape the nature of customer and supplier contracts; suppliers will draw directly on information held in databases by their customers, working closely and seamlessly as an in-house supplier now does. Electronic mail and billing systems will reduce the cost of transactions.

With a global reach for communicating electronically, distance will not be a determinant of markets and costs. Enterprises organise certain types of work in shifts according to the time zones – Australia and East Asia, Europe, and America, such that work on a project or a product can go on almost round the clock in different countries. Add to this the profit from wage differential, for example, in developing countries with abundant skill and expertise. Thanks to the networks, clients can receive customised products and value-added services when and where they want. Gartner Glossary highlighted the impact of digital technologies in the Industrial Revolution and mentioned it as the fourth Industrial Revolution leading to the rise of small industrial businesses. Gartner Glossary defined digitalisation as using digital technologies to transform business models and generate revenue.

With affordable digital devices and reduced Internet costs, India is experiencing a digital revolution. According to the MSME (Ministry of Micro, Small and Medium Enterprises) report for 2021-2022, our country has 30 million small and medium enterprises (SMEs). The SME sector is growing at 8% per year, and by 2026, 12 million people will be involved in

small-scale enterprises. The Digital India programme facilitated a growth in digital payments through UPI (Unified Payment Interface).

The workforce challenges are poor infrastructure and insufficient training in accessing digital technologies. 2016 The IFC (International Finance Corporation) reported a massive finance demand gap in SME sectors. It also recommends reforming our educational system to provide skill development and upskilling programmes to meet current industry needs. One of the most important challenges is data security. Due to poor infrastructure and inadequate financial support, digital technologies are prone to cyber-attacks.

Check Your Progress: 2

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1. Discuss the status of Digital India towards development.

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13.4 INFORMATION ACCESS: INTERNATIONAL AND NATIONAL ASPECTS

13.4.1 International Flow of Information

Knowledge is embodied in people, in things natural and man-made, and documents and other media. Scientific, technical, and managerial knowledge is a key input to socio-economic development. Therefore, knowledgeable persons, intellectuals, and scholars are a nation's most valuable resources and assets. Investments for developing this resource, the best basis for sustainable long-term national development, should receive top priority in any national development plan. Developing countries majorly rely on technical knowledge for their economic development, but the information systems in their information systems lack the technological advancements to access and analyse information. These developing countries benefit from the information accessed from developed countries, better understanding their countries' resources. Information flows across cultures, nations ignoring traditional borders and leading to a change through the major forms of

- Digital technologies
- Media and other entertainment tools
- News channels
- Participatory journalism applications

13.4.2 ICT and Development

Information and Communication Technology (ICT) uses computing and telecommunication technologies to facilitate information creation, collection,

transmission, and storage. These technologies include computing, wired, and wireless technologies to support various communication technologies. ICT has enhanced the pace of learning and knowledge creation, boosted productivity, and accelerated the economy.

The role of ICT in development is fundamental as it transforms society and leads to growth. The Asian Development Bank (ADB) emphasises that ICT for development is not just digitalisation or technological improvement but is about educating the communities for inclusive growth, innovation, and improved well-being.

Check Your Progress: 3

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1. How do ICT tools transform society?

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13.5 DIGITAL DIVIDE

In the 20th century, the term Digital Divide was coined to define the divide between individuals who own a telephone and who do not. After the invention of the Internet, the same term was used to describe individuals with and without digital and Internet access. The digital divide in underdeveloped and developing countries is characterised by unequal access to the Internet and bandwidth inequality. In 2023, more than 692 million internet users were in India, of which 67 per cent are from urban and 31 per cent from the rural population. According to the Centre for Monitoring Indian Economy (CMIE) report, Indian women are 33 % less likely to access the Internet than men.

The harsh reality of the enormous digital divide hit us hard during the pandemic; a significant issue in various sectors, such as education, healthcare, and the economy, was evident despite continuous efforts under the Digital India programme. Disparities in accessing online education, limited resources for e-learning, and a lack of digitised library resources have made the pandemic a difficult situation for students. This divide is often caused by poverty, lack of infrastructure, and cultural expectations. Women and girls in our country and worldwide can harness ICT's potential to improve their lives and communities and participate in policy decisions.

13.5.1 Data Security

The process involves protecting digitised information in any digital device, including hardware, software, and storage devices, against cyber-attacks, insider threats, data thefts, etc. Data security is essential in international and national organisations to protect data from theft, breaches, and financial and reputational loss. Governments of a few countries have implemented

ensorship and information filters. Changes in work culture, such as telecommuting, working for multiple organisations simultaneously, and forming virtual teams and online meetings, had become inevitable post-pandemic. These changes offer advantages to the family and individual but also disadvantages depending on socio-economic and technological development, the nature of work, and existing work culture and habits. IT developments are happening at a pace that leaves little time for national authorities, managers, and decision-makers to understand and evaluate their impact on the country's social, political, economic, and cultural fabric. Privacy and confidentiality of information; freedom of access to and publication of information; sovereignty and conflicts vis à vis nation-states; intellectual property and business law-related matters; trade-in information services across national borders; and activities of transnational corporations in technology transfer and information services. To determine the extent of economic and political vulnerability caused by a country's heavy reliance on external information, information services, and technologies and to reduce such dependence if necessary.

Check Your Progress: 4

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1. Discuss the consequences of the Digital Divide.

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13.6 ECONOMICS AND POLICY ISSUES

Economics and policy issues play an important role in the development of any society. Information is not merely an input resource for effective socio-economic development planning; ensuring the optimal allocation and utilisation of all other resources is essential. Despite this vital characteristic of information about development planning, very few national development plans of developing countries have an information chapter, not even a separate budget line. Even within sectoral plans, one may not find a separate budget line for information. However, it is often reiterated that information is a national resource, and that national information policy and plan should be coordinated with or be derived from national development policy and programme. National development planning should recognise the information sector, like other economic sectors like agriculture, industry, science and technology, education, and culture. This will integrate information infrastructure development plans, understand the mutual influences between information and other sectors, provide data for the information economy, and formulate guidelines for apportioning national resources among information sector elements and other sectors. The level of information handling capability is a socio-economic indicator. Criteria for allocating resources for

producing, processing, distributing, and accessing transient information, such as commercial or stock market information, should be developed. Priority among information demands should be based on a country's socio-economic and cultural contexts and developmental stages. Economists can help develop a suitable classification of information processes once the concept of an information sector is accepted. Many considerations support policymaking towards development; they are:

- Achieving and maintaining a stable economy through structural reforms
- Reducing poverty through sustained economic growth and education
- Investing in Infrastructure development and innovation
- Increasing sustainable small and medium-scale business environment
- Upskilling programmes to be included in school-level education.
- Creating fair labour market opportunities
- RTE (Right to Education) and RTI (Right to Information) ensure a more transparent governing system and inclusive development by decreasing the disparities.

The right to information is a fundamental human right that influences information system design, networking, outsourcing, virtual team formation, and joint research. However, information processes operate imperfectly, and access to information does not equal all classes. The capacity for effective use of information differs significantly among individuals, classes, and nations. The use of information also depends on the environment, such as R&D, higher education, industrialisation, and commerce. The appropriateness of information accessed also influences the use of information. Efficient and effective use of information in a country also depends on the level of infrastructure development, which may vary within and among countries.

Check Your Progress: 5

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1. Discuss the considerations that support policymaking towards development.

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13.7 LET US SUM UP

Knowledge has played a crucial role in human evolution, fostering creativity, logic, and decision-making. The evolution of communication from verbal to electronic interactions has revolutionised societal interactions. Information Economy and the Economics of Information are related but differ in scope.

The Internet has facilitated a shift towards a knowledge society, impacting factors like globalisation, human capital development, and infrastructure. Initiatives like UNESCO's aim to foster knowledge societies and Digital India highlight the role of digital empowerment in development. Changes include shifting from a production-based to a demand-based economy, with mass society focusing on customisation and personalisation. Digital technologies, media, news channels, and participatory journalism facilitate information access at the international level. However, the digital divide persists, posing access to digital tools and knowledge challenges. The consequences of the digital divide include disparities in education, healthcare, and the economy. Data security is essential to protect against cyber threats, and economic and policy issues focus on stability, poverty reduction, infrastructure investment, and fair labour market opportunities.

13.8 KEYWORDS

Idea: The product of thinking, reflecting, imagining, etc., got by the intellect by integrating with the aid of logic, a selection from the apperception mass, and/or what is directly apprehended by intuition and deposited in the memory (Ranganathan, 1967). Alternative term: Concept.

Knowledge is the totality of ideas conserved by humans. In this sense, Knowledge is equivalent to the connotation of the term 'Universe of Ideas' (Ranganathan, 1967).

Information: Information is "organised data which are (or rather can be) communicated" (Porat, 1977). Knowledge is information that has been assimilated, "appropriated", or has been meaningfully aggregated into a reservoir of facts and concepts that can be applied. WordNet defines 'Information' as a collection of facts from which conclusions may be drawn and knowledge acquired through study experience or instruction. Ranganathan defines information as an idea communicated by others or obtained by personal study and investigation. He adds, 'Knowledge and information are sometimes treated as synonyms. (Ranganathan, 1967).

Communication: 'To communicate' is derived from 'to commune', which means to share. Information is the message carried through the communication medium (human or machine) by a communicative action. The communication process helps move, transfer, and circulate information from the point of its generation, recording, or location to the point of its potential use.

Development: Development is the bridge between the hopes and aspirations of a people on the one hand and the realities of the world on the other. In this context, information and knowledge are the pillars of that bridge. Sustaining development is not a question of information or knowledge; both are required. "Development, even economic development is a knowledge-based process." (Boulding, 1966)

Energy Axis: The investments in and undertakings for identifying energy sources, energy generation, storage, processing, transfer, use, and conservation (and the related economics and geopolitics).

Information: Communication Axis The investments in and undertakings for the generation, recording, storage, processing, accessing, communication, and use of information (and the related economics and geopolitics).

Poverty Index: The index measures the percentage of households in a country deprived in three dimensions: monetary poverty, education, and basic infrastructure services, providing a comprehensive picture of poverty.

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13.10 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. Discuss the role of knowledge in human evolution.

Knowledge significantly influences human evolution, shaping both biologically and culturally. Early humans demonstrated cognitive abilities through tool use and innovation, leading to the development of sophisticated tools. Cultural transmission of knowledge about tool-making and use facilitated efficient sharing and transfer, fostering social cohesion. Knowledge within communities, such as hunting techniques and medicinal plant use, contributed to group survival. Environmental knowledge enabled adaptation to ecosystems, while technology and innovation led to advancements in tools and agriculture.

2. Explain the role of Digital empowerment in development.

Digital empowerment is crucial for societal development, contributing to economic, social, and cultural progress. It involves using digital technologies to enhance individuals' capabilities and engage in the digital landscape. Access to digital tools is essential, but challenges persist in ensuring full accessibility. Digital literacy is essential in a knowledge society. Initiatives like UNESCO and national programs like Digital India emphasise the importance of digital empowerment. Still, challenges like the digital divide, data theft, and privacy need to be addressed for inclusive development.

Check Your Progress: 2

1. Discuss the status of Digital India in terms of development.

The Digital India initiative launched in 2015, aimed to transform India into a digitally empowered society and knowledge economy. Key achievements include expanding internet access, enhancing digital literacy, promoting e-governance, and digital payments. Other key achievements include cybersecurity, rural connectivity, digitising health records, developing smart cities, and launching the MyGov platform for citizen participation in governance.

Check Your Progress: 3

1. How do ICT tools transform society?

ICT tools have revolutionised society by accelerating learning, boosting productivity, enabling global communication, and transforming work culture. They provide access to vast information, facilitating knowledge creation, collaboration, and streamlining processes. They break down geographical barriers, fostering global partnerships and work continuity. ICT tools also democratise access to information, allowing smaller units to compete with larger ones. Digital India initiatives, like UPI, support SMEs in India. However, challenges like poor infrastructure, insufficient training, and data security persist.

Check Your Progress: 4

1. Discuss the consequences of the Digital Divide.

The digital divide, characterised by unequal access to digital tools and the Internet, significantly impacts education, healthcare, and the economy. It exacerbates existing inequalities, particularly in underserved communities, and has been exacerbated by the pandemic. Economic disparities are also exacerbated, as individuals without adequate digital literacy miss out on opportunities for online employment, digital entrepreneurship, and e-commerce. The digital divide also deepens social and cultural divides, and workforce challenges arise due to limited digital access and skills. Gender disparities are also a concern.

Check Your Progress: 5

1. Discuss the considerations that support policy-making for development.
 - Achieving and maintaining a stable economy through structural reforms
 - Reducing poverty through sustained economic growth and education
 - Investing in Infrastructure development and innovation
 - Increasing sustainable small and medium-scale business environment
 - Upskilling programmes to be included in school-level education.
 - Creating fair labour market opportunities
 - RTE (Right to Education) and RTI (Right to Information) ensure a more transparent governing system and inclusive development by decreasing the disparities.

The right to information is a fundamental human right that influences information system design, networking, outsourcing, virtual team formation, and joint research. However, information processes operate imperfectly, and access to information does not equal all classes. The capacity for effective use of information differs significantly among individuals, classes, and nations. The use of information also depends on the environment, such as R&D, higher education, industrialisation, and commerce. The appropriateness of information accessed also influences the use of information. Efficient and effective use of information in a country also depends on the level of infrastructure development, which may vary within and among countries.

UNIT 14 E-GOVERNANCE POLICY AND FRAMEWORK

Structure

- 14.0 Introduction
- 14.1 Learning Outcomes
- 14.2 Introduction to Information Technology
- 14.3 Principles of Information System Management
- 14.4 Introduction to e-Governance and Digital Transformation, Meaning, Definition, Benefits & Limitations
- 14.5 History of E-Governance
- 14.6 Benefits of E-Governance
- 14.7 Models of E-Governance – Weidner’s Dissemination model, Critical Flow Model, Comparative Analysis Model, Interactive Service Model, Mobilisation and Lobbying Model
- 14.8 E-Governance Projects and Public-Private Partnerships
- 14.9 Digital Divide- Meaning, Definition, Parameters, Types, Causes, Bridging Digital Divide
- 14.10 Opportunities and Challenges of E-Governance
- 14.11 Let Us Sum Up
- 14.12 Key Words
- 14.13 Further Reading
- 14.14 Check Your Progress: Possible Answers

14.0 INTRODUCTION

This unit is concerned with acquainting the learners with some of the pertinent concepts related to e-governance, how it works, and the broad areas under which it functions. The challenges of e-governance considering the different political arrangements and technological borders will be assessed, and the learners can deliver ideas of its functionality. It will also lead to an understanding of Information Technology and Information System Management.

Again, to get a proper overview of the subject matter, we need to understand the different models of e-governance and their theoretical perspectives. Learners will be able to distinguish between projects and public-private partnerships and gain knowledge on the digital divide and the challenges in a changing world.

14.1 LEARNING OUTCOMES

After completing this unit, you should be able to

- Identify the concepts and objectives of studying e-governance;

- Discuss the subject matter, nature and scope of Information technology and E-governance;
- Describe the theoretical concepts of E-governance;
- Discuss the factors and challenges of the digital divide; and
- Connect the challenges and opportunities of e-governance.

14.2 INTRODUCTION TO INFORMATION TECHNOLOGY

The mechanism and software used to generate, accumulate, transfer, manipulate, and exhibit data and information are collectively called information technology, or IT. In a literal sense, IT is vital to the Information Age and relates to all aspects of communications and computing.

History and evolution of information technology

The last ten years of the 20th century were the best and the worst for public service education. The abacus in Babylonia in the fourth century BC is usually discussed when discussing the history of those devices intended to count objects and generate data. However, the Atanasoff-Berry Computer (ABC), the first electrical digital computer in history, 1942 marked the beginning of computing and IT in the United States. Computers did not replace conventional accounting and record-keeping practices until after World War II, despite ABC's reintroduction and the Electronic Numerical Integrator Analyzer and Computer (ENIAC) deployment to help with firing table preparation.

Soon after the transistors replaced vacuum tubes in the 1950s, computer reliability rose, the hardware and software evolved, and their evolutionary paths were slightly different in the past. Electrical engineers created the hardware, and every new generation of computing technology was adapted and used in industry and government. The creation of software applications has a history that parallels various noteworthy management changes in the public sector and marks the beginning of the growth of management reporting. The technology combined began to advance the public sector beyond data processing in the 1960s, initiating a different e-government era.

14.3 PRINCIPLES OF INFORMATION SYSTEM MANAGEMENT

The gradual evolution from Information Technology to Information System Management led to a massive shift in the structure and function of E-Governance. Information System Management refers to any framework of software that facilitates the collection, storage, organisation, and distribution of information. Information management encompasses a series of organisational activities related to acquiring, storing, and distributing information to stakeholders.

14.4 INTRODUCTION TO E-GOVERNANCE AND DIGITAL TRANSFORMATION

Administrative machinery is conducted through information technology or digital intervention called e-governance. The term governance originates from an ancient Greek word, “Kebernon,” meaning steering. Governing in current use means directing, regulating, and manipulating from a position of authority. In 2002, The UN addressed e-Governance and signified five categories for measuring progress towards e-Governance.

1. Emerging online presence: Sites providing reliable information
2. Enhanced Online Presence: Increasing quantity of webpages providing dynamic content
3. Interactive Web presence: Electronic exchanges between users and governments
4. Transactional Web presence: Services like payments (taxes) and purchases (licences)
5. A fully integrated online presence that combines services, information, and exchanges

14.5 HISTORY OF E-GOVERNANCE IN INDIA

The Indian government founded the Department of Electronics in the 1970s, and the National Informatics Centre (NIC) was established in 1977, marking the beginning of the country's transition to electronic governance. Government offices had computers by the 1980s; however, they were just used for drafting. Eventually, this expanded to include internal government applications in various administrative fields, system monitoring, growth, and information and technology to manage data-intensive tasks like tax administration, elections, and censuses. E-Governance can be of different types depending on the type of governmental structure as well as the

a. **Government to Customer (G2C):**

E-Governance is to provide ICT organisation consistently and effectively to inhabitants. This establishes a link between the government and people utilising the technology.

b. **Government To Employees (G2E)**

E-Governance to Employee partnership (G2E) is the online association between online instruments, sources, information, and products that support communication between the government and its companies.

c. **Government To Government (G2G)**

Government-to-government (G2G) is the access to common information and data framework between administration offices, divisions, or associations. It improves access sharing and information retention.

d. **Government To Business (G2B)**

This is primarily determined by how professionally the work with state

bodies of various levels is organised and how well the government bodies build the processes. The government-to-business (G2B) model implies that it is designed to support and develop businesses from the government's side.

14.6 BENEFITS OF GOVERNANCE

E-Governance has several benefits as it has its hindsight. In a country like India, e-governance can have several benefits. Primary among them are automation issues. To put it together, some of the leading points are:

Automation: It leads to the improvisation of clerical functions, which are also error-free to a considerable extent.

Informatisation: E-governance leads to clarity in steady information-flow processes. For example, it can store, access, and archive most information.

Prompt decision-making: Because of the automation of processes and the application of accurate facts, there is fast delivery because of prompt decision-making, communication, and implementation.

Cost efficient: The Governance that emanates from the ICT-moderated process tends to be cheaper, producing the same outputs at a lower total cost.

Quality gains: Governance works better by producing the same outputs at the exact total cost but to a higher quality standard.

Check Your Progress: 1

Note: 1) Use the space provided below for your answers.

2) Compare your answers with those given at the end of this unit.

1. Write about the history of e-Governance in India.

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2. What are the benefits of e-Governance? Substantiate with examples.

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14.7 MODELS OF E-GOVERNANCE WEIDNER'S DISSEMINATION MODE, CRITICAL FLOW MODEL

a. Weidner's Dissemination model

E-Governance functions differently, considering the outcome's expected nature and the beneficiaries involved. One such model is Weidner's

Dissemination model. This model establishes the conditions of prior preference, particularly in the case of legal or judicial decision-making, and this is primarily used to influence decisions by setting up precedence. Most commonly, this e-governance model assesses the performance of a particular public servant, ministry, or government. By promoting background know-how, this model provides rationality for the future course of action. This model also provides a precursor for future courses of action, picking up from the e-government guiding principles and procedures in the past. ICT unlocks access to local knowledge and global products at a meagre cost. This model provides information on predecessor governments' or electoral candidates' performance by sharing their work records in their constituencies. This model offers room for strong arguments emanating from the analysis.

b. Critical flow model of e-governance

The critical flow model is based on disseminating crucial information to the targeted people through convergent media or ICT. This emphasises the data's relevance and the necessity of using it. This remains functional in both private and public domains. The key idea of this model is to promote transparency to implement good governance. It tries to diminish the element of time and distance and minimise the abuse of power by the government. The model can work in areas like availing policies commissioned by the government to the people, acquiring research studies, and processing inquiry reports. There could be other advantages, such as obtaining records of human rights violations and criminal impeachment against government officials to concerned citizens and non-governmental organisations and facilitating information on the corruption of government officials or ministries to the electoral bodies or any relevant governing council. The model may not work properly in instances where the government bodies do not encourage public contributions and criticise all information of a critical nature or maintain tight control over all information and remain available to only a few top levels of the government.

c. Comparative Analysis model

The Comparative Knowledge Model, becoming increasingly popular, is one of the most used yet fundamental models for emerging nations. By comparing instances of poor governance with those of good administration and then examining the various facets of bad governance and its effects on the populace, the model can be utilised to empower individuals. The concept is predicated on using ICT for information exploration and comparison with existing information sets, whether in the public or private domain. The result is discussions and strategic learning. For example, if a certain sum of money can be used to create "5" schools in village "A," why can the same amount of money only be used to establish "2" schools in village "B"?

d. Interactive Service model

The governance-to-citizen Government model is another name for the interactive-service system of governance. This paradigm, which allows

for direct public participation in the digital governing process, is an amalgam of several e-government models. This concept uses ICT to integrate everyone into a knowledge network, providing interactive communication media. G2C2G entirely takes advantage of ICT's potential to use it for increased efficiency and transparency, participation in government operations, and cost and time savings in the decision-making process. Through this concept, citizens can access all government services since it establishes a channel for tasks like filing tax returns, communicating concerns, and government procurement, to name a few.

e. Mobilisation and lobbying model

It is the most popular e-governance paradigm and has consistently aided civil society organisations in influencing international decision-making processes, particularly in poor nations.

The mobilisation model's foundation is the strategic, focused flow of information intended to fortify action and forge powerful allies. It takes a proactive stance in creating online communities that encourage active information exchange and sharing common ideals. The strength of this model and the resources and ideas brought together through virtual networks is the diversity of these virtual communities. The lobbying strategy can successfully surmount institutional, regional, and administrative obstacles to compel strict action.

14.8 E-GOVERNANCE PROJECTS AND PUBLIC-PRIVATE PARTNERSHIP

Public-private partnerships are collaborations between the public and private sectors to create, organise, fund, build, and/or manage projects customarily considered to be under the purview of the government sector. As the PPP model becomes more widely accepted, it quickly spreads to every aspect of public life, including ICT.

Public-private partnerships in E-governance can

- a. We enhance communication between public entities, intergovernmental organisations, private businesses, and international relationships.
- b. Ensured high-quality services are expected.
- c. Enhancing government services necessitates the use of improved processes or systems.
- d. Improve governance and transparency.
- e. Giving government employees more authority at the implementation and administrative levels

Check Your Progress: 2

Note: 1) Use the space provided below for your answers.

2) Compare your answers with those given at the end of this unit.

1. Write about the Weidner's Dissemination model. How is it relevant for government functioning?

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2. Discuss the significance of the critical flow model. What are the advantages of this model?

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14.9 DIGITAL DIVIDE: MEANING, DEFINITION, PARAMETERS, CAUSES

The Digital Divide refers to the division of technological privileges between the haves and the have-nots. While this divide works on technology, it also has other core elements in modern times.

Material access: The core element of the digital divide is based on physical access to personal computers and the Internet among demographic categories that are obvious in this respect: income, education, age, sex, and ethnicity.

Usability access: Regarding digital technology, the core difference is between the 'have-nots' and the element of usability. Despite the concept of usability, it is rather significant to understand that most communities do not understand the applicability of digital technology despite access to it. Some studies have found that the refusal to use computers and get connected to the Internet was:

- no need or significant usage opportunities;
- no time or liking;
- rejection of the medium (the Internet and computer games as 'dangerous' media);
- lack of money;

Skills access

After acquiring the motivation to use computers and some kind of physical access to them, one has to learn to manage the hardware and software. According to the model in Fig. 1, the problem of a lack of skills might appear here. This problem is framed with terms such as 'computer, information or multimedia literacy' and 'computer skills' or 'information capital.'

Usage access

Actual usage of digital media is the final stage and ultimate goal of the total appropriation process of technology, which is called access in this article.

Having sufficient motivation, physical access, and skills to apply digital media are necessary but not sufficient conditions for actual use. Usage has its grounds or determinants. As a dependent factor, it can be measured in at least four ways:

1. usage time;
2. usage applications and diversity;
3. broadband or narrowband use;
4. more or less active or creative use.

Bridging Digital Divide

Over one billion people live in India, and 70% do so in villages. According to the report published by the National Survey of India, the literacy rate of India is 77.7 per cent, with males being 84.70 % and women being 70.30%. Even though the information and communication technology (ICT) sector is robust and expanding quickly, access to ICTs is still quite limited, especially in rural areas. Some requirements must be met for every revolution to occur. India has not yet created the supportive atmosphere needed for the digital revolution. The infrastructure is the primary bottleneck. Infrastructure factors like energy and IT restrict access to technologies. As of 2023, while the infrastructure has developed considerably, there are still jarring gaps in the skills available to utilise the resources and in some significant pockets, there are psychological barriers that limit the application of the apps. The major areas which need to be addressed are.

- a. Infrastructural knowledge
- b. Breaking the psychological qualms over applying IT
- c. Creating a fertile ground for skill development

14.10 OPPORTUNITIES AND CHALLENGE OF E-GOVERNANCE IN INDIA

Building Infrastructures: Significant efforts would need to be made to gather the resources required for this difficult task. Governments could organise computer leasing agreements as a means of addressing the issue. This would lower the initial large capital expenditures.

Improved Connectivity: Creating total connectivity across all ministries and departments will enable the efficient speed of the Internet to be used for transferring files and paperwork instead of manual labour. Databases from different departments must be interoperable for this to be truly successful. For citizens to benefit from IT daily, interoperability of e-governance projects is crucial.

Information flow: Information flow is smooth when provided to the public in a language they can comprehend and feel at ease with, typically the native tongue. Since technology exists, translating text from English into other languages is possible. As a result, the issue is controllable as long as there is sufficient drive to complete this difficult task.

Breaking the stereotypes: Getting government workers accustomed to working exclusively manually to adopt a new perspective. This is a significant task that requires careful planning and perseverance. It is necessary to arrange training sessions, workshops, and seminars to raise awareness among staff members at all levels.

Creating Cyber awareness: Disseminating cyber laws to the public as soon as feasible to grant IT systems information documents the same legal standing as papers currently kept on paper and

Encouraging power infrastructures: Encouraging electricity infrastructures and all-weather surface transportation systems to close the digital divide in India between rural and urban areas.

Check Your Progress: 3

Note: 1) Use the space provided below for your answers.

2) Compare your answers with those given at the end of this unit.

1. Elaborate on the digital divide and its different types.

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2. What are the essential Opportunities and Challenges of E-Governance in India?

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14.11 LET US SUM UP

In this unit, we have discussed the key features of E-governance and its characteristics. We have analysed the different types of e-government, the history and evolution of its course, and the areas maintained by e-government. The unit has defined the concepts of Digital Divide and the different challenges and opportunities that arise from it. It has also discussed the areas of public-private collaboration in terms of e-government and the various dimensions of e-government.

14.12 KEYWORDS

E-filing: Electronic filing is the way to submit assessment forms over the web utilising tax preparation software that has been pre-approved by a significant expense authority, for example, the IRS or the Canada Revenue agency.

E-voting: Electronic voting utilises electronic voting to deal with throwing and tallying votes.

‘SMART Governance: The future of public services, increased efficiency,

group engagement, interactive work, and ongoing improvement through creativity are all referred to as "smart governance."

E-participation: E-participation is "the process of involving citizens in policy and decision-making through ICTs to make public administration inclusive, collaborative, deliberative, and participatory for intrinsic and instrumental ends."

E-participation: E-participation is defined as "the process of engaging citizens through ICTs in policy and decision-making to make public administration participatory, inclusive, collaborative and deliberative for intrinsic and instrumental end."

14.13 FURTHER READING

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14.14 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. In the 1970s, the government of India established the Department of Electronics, followed by the National Informatics Centre (NIC) in 1977, thereby initiating the process of e-governance in India. By the 1980s, government offices were equipped with computers but were limited to

drafting. Eventually, this spread out to in-house government applications in diverse administration areas, system monitoring, expansion and the application of information and technology to administer data-intensive functions related to elections, census, tax administration, etc.

2. E-Governance has several benefits as it has its hindsight. In a country like India, e-governance can have several benefits. Primary among them are automation issues. To put it together, some of the leading points are:

Automation: It leads to the improvisation of clerical functions.

Informatisation: E-governance leads to clarity in steady information-flow processes. For example, it can store, access, and archive most information.

Prompt decision-making: Because of the automation of processes and the application of accurate facts, there is fast delivery because of prompt decision-making, communication, and implementation.

Cost efficient: The Governance that emanates from the ICT-moderated process tends to be cheaper, producing the same outputs at a lower total cost.

3. **Quality gains:** Governance that works better: producing the same outputs at the exact total cost at the same time, but to a higher quality standard.

Check Your Progress: 2

1. E-Governance functions differently, considering the outcome's expected nature and the beneficiaries involved. One such model is Weidner's Dissemination model. This model establishes the conditions of prior preference, particularly in the case of legal or judicial decision-making, and this is primarily used to influence decisions by setting up precedence. Most commonly, this e-governance model assesses the performance of a particular public servant, ministry, or government. By promoting background know-how, this model provides rationality for the future course of action. This model also provides a precursor for future courses of action, picking up from the e-government guiding principles and procedures in the past. ICT unlocks access to local knowledge and global products at a meagre cost. This model provides information on predecessor governments' or electoral candidates' performance by sharing their work records in their constituencies. This model offers room for strong arguments emanating from the analysis.
2. The critical flow model is based on disseminating crucial information to the targeted people through convergent media or ICT. This emphasises the data's relevance and the necessity of using it. This remains functional in both private and public domains. The key idea of this model is to promote transparency to implement good governance. It tries to diminish the element of time and distance and minimise the abuse of power by the government. The model can work in areas like availing policies commissioned by the government to the people, acquiring research

studies, and processing inquiry reports. There could be other advantages, such as obtaining records of human rights violations and criminal impeachment against government officials to concerned citizens and non-governmental organisations. Facilitating information on the corruption of government officials or ministries to the electoral bodies or any relevant governing council

Check Your Progress: 3

1. The Digital Divide refers to the division of technological privileges between the haves and the have-nots. While this divide works on technology, it also has other core elements in modern times.

Material access: The core element of the digital divide is based on physical access to personal computers and the Internet among demographic categories that are obvious in this respect: income, education, age, sex, and ethnicity.

Usability access

The core difference between digital technology and 'have-nots' is the element of usability. Despite the concept of usability, it is rather significant to understand that most communities do not understand the applicability of digital technology despite access to it. Some studies have found that the refusal to use computers and get connected to the Internet was:

- no need or significant usage opportunities;
- no time or liking;
- rejection of the medium (the Internet and computer games as 'dangerous' media);
- lack of money;

Skills access

After acquiring the motivation to use computers and some kind of physical access to them, one has to learn to manage the hardware and software. According to the model in Fig. 1, the problem of a lack of skills might appear here. This problem is framed with terms such as 'computer, information or multimedia literacy' and 'computer skills' or 'information capital. '

Usage access

Actual usage of digital media is the final stage and goal of the total appropriation process of technology, which is called access in this article. Having sufficient motivation, physical access, and skills to apply digital media are necessary but not sufficient conditions for actual use. Usage has its grounds or determinants. As a dependent factor, it can be measured in at least four ways:

1. usage time;
2. usage applications and diversity;

3. broadband or narrowband use;
 4. more or less active or creative use
2. **Building Infrastructures:** Significant efforts would need to be made to gather the resources needed for this difficult task. Governments could organise computer leasing agreements to address the issue, lowering the initial large capital expenditures.
 3. **Improved Connectivity:** Creating total connectivity across all ministries and departments will enable the Internet to transfer files and paperwork efficiently in place of manual labour. Databases from different departments must be interoperable for this to be truly successful. For citizens to benefit from IT daily, interoperability of e-governance projects is crucial.
 4. **Information flow:** Information flow is smooth when provided to the public in a language they can comprehend and feel at ease with, typically the native tongue. Since technology exists, translating text from English into other languages is possible. As a result, the issue is controllable as long as there is sufficient drive to complete this difficult task.
 5. **Breaking the stereotypes:** Getting government workers accustomed to working exclusively manually to adopt a new perspective. This is a significant task that requires careful planning and perseverance. It is necessary to arrange training sessions, workshops, and seminars to raise awareness among staff members at all levels.
 6. **Creating Cyber awareness:** Disseminating cyber laws to the public as soon as feasible to grant IT systems information documents the same legal standing as papers currently kept on paper and
 7. **Encouraging power infrastructures:** Encouraging electricity infrastructures and all-weather surface transportation systems to close the digital divide in India between rural and urban areas.