UNIT 1 INFORMATION AND COMMUNICATION TECHNOLOGY: AN INTRODUCTION

Structure

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1.0 OBJECTIVES

After going through this Unit you will be able to:

- describe the phases of emergence of Information and Communication Technologies,
- discuss the types of applications of Information and Communication Technologies, and
- highlight the information systems along with their roles.

1.1 INTRODUCTION

Webopaedia defines 'information' as a word, which has many different meanings in everyday usage and in specialized contexts, but as a rule, it is a concept that is closely related to data, instruction, knowledge, meaning, communication, representation and mental stimulus. Information is knowledge derived from data/ data placed within a context. It is a message,

something to be communicated from the sender to the receiver. Information in an organization is the collection of expertise, experience and database that individuals and workgroups use for discharging their responsibilities. It is produced and stored by individual minds, or implicitly encoded and documented in organizational processes, services and systems. It is required for better planning and control. Shannon and Weaver define information as the amount of uncertainty that is reduced when a message is received.

'Communication,' on the other hand, is the process of information, usually via a common system of symbols. Communication can be interactive, transactive, intentional or unintentional; it can also be verbal or nonverbal.

'Information and Communication(s) Technology' (ICT) is then about use of technology in information processing and communication. In particular, it deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information. ICT may be discussed in terms of all the uses of digital technology that already exist to help individuals, businesses and organizations use information. ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form. For example, personal computers, radio, ham, telephone, broadband, digital television, email, robots etc. are all equipment, which can be classified as ICTs. Importantly, it is also concerned with the way these different uses can work together with each other.

In this Unit, we will be discussing about ICT applications and Information Systems.

1.2 EMERGENCE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN INDIA

Recognizing the increasing importance of electronics, the Government of India established the Department of Electronics in 1970. The subsequent establishment of the National Informatics Centre (NIC) in 1977 was the first major step towards e-governance in India as it brought 'information' and its

communication in focus. In the early 1980s, use of computers was confined to very few organizations. The advent of personal computers brought the storage, retrieval, and processing capacities of computers to government offices. By the late 1980s, a large number of government officers had computers but they were mostly used for 'word processing'. Gradually, with the introduction of better software, computers were put to other uses like managing databases and processing information. Advances in communications technology further improved the versatility and reach of computers, and many government departments started using ICT for a number of applications like tracking movement of papers and files, monitoring of development programmes, processing of employees' pay rolls, generation of reports etc.

However, the main thrust for e-governance was provided by the launching of NICNET in 1987 – the national satellite-based computer network. This was followed by the launch of the District Information System of the National Informatics Centre (DISNIC) programme to computerize all district offices in the country for, which free hardware and software was offered to the State Governments. NICNET was extended via the State capitals to all district headquarters by 1990.

In the ensuing years, with ongoing computerization, teleconnectivity, and internet connectivity came a large number of e-governance initiatives, both at the Union and State levels. A National Task Force on Information Technology and Software Development was constituted in May 1998. While recognising information technology, as a frontier area of knowledge per se, it focused on utilizing it, as an enabling tool for assimilating and processing all other spheres of knowledge. It recommended the launching of an 'Operation Knowledge' aimed at universalizing computer literacy and spreading the use of computers and IT in education in the country. In 1999, the Union Ministry of Information Technology was created. By 2000, a 12-point minimum agenda for e-governance was identified by Government of India

for implementation in all the Union Government Ministries/Departments. The agenda undertaken included the following action points:

i. Each Ministry/Department must provide PCs with necessary software up to the Section Officer level. In addition, Local Area Network (LAN) must also be set up.

ii. It should be ensured that all staff, who have access to and need to use computer for their office work are provided with adequate training. To facilitate this, inter alia, Ministries/Departments should set up their own or share other's Learning Centres for decentralized training in computers, as per the guidelines issued by the Ministry of Information Technology.

iii. Each Ministry/Department should start using the Office Procedure Automation software developed by NIC with a view to keeping a record of receipt of post, issue of letters, as well as movement of files in the department.

iv. Pay roll accounting and other house-keeping software should be put to use in day-to-day operations.

v. Notices for internal meetings should be sent by e-mail. Similarly, submission of applications for leave and for going on tour should also be done electronically. Ministries/Departments should also set up online notice board to display orders, circulars etc., as and when, issued.

vi. Ministries/Departments should use the web-enabled Grievance Redressal Software developed by the Department of Administrative Reforms and Public Grievances.

vii. Each Ministry/Department should have its own website.

viii. All Acts, Rules, Circulars must be converted into electronic form along with other published material of interest or relevance to the public, should be made available on the internet, and be accessible from the Information and Facilitation Counter (one stop shop under National E-governance Plan-NeGP).

ix. The websites of Ministries/Departments/Organisations should specifically contain a section in, which various forms to be used by citizens/customers are made available. The forms should be available for being printed or for being completed on the computer itself and then printed out for submission. Attempts should also be made to enable completion and submission of forms online.

x. The Hindi version of the content of the websites should, as far as possible, be developed simultaneously.

xi. Each Ministry/Department would also make efforts to develop packages, so as to begin electronic delivery of services to the public.

xii. Each Ministry/Department should have an overall IT vision or strategy for a five year period, within, which it could dovetail specific action plans and targets (including the minimum agenda) to be implemented within one year.

1.3 APPLICATIONS OF ICT

Harry Bouwman et. al. (2005) proposed four types of applications of ICTs. They are Information Services, Communication Services, Transaction and Registration Services, and Integrated applications.

- **Information Services**

Information means collection of facts from, which conclusions can be drawn. It is related to data and knowledge, as data represents values attributed to parameters and knowledge signifies understanding of real things or abstract concepts. Databases are at the heart of information services. The use of databases, often object oriented and distributed, makes it possible to provide access to the same information using different channels like telephone, online databases, call centres or in print. The most familiar example is the telephone. A large number of call centres can be reached by telephone. Another well-known example is personal computer (PC). The PC allows people to use Internet services, online databases, and so on. These services are accessed via Internet.

In addition to the distinction based on the presentation of information (text, images, sound), a distinction can be drawn regarding the nature of the information, that is, between information produced and used within organizations (databases that are often being used within business systems: enterprise and management information systems [MIS] applications) and other information provided by third parties. This second category of information includes:

i. Financial information – currencies, prices, stock exchange information, and so on.

ii. Economic information, for instance, market information, company addresses, business profiles, and so on.

iii. Legal information – complete legal texts, jurisprudence, legal articles, and so on.

iv. Scientific information – especially in the areas of medicine and chemistry.

v. Government information.

vi. General news, as generated by news services and various editorial boards; and

vii. Educational information, such as, encyclopedias, and so on.

- **Communication Services**

There are various forms of communication services and applications. An important distinction that can be drawn in this respect is between synchronous and asynchronous applications. Synchronous communication involves the simultaneous 'presence' of the participants in the communication process (for instance a telephone call), whereas in the case of asynchronous communication, there is a certain time interval between the message and a response to that message ('delayed communication', such as exchange of letters). Examples of synchronous applications are chatting and video conferences. Chat is an application that enables two persons connected to the same network to exchange information synchronously. In a video teleconferencing, several persons can communicate simultaneously with the aid of PCs and a network infrastructure. Video-conferencing can serve, as a realistic alternative to physical meetings. The best-known example of asynchronous communication application is electronic mail. A message is sent, arrives at the electronic mailbox of the recipient, who opens the message, reads it at a convenient time, and then sends a reply. In the early 1990s, this application

was relatively new and used especially for internal communication. Nowadays, there is hardly any organization that doesn't have e-mail in their communication process.

There are applications that take communications to next level (more formal), as they use highly structured data in processes of organizations. One example of this kind of application is 'workflow management system.' A basic principle of workflow management is that it is not just a single activity that is being automated but, rather, the entire process of, which the specific task is a part. Workflow management makes sure that a user has access to the data he or she requires to perform a specific task in the office process at the right moment. In general terms, workflow management is the automated support of processes.

Another example is 'electronic data interchange' (EDI). EDI deals directly with transactions – for instance, order and billing processes – whereby, standardized messages are exchanged between computers. This involves communications between computers rather than people. EDI is used in numerous economic sectors, for instance trade, transport, health care, and insurance. EDI is in effect a combination of databases and communication (exchanging messages) services.

- **Transaction or Registration Services**

Transaction or registration services are becoming more and more important for organizations, businesses, and governments in dealing with their stakeholders. Here too, a distinction can be drawn between internal and external applications. In the case of internal transactions this involves both the monitoring of all kinds of processes (for instance in workflow systems, planning modules, financial administration, ERP systems, and so on) and the collection of all

sorts of information in a central electronic database. Technology-oriented registration services include, for example, monitoring the occupation levels of the company network, checking the online presence and performance of individuals and/or various technical systems, and so on. Following this, registration services can also be used to supervise the progress of various (often geographically dispersed) business processes.

In the case of external applications, it has to do above all with collecting information from consumers and other parties within the organization's environment, as well as processing electronic transactions, that is, e-commerce. External registration services in particular have to do with the interaction between the organization and the market, with various parties in its vicinity. An example of this is the collection of information regarding the organization's customers, for instance by monitoring, which pages of the organization's website were being frequented.

- **Integrated Applications**

Applications that integrate information, communication, and registration services are called integrated applications. They offer the possibility to consult information, and in many cases to conduct transactions, for example on websites or information kiosks, for example in banks. Some well-known applications that integrate different patterns are intranet, groupware, computer-supported collaborative work (CSCW), and group decision support system (GDSS).

Intranet and groupware to a large extent are similar applications. They are office applications that integrate information, communication, and registration services. These services provide an integrated package of online databases and shared documents and applications.

Intranet can be defined, as a local (closed) version of the Internet. Generally speaking, an intranet will include applications that are found on the Internet. Information concerning the internal organization, customers, projects, stock supplies, and so on can be accessed through the internal website; memos and newsletters are sent by e-mail; expenditure claims are submitted online; and a jointly produced document is put on a web page, and so on.

Computer-supported collaborative work can range from 'file and information sharing' to 'application sharing' and so on.

Group decision support systems are specifically aimed at supporting decision making processes. This involves both providing information during decision-making processes and systematically processing the results. Some group decision support systems contain all kinds of calculation rules or procedures to ensure decisions are arrived at in a more systematic way.

1.4 INFORMATION SYSTEMS

An information system can be defined technically, as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. In addition to supporting decision making, coordination, and control; information systems may also help managers and workers analyze problems, visualize complex

subjects, and create new products. Information systems contain information about significant people, places, and things within the organization or in the environment surrounding it. By information we mean data that have been shaped into a form, that is, meaningful and useful to human beings.

Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use. Three activities in an information system produce the information that organizations need to make decisions, control operations, analyze problems, and create new products or services. These activities are input, processing, and output.

- **Input** -involves capturing or entering the data. In many cases, this will involve entering data via the keyboard but there are many other faster and more accurate methods, such as, bar coding, scanning, etc. The input involves turning the data into a form that can be processed by the computer. The data needs to be encoded.
- **Processing** - performing actions on the input data. This would involve performing calculations, searching, sorting, arranging, presenting, converting, transferring, classifying etc.
- **Output** -these are the results or the information produced, when the data has been processed. All information systems produce output.

Although computer-based information systems use computer technology to process raw data into meaningful information, there is a sharp distinction between a computer and a computer program on the one hand, and an information system on the other. Electronic computers and related

software programs are the technical foundation, the tools and materials, of modern information systems. Computers provide the equipment for storing and processing information. Computer programs, or software, are sets of operating instructions that direct and control computer processing. Knowing how computers and computer programs work is important in designing solutions to organizational problems.

1.4.1 Components of Information Systems

Organization, management, and IT are three dimensions of information systems (IS). Using IS effectively requires an understanding of these dimensions.

- **Organization:** An organization coordinates work through its hierarchy and through its business processes, which are logically related tasks and behaviors for accomplishing work. Developing a new product, fulfilling an order, and hiring a new employee are examples of business processes.

- **Management:** Management's job is to make sense out of the many situations faced by organizations, make decisions, and formulate action plans to solve organizational problems. Managers perceive business challenges in the environment, they set the organizational strategy for responding to those challenges, and they allocate the human and financial resources to coordinate the work and achieve organizational objectives.

- **Information Technology:** IT is one of many tools managers use to cope with change. Computer hardware, computer software, data management technology, networking and telecommunications technology, world wide web etc. are tools of IT. All these along

with the people required to run and manage them, represent information technology (IT) infrastructure.

1.4.2 Types of Information Systems

There are so many IS. Most important of them are transaction processing systems, management information systems, decision-support systems, and business intelligence systems. Discussions on each of these systems are dealt below:

- **Transaction Processing Systems**

A transaction processing system (TPS) is a computerized system that performs and records the daily routine transactions necessary to conduct business, such as sales order entry, hotel reservations, payroll, employee record keeping, and shipping. The principal purpose of this system is to answer routine questions and to track the flow of transactions throughout the organization. At the operational level, tasks, resources, and goals are predefined and highly structured. Managers need TPS to monitor the status of internal operations and the firm's relations with its external environment. These systems are also major producers of information for the other systems and business functions. It also supplies employee payment history data for insurance, pension, and other information. TPS are often so central to a business that its failure for a few hours can lead to a firm's demise and perhaps that of other firms linked to it.

- **Management Information System**

Management Information Systems (MIS) designates a specific category of information systems serving middle management. MIS provides managers with reports on the organization's current performance. This information is used to monitor and control the business and predict future

performance. MIS summarizes and reports on the company's basic operations using data supplied by TPS. The basic transaction data are compressed and usually presented in reports that are produced on a regular schedule. MIS serve managers primarily interested in weekly, monthly, and yearly results. This system typically provides answers to routine questions that have been specified in advance and have a predefined procedure for answering them. For instance, MIS reports might list the total number of grievances received and total number of grievances redressed by a government agency in a month or compare total annual sales figures for specific products with planned targets. These systems generally are not flexible and have little analytical capability. Most MIS use simple routines, such as summaries and comparisons, as opposed to sophisticated mathematical models or statistical techniques.

- **Decision Support System**

Decision Support Systems (DSS) support more non-routine decision making. They focus on problems that are unique and rapidly changing, for which the procedure for arriving at a solution may not be fully predefined in advance. They try to answer questions such as these: What would be the impact on production schedules, if we were to double sales next month? What would happen to our return on investment, if a factory schedule were delayed for three months? Although DSS use internal information from TPS and MIS, they often bring in information from external sources, such as current stock prices or product prices of competitors. These systems use a variety of models to analyze the data and are designed in such a manner that users can work with them directly. DSS are of two types. One such system is the DSS that operates on a desktop personal computer using simple models and data. It provides a system of menus that makes it easy for users to enter data or obtain information. Other DSS supporting non-routine decision

making are more data-driven, focusing on extracting useful information from large quantities of data.

- **Business Intelligence System**

Business Intelligence System (BIS) is a contemporary information system for data and software tools for organizing, analyzing, and providing access to data to help managers and other enterprise users to make more informed decisions. Business intelligence applications are not limited to middle managers and can be found at all levels of the organization including systems for senior management. Senior managers need systems that address strategic issues and long-term trends both in the firm and in the external environment. They are concerned with questions such as these: What will employment levels be in coming ten years? What are the long-term industry cost trends, and where does the firm fit in? What new investments and acquisitions would protect the firm from cyclical business swings? These can be resolved with help of BIS.

1.5 CONCLUSION

ICT can contribute to an accelerated operation of organizational processes. This applies both to the internal and external provision of information and to the provision of services, policy-making, decision-making, and internal management**.** By replacing traditional ways of providing services and information (in writing, by telephone or face to face) with an electronic approach, an organization can improve the quality of services, based on the speed, accuracy, selectiveness. There is also an opportunity to improve policy-making and decision-making processes through interactive policy-making, with active participation on the part of customers. Finally, there is a possibility to streamline all basic organizational data concerning businesses and customers. This would mean a huge improvement with regard to organizational database management and the

associated supervision, management, and implementation processes with the help of Information Systems.

ACTIVITY

Illustrate application of GIS in any project in India.

1.6 REFERENCES

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UNIT 2 E-GOVERNANCE: CONCEPT AND SIGNIFICANCE

Structure

2.0 Objectives

2.1 Introduction

2.2 Concept of E-governance

2.3 Models of E-governance

2.4 Significance of E-governance

2.5 Enabling a Compatible Environment for E-Governance Implementation in Public Organizations

2.6 Conclusion

2.7 References and Further Readings

2.0 OBJECTIVES

After studying this Unit, you should be able to:

- discuss the concept and significance of e-governance;
- explain the various models of e-governance; and
- highlight the various roles of ICT in governance.

2.1 INTRODUCTION

Reinventing government has been a dominant theme since 1990s, wherein governments world over are attempting to improve the systems of public service delivery. Rapid strides made in the

field of Information and Communication Technology (ICT) have facilitated the reinvention of governments and prepared them to serve the needs of a diverse society. In other words, the information age has redefined the fundamentals and transformed the institutions and mechanisms of service delivery forever. The vision is the articulation of a desire to transform the way government functions and the way it relates to its constituents. The concept of electronic governance, popularly called e-governance, is derived from this concern. Democracies in the world share a vision of the day when e-governance will become a way of life.

India has been at the forefront of the IT revolution and has had its effect on the public administration systems, as we would see later in this Unit. In fact, if the potential of ICTs are harnessed properly, it has a lot of opportunities, especially, in the social and economic growth of the developing world.

2.2 CONCEPT OF E-GOVERNANCE

E-governance is the application of ICT to the processes of government functioning for good governance. In other words, e-governance is the public sector's use of ICTs with the aim to improve information and service delivery, encourage citizen participation in decision-making and make government more accountable, transparent and efficient.

The Ministry of Information and Technology states that e-governance goes far beyond mere computerisation of stand alone back office operations. It implies fundamental changes in government operations; and new set of responsibilities for the legislature, executive, judiciary and citizens.

According to the Comptroller and Auditor General, UK, e-governance means providing public access to information via the internet by government departments and their agencies.

So in essence, e-governance is the application of ICT in government functioning to bring in **SMART** governance implying: simple, moral, accountable, responsive and transparent

governance.

SMART GOVERNANCE

Simple- meaning simplification of rules, regulations and processes of government through the use of ICTs and thereby providing for a user-friendly government

Moral- connoting emergence of an entirely new system of ethical values in the political and administrative machinery. Technology interventions improve the efficiency of anti-corruption agencies, police, judiciary, etc.

Accountable-facilitating design, development and implementation of effective Management Information System and performance measurement mechanisms and thereby ensuring accountability of public service functionaries.

Responsive- streamlining the processes to speed up service delivery and make system more responsive.

Transparent-bringing information hitherto confined in the government documents to the public domain and making processes and functions transparent, which in turn would bring equity and rule of law in responses of the administrative agencies.

SMART governance, thus, helps in:

- improving the internal organisational processes of governments;
- providing better information and service delivery;

- increasing government transparency in order to reduce corruption;
- reinforcing political credibility and accountability; and
- promoting democratic practices through public participation and consultation.

E-governance and E-government

E-governance and e-government are often used interchangeably, so distinguishing between them at this stage is imperative. According to Thomas B. Riley government and governance are both about getting the consent and cooperation of the governed. But whereas government is the formal apparatus for this objective, governance is the outcome as experienced by those on the receiving end…. E-government can be more productive version of government in general, if it is well implemented and managed. E-governance can evolve into participatory governance, if it is well supported with appropriate principles, objectives, programmes and architectures.

E-government is, thus, the modernisation of processes and functions of government using the tools of ICT as to transform the way it serves its constituents. As per the World Bank, e-government refers to the use by government agencies of information technologies (such as wide area networks, internet and mobile computing) that have the ability to transform relations with citizens, businesses and other arms of government. It is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees. E-governance, on the other hand, goes beyond the service delivery aspects and is seen as a decisional process. It is about the use of ICTs in the systems of governance, that is, using ICT to involve multi-stakeholders in decision-making and in making governments open and accountable.

2.3 MODELS OF E-GOVERNANCE

Prof. Dr. Arie Halachmi in his paper, namely, ' E-Government Theory and Practice: The Evidence from Tennessee (USA),' has given five important models of e-governance, which can be used as a guide in designing e-government initiatives depending on the local situation and governance activities that are expected to be performed. These models are:

- The Broadcasting Model
- The Critical Flow Model
- The Comparative Analysis Model
- The E-Advocacy/Mobilisation and Lobbying Model
- The Interactive-Service Model

We will now discuss these models individually.

- **The Broadcasting Model**

  The model is based on dissemination/broadcasting of useful governance information, which is in the public domain into the wider public domain with ICT and convergent media. The strength of the model rests upon the fact that a more informed citizenry is better able to judge the functioning of existing governance mechanisms and make an informed opinion about them. Consequently, they become more empowered to exercise their rights and responsibilities. Widespread application of this model corrects 'information failure situations' by providing people with the relevant information relating to the governance sphere to make informed opinion and impact governance processes.

  Further, the uses of ICT opens an alternative channel for people to access information as well as validate existing information from different sources.

- **The Critical Flow Model**

  The model is based on disseminating/channeling information of critical value to the targeted audience or into the wider public domain with ICT and convergent media.

  The strength of this model is that ICT makes the concept of 'distance' and 'time' redundant when information is hosted on a digital network, and this could be used advantageously by instantly transferring the critical information to its strategic user group located anywhere or by making it freely available in the wider public domain.

- **The Comparative Analysis Model**

  This model is highly significant model for developing countries and can be used for empowering people. Essentially, the model continuously assimilates best practices in the areas of governance and then uses them as benchmarks to evaluate other governance practices. It then uses the result to advocate positive changes or to influence 'public' opinion on these governance practices. The comparison could be made over a time scale to get a snapshot of the past and present situation or could be used to compare the effectiveness of an intervention by comparing two similar situations. The strength of this model lie in the infinite capacity of digital networks to store varied information and retrieve and transmit it instantly across all geographical and hierarchal barriers.

- **The E-Advocacy/Mobilization and Lobbying Model**

  This model builds the momentum of real-world processes by adding the opinions and concerns expressed by virtual communities. This model helps the global civil society to impact on global decision-making processes. It is based on setting up a planned, directed flow of information to build strong virtual allies to complement actions in the real world. Virtual communities are formed which share similar values and concerns and these communities in turn link up with or support real-life groups/activities for concerted action.

  Hence, it creates a diversity of virtual community and the ideas, expertise and resources are accumulated through this virtual form of networking. In addition, it is able to mobilize and leverage human resources and information beyond geographical, institutional and bureaucratic barriers and use it for concerted action.

- **The Interactive-Service Model**

  It opens avenues for direct participation of individuals in governance processes and brings in greater objectivity and transparency in decision-making processes through ICT. Fundamentally, ICT has the potential to bring in every individual in a digital network and enable interactive (two-way) flows of information among them.

  Under this model, the various services offered by the Government become directly available to its citizens in

an interactive manner. It does so by opening up an interactive Government to Consumer to Government (G2C2G) channel in various aspects of governance, such as election of government officials (e-ballots); redressing online of specific grievances; sharing of concerns and providing expertise; opinion polls on various issues; etc. (adapted from Prof. Dr.Arie Halachmi 'E-Government Theory and Practice: The Evidence from Tennessee, USA').

After our discussion about the models of e-governance, we will now focus on the legal and policy framework for the implementation of ICT and e-governance in the country.

2.4 SIGNIFICANCE OF E-GOVERNANCE

ICT applications impact upon the structures of public administration systems. Technological advancements facilitate the administrative systems by enabling:

- Administrative Development; and
- Effective Service Delivery

We will now discuss them individually.

Administrative Development

Administrative reforms, often, have focused on procedural details and restructuring of systems and processes of government organisations. The basic objective of these reforms is to enhance capacities of the systems. ICTs can be used and are being used now to give further impetus to the process. They help in the following manners:

- **Automation of Administrative Processes**

  A truly e-governed system would require minimal human intervention and would rather be system driven. While initially the solutions that were offered were quite primitive with poor information layout, inadequate navigation provisions, occasional disruption in services, periodic outdated content and little or no 'back office' support. However, technological advancements and

increased pressure from citizenry have prompted improvements in these areas. Now administrative departments are computerised and connected through network. Software has been built and designed around government departments ensuring efficiency in operations. The departments have launched individual websites carrying information of their respective departments. This has enabled online carrying of operations and file movements. Budgeting, accounting, data flow, etc. has become easy. This has increased the efficiency of office operations and processes and has reduced unnecessary delays.

- **Paper Work Reduction**

An immediate impact of automation would be on the paperwork. Paperwork is reduced to a greater extent with communication being enabled via electronic route and storage and retrieval of information in the electronic form. All this has led to emergence of 'less paper office'. This concept is defined as an office situation where all the information (file and mail) amongst various functionaries is distributed online. In the words of Dubey, less paper office is the implementation of effective electronic communication processes that enable elimination of reproductive works and unnecessary papers. The concept is where files and mails (information) are transmitted over wires to small computers at each employee's desk. Office work, such as, file movements, notings, etc. is computerised and documentation, report preparation, databases are now maintained in computers. Due to interconnectivity through LAN, transfer of information and files take place online, thus reducing the physical movements and consumption and storage of huge piles of paper.

- **Quality of Services**

ICT helps governments to deliver services to the citizens with greater accountability, responsiveness and sensitivity. Quality of services improves, as now the people are able to get services efficiently and instantaneously. As volumes of transactions and information can be electronically handled and delivered over a wider area through the net and web, qualitative services become possible in least time, in least cost, in least difficulty and in greaterconvenience.

By ensuring online redressal of grievances the accountability of officials is ensured. They have

become sensitive to the issues affecting people. Monitoring by way of video teleconferencing has further facilitated central monitoring, reporting and face to face communication that has assured effective service delivery by the officials.

- **Elimination of Hierarchy**

  ICT has reduced procedural delays caused by hierarchical processes in the organisation. Through Intranet and LAN, it has become possible to send information and data across various levels in the organisation at the same time. Computerisation and communication patterns facilitated by ICT have increased efficiency and have led tothe involvement of all levels in decision-making.

- **Change in Administrative Culture**

  Bureaucratic structures have been plagued by characteristics aptly described by Victor Thompson as 'bureau-pathology'. From the days of New Public Administration, efforts have been made to find ways to deal with the pathological or dysfunctional aspects of bureaucratic behaviour and to make delivery of public services effective and efficient. With e-governance, public actions coming under public glare would certainly induce norms and values of accountability, openness, integrity, fairness, equity, responsibility and justice in the administrative culture. Rather, administration would become efficient and responsive.

Effective Service Delivery

ICTs play an important role in effectively delivering services to the people. ICTs ensure:

- **Transparency** by dissemination and publication of information on the web. This provides easy access to information and subsequently makes the system publicly accountable. Also as web enables free flow of information, it can be easily accessed by all without anydiscrimination.

- **Economic Development**

  The deployment of ICTs reduces the transaction costs, which makes services cheaper. For example, rural areas suffer on account of lack of information regarding markets, products,

agriculture, health, education, weather, etc. and if all this could be accessed online would lead to better and more opportunities and thereby prosperity in these areas.

- **Social Development**

The access to information empowers the citizens. Informed citizenry can participate and voice their concerns, which can be accommodated in the programme/ project formulation, implementation, monitoring and service delivery. Web enabled participation will counter the discriminatory factors affecting our societal behaviour.

- **Strategic Information System**

Changing organisational environment and increasing competitiveness have put pressures on the performance of the functionaries. Information regarding all aspects need to be made available to the management at every point to make routine as well as strategic decisions. ICTs effectively enable putting such strategic information systems in place.

After the above-mentioned discussion on the significance of ICTs in governance, we will now highlight the legal and policy framework for ICT and e-governance, as existing in India.

2.5 ENABLING A COMPATIBLE ENVIRONMENT FOR E-GOVERNANCE IMPLEMENTATION IN PUBLIC ORGANIZATIONS

As per the 2nd ARC, the following points are considered to be essential to make a compatible environment for e-governance implementation in public organizations.

- **Building a Congenial Environment**

Providing political support at the highest level, incentivising e-governance, overcoming the resistance to change within government, and creating awareness in the public with a view to generating a demand for change will enable a congenial environment for ICT application in the organizations.

- **Identification of e-Governance Projects and Prioritisation**

Union and State Government levels need to identify e-governance initiatives, which could be undertaken within their functional domain, keeping the needs of the citizens in mind. Such initiatives, which would provide timely and useful information to the citizens, would not require the creation of a database for providing useful services to the citizens, allow for making elementary online transactions including payment for services, require verification of information/data submitted online, and such that require creation and integration of complex databases (Michael Hammer & James **C**hampy).

- **Business Process Re-engineering**

For every function a government organisation performs and every service or information it is required to provide, there should be a step-by-step analysis of each process to ensure its rationality and simplicity. Such analysis should incorporate the viewpoints of all stakeholders, while maintaining the citizen-centricity of the exercise. After identifying steps which are redundant or which require simplification, and which are adaptable to e-Governance, the provisions of the law, rules, regulations, instructions, codes, manuals etc. which form their basis should also be identified. Following this exercise, governmental forms, processes and structures should be re-designed to make them adaptable to e-Governance, backed by procedural, institutional and legal changes.

- **Capacity Building and Creating Awareness**

Capacity building efforts must attend to both the organizational capacity building, as also the professional and skills upgradation of individuals associated with the implementation of e-governance projects. Each government organization must conduct a capacity assessment, which should form the basis for training their personnel. A network of training institutions needs to be created in the States with the Administrative Training Institutes at the apex.

- **Implementation**

Implementation of e-governance projects would involve a detailed 'project management' exercise, which would consist of breaking up entire e-governance projects into components/activities, planning

each activity in detail, allocating resources, both human and financial; commencement of activities, as per the plan and continuous tracking, and need-based mid-course correction.

- **Monitoring and Evaluation**

Once the e-governance project is implemented constant monitoring would be required to ensure that each component is functioning, as per the design.

Evaluation of success or failure of e-governance projects may be done by independent agencies on the basis of parameters fixed beforehand.

- **Protection Strategy for Critical Information Infrastructure Assets**

2.6 Conclusion

According to Traunmuller and Lenk, e-governance is a global phenomenon today and it is the most recent paradigm in public administration. The speed and transparency associated with e-governance has the potential to make public administration responsive and effective. As the development of e-governance gets past the phase of pilot projects, it becomes apparent that sustainable development of e-governance will depend on an adequate institutional framework that will enable public administration to manage and harmonise the emerging multitude of technical and organisational changes at all levels ofgovernment….

The time has come to focus on the challenges in implementation, especially those related to cross-level applications and institutional framework, which would enable to bring in broaderchanges in governance.

ACTIVITY

1. Form a group and discuss in detail the provisions of the IT Act 2000 and Right toInformation Act 2005.
2. Let us know about some scope wherein the Right to Information Act 2005 can be more effective.

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UNIT 3 LEGAL AND POLICY FRAMEWORK FOR ICT AND E-GOVERNANCE

Structure

3.0 Objectives

3.1 Introduction

3.2 Legal and Policy Framework for ICT and E-Governance

3.3 Conclusion

3.4 References

3.0 OBJECTIVES

After studying this Unit, you will be able to:

- highlight the importance of legal and policy framework;
- discuss the various legal and policy enactments; and
- suggest measures to improve upon the limitations.

3.1 INTRODUCTION

Legal and policy framework is necessary to provide legal sanctity to ICT based applications in governmental organizations. Electronic transactions, use of monetary cards, digital signatures and such other applications are making governance a good one. Governance is now inclusive, as it aims to bridge the rural-urban divide by having NeGP and Digital India Programmes operational.

In this Unit, we will discuss the legal and policy framework that is being enacted to provide legal authentication to all electronic transactions and electronic communication.

We will begin with a discussion on IT Act 2000.

3.2 LEGAL AND POLICY FRAMEWORK FOR ICT AND E-GOVERNANCE

A. Information Technology Act 2000

The Action Plan endorsed by the Conference of Chief Ministers in 1987 had already addressed the pertinent issues of accountable and citizen friendly administration; and transparency and right to information. In pursuance of these issues, the Information Technology Act was promulgated in 2000. The objective of the Act is "to provide legal recognition for transactions carried out by means of electronic data interchange and othermeans of electronic communication, commonly referred to as 'electronic methods of communication and storage of information'; to facilitate electronic filing of documents with the Government agencies; and further to amend the Indian Penal Code, the Indian Evidence Act, 1872, the Banker's Book Evidence Act, 1891 and the Reserve Bank of India Act, 1934 and for matters connected therewith or incidental thereto."

Both e-commerce and e-governance transactions are covered under the ambit of this Act, which facilitates acceptance of electronic records and digital signatures. The Act, thus, stipulates numerous provisions. It aims to provide for the legal framework so that legal sanctity is accorded to all electronic records and other activities carried out by electronic means. The said Act further states that unless otherwise agreed, an acceptance of contract may be expressed by electronic means of communication and the same shall have legal validity and enforceability.

CHAPTER III of the Act details about 'Electronic Governance' and provides inter alia amongst others that where any law provides that information or any other matter shall be in

writing or in the typewritten or printed form, then, notwithstanding anything contained in such law, such requirement shall be deemed to have been satisfied, if such information or matter is:

i. rendered or made available in an electronic form; and

ii. accessible, so as to be usable for a subsequent reference.

B. Right to Information Act 2005

The Right to Information Act 2005 (RTI Act 2005) includes the right to:

- inspect works, documents, and records;
- take notes, extracts or certified copies of documents or records;
- take certified samples of material; and
- obtain information in form of printouts, diskettes, floppies, tapes, video cassettes orin any other electronic mode or through printouts.

Important Definitions

Herein, we will define some of the important terms used in the RTI Act 2005:

- **Information:** records, documents, memos, e-mails, opinions, advice, press releases, circulars, orders, logbooks, contracts, reports, papers, samples, models, data materialheld in electronic form, and information about private bodies can be accessed under existing laws by a public authority.
- **Public Authority:** any authority or body or institution of self- government establishedor constituted by or under the Constitution or by any other law made by Parliament or the

State Legislature, and includes anybody or a non-government organisation owned, controlled or substantially financed, directly or indirectly by funds providedby the appropriate government.

- **Record**: includes any document, manuscript and file; any microfilm, microfiche, and facsimile copy of a document; any reproduction of image or images embodied in such microfilm; and any other material produced by a computer or any other device.

- **Central Public Information Officer and State Public Information Officer:** the Central Public Information Officer (CPIO) designated under sub-section (*1*) and includes a Central Assistant Public Information Officer (CAPIO) designated, as such under sub-section (*2*) of Section 5. It is the duty of every public authority to designate, as many officers, as the CPIOs or SPIOs, as the case may be, in all administrative units or offices under it, as may be necessary to provide information to persons requesting for the information under this Act, within one hundred days ofthe enactment of this Act.

- **Appellate Authority**: the officer immediately senior in rank to the PIO and appointed by the appropriate public authority, as such.

- **Central Information Commission**: the CIC is constituted under sub-section (1) of Section 12 of the Act. It consists of a Chief Information Commissioner and such number of Information Commissioners, not more than ten, as deemed necessary. They are to be appointed by the President on recommendation of a Committee consisting of the Prime Minister, the Leader of Opposition in the Lok Sabha, and a Union Cabinet Minister nominated by the Prime Minister.

- **Chief Information Commissioner and Information Commissioner:** the Chief Information Commissioner and Information Commissioner are appointed under sub-

section (3) of Section 12 of the RTI 2005 by the Central Government. Every Information Commissioner shall hold office for a term of five years from the date on, which he enters upon his office or till he attains the age of sixty-five years, whichever is earlier, and shall not be eligible for reappointment.

Procedure for Obtaining Information

The detailed procedure for applying for obtaining information under this Act has also beenlaid down by the Government. The applicant can apply in writing or through electronic means in English or Hindi or in the official language of the area, to the PIO, specifying the particulars of the information sought for. The applicant is not obliged to give the reasons for asking for the information. The applicant has to make the application along with the prescribed fee. However, no fee is to be paid by a person living below the poverty line.

Information has to be provided to the applicant within 30 days of making application to the PIO. In case the application has been made to the APIO, 5 more days are added. However, in cases involving life and liberty of an individual, information has to be madeavailable within 48 hours. In case information sought involves the interests of a third party,the maximum time limit will be 40 days, that is, 30 days plus 10 days given to the third party to make its representation.

However as per Section 8 and 9 of the Act, the PIO can reject the application, if the information asked falls under the category of information not to be disclosed, or if it infringes the copyright of any other body than the state. If the PIO fails to provide the information within 30 days, it would be deemed to be a refusal, and the applicant will have a right to go into appeal to the Appellate Authority or the Information Commission.The Act also provides for a fine on the PIO at the rate of Rs. 250 per day, subject toa maximum of Rs.

25,000, if there is a delay beyond 30 days in providing information.

The first appeal is an internal appeal to the Appellate Authority within the organization who has to decide the appeal within 30 days. The second appeal is external, and is madeto the Central or State Information Commission, as the case may be, within 90 days of the rejection by the Appellate Authority. An appeal can be made against the order of the Information Commission only before the High Court and not to any lower courts.

C. National e-Governance Plan 2006

The National e-Governance Plan (NeGP) has been formulated by the Department of Information Technology (DIT) and Department of Administrative Reforms & Public Grievances (DAR&PG). The Union Government approved the National e-Governance Plan (NeGP), comprising of 27 Mission Mode Projects (MMPs) and 10 components on May 18, 2006. The NeGP aims at improving delivery of Government services to citizens and businesses with the following vision:

'Make all Government services accessible to the common man in his locality, through common service delivery outlets; and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man.'

Implementation Strategy, Approach, and Methodology of NeGP

- Implementation of e-Governance requires provisioning of hardware and software, networking, process re-engineering, and change management. Hence, the approach and methodology adopted for its implementation contains the following elements:

- Common Support Infrastructure: NeGP implementation involves setting up of common and support IT infrastructure such as: State Wide Area Networks (SWANs), State Data

Centres (SDCs), Common Services Centres (CSCs), and Electronic Service Delivery Gateways.

- Governance: Suitable arrangements for monitoring and coordinating the implementation of NeGP under the direction of the competent authorities have also been substantially put in place. The programme also involves evolving/ laying down standards and policy guidelines, providing technical support, undertaking capacity building, R&D, etc. DIT is required to adequately strengthen itself and various institutions like NIC, Standardisation Testing and Quality Certification (STQC), Centre for Development of Advanced Computing (C-DAC), The National Institute for Smart Government (NISG).

- Centralized Initiative, Decentralized Implementation: E-governance is being promoted through a centralised initiative to the extent necessary to ensure citizen-centric orientation, to realise the objective of inter-operability of various e-governance applications, and to ensure optimal utilisation of ICT infrastructure and resources while allowing for a decentralised implementation model.

- Public-Private Partnerships (PPP) model is to be adopted, wherever feasible, to enlarge the resource pool without compromising on the security aspects.

- Integrative Elements: Adoption of unique identification codes for citizens, businesses, and property is to be promoted to facilitate integration and avoid ambiguity.

- Programme Approach at the National and State levels: For implementation of the NeGP, various Union Ministries/Departments and State Governments are involved. Considering the multiplicity of agencies involved and the need for overall aggregation and integration

at the national level, NeGP is being implemented, as a Programme, with well defined roles and responsibilities of each agency involved. For facilitating this, appropriate programme management structures have also been put in place.

- Facilitator role of DIT: DIT is the facilitator and catalyst for the implementation of NeGP by various Ministries and State Governments and also provides technical assistance. It serves, as a secretariat to the Apex Committee (discussed later) and assists it in managing the programme. In addition, DIT is also implementing pilot/ infrastructure/ technical/ special projects and support.

- DAR&PG's responsibility is towards government process re-engineering and change management, which are desired to be realised across all government departments. Planning Commission and Ministry of Finance allocate funds for NeGP through Plan and Non-plan budgetary provisions and lay down appropriate procedures in this regard.

- Ownership of Ministries: Under the NeGP, various MMPs are owned and spearheaded by the concerned line Ministries. In case there are any ongoing projects, which fall in the MMP category, they would be suitably enhanced to align them with the objectives of NeGP.

Programme Management Structure

The Programme Management Structure is as follows:

- **Prime Minister's Office:** To provide leadership to the NeGP; prescribe deliverables and milestones; and monitor periodically the implementation of NeGP.

- **National e-Governance Advisory Group:** Under the Chairmanship of the Union Minister for C&IT, it obtains views of external stakeholders, advises the Government on policy issues and strategic interventions necessary for accelerating introduction of e-Governance across Union and State Government Ministries/Departments.

- **Apex Committee (NeGP):** Functions under the Chairmanship of the Cabinet Secretary; oversees the NeGP programme and provides policy and strategic directions for its implementation, resolves inter-ministerial issues; moderates and drives services, process re-engineering and service levels of each MMP, wherever required.

- **Planning Commission and Ministry of Finance:** Allocate funds for NeGP through Plan and Non-plan budgetary provisions and lay down appropriate procedures in this regard.

- **Line Ministries/Departments:** Take ownership of the MMP and conceptualize the project by fixing the objectives, hold consultations with all the stakeholders, prepare comprehensive Project Document including identification of e- services and service levels, obtain sanction for schemes, and implement the project and its various components.

- **State Governments/UT Administrations:** Responsible for implementing State Sector MMPs, under the overall guidance of the respective Line Ministries in cases where central assistance is also required. An Apex Committee at the State level headed by the Chief Secretary is constituted to implement the projects.

- **Department of Information Technology (DIT) including National Informatics Centre (NIC):** DIT serves as a secretariat to the Apex Committee and assists it in

managing the NeGP projects. DIT assists National e-Governance Advisory Group and Prime Minister's Office; facilitates implementation of NeGP by various Ministries and State Governments; carries out technical appraisal of all NeGP projects; prepares suitable template(s) for preparing project document(s) for use by individual departments; provides technical assistance to various Ministries and State Governments either directly or through NIC or in collaboration with external professional Consultants; undertakes monitoring of all the MMPs.

- **Department of Administrative Reforms & Public Grievances (DAR&PG):** Responsible for generic Process Re-engineering and Change Management, which are desired to be realised across all Government departments. However, concerned Line Ministries / Implementing Agencies are primarily responsible for carrying out the required Process Re-engineering and Change Management; promoting initiatives for Human Resource Development, and training and awareness building.

Different Mission Mode Projects conceptualized under NeGP initially are mentioned below:

Those MMPs under the Central Government category are mentioned below:

Central MMPs

- Ministry of Finance/Central Board of Direct Taxes: Income Tax;
- Ministry of Corporate Affairs: MCA21;
- Ministry of External Affairs/Ministry of Home Affairs: Passport, Visa, and Immigration; Department of Banking: Insurance;

- MMP National Citizen Database: Ministry of Home Affairs/Registrar General of India (RGI);
- Central Excise Department: Revenue/Central Board of Excise & Customs;
- Pensions & Pensioners Welfare and Department of Expenditure: Pensions;
- Department of Banking: Banking;
- Department of Administrative Reforms & Public Grievances and Ministry of Home Affairs/Registrar General of India: National Citizen Database.

Those MMPs under the State Government category are mentioned below:

State MMPs

- Ministry of Rural Development: Land Records;
- Ministry of Road Transport & Highways: Road Transport;
- Department of Land Resources/ Department of Information Technology (DIT): Property Registration;
- Agriculture Department: Agriculture & Cooperation;
- Ministry of Finance: Treasuries;
- Ministry of Urban Employment and Poverty Alleviation: Poverty Alleviation based Livelihoods;
- Ministry of Panchayati Raj: Gram Panchayats;
- Ministry of Finance: Commercial Taxes;
- Ministry of Home Affairs: Police;

- Ministry of Labour & Employment: Employment Exchanges;
- DIT: E-District

Those MMPs under the Integrated Services category are mentioned below:

de Projects - Integrated Services Category

mmerce): Ministry of Commerce & Industry/ Department of Commerce

rtment of Industrial Policy & Promotion / DIT

rvices Centres: Department of Information Technology

Department of Information Technologies and Department of Administrative Reforms & Public Grievances;

: Department of Information Technology;

epartment of Justice;

nt: Ministry of Commerce & Industry/ Directorate General of Supplies and Disposals

he above projects, there is also need to create the right governance and institutional mechanisms, set up core e, formulate key policies, standards, and the legal framework for adoption; and to channelize private sector l financial resources into the National e-governance efforts. For this purpose, certain key components have also ed for implementation, which are given below. These components cut across and support various projects.

ort Components Category

1 DIT: Core Policies

2 DIT: Core Infrastructure: SWAN, NICNET, SDCs

3 DIT: Support Infrastructure (CSCs, etc.)

4 Technical Assistance Department of Information Technology

5 DIT: R&D

6 Department of Administrative Reforms & Public Grievances: Human Resource Development

7 Department of Administrative Reforms & Public Grievances: Awareness & Assessment

8 Department of Administrative Reforms & Public Grievances: Organization Structures

ny more operational aspects relating to the MMPs at various levels and departments. You can visit the website of nto account the performances of various MMPs.

D. National Policy on Information Technology, 2012

The National Policy on IT focuses on application of technology-enabled approaches to overcome monumental developmental challenges in education, health, skill development, financial inclusion, employment generation, governance etc. to greatly enhance efficiency across the board in the economy. The policy seeks to achieve the twin goals of bringing the full powerof ICT within the reach of the whole of India and harnessing the capability and human resources of the whole of India to enable India to emerge as the Global Hub and Destination for IT and ITES Services by 2020.The focus of the IT policy is therefore on deployment of ICT in all sectors of the economy and on providing IT solutions to the world. The Policy aims at attaining these objectives through coordinated action on the part of both the Central and State governments.

A unique AADHAAR based electronic authentication framework would be an integral part of systems providing services to the people. Cloud computing will significantly speed up design and roll out of services, enable social networking and participative governance and e- commerce on a scale, which was just not possible with traditional technology solutions.

Adoption of IT by civil society is also increasing by leaps and bounds. It presents a unique opportunity to reach a large percentage of the population in ways that were not possible earlier. Used appropriately, they could substantially enhance the democratic and governance fabric of the country. Social media could also be utilized to facilitate peer-to-peer interaction and thereby promote horizontal communication to foster the growth of a connected society.

The National Policy on IT aims to maximally leverage the power of ICT to help address monumental economic and developmental challenges the country faces. It is rooted in the conviction that ICT has the power to transform India and improve the lives of all Indians.

I. Vision

To strengthen and enhance India's position, as the Global IT hub and to use IT and cyber space, as an engine for rapid, inclusive, and substantial growth in the national economy.

II. Mission

1. To consolidate India's position as the global IT & ITES hub and leverage IT to contribute significantly to GDP and employment.
2. To create a sustainable ecosystem for R&D and Innovation to emerge, as a global leader in the conception, design, and development of new products, services, processes, and business models.
3. To leverage ICT for enhanced competitiveness and productivity of key economic and strategic sectors.
4. To provide ubiquitous affordable access to information and public services for

enhancing efficiency, transparency, accountability, and reliability; and leverage use of ICT, as a driver for social inclusion.

5. To be the leading resource base for IT and ITES talent for domestic and global markets.

6. To ensure a secure cyber space to facilitate trust and enable sustained growth of ICT.

7. To transform India into a Knowledge Society.

III. Objectives

1. To increase revenues of IT and ITES Industry from 100 Billion USD at present (2012) to 300 Billion USD by 2020 and expand exports from 69 Billion USD at present to 200 Billion USD by 2020.

2. To gain significant global market-share in emerging technologies and services.

3. To promote innovation and R&D in cutting edge technologies[1] and development of applications and solutions in areas like localization, location based services, mobile valueadded services, cloud computing, social media and utility models.

4. To encourage adoption of ICTs in key economic and strategic sectors to improve their competitiveness and productivity.

5. To provide fiscal benefits to SMEs and Startups for adoption of IT in value creation.

6. To create a pool of 10 million additional skilled manpower in ICT.

7. To make at least one individual in every household e-literate.

[1] Cutting-edge technology refers to technological devices, techniques or achievements that employ the most current and high-level IT developments. Cutting-edge technologies that can change our world in future. Can you imagine the world without electricity and light bulbs? Before these inventions, people did not have much choice. Technological innovations have changed our lives in recent years for the better.

8. To provide for mandatory delivery of and affordable access to all public services in electronic mode.

9. To leverage ICT for key social sector initiatives like education, health, rural development, and financial services to promote equity and quality.

10. To make India global hub for development of language technologies, to encourage and facilitate development of content accessible in all Indian languages, and thereby help bridge the digital divide.

11. To enable access of content and ICT applications by differently-able people to foster inclusive development.

12. To leverage ICT for expanding the workforce and enabling life-long learning.

13. To strengthen the Regulatory and Security Framework for ensuring a secure and legally compliant cyberspace ecosystem.

14. To adopt open standards and promote open source and open technologies.

IV. Strategies

1. Creating ecosystem for a globally competitive IT/ITES Industry
2. Human Resource Development
3. Promotion of Innovation and R&D in IT Sector
4. Enhancing productivity and competitiveness in key sectors through ICT
5. Creating an ecosystem for Internet and mobile driven Service Industry
6. Enabling Service Delivery through e-Governance
7. Development of Language Technologies

8. GIS based IT Services
9. Security of Cyber Space

E. Digital India

Digital India (DI) is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy.

Vision of digital India is centered on three key areas-digital infrastructure, as a utility to every citizen; governance and services on demand, and digital empowerment of citizens. Digital India has nine pillars to achieve the three visions.

Overall costs of DI are Rs. 100,000 Cr. in ongoing schemes and Rs. 13000 Cr. for new schemes and activities.

The Programme has a Minister, Communications and IT at the apex. There is a Secretary DeitY, CIOs in ministries, additional secretaries, and joint secretaries looking after the nine pillars of DI implementation of its vision areas.

We will now briefly discuss these pillars individually.

- **Pillar 1 Broadband Highways**

This has 2, 50,000 village Panchayats to be covered under the National Optical Fibre Network (NOFN) by December 2016. Department of Telecommunications (DoT) is the nodal Department for this project. National Information Infrastructure (NII) would integrate the network and cloud infrastructure in the country to provide high speed connectivity and cloud platform to various government departments up to the Panchayat level. These infrastructure components include

networks, such as, State Wide Area Network (SWAN), National Knowledge Network (NKN), National Optical Fibre Network (NOFN), Government User Network (GUN), and the 'MeghRaj[2]' Cloud.

- **Pillar 2 Universal Access to Mobile Connectivity**

This initiative focuses on network penetration and filling the gaps in connectivity in the country. There are around 55,619 villages in the country that do not have mobile coverage. As part of the comprehensive development plan for North East, providing mobile coverage to uncovered villages has been initiated. Mobile coverage to remaining uncovered villages would be provided in a phased manner. The Department of Telecommunications will be the nodal department and project cost will be around 16,000 Cr. during 2014-18.

- **Pillar 3 Public Internet Access Programme-National Rural Internet Mission**

The two sub components of Public Internet Access Programme are Common Services Centres (CSCs) and Post Offices, as multi-service centres. CSCs' number would be increased to 250,000 i.e. one CSC in each Gram Panchayat. CSCs would be made viable and multi-functional end-points for delivery of government and business services. DeitY would be the nodal department to implement the scheme.

A total of 150,000 Post Offices are proposed to be converted into multi service centres. Department of Posts would be the nodal department to implement this scheme.

- **Pillar 4 E-governance: Reforming Government through Technology**

[2] In order to utilize and harness the benefits of Cloud Computing, the Government of India has embarked upon an ambitious initiative –'GI Cloud,' which has been named as 'MeghRaj'. The focus of this initiative is to accelerate delivery of e-services in the country while optimizing ICT spending of the Government. This will ensure optimum utilization of the infrastructure and speed up the development and deployment of e-gov. applications.

Government process re-engineering using IT to simplify and make the government processes more efficient is critical for transformation to make the delivery of government services more effective across various government domains. This Pillar entails form simplification and field reduction, online applications and tracking, online repositories, and integration of services and platforms.

- **Pillar 5 E-kranti: Transforming E-governance for Transforming Governance**

Substantial transformation in the quality, quantity, and manner of delivery of services; significant enhancement in productivity and competitiveness, integrated services and not individual services, government process reengineering (GPR) has to be mandatory in every MMP. Likewise, ICT infrastructure on demand, Cloud, Mobile First, fast tracking approvals, mandating standards and protocols, language localization, national GIS, and security and electronic data preservation are enabling transformation of governance with use of ICT.

- **Pillar 6 Information for All** with the help of Open Data platform and online messaging.

- **Pillar 7 Target NET ZERO Imports**

This pillar focuses on promoting electronics manufacturing in the country with the target of NET ZERO imports by 2020, as a striking demonstration of intent. This ambitious goal requires coordinated action on many fronts, such as, taxation, incentives, economies of scale, and eliminating cost disadvantages. Focus areas will be the set top boxes, VSATs, mobiles, consumer & medical electronics, smart energy meters, smart cards, micro-ATMs, incubators, clusters, skill development, enhancing PhDs, government procurement, safety standards, national award, marketing, brand building, R & D in electronics, and security forces.

- **Pillar 8 IT for Jobs**

This pillar focuses on providing training to the youth in the skills required for availing employment opportunities in the IT/ITES sector. There are eight components with specific scope of activities under this pillar. IT trainings to people in smaller towns and villages and focus on setting up of BPOs[3] in every north-eastern state in order to facilitate ICT enabled growth in these states. DeitY is the nodal department for this scheme.

- **Pillar 9 Early Harvest Programme**

Consists of those projects, which are to be implemented within short timelines. An IT platform for messages, a mass messaging application has been developed by MeitY for this purpose with over 1.36 crore mobiles and 22 lakh emails, as part of the database. Biometric attendance, Wi-Fi in all universities under NKN+400 additional universities, public Wi-Fi hotspots in areas having tourists' attendance, school books to be e-books by 2015, and such others.

Few Challenges

High level of digital illiteracy, creation of awareness among common masses, mammoth task to have connectivity with each and every village, town, and city; connecting 250,000 Gram Panchayats through National Optical Fibre, and ensuring that each Panchayat point of broad band is fixed up and functional are few big challenges. It is found that 67% of National Optical Fibre Network (NOFN), Ministry of Communications & Information Technology, Govt. of India points is found to be non-functional even at the pilot stage.

[3] Business process outsourcing is a method of subcontracting various business-related operations to third-party vendors.

India has low internet speed. According to third quarter 2016 Akamai Report on internet speed, India is at the 105th position in the world in average internet speed. This rank is the lowest in entire Asia Pacific region.

Further, issues pertaining to taxation and regulatory guidelines have proved to be a road block in realizing the vision of Digital India. Some of the common policy hurdles include lack of clarity in FDI policies have impacted the growth of e-commerce.

We are having a very slow and delayed infrastructure development inadequate to tackle growing increase in digital transactions. India needs over 80 lakh hotspots, as against the availability of about 31,000 hotspots at present, to reach global level, according to ASSOCHOM-Deloitte report.

The private participation in government projects in India is poor because of long and complex regulatory processes and also because they are found to be commercially non-viable. Currently over 55,000 villages remain deprived of mobile connectivity because providing mobile connectivity in such locations is not commercially viable for service providers. Also, no funds have been deployed effectively to meet the cost of infrastructure creation in rural areas.

Non-availability of digital services in local languages is a great barrier in digital literacy.

Fear of cyber crime and breach of privacy has been deterrent in adoption of digital technologies.

According to NASSCOM, India needs 1 million trained cyber security professionals by 2025. The current estimated number is 62000.

Suggestions

Policy changes are needed to make digital India a reality. Digital literacy, a massive awareness programme has to be conducted to educate and inform the citizens, especially in rural and remote areas, about the benefits of internet services to increase the growth of internet usage. Digital divide needs to be addressed. This mission needs content and service partnerships with telecom companies and other firms. PPP models must be explored for sustainable development of digital infrastructure. Minimum cyber security risks and many more of such initiatives are the requirements of the day.

3.3 CONCLUSION

The Unit discussed about the various legal and policy enactments that are being implemented to provide legal sanctity to all technology based transactions and communications.

Beginning with IT Act 2000, the Unit discusses the RTI Act 2005, the NeGP 2006, National IT Policy Act 2012, and Digital India Programme. These Acts and projects do focus on inclusive governance by having cutting edge technologies and involvement of stakeholders across levels. They are all attempts to make governance a democratic one.

ACTIVITY

The provisions of the National Policy on Information Technology, 2012 are getting operational with the launching of Digital India Programme. Let us know about your viewpoints on this statement.

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UNIT 4 ROLE OF ICT IN ADMINISTRATION

Structure

4.0 Objectives

4.1 Introduction

4.2 Role of ICT in Administration

4.2.1 Internal Administration

4.2.2 Planning and Decision Making

4.2.3 Service Delivery

4.3 Conclusion

4.4 Key Concepts

4.5 References

4.0 OBJECTIVES

After studying this Unit, you should be able to:

- discuss the essential components for ICT implementation in administration;
- examine the role of ICT in the vital areas of administration; and
- suggest measures for effective implementation of ICT in administration.

4.1INTRODUCTION

ICTs have emerged, as major instruments in facilitating and enabling the restructuring

of hierarchical organizations, re-engineering of work processes, and effective and participative decision-making.

In this Unit, we will discuss the role of ICT in facilitating three vital areas of administration, namely,

- Internal Administration;
- Planning and Decision Making; and
- Service Delivery

We will now discuss the role of ICT in the three vital areas of administration individually.

4.2 ROLE OF ICT IN ADMINISTRATION

ICT enables administration to be efficient and effective by facilitating the three core areas

of its functioning. It helps administration perform its public functions by simplifying the work processes and internal functioning via internal computerization and automation, thus fostering transparency and accountability. Further, ICT facilitates policy formulation through multi-stakeholders participation enabling administration to incorporate the ideas and suggestions of professionals, academicians, private sector, civil society organizations, media, community, and individuals in policy making. In addition, it renders public goods and services to the people by making the service delivery much more convenient, citizen oriented, and cost-effective.

We will now examine these roles in detail.

4.2.1Internal Administration

ICT:

- tends to reduce the inordinate delays in file processing and movement caused by multiple levels in the departments/organizations (Gupta, et.al). From the lowest level of receipt of application to the highest level of action taking is the involvement of online file movement. Once the concerned official does noting, it is sent online to the next official. Hence time is not wasted in unnecessary physical movements. Computerized database is available for ready reference and it becomes possible for the officials to reduce the number of file movements;
- promotes centralized storage of files and data. This enhances maintenance, reduces unnecessary effort, minimizes storage place, and lessens security risks. As the files anddata are maintained in the electronic form, location and retrieval becomes easy and time saving. The entire office management system is electronised;

  establishes efficient communication system between employees of departments thereby reducing wastage of time. Technology promotes connectivity and closer collaboration between departments and helps them to work in an integrated manner increasing

overall productivity and reducing time overheads. This will not only benefit the employees of the organization but also the citizens, who would experience a much shorter turnaround time and a greater degree of transparency (paraphrasing Gupta, et.al);

- replaces the manual system of using standard process sheets and similar documents for processing leave applications, transfer orders, or General Provident Fund advances of the employees. These process sheets can be maintained in the electronic form in a computerized environment (Gupta, et.al); and
- shapes the environment in, which the department is operating and enhances the knowledge and skills required by administrators and staff. It facilitates organizational learning and adaptation to the changing global environment by way of partnership, participation, information sharing, and delegation- a complete shift from the functionaltraits of classic administration.

Now there is a shift from the traditional administration to a modern electronised administration. ICT modernizes the traditional pattern of administrative functioning in the following way:

Traditional Administration	**Electronic Administration**
• Unwieldy paper files	Computer based files
• Hierarchical authority	Networked power
• Wielding power through hiding information	Empowerment by sharing information
• Expenditure orientation	Performance orientation
• Individualistic	Organizational
• Batch processing	Online processing

• Delayed access	Instant access
• Delayed response	Prompt response
• Manual data entry	Electronic data entry
• More time for routine repetitive work	More time for creative work
• Fear of unknown	IT savvy
• Status quo	Continuous improvement

Source: Jagdish Kapoor

4.2.2 Planning and Decision Making

ICT enables planning and decision making with the help of following applications:

- **Information Systems**

Storage of information in electronic databases opens up significant possibilities for sharing information and creating new information and knowledge. Such information can be retained, as individual data elements, as combinations of data to support decision-making, and as accumulated knowledge and wisdom (Gupta, et.al.). Information collected for one purpose can be re-used for multifarious policies and plans. Geographic Information Systems have enabled effective planning and decision-making by government departments.

Geographic Information Systems (GIS)

GIS are special category of Decision Support Systems that can capture, store, check, integrate, analyze and display data using digitized maps. Every record or digital object hasan identified geographic location. By integrating maps with spatially oriented databases and other databases, government departments can generate information for planning, problemsolving and decision making, thereby increasing their productivity and quality of

decisions. With help of GIS, use and analysis of spatial information in conjunction with connected socio-economic information is possible, which provides an ideal basis for planning. GIS is used for systematic town planning, establishing network, taking stock of country's agricultural and other resources, identifying natural resources through remote sensing; anddeveloping infrastructure projects through spatial digital information to meet the growingneeds of urbanization (Gupta, et.al.).

GIS has been used for local level development planning in the country. The Department of Science and Technology has implemented a UNDP assisted Project on 'GIS-Based Technology for Local Level Development Planning' in association with leading academic institutions, data generating agencies, and NGOs in the country. The Project helps in local level planning by using remote sensing, GIS, and modern data communication facilities. Tools and techniques, such as, Geo-referenced Area Management or the GRAM++GIS package and Decision Support Modules were used for selected sectors of local level planning, for example, water resources management, land use planning, energy, budgeting, and infrastructure development (http://www.undp.org.in).

- **Connectivity**

Connectivity among various government departments is provided horizontally and vertically through LAN and WAN. With networking they are able to smoothly transfer files, papers, records, information and notifications on intranet. Transfer and exchange of data is now immediately done. Wide area network has helped in linking state headquarters with district and cities and even the villages. Departments are now able to stay connected with their local units. Reports and data from the grassroots offices can be sent via e-mail. Linking the offices at the cities' and village level has helped in policy monitoring.

Project implementation and monitoring can be done with the help of such networking. A system for monitoring of various aspects of rural development schemes implemented at the

district level has been made available to the Department of Rural Development. The state and central government departments can monitor online the progress made in the implementation of the poverty alleviation schemes. This has been implemented in State of Madhya Pradesh.

- **Video Teleconferencing**

Video teleconferencing can be used to decide urgent matters in consultation with senior officers without calling them over from their offices. This will make them accessible to the people even while being in a position to confer with other officers in matters which are urgent and cannot wait for a formal meeting to be convened.

The state departments are able to address their units with the help of this Network. The Network connects the State Headquarters with key locations in the district and cities and provides video teleconferencingwhich is used by the Chief Minister, Ministers and Heads of Department to hold frequent reviews of various programmes without requiring the district officers to travel and be physically present in the State Headquarters. This has proved to be extremely effective tool for managing natural calamities and drought relief, handling health related epidemics, tracking performance and organizing state-wide campaign for various programmes and themes.

Teleconferencing has enabled citizens' participation in decision-making, especially in matters concerning them.

ICT has further enabled a direct form of democracy through e-polls, e-consultations, e-discussions and e-ballots. Political parties, governmental institutions, non-governmental organizations, and media get the opinions and feedback of the people through e-polls on policy matters and on crucial issues. The suggestions are important inputs to planning andpolicy making by the government.

4.2.3 Service Delivery

ICT helps administration to perform its duties towards citizens by efficient and effective delivery of public services. With ICT enabled service delivery, administration is able to provide:

- qualitative and comprehensive information on departmental websites, especially in local languages. Government departments also host notifications and various Acts promulgated from time to time on the web. Government is now able to provide information to those, who are living in remote and disadvantaged areas, where they have no access to libraries, newspapers etc.

  Most of the state governments are now hosting bilingual websites enabling easy access to information and services by the people. Information on utility services and welfare schemes, as those given below, is now being hosted on bilingual websites.

  i. rural services relating to land records;

  ii. police services concerning FIR registration and lost and found matters;

  iii. social services relating to pension scheme, schemes for elderly and widows, schemes for physically challenged, licenses, motor vehicle registration, ration cards, certificates relating to births and deaths, domicile, caste/tribe etc;

  iv. public information regarding employment exchange registration, employment opportunities, examination results, hospitals/beds availability, railway time tables, airline time tables, government notifications, government forms, government schemes etc;

  v. agricultural information on seeds, pesticides, fertilizers, crop disease, weather forecast, and market price;

  vi. utility payments of electricity, water, and telephone;

  vii. commercial services pertaining to taxation and return filing; and

viii. public grievances matters pertaining to civic amenities, such as electricity, water, telephone, ration card, sanitation, public transport etc. (Sawhney).

- integrated and seamless services to the citizens. All service providers, all services, and all service channels are integrated to provide seamless services to the people. It is now possible to deliver the services seamlessly across governments and across delivery channels using internet, telephone, and service counters. Citizens are able to access the services in a seamless fashion (fluid, agile, integrated, transparent, and connected), as per their needs (Kernaghan). Thus, they are saved from travelling distances and spending time and money for getting services, as everything is available at a single window centre.

  The single window system will provide all government services and information online at a single point that can be a web portal or a CSC.

  In Andhra Pradesh, government departments and organizations are providing public services through the single window and one-stop shop, namely, e-seva kendras and city civic centres. The people can visit the e-seva kendras and city civic centres and avail information on employment schemes, development programmes, and government notifications. Departments can now get online payments on the utilities (electricity, water, and telephone) they provide to the citizens. Departments have now enabled the people to file returns and taxes, lodge grievances, and apply for various certificates using e-seva or civic centre facilities. In addition, departments are able to host online information pertaining to a number of social services, such as, schemes for widows, old and physically challenged.

  Civic departments are able to use one-stop centres of FRIENDS Project in Kerala to provide public information and utility services to the people. The

FRIENDS centres are fast, reliable, instant, and efficient networks for disbursement of services by departments. These centres render one-stop, front-end, IT enabled payment counter facility for citizens to make all kinds of government payments. Hence, the government is able to get increased revenues, as now there is no scope for intermediaries and corruption.

The National Capital Territory of Delhi has set up citizen service points, which are being used by the citizens to access any information about government services from any location. These citizen service points are electronically linked to government departments through websites. The government has also put up 'Suvidha' Points at each department to enable the citizens a single window to interact. At these Suvidha Points the applications are accepted and acknowledged and the citizens are given a date by, which they can expect a response from the department.

States like Tripura have opened Information and Facilitation Centres in the State Secretariat. This enables the departments to highlight their activities and use database at the backend to respond to citizens' queries. Likewise Delhi, Orissa and Rajasthan have undertaken similar initiatives in service delivery.

NIC has developed a web-based Public Grievance Redressal Monitoring System for the Directorate of Public Grievances enabling the citizens to file their grievances to the Directorate. The system also helps in monitoring the status of grievance redressal.

Thus, with ICT in service delivery:

- Public interaction has become maximum. One stop information centres render all services to the people without the need for them to visit the departments personally. Quality services are being provided with the help of conveniently located access points. Government has facilitated comfort and satisfaction to the people, as they can

avail public services of their own choice conveniently from any place and at any time and in their language.

Administration has access to number of service delivery channels now. Government usesintegrated service channels, such as, internet, website, computers, CDs, mobile and other wireless devices, television, radio, etc. not only in delivery of services but also in generating awareness and mobilization. Hence, ICT has provided multiple electronic channels to the government departments to render different types of services and to reach to those far-flung areas, which have connectivity and bandwidth problem. ICT has ensured seamless service delivery involving all service providers and all service channels for all services.

- Openness is ensured. Government departments have become transparent in sharing information with the people. There is no secrecy and administration has become openin giving information. This has ensured the right to information to people.
- Accountability and efficiency has increased. Administration has now become hassle free, as they are able to dispose of cases online. With service delivery becoming integrated at both front-end and back-end, their burden of facing hundreds of peopleevery day and being tangled in the file work has been reduced. Now, departments can focus on their core functions. Also, internal monitoring of disposal of applications is possible and delay, harassment, and corruption can be checked. The system bringsin transparency relating to the number of applications received and the concerned department to, which they relate.

4.3 CONCLUSION

ICT in administration has led to positive developments. With ICT enabled administration, there is/are:

- citizen-centeredness in service delivery;
- restructuring of government departments;
- better working methodologies and re-engineered work processes;
- better decision-making, implementation, monitoring and evaluation;
- increase in efficiency and productivity;
- cost effectiveness, consistency, and seamless services;
- participative and collaborative policy making;
- openness and wider accessibility; and
- accountable, responsible, and decentralized governance.

ACTIVITY

1. Let us know about some of the ICT applications being implemented in the secretariat departments of your State.

2. Discuss the civic services being rendered by the Information and Facilitation Counters in your locality.

4.4 KEY CONCEPTS

Ethernet : is a frame-based computer networking technology for local area networks. It has become the most widespread LAN technology in use during the 1990s to the present. In telecommunications, a frame is a packet which has been encoded for transmission over a particular link.A packet is the fundamental unit of information carriage in all modern computer networks.

Telemetry : basically refers to wireless communications and is a system for acquisition, storage and transmission of real time data from remote locations. It is a technology that allows the remote measurement and reporting of information of interest to the system designer or operator. The word is derived from Greek word- 'tele' meaning remote, and 'metron' meaning measure.

Application : software application, which includes database programmes, word processors and spreadsheets. Application software sits on the top of systems

software because it is unable to run without the operating system and system utilities. It is defined subclass of computer software that employs the capabilities of a computer directly to a task that the user wishes to perform.

Spreadsheets : is an accounting or bookkeeping programme that displays data in rows and columns on a screen. It is a screen-oriented interactive programme enabling user to lay out financial data on the screen.

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UNIT 5 ADMINISTRATIVE CULTURE: TOWARDS ICT BASED REFORMS

Structure

4.0 Objectives

4.1 Introduction

4.2 Meaning and Importance of Organization Culture

4.3 Administrative Organization Culture: A Case for ICT

4.4 Towards Changed Organization Culture

4.5 Mechanisms

4.6 Limitations

4.7 Suggestions

4.8 Conclusion

4.9 References and Further Readings

4.0 Objectives

After studying this Unit, you should be able to:

- explain the traditional traits of administrative organization**;**
- discuss the role of ICT in transforming the traditional traits to a more sophisticated one in public organizations.
- describe the limitations the organizations have to face, when bringing a tech savvy culture; and
- highlighting steps to be taken up to have a tech savvy culture in public organizations.

4.1 INTRODUCTION

"Ultimately, the government worker of the future has to be a knowledgeworker."

“Men well governed should seek no other liberty, for there is no greater liberty than a good government.” This in times, when the waves of change point towards a liberal economic framework and exit of state from sectors that could be better done through private enterprise, has far reaching implications. While this is so, it definitely does not mean curtains for governments, since, as long as, the civilizations exist; governanceof some form has to exist to ensure order and fair play. The areas of operation may change but the societal dependence on state is inevitable and, if that is the case, it is important that the state does its task in the manner giving least inconvenience and

maximum facility to its citizens. Never before was the craving for looking at options and alternatives to improve governance stronger than now. Though there are many ways of achieving that, one has to find out methods that are easiest and cost effective and it is here that the tools of Information and Communication Technology score over others.

ICTs enable transformation of a very vital component of governance, that is, administrative organization. It plays a significant role in enabling the organization to be citizen centered and service oriented in the context of globalization. In this Unit, we will be focusing on the traditional traits of administrative organization and how ICTs can facilitate it to become citizen centered and vibrant with the changing environment.

To mention we have used the terms 'administrative organization,' 'government organization' and 'bureaucratic organization' interchangeably for convenience sake.

To begin with, we will now delve on the traditional traits of administrative organization.

4.2 TRANSFORMING THE TRADITIONAL TRAITS OF ADMINISTRATIVE ORGANIZATION: MAKING A CASE FOR ICT APPLICATIONS

Every day when one sees tens of thousands of citizens approach the government, onecan't help asking a question- whether it is possible to live up to their expectations. The expectations those are huge while resources at disposal are thin. To make matters worse, systems to administer those resources are out of date and inefficient.

The bureaucratic culture in a government organization is characterized by traits, where fixed ideas and achievement against predetermined targets hold precedence. It is based on formal rigidities, systems, clearly spelt out rules, and rationally laid down guidelines and procedures. The bureaucratic organization design is the overall configuration of structural components that define jobs, groupings of jobs, hierarchy, patterns of authority, approaches to coordination, and line-staff differentiation into a single, unified organizational system. The organization is characterized by a hierarchical set up, a top to bottom approach and is largely a closed system. Unity of command and compliance to set rules and procedures takes precedence over rest. The accent is more on doing least number of mistakes rather than experimentation and risk taking and committing errors, as a result of that. The stereotypical belief about bureaucracies is that they are inflexible, monolithic organizations with uncaringemployees, who create red tape.

One thing perhaps is certain; the solution does not lie in the talk and cannot be in pronouncements. If we've to improve the administration of governments anywhere, we would have to dosome serious introspection, look inwards, do a system analysis and figure out, where the rub lies. A thorough system analysis would, however, confirm that nine out of ten times, both the prevention and cure of this disease is possible, only if we allow technology to takeprecedence over the norm. Internally, technology solutions would ensure that the non-performers can't hide themselves and the decision support systems are on a stronger wicket with properly processed information base. Externally, technology would ensure that the discretionary advantages and favors possible in the tech-less system are eliminated allowing level playing field to everybody, which in essence, is the purpose of government.

This does not mean that ICTs can by themselves make the transformation happen, as there are host of other factors that influence butit is also true that technology is a sine qua non, an indispensable condition for achieving that.

4. 3 ROLE OF ICT IN TRANSFORMATION OF GOVERNANCE OF PUBLIC SECTOR ORGANIZATIONS

To ensure an ICT enabled change or transformation in the way of working of our public organizations, there is a need to gain a high-level of management support for the projects. Besides, there is need to have a central IT unit in the offices to coordinate the introduction of technology and make sure that all users are well acquainted with the basics of networking and have access to the network to perform the organizations' core functions in a digitized environment. The managers need to provide responses to the employees of the potentials, reliability, and security aspects of ICT applications. This will help the personnel with a sense of ownership of e-governance projects taken up.

For building the new work culture, there is a need to:

- provide organization with a presence on internet;
- provide a way to receive information from internet;
- create an internal process to guide internet use;
- provide positive role models for users; and
- provide new mechanisms to support the rhetoric of organization.

Mechanisms

In order to bring about the change in the bureaucratic culture and infuse in them new thoughts and urge for

creativity, ICT and its solutions can play a major role. This can allow them to gain insights into expanding frontiers of information technology but also help them become knowledge workers. This would also free their minds and open them to open ended thinking.

In order to achieve this objective, there has to be designed and tailored programmes to sensitize them to information needs on one hand and bringing technical skills of functionaries on the other.

The main objectives of these programmes are to:

- identify ICT applications that can provide improved services to citizens and helppublic administration in improving planning, monitoring, and administrative processes;
- demonstrate the feasibility of implementing such applications by specifying broad architecture, detailed design, and creating prototype application software(wherever feasible); and
- disseminate the work to public administrators that promote and use e-governance.

A major shift has occurred in the operation of the public sector in India and other countries over the last decade or so. At the heart of this change is the proliferation of new instruments or tools of public action-regulation, contracts, cooperative agreements, reimbursement schemes, tax subsidies, vouchers, insurance, and many more. Moreover, many of these new or newly expanded tools have in common a reliance on a host of third parties-such as commercial banks, non-profit organizations, other levels of government, or for-profit companies-to implement public programmes. The adoption of these tools has, thus, transformed the public sector from a provider to an arranger of services with profound implications on the nature and content of public management and democratic governance more generally. Those involved in public administration must consequently learn not only how to operate public agencies but also the distinctive operating requirements of the different tools, many of, which involve complex collaborative relationships with private contractors, regulated industries, non-profit agencies, and other levels of government.

The governments would, therefore, need to play a pivotal role in calling attention to this development and producing educational and other materials to promote understanding of it. This should include:

- emphasis on ‘new governance’ concept and its implications to accountability, management, and democratic control; and
- instructional materials to acquaint both policy scholars and practitioners with these alternative tools and with the "tools approach" that focuses attention on them. More than that, it is needed to establish an agenda for future action that

might improve the operation of public programmes by sensitizing policymakers and policy administrators to the distinctive features and operating demands of the various tools that public programmes embody.

Within the broad framework of these objectives, there is a need to take up the following types of activities:

- developing conceptual papers on strategies that governments can follow to introduce e-governance;
- working with specific departments/programmes to identify opportunities for developing ICT applications;
- designing ICT applications and identifying hardware and software resources that would be required to implement such applications in the respective offices;
- developing the software, as prototypes, to demonstrate the feasibility of building such applications;
- conducting cost-benefit analysis of e-governance projects and preparing comprehensive evaluation reports;
- documenting case studies of successful e-governance applications already developed in the field;
- designing workshops for sensitizing senior echelons of public administrators;
- developing papers, reports, and films to disseminate the output;
- creation and maintenance of databases that allows the retrieval and sorting of data easier and faster to enable citizen services;
- For this purpose, smooth front ends could allow user-friendly access to these databases; and
- Networking and connectivity should be ensured, wherein all these related computers and databases talk to each other, share the information, and live symbiotically.

4.4 Limitations

The resistance to change is inevitable, especially, so if the status quo gives the vested interests additional clout. Such a shift in the bureaucratic culture may also meet witha similar response, as the bureaucracy ever so reluctant to open up may create many

hurdles to see that the power they wield over the information they control is not reduced by bringing it into public domain through net. Besides this, openness and transparency in administration, which such activities attempt to achieve, would also be feared by those sections of employees who do not want to get exposed for their inefficiency. Another constraint is paucity of funds, as the case is with most of the public bodies in India. This exactly is the reason why such projects should be taken up as public-private initiative getting entrepreneurs to invest in them. Another challenge is to develop public awareness about ICT and making the citizens use such mediums for accessing civic services.

ICTs in the administrative parlance have been simply equated to computerization resulting in myriad of computers with absolutely no accent on the 'information' part of IT. Anybody who understands ICT would agree that it is almost 80% in the information part and only rest in the latter, that is, technology. The wrong understanding of this definition in organization has, however, resulted in needless addition of computers leading to a system, which neither has citizen focus and nor has evolved out of the real understanding of the maladies the particular system is afflicted with. Most of the computers lying with various organizations are relegated to being used as typewriters; more than 90% of their processing and storing capacities are unutilized/underutilized.

The bane of most government databases is that individual rather than systems drive it and hence, most of it is never updated once the individual departs.

Suggestions

Changing the administrative bureaucratic culture to a tech savvy, modern looking, flexible, goal-oriented culture requires significant efforts both at the technical as wellas organizational and personnel level. There are few management tips, as suggested below that can help usher in such a change:

- **Making a Compelling Case for Change**

Successful organizations have one important thing in common - the people, who have a stake in the outcome see the need to change. Most researchers also found that, as employees' understanding of a need for a change went down, the failure rate went up. Creating a change readiness is, therefore, critical.

Leaders of successful new initiatives made a compelling case to critical stakeholders before doing anything

else. How did they do it? The change managers were able to make a compelling case for change in their organization by creating a change readiness in the officials and employees.

- **Communicate Formally and Informally**

Formal communications – meetings and memos – are necessary, but they are not sufficient in times of change and transition. Employees need to know how the new direction relates to their day-to-day work. Officials at all levels need to talk about how the change relates to day-to-day decisions, actions, andevents.

Look for opportunities to discuss differences and similarities with newmethods or structures during team meetings and one-to-one meetings.

Most officials and employees need to hear a new idea many times before theyabsorb and integrate the new information. This is, especially true, when the new way of doing things is significantly different from current practices. As they hear about a change and talk through how it supports organization goals,they mentally rehearse how they will accomplish work using different means or different methods. For a significant change, this will not happen in a day or a week. Significant transformation requires time.

- **Personalise the Message: What Does This Mean for Me?**

Employees want answers to questions about how a change will affect them and how his or her job will change. Until the employees know what part they will play and how the change willimpact them directly, they can withdraw into worry. Their energy is not available to work on change or on the business of the organization.

Someone on the executive level can only answer questions like this in generalities; employees will look to their supervisors to gain information.The more preparation and information direct supervisors have, the better equipped they will be to answer questions.

And, it is impossible to have all the answers. Draw the picture of what you doknow and

the boundaries of what is unknown.

- **Acknowledge the Unknowns**

The maxim, “I’ll communicate something when I know something,” does notwork in change situations. In times of change, employees fill in the blanks with their worst fears. Every bit of factual information helps.

The statement, “I don’t know,” is more helpful than no communication at all.When you do not know an answer, tell employees when you will report on progress finding answers.

Most employees do not expect their directors to be perfect and all knowing. They will accept when you are not able to find answers. Be sure, though, notto let questions fall into a black hole. Reporting that you have no new information is better than silence.

- **Surface Rumors and Fill in the Blanks**

In many government organizations while the computerization process is on, itis observed that rumors regarding lay off etc. hold sway. Such rumors hold such a sway that members become so incensed and their productivity plummets.

The managers can bring out the myths by asking "What are the latest rumorsand gossips?" Bringing rumors out into the open deprives them of their power and provides a chance to replace rumors with solid facts or at least informed denials.

Look for patterns and fill in with factual information and frank discussion of unknowns.

- **Practice What You Preach**

When management actions do not match the changes they are asking others to make, employees grow cynical. One administrator extolled the virtues of self-organizing teams, but continued to dictate the details of team membership and assignments. He even stopped by developers' desks to givethem advice on how to write code. He talked the talk but his actions showedhe did not walk the walk of self-organization.

Successful change requires changes from everyone, not just the lower levelsof the organization. Wise managers do not ask other employees to make changes they are not willing to make themselves.

- **Acknowledge and Build on What Employees Value**

One finds that asking the question adifferent way help surface the information. As employees work out the details of how the new ways will work, ask, "What were the strengths of theway we have been doing things? How do those strengths map to the new way?"

Acknowledge that the old way was not stupid or bad – it worked well at onetime, but it does not fit the current context.

- **Reframe Resistance**

When employees resist, the natural tendency is to push harder, give morereasons or even threaten. But exploring the response to change can be a source of important information.

When faced with a change, some employees are afraid they will not be able –or will not have time – to learn the new skills, methods or procedures to be successful with the change. Herein, communication from a well-respected senior will garner more attention. Past experience with change will affect how employees greet the current change initiative. When past change efforts have failed the employees will be understandably skeptical. Arguing will not help, but curiosity may. Probe, you may uncover useful information that will help you avoid pitfalls with the current change. Or youmay be able to point out what has changed since the last time that makes thechange more likely to succeed this time.

- **Employees Do Not Resist Change, They Resist Coercion**

Employees do not resist change itself; they resist coercion. Lay out the reasons, acknowledge the emotions, provide support, and give employees achance to choose change.

- **Empathise**

In reality, change involves loss: loss of routines, relationships, turf, expertiseand status. It is normal for people to experience intense emotions during times of change. Pretending those emotions do not exist will not make them go away; failing to acknowledge emotional responses may actually prolong and amplify them. Administrators need tolisten, empathize, and acknowledge that feelings are real and valid. Real change takes time. One is not expected to complete a major transformation in a matter of weeks. Transitions that involve significant changes-new methods or re-organizations-are measured in months and years,not days and weeks.

Expect that the world around you will shift during the transition and be prepared to adapt to new opportunities and circumstances. Be willing to refine goals and plans based on new information from both inside and outside the organization. Plan for small wins and celebrate those wins.

Start change communication with a compelling reason for the change, thencommunicate, communicate, communicate until the employees begin to forget they ever did things a different way.

CONCLUSION

ICTs have taken up the challenge of re-building administrative culture in government organizations. They have enabled an improved and qualitative work culture by fostering:

- open, transparent, flexible, and decentralized administration;
- information sharing and dissemination;
- shift in the traditional organizational culture of neutrality, anonymity, and politicalaccountability;
- speed, accuracy, and efficiency in day to day work;
- participative, collaborative, cost effective, and responsive work culture ; and
- values of public interest, public discourse and dialogue, and democratic citizenship and has enhanced public accountability and trust of the masses in administration.

ACTIVITY

1. Visit a government department or agency. Observe the functioning and the workculture. Please jot down your observations about the behavior and action of theemployees and officials.

2. Narrate some suggestive measures to revamp the administrative culture of ourgovernment organizations.

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UNIT 6 ROLE OF ICT IN RURALDEVELOPMENT

Structure

6.0 Objectives

6.1 Introduction

6.2 ICT Applications in Rural Development

6.3 ICT Applications in Agriculture

6.4 ICT and Women Empowerment

6.5 'PRAJA:' ICT Application in Public Service Delivery

6.6 Suggestions for Effective ICT Implementation in Rural Development

6.7 Conclusion

6.8 Key Concepts

6.9 References and Further Readings

6.0 OBJECTIVES

After studying this Unit, you should be able to:

- explain the importance of ICT in citizen service delivery;
- discuss the role of ICT in rural development;
- highlight ICT applications in agriculture development ; and
- describe the role of ICT in creating livelihood opportunities in rural communities.

6.1 INTRODUCTION

India is a country of villages and their socio-economic transformation shall always serve, as an index to development. Rural development is generally taken, as development of rural areas. The concept encompasses within its scope an overall improvement of the

quality of life in rural areas taken, as a whole and not just the development of an isolated sector.

Since 1991, a new era has commenced, wherein the Indian economy has opened up to the world economy and invited foreign capital, investment collaborations, and technology in a big way. Today, every

sector of the Indian economy is attuning itself to the changing economic environment. The rural sector is no exception. New feature of today's globalisation that has profound impact on rural sector is the ICT. The major objectives of ICT in rural development are to bring efficiency, openness, and responsiveness along with participation in the formulation and implementation of rural development programmes by the people. It contributes to qualitative and quantitative changes in rural life style.

In this Unit, we will now discuss and assess the role played by ICT in the field of rural development.

6.2 ICT APPLICATIONS IN RURAL DEVELOPMENT

ICTs develop in rural communities a learning and innovation capacity that increases the effectiveness of their efforts to solve problems and improve their lives. They empower these communities and increase the effectiveness of their development efforts through informed decision making to achieve the objectives of poverty eradication, food security, and sustainable development in rural areas.

However, technological applications in our country are largely restricted to urban areas. Rural areas have not reaped enough benefits from them. It is, therefore, necessary, to develop and introduce appropriate of so called green technologies[1] coupled with sound delivery system, which ensures economic and ecological sustainability and optimum use of local resources emphasizing on technology capacity building of rural people. In this endeavor, institutional linkages and active participation amongst voluntary agencies,

[1] India has one of the largest green energy projects that generate 20,000 MW of solar power and 3,000 MW from wind farms on 50,000 acres in Karnataka. The first phase of the US$50 billion project was started in the year 2012.Also, a Clean Energy Fund has been set up in the national budget, which provides subsidies for green technology and has been the basis for a National Action Plan on Climate Change, which sets specific targets on issues such as energy efficiency and sustaining the Himalayan eco-system. For any green technology initiative, it is necessary to ensure energy efficiency through its life cycle assessment. Water efficiency, materials efficiency, indoor environmental quality enhancement, operations and maintenance optimization, waste reduction, and site and structure design efficiency has to be ensured to have a clean environment.

science and technology based field groups, R & D institutions, financial agencies, and above all, people, who are primary stakeholders, become crucial forimproving the quality of life in rural areas to achieve long term sustainability.

Essentials

In above process, technology choice can have a critical impact on many aspects of rural development. Therefore, technology must be carefully chosen to enable rural people to:

- acquire and imbibe knowledge of technologies appropriate to their needs and environment;
- upgrade their traditional skills and capabilities;
- minimize fatigue and reduce drudgery; and
- be innovative.

Equally ICT should:

- be capable of easy assimilation;
- generate significant and assured added value to existing methods of operation;
- generate employment and use local resources, both men and materials;
- need low capital investment and result in low cost production of goods;
- be capable of replication and adoption; and
- blend harmoniously with existing ecosystems leading to tangible improvements in the living conditions and self-sustained development of the rural people.

Thus, appropriate or green technologies, with above features, can play crucial role in building up local capacity, devising solutions for tackling the identified problems, and improving the lives of rural people by improving their surroundings and daily activities. Focus must be on technological empowerment of people with skills and critical thinking

that fosters a sense of self-reliance and ability to evaluate what is beneficial or detrimental to their interests. This will improve their access to affordable, environmentally sound technologies and generate meaningful employment in local economic structure.

However, success in development and dissemination of such green technologies lies in participatory systems with down to earth approach or effective percolation of technology from people's acceptance point of view as well as to make proposed intervention sustainable to be managed by them. This involves:

- need identification/assessment of the people by local voluntary or science and technology based field groups;
- identification of ideal technological options, as per location specific needs, skills, and resources available;
- in-house technology appropriation or with assistance of nearby technical institution to a scale and level, which is acceptable to the people for long term sustainability;
- technology back up for 2-3 years through continuous handholding to people; and
- establishing backward and forward linkages for long term sustainability.

Once total system is in place with the complete technology package, the field group can gradually withdraw giving the entire responsibility to locally formed people's groups/ organization for further dissemination and use.

With above approach in mind to reach majority of the people, who live in the vast areas of rural India, several grassroots level organizations with scientific and technological capabilities are providing crucial link between the emerging new developments in knowledge and technology, and also helping to strengthen and diversify the local economy, utilization of local resources, and upgrading the skills of artisans, land-less laborers and other disadvantaged sections. By adopting above mentioned approach, such groups have developed proven and viable models of a large number of green technologies for socio-

economic upliftment through skill upgradation, income generation, drudgery removal, sustainable use of resources, etc. Such interventions have brought in visible changes in the lifestyles in rural areas and can have multiplier effects in different parts of the country.

6.3 ICT Applications in Agriculture

ICT revolution is leading to the need to develop a new paradigm for agriculture. Beyond databases and information systems, applications of ICT to agriculture are appearing everywhere. ICTs are profoundly transforming extension services through the use of multimedia technology, distance education technology, as well as through innovative approaches based on interactive knowledge development processes. They are having a clear impact on our capacity to monitor the environmental impact on agriculture and degradation of natural resources through remote sensor data. GIS are opening new approaches to regional planning and to the management of natural resources.

In the context of agriculture, there are five key services or functions that are very closely related to ICT:

- access to information through different types of **Agricultural Information Systems** (AIS);
- monitoring the situation of natural resources and environmental impact through different **Information Processing Tools** (i.e. analysis of environment deterioration, soil erosion, deforestation, etc.);
- **Education and Communication Technologies** that are playing a very important role in generating new approaches to learning and knowledge management;
- **Networking,** where ICTs can contribute greatly to relating people/institutions and facilitate the emergence of 'Virtual Communities of Stakeholders' that generate and exchange information and knowledge among themselves. If well managed,networking

is a first step in the direction of developing interactive knowledge development processes that may lead to learning networks; and

- **Decision Support Systems (DSS)** through which data and information provide relevant knowledge inputs for informed decision-making. These tools are playing an important role in converting information systems into knowledge systems. it is empowering people through developing in people a capacity to achieve their development objectives and goals through the generation, acquisition, and useof knowledge.

National Institute of Agricultural Extension Management

National Institute of Agricultural Extension Management, as an apex national institution, has undertaken a number of 'Cyber Extension' initiatives across the country. District level websites are hosted, information kiosks are established at block /mandal and village levels, and technical and other need based information is collected, digitized, and hosted on the internet.

The Institute has taken initiative to provide linkages to the technical and other farmer-friendly information through its websites. In Andhra Pradesh, websites of 24 districts contain very important information on district profile, land use pattern, district agriculture scenario, strategic research and extension plans, replicable success stories, and information on important contact persons with their telephone numbers and e-mail addresses. These websites have improved information dissemination significantly.

Village Knowledge Centres

The future of food security in the developing world is dependent less on resource-intensive agriculture and more on knowledge-intensity. In the coming years, agriculture will have to be developed, as an effective instrument of creating more income, jobs, and food; and such a paradigm of sustainable agriculture will be both knowledge and skill intensive. The development of precision agriculture is need of the hour, which emphasizes

knowledgeintensity. Precision agriculture refers to exactness and implies correctness or accuracy in any aspect of production. Precision agriculture is the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production for the purpose of improving crop performance and environmentalquality. The enabling technologies of precision agriculture can be grounded into four major categories: Computers, Geographic Information System (GIS), Global Positioning System(GPS), and Sensors and Application Central (SAC).

The new agriculture paradigm in India will have to take advantage of knowledge availability to achieve the triple goals of increased income, jobs, and food. The emergingICTs have a significant role to play in evolving such a paradigm. The key step in the useof ICTs in sustainable agricultural and rural development is the value addition made to generic information to render it local specific. A programme has been launched in 1998 in the Pondicherry region to determine the manner in, which ICTs make an impact on rural livelihoods. The Village Knowledge Centre Project has an operational centre/value addition centre at Villianur, which is the headquarters of the Villianur Commune. The value addition centre has access to the internet through two dial-up accounts. This also functions, as the hub of a local area network for data and voice transmission covering the project village. The value addition centre in Villianur has generated a number of databases to fulfill requirements of the people in the villages. Some of the databases pertain to the following:

- entitlements to rural families: this database provides details of the schemes, which are operational in Pondicherry Union Territory;
- families below poverty line: details of families in the communes of Ariyankuppam, Villianur, and Nettapakkam have been provided in this database, which has been compiled from the UT Administration. Approximately 22,000 families are listed;
- grain prices in Pondicherry region;

- input prices (quality seeds/fertilizers) in Pondicherry region;
- directory of general and crop insurance schemes;
- integrated pest management in rice crop;
- pest management in sugarcane crop;
- directory of hospitals and medical practitioners in Pondicherry-grouped with specializations, such as, orthopedics, pediatrics, etc.; and
- bus/train timetables-covering Pondicherry region and two nearby towns.

These databases (except the data on families below poverty line, which is an official document in English) are available in Tamil language at all village centres. Updates are transferred using the wireless network. In addition, interactive CD-ROMs for health related issues have been developed, where frequently asked questions (FAQs) are posed to medical practitioners, whose replies are video-graphed and converted to real video format for retrieval, using a PC. Topics related to 'general hygiene', 'dental and oral hygiene' and 'eye' have been covered.

Recently, a significant new dimension was added with the commissioning of solar-mains hybrid power systems in all the centres. The Human Development Report (UNDP 1999) cites this, as an example of a creative project in addressing the global information divide.

6.4 ICT and Women Empowerment

ICT applications in rural areas should benefit the agricultural sector and reduce rural poverty. Participation of the poor in planning and implementation of anti-poverty programmes is required to reduce the chain of intermediaries between the government and actual

beneficiaries and to improve their bargaining power. There is a need for institutional mechanism at the grassroots to safeguard the interests of the poor. Therefore, organizing the poor in the form of self-help groups (SHGs) around thrift and credit services is one of the most effective methods, not only for alleviating poverty but also for empowering rural poor.

In this context, the Government of Andhra Pradesh has provided a larger space for women self-help groups in its strategy for poverty alleviation and women empowerment. The Development of Women and Children in Rural Areas (DWACRA) Programme was started in 1982-83 in the State with UNICEF cooperation to provide opportunities of self-employment on a sustained basis for the rural poor women. National Institute of Agricultural Extension Management has provided multimedia computer system with UPS, printer and internet connectivity to Mutually Aided Cooperative Thrift and Credit Societies (MACTCS) organized by DWARCA groups. Four members identified by the group were trained in basic computer operations and internet browsing. Multimedia CDs on agriculture-intensive self-learning packages on watershed management, vyavasya, panchangam (encyclopedia of agricultural practices), paddy, cotton, mayo, and coconut cultivation, expert systems on selected crops and rural development – pickle making, child education, nutrition and health education, etc. were given to all the groups. A user-friendly accounting package was given to all the MACTCS to maintain their accounts and two members were trained to use it.

The experiences of these groups have shown that they have been using the internet in innovative ways. They are browsing DRDA Websites for government programmes and schemes. They are looking for weather forecasts, market prices, job opportunities, and news on the net regularly. They have also started to charge some of these services

selectively. This has provided a good opportunity to the rural information kiosks to earn some revenue. Farmers are also using the net for getting technical advice online from various sources. Rural people have created their own e-mail accounts for faster communication. They are sending emails to DRDA, district collector, and other district and state-level officials.

The studies conducted on the impact of these groups on women empowerment highlighted that woman's access to and control over their savings, credit, and income has improved. Further, women have improved freedom to move and interact with the officials and other women after joining the SHGs of DWACRA.

6.5 'PRAJA': ICT APPLICATION IN PUBLIC SERVICE DELIVERY

In this Section, we will be discussing a project namely, 'PRAJA' that is based on ICT applications to render services to the people in the rural areas.

PRAJA: Reaching People in Rural Areas

The Project aims to provide all public services to the rural people at the district and mandal (Block) levels. National Informatics Centre (NIC) technically supports this Project taken up for the first time in West Godavari district of Andhra Pradesh.

The Project namely 'Praja' (meaning citizens) is an effort to bring government closer to the people and empower them through ICT. It is an effort to deliver various Government to Citizens (G2C) and Citizens to Citizens (C2C) services in the rural areas. The Project has provided web enabled rural kiosks termed Praja Seva Kendrams at mandal level and village level. The fully computerized Praja Seva Kendrams are on a district wide network connected through dial up circuits and internet, with the district server acting, as a remote access server.

The Praja Seva Kendram runs a district portal that allows access to various citizen services. Issuance of various certificates, rendering information about various programmes, and networking enables interactivity with the citizens- G2C and C2C. The Project allows access to hither to marginalized communities and therefore, helps in bridging the existing information gaps and is a step towards digital unite. Many of the Praja Seva Kendrams are run, as self-employment units and are manned by unemployed youths from Chief Minister's and Prime Minister's rural employment plan beneficiary groups. The Project envisages that all villages can become knowledge hubs and gain symbiotically from each other and derive benefits from global networks. In addition to providing government services, this Project encourages rural e-commerce and rural cyberforums in the villages.

The traditional channels of citizen service delivery are continuing and complementing electronic channels for transactions, as they cater especially to those, who are unfamiliar with technology or electronic transactions. Therefore, it is of prime importance that governments create awareness and educate the citizens on how to use the electronic channels. Through proper education citizens can familiarize themselves with the changes in service delivery mechanisms.

6.6 SUGGESTIONS FOR EFFECTIVE ICT IMPLEMENTATION IN RURAL DEVELOPMENT

Limited local participation, lack of availability of local resources, fractured relationship with state agencies, and exogenous social and economic environment are identified, as some of the factors for the inability of ICT projects to deliver their full range of outputs in rural areas. There is need for promoting participatory methodologies of content creation and knowledge management. The approach to rural women and men should be one of partnership and not patronage. In the field of agriculture, a Farmer

Participatory Knowledge System (FPKS) could replace the existing beneficiary and patronage approach to knowledge dissemination. Information should be demand driven and should be relevant in terms of time and space.

There is need for more on-farm and non-farm employment opportunities in villages. This will be possible only, if there is diversification of farming systems and value addition to primary products through improved post-harvest technology. Training should be with reference to market-driven skills. Small-scale industries and khadi and village industries should receive particular attention from the point of view of the upgradation of both technology and marketing skills. There is also need for synergy between the private sector and public and cooperative sectors in promoting more avenues for skilled jobs in villages.

The usefulness of a computer-aided knowledge centre in villages will be directly proportional to the social, ecological, and economic significance of the static and dynamic information being provided. Hence, a consortium of content providers will have to be developed for each agro-ecological zone. Leading industries could participate actively in such a knowledgeand skill empowerment revolution by adopting specific villages, where they could provide, in addition to monetary support, marketing and management information.

A culture of change, knowledge and lifelong learning should be encouraged by rural communities and the government agencies serving them, along with openness to a wide spectrum of ideas in the knowledge age. Cultures of merit, analysis, professionalism, and evidenced-based decision-making should be embraced in rural ICT4D initiatives. Online services should be designed with a mix of free and fee-based services, so as to ensure commercial sustainability of rural ICT4D initiatives in the long run. As a major consumer of ICT products and services, governments in developing countries can also lead by way of example in the use of ICT, implementing best organizational practicesand spurring local markets in rural areas.

ICT4D policy initiatives should have a strong grounding in local communities of villages. Online and offline forums should be promoted for communities of interest and communities of practice to exchange knowledge on harnessing and creating ICTs in the rural context. Multi-actor alliances targeting rural ICT4D initiatives should be encouraged and nurtured. Creating funding options for rural ICT4D initiatives should be explored. Special financing should be set aside for ICT initiatives involving marginalized communities, physically challenged, refugees, migrant population, and youths. Measures should be implemented toincrease ICT literacy in rural areas. Technical, managerial, and design capacity should be built up in the adoption of ICT for rural communities, creation and maintenance of secure ICT infrastructure, and scaling up of rural ICT initiatives across dimensions of depth and breadth. Capacities should be built up not just in adoption of ICTs in rural areas, but in creativity with regard to devising new applications, R&D focus areas, and harvesting of local knowledge. This will help to confer the benefits of the knowledgeage to every woman and man in a village. Reaching the unreached and including the excluded will be possible only through an integrated ICT system.

6.7 CONCLUSION

Indian economy can rightly be called a rural economy, as sixty percent of the country's population resides in villages and thrives on agriculture. Socio-economic transformation of rural areas is, therefore, an indicator of the nation's economic development. ICT, especially, as an important feature of good governance, plays an important role in bringing in this transformation extensively by:

- rendering effective and varied delivery channels to reach the target groups in rural areas;
- empowering people through knowledge and information creation and dissemination; and

- enabling food security, livelihood, poverty eradication, and sustainable development.

By building up technical, managerial, and design capacity in the adoption of ICT for ruralcommunities; creating and maintaining secure ICT infrastructure; and scaling up of rural ICT initiatives across dimensions of depth and breadth will ensure rural development to reach the rural poor and disadvantaged. Technology has to be used, as a strategicinnovation in this effort.

ACTIVITY

Mention some of the ICT initiatives/ projects/experiments undertaken in areas of agriculture and women empowerment in your State or Region.

6.8 KEY CONCEPTS

Wireless Application Protocol : a secure specification that allows users to access information instantly via handheld wireless devices, such as, mobile phones, pagers, two-way radios, smart phones and communicators. WAP supports most wireless networks. These include CDPD, CDMA, and GSM.

GPR : short for Ground Penetrating Radar, a UWB imaging technology used for subsurface earth exploration. GPR uses electromagnetic wave propagation and scattering to image and identify changes in electrical and magnetic properties in the ground. GPR systems have wide applications, such as locating underground utility lines, monitoring airplane runways for structural integrity, detecting unexploded land mines, conducting

groundwater studies or forensic research, and surveying land for construction purposes.

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UNIT 6 PANCHAYATI RAJ INSTITUTIONS: IMPROVING SELF-GOVERNANCETHROUGH ICT

Structure

6.0 Objectives

6.1 Introduction

6.2 Changing Role of PRIs

6.3 ICT Intervention in Local Governance: Need and Importance

6.4 ICT in PRIs: Application Areas

6.5 E-Panchayat Project: Andhra Pradesh

6.6 E-Panchayat: Challenges in Implementation

6.7 Conclusion

6.8 References

6.0 OBJECTIVES

After studying this Unit, you should be able to:

- explain the significance of PRIs, as self-governing institutions in democratic set up;
- describe the changing role of PRIs;
- identify the need and importance of ICT intervention in local governance;
- highlight the application areas of ICT in PRIs; and
- explain the concept of e-panchayat and its challenges.

6.1 INTRODUCTION

PRIs have become backbone of our democratic set up. With globalization there came in more initiatives in local governance, especially with the passing of the 73rd Constitutional Amendment Act in 1992. PRIs right from the village panchayats to the Zilla Parishad had to redefine their roles, as that of catalysts and facilitators of grassroots governance. Therefore, strengthening of PRIs, as self-governing institutions at the grassroots level to run the administration of local affairs is much needed for a direct democracy. In this context, sincere efforts need to be taken to substantially enhance the knowledge, skills, and capabilities ofPRIs with the use of ICT.

In this Unit, we will discuss ICT enabled initiatives undertaken in the country to reorient PRIs, as self-governing institutions; and make them vehicles of socio-economic transformation of rural India.

6.2 CHANGING ROLE OF PRIs

The Constitution through 73rd Amendment visualizes panchayats, as institutions of local self-government. It also devolves the powers, functions, and responsibilities to panchayats in respect of 29 subjects to prepare their schemes and development plans and implementation of these programmes of economic and social development. The Constitution enjoins the state government to take steps for devolution of powers and functions to the panchayats to enable them to become 'institutions of self-government'. However, the available information reveals that the process of devolution has not yet been firmed up in most of the states. The extent of devolution of powers and functions is subject to the will of the state legislature. It is found that the steps have been taken in most states are on a piece-meal nature.

Experience of more than three decades of implementation of the 73rd Constitutional Amendment Act shows that PRIs in most of the states have not delivered the services to rural people in accordance with the provisions of the Act. Although the Act empowers them to prepare plans for economic development and social justice and implement the schemes of rural development, as may be entrusted to them including those related to matters listed in the XI Schedule, they failed to become the real institutions of self-governance due to lack of community participation and insufficient capacity in running their activities.

The challenges before the PRIs in the new millennium are formidable. Infact, these institutions are to transform themselves from being representative political institutions to being community institutions of direct democracy with support from the local community. These institutions have to work within the broad framework of good governance. The positive challenges of these institutions are preserving democracy at the grassroots, initiating necessary steps for good governance, maintaining accountability and transparency with the purpose of social audit, exploring possibilities for new initiatives or new power equations, civil society activities through partnership with NGOs, achieving women empowerment, and developing efficient service delivery mechanisms.

Poverty reduction should be the highest priority mission of PRIs in the new millennium. These institutions have to draw long-term plans for rural development and catalyze public-private partnership to realize them in the areas of health, education, roads, water supply, and other infrastructure services. They have to ensure that their administration and functions are accountable to the people to facilitate empowerment.

To meet these challenges, ICT initiatives have been undertaken by the Central and state governments since 1990s. These initiatives have vast potential to ensure a more accountable, responsive, and citizen friendly local self-governing institution. Positive harnessing of ICTcan open new vistas for PRIs' efficiency and effectiveness.

6.3 ICT INTERVENTION IN LOCAL GOVERNANCE: NEED AND IMPORTANCE

Need of ICT Intervention in PRIs

With the passage of 73rd Amendment Act to the Constitution of India, the panchayats in rural areas received the Constitutional legality to function, as local self-governments. They were now treated, as the third tier of government. Enormous authority has been given to them for managing their affairs including the responsibility to plan for their areas and collecting revenues for their sustenance. But even after a period of three decades and more of the enactment, the third tier governance is yet to fructify. The benefits of ICT are sparsely garnered and in general they function in isolation with little participation of the people in their affairsexcept to cast vote in an interval of five years.

In rural areas, most of the states have adopted the three-tier panchayati raj structure with village panchayat at the lowest level, block panchayat at the intermediate level, and zilla panchayat at the district level. It is desirable that there should be a strong organic linkage all through the process. However, the flow of information pertaining to the performance of various programmes of the government gets held up at different levels. Most of the data generated at gram panchayats get stacked up at the intermediate levels. This kind of interruptions in the flow of information results in problems of interim coordination, especially between the functional departments and the panchayats.

There is no consolidated data on infant mortality rate or fertility rate available at the block levels. Problems of accuracy and completeness of data persist. Accredited agencies like Central Statistical Organization, National Sample Survey Organization or Centre for Monitoring Indian Economy (CMIE) are limited up to the state level only. Though census provides a lot of data but they have a defined area of operation and are concerned with specific time period only.

Hence one can witness adhocism in prioritization of schemes and programmes with non-availability of accurate and complete information. Decision made is of poor quality. It is not possible to make a mid-course correction in the plans or programmes. This makes the people's involvement an eye wash.

The people can participate in the meetings of the gram panchayats four times in a year. But these meetings are for showcasing the works the local bodies have done with little participation of the villagers in the real sense. There is no transparency to bring the public documents to the meetings. Here is where RTI/social audit can be of use.

However, in the higher tiers, that is, intermediate and district levels, there is no such platform existing for the local people to share their feedback. For instance in beneficiary oriented programmes, the panchayats at the village and block levels are mainly entrusted with identification of beneficiaries. Though in matter of identification, there are limited deliberations, but the list of selected recipients/beneficiaries is usually notexhibited either in the office of village panchayat or block (intermediate) panchayat for public viewing. This may lead to corruption in the finalization of the list of beneficiaries. In addition to this, at the time of the actual implementation of the schemes, the local people have no channel to get the information regarding budgetary funds allocated. There is no citizen charter to enable the locals to know about the details of the schemes-what the scheme entails, who all will be covered etc.

Hence, one finds people losing faith in the schemes meant for them owing to high degree of secrecy being maintained. Manifestation of corruption in different forms distorts the policy objectives of the government and acts against the interest of the people. 'Who is accountable?' 'To whom one can approach?' are the kind of responses the people require. At the locallevel there is little scope for interaction between the people on the one hand and local bodies on the other. As there is no regular channel for effective communication betweenthe local bodies and local citizens, the nature of development is not participatory

and democratic.

Need and Importance of ICT in PRIs

Effectiveness of any institution depends on the delivery mechanism and the supportive rules and procedures acting in harmony with each other, so that the institution can discharge the functions and play the assigned role. For keeping in track, the institutions interact and exchange ideas with the stakeholders. The direct stakeholders are to be given importance, structures have to be redefined, and procedures and practices of governance have to be brought closer to people. Local governance should be understood from such a perspective, instead of just being seen, as an agent of programme implementation. ICT intervention can facilitate this process.

ICT interventions aid in the process of development by sharing knowledge, increasing productivity, overcoming geographical boundaries, and facilitating procedural openness. ICTs lead not only to increase in supply of information with economy and reliability, but also consequently, to better decision-making and innovations. It also leads to demand for greater openness and transparency in operations. It is a powerful tool of empowerment.

ICTs can improve local self-governance of PRIs in three distinct ways:

- It creates 'efficiency benefits' in the policy cycle. By acquisition, transfer, and management of complex policy information and data it helps decision-makers in making informed decisions;
- It improves the delivery of local government services; and
- It gives a facelift to the government-civil society interface by increased access to government information and facilitating dialogue and public feedback on government projects and performance.

ICTs play an increasingly important role in helping policy makers and administrators to better manage the provision of public goods and services at the local level. They can

now work with enhanced infrastructure for provision of services; speed up the approval and delivery of permits, and provide timely and more relevant response to information requests. Thus, ICT has emerged, as an effective instrument to bring masses closer to the government. The Working Group on IT for Masses[1] appointed by the Centre perceives ICT providing a unique and new opportunity to address age-old problems in the field of education, health, rural development, poverty alleviation, employment, etc. and to be a major facilitator for information transparency, good governance, empowerment, participative management, and grassroots democracy.

The following four aspects can be delineated pertaining to the role of ICTs in governance of PRIs:

Empowerment of people, as it enables them with wider participation in planning, implementation, and management of programmes.

- Transparency and probity by exhibiting the transactions, progress of work, future plans and actions into wider public domain, and thus allowing access to the common man.
- Increased effectiveness and efficiency of services provided directly by government and its agencies.
- Enhanced coordination within the different segments of the functional departments of the government.

6.4 ICT IN PRIs: APPLICATION AREAS

ICT application has vast potential to ensure more accountable, responsive, and citizen-friendly PRIs. Wired PRIs would, not only be more transparent, but also more open to

[1] 'IT for Masses' is a Plan Scheme of DeitY. It was introduced in the Tenth Five Year Plan, continued in the Eleventh Five Year Plan, retained in the Twelfth Five Year Plan. From 2013-14 onwards, IT for Masses Programme has been merged with Manpower Development Scheme of the Department. The basic objective being to initiate / promote activities in ICT for focus groups and areas for inclusive growth of IT sector.

social audit. People can easily register their grievances through e-mail. Software such as Rural Soft can be used in monitoring rural development programmes and projects. ICT can also help in reducing the corrupt practices in rural infrastructure development projects undertaken by the PRIs. With the aid of Geographical Information System (GIS) and satellite imagery, a detailed visual record of the projects can be maintained, which can be accessed any time with a click of mouse. Physical verification of the projects would be no more at the mercy of time, but can be done by anybody, from anywhere and at anytime. Thus, application of ICT can increase legitimacy and acceptability of the PRIs among its stakeholders.

The 'Working Group on IT for Masses' has recommended the need to re-engineer various services such as those related to local governance at block or panchayat levels through extensive use of ICT. It further suggested that ICT should provide relevant information while fulfilling local information needs of the people. ICT enabled initiatives will help in the successful realization of powers and responsibilities of PRIs through a lot of information input and their efficient analysis. Therefore, ICT enabled initiatives can play a crucial role in the following areas of PRIs:

- **Participatory Planning**

  Participatory planning needs access to a wide variety of information by the officials as well as the people and civil society. ICTs have the potential to provide comprehensive information and increase the speed and quality of this process. GIS consists of reliable and accurate spatial and non-spatial information on land and land resources. With the help of GIS, Panchayat Resource Mapping can be done, which can help not only in preparation of local plans, but also in consolidation of these plans at district level. Subject to the state laws, PRIs have the responsibility of agriculture, including agricultural extension, soil conservation, social forestry and farm forestry; all of which needs the aid of GIS and remote sensing data for efficient

and effective performance.

At the implementation stage, application of ICT can lead to better resource mobilization and deployment, manpower management, and technical support. ICT canmake quick, comprehensive and transparent impact-assessment possible, which can enable better implementation of the projects and plans. Thus, ICT makes decentralized and participatory planning a smooth and simple affair and helps in realizing its inherent benefits, i.e. efficiency, equality, and empowerment.

- **Taxation**

Subject to state laws, the PRIs can levy, collect, and appropriate taxes, duties, tolls and fees. Experience of integrating ICT with the Central and States' tax administration shows more revenue collection and less corruption. The same can be replicated with tax administration and fiscal planning of PRI subject to state laws, primary and secondary education, vocational education, adult and non-formal education, and technical training are the responsibility of the PRIs. Panchayat centres equipped with ICT tools and services can become major hubs foreducating people on a mass scale. ISRO has launched Edusat- world's first satellite dedicated to education to enable radio and TV broadcast, internet based education, data broadcasting, talk-back option, audio-video interaction, and video conferencing.This will be real-time interactive learning available 24 hours a day. By spending around a minimal for infrastructure, the PRIs can have access to Edusat facilities and take education to the doorsteps of the rural and disadvantaged sections.

- **Training**

Training of numerous functionaries as well as elected representatives has emerged as one of the most challenging areas in the effective functioning of the PRIs. Training is not one time process; rather it needs time-to-time administering on the recipients. Developing appropriate training module needs expertise. ICT can help in easing the

difficulties faced in the area of training through District Panchayat LAN (for local contents), internet, video conferencing, etc. It can also provide cyber platform to share variety of panchayat related experiences from across the country.

6.5 E-PANCHAYAT PROJECT: ANDHRA PRADESH

E-panchayat is a software product conceptualized, designed, and developed by National Informatics Centre, Hyderabad, Andhra Pradesh, as a part of e-governance initiatives. At present, it is being implemented in 450 gram panchayats in the State with an investment touching eight crore rupees. E-panchayat has been designed taking into consideration all the information and knowledge management requirements in a gram panchayat. It covers all information requirements for the village panchayat functionaries and rural citizens. The Constitutional Amendment Act 1992, success stories of gram panchayats in the country, Government orders pertaining to village secretariats and functions of the village secretary and elected representatives of gram panchayat are included in the e-panchayat software package. Thus, e-panchayat fits well into the information systems at gram panchayat level. The software is web-enabled and citizen-centric.

E-panchayat software in Andhra Pradesh comprises nearly 30 main modules and 150 sub-modules in line with the 30 sectoral functions of the gram panchayats. Some of the important modules are explained below:

Gram Panchayat Administration

This module provides following information and services:

- minutes of meetings;
- schedules of Gram Sabhas;
- agenda update;
- certificates and licences;

- bill payments;
- attendance monitoring of Panchayat functionaries;
- gram Panchayat meetings management;
- gram Panchayat cleanliness monitoring;
- registration of births/ deaths/ marriages, etc.;
- issue of trade licences;
- pension schemes management system;
- self-help groups and other villagers welfare schemes management system;
- assets management, property tax assessment and management;
- property lost/found reporting system;
- law and order management system;
- encroachments checking and monitoring module;
- government orders searching and retrieval system;
- village statistics maintenance and reporting system; and
- intensive sanitation management information system.

Agriculture

This module:

- facilitates educational services on the best agricultural practices to enhance the yield and reduce expenditure and enhance the quality of produce for the farmers;
- facilitates agriculture and related departments to provide season-specific, region-specific information services to the farmers;
- enables elected representatives of gram panchayats to manage farmers' grievances;
- enables gram panchayat secretariat to report the details of agriculture production of

the village; and

- offers counseling services to the farmers by agriculture experts.

Irrigation and Water Conservation

This module:

- provides information on irrigation canals to the farmers;
- facilitates education on various water harvesting and conservation schemes;
- enables reporting of problems on pipelines, canals, etc. and subsequent review of problems by Sarpanch (or the head of Panchayat or Village Council); and
- facilitates the appraisal of the status of water cess payments and reporting on the dues.

Elections

This module provides the following information services:

- registration of voters;
- objection to voters list;
- elected representative information;
- publication of electoral rolls; and
- dissemination of electoral rolls.

Housing

This module provides information on:

- low cost housing techniques;
- application for housing scheme; and
- loan recovery status

Adult Education

This module provides information on:

- enrolment of adults;
- schedule of education programmes;
- training kits for adult education;
- feedback on education programmes; and
- status monitoring

Cultural Programmes

This module provides information on:

- enrollment of artists;
- training of artists;
- schedule of programmes; and
- information on opportunities

Women and Child Welfare

This module extends information services on:

- immunization schedules;
- nutrition programme;
- schedule of camps; and
- counseling by health workers

Social Welfare

Under this module services available are:

- atrocities reporting;
- welfare scheme information;
- inventory of handicapped persons;
- donors information;
- counseling; and
- application for schemes

Village Accounting System (VAS)

Following are the features of VAS:

- cash transactions;
- bill receipts;
- ODs and cheques receipts;
- automatic challan submission;
- treasury payments;
- classified accounts;
- all kinds of taxes and fee collections;
- cheques/DDs reconciliation; and
- daily collection report

Feedback studies confirm the satisfaction of rural people with the functioning of e-panchayats in the State. E-panchayats have facilitated the implementation of right to information at the village level. They have equipped the rural folk with comprehensive and updated information thereby ensuring transparency in local governance.

6.6 E-PANCHAYAT: CHALLENGES IN IMPLEMENTATION

Some of the challenges in the effective implementation of e-panchayats are mentioned below:

- there is lack of adequate infrastructure that leads to creation of regional imbalances;
- the input cost in networking of PRIs is very high;
- there is shortage of software and quality content in regional languages; and
- due place to traditional folk media is not accorded.

E-panchayats should be based on ethnocentric, need-based, and bottom up approach. They have to steer clear of these limitations to accomplish the constitutionally mandated goals.

6.7 CONCLUSION

In the process of development of the country, PRIs have been playing a vital role as agents of rural transformation.

In the era of globalization, PRIs have to redefine their roles, as that of catalysts and facilitators. Therefore, sincere efforts need to be taken by these institutions to enhance knowledge, skills, and capabilities through ICTs. ICT initiatives lead to greater openness and transparency in operations and empower PRIs, as self-governance institutions. ICT initiatives can be applicable in the areas of participatory planning, taxation, education andtraining, and service delivery.

Further, e-panchayats aim at equipping rural people with comprehensive and updated

information and ensure transparency in governance. In other words, e-panchayats have strengthened participative democracy at the grassroots.

However, applications of ICT to the PRIs have to address to certain crucial factors- regional imbalances, resources, software development, and high cost- to facilitate rural development and self-governance in the country.

ACTIVITY

1) Let us know about experiments in e-panchayat in other states of India and their experiences.

2) List out some of the software developed for rural applications in the country.

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UNIT 8 E-LEARNING: ROLE OF ICT IN EDUCATION AND TRAINING

Structure

8.0 Objectives

8.1 Introduction

8.2 E-Learning: Concept and Significance

8.3 E-Learning: Online Delivery of Education and Training

8.4 E-Learning Systems: Virtual Learning Environment

8.5 Digital Library

8.6 Cloud Storage in Education Sector

8.7 Digital Portfolio

8.8 Conclusion

8.9 Key Concepts

8.10References

8.0 OBJECTIVES

After studying this Unit, you should be able to:

- explain the concept and significance of e-learning;
- describe the online delivery of education and training through internet;
- discuss the concept and benefits of Virtual Learning Environment;
- highlight the features of digital library;
- explain the importance of digital portfolios; and

8.1 INTRODUCTION

Information and communication technology (ICT) has become an integral part of learning today. Countries across the world are using ICT in facilitating information dissemination and communication in all areas of education and training. There are now educational and training institutions imparting skills in the basic and advanced concepts of ICT. Besides, ICT is being used in facilitating distance learning. It is enabling online designing of courses, online delivery of courses, computer-aided teaching, online assessment, besides management and networking of a large number of educational institutions. ICT based systems and software, CD based courses, online courses, digital libraries, discussion forums, digital portfolios, teleconference, etc. has made e-learning a reality today.

In this Unit, we will be discussing these ICT-based applications in the field of learning.

8.2 E-LEARNING: CONCEPT AND SIGNIFICANCE

E-learning is an approach to facilitate and enhance learning with the application of ICT. It refers to the use of web based applications, mobile applications, digital radio, television, and such others components to enhance the delivery of both formal and informal learning and knowledge sharing.

E-learning: Significance

E-learning is significant in many ways. It:

- enables flexible learning, where just-in-time learning is possible. It is a means to effective and efficient learning due to its ease of access and the pace being determined by the learner;

- facilitates collaborative internet and web-based learning opportunities to the learners. It supports distance learning with wide area networks (WAN). It addresses the practical side of learning by organizing the topics to be taught and creating multimedia CD-ROMs and websites. An important advantage is that hyper linking is possible and having interactive parts illustrating difficult things and for doing exercises is now happening;
- allows a wider range of learning experiences, such as, educational animation to online learners;
- imparts e-training through the asynchronous and synchronous communication modes, permitting the learners the convenience of flexibility. Asynchronous learning uses technology such as blogs, wikis, and discussion boards to allow participants to contribute when time allows. Synchronous activities allow all participants to join in at once with a chat session or a virtual classroom or a meeting;
- develops the role competencies of the personnel in an organization through the use of electronic media. Specialized training is rendered through customized software, which addresses the particular needs of the clientele mostly through the synchronous mode on dedicated broadband internet connectivity. Equally, it also renders training to the learners through the generic software displaying universal contents in asynchronous mode to the learners through a shared network with limited internet access or on World Wide Web; and
- enhances teaching by professional development of teachers through training on usage of ICT in education. E-learning system like World Links enables the teachers to integrate technology into teaching and thus create dynamic student-centered learning environment in classrooms. The faculties can also interact with their peer groups in their virtual environment and exchange ideas and notes on the subject.

Hence, as put by Gupta and Singhal, e-learning is a planned effort towards providing

interactive and experiential learning; flexibility in terms of time, place, and pace; participation and accessibility; expertise and qualitative subject matter; best resource at the learners' doorsteps and personalized training.

8.3 E-LEARNING: ONLINE DELIVERY OF EDUCATION AND TRAINING

E-learning is basically the delivery of learning via the internet. We can refer to this type of learning as online learning and/or web based learning. With the internet boom since mid-1990s, the concept of online learning has been widely in vogue. Online learning can be thought of, as a subset of the broader e-learning category, because it refers specifically to content delivered via the internet or intranet. A growing number of universities and colleges are now offering select set of academic courses via the internet. Universities around the world offer online courses ranging from associate's degrees to doctoral programmes in everything from business administration to criminal justice to nursing. While some programmes require students to attend some campus classes or orientations, many are completely online. In addition, several universities offer online student support services such as online advising, student newsletters, etc.

For the younger children there are free learning sites ranging from those that provide worksheets to those with interactive exercises.

Similarly, there are universities and distance learning systems offering courses online to its learners. Now even the corporate and businesses are using online learning to provide cost-effective training to their employees, partners, and customers.

Open source online learning system is growing fast in the education and business world. WebOpenSource.com lists the entire available open source online learning system in the market today. Instructors in education and business organization may freely use it under

GNU Software License[1]. One of the best open source online learning systems is Moodle[2].

Indira Gandhi National Open University, New Delhi has a digitized electronic repository of the self-learning material of the University known as 'e-gyankosh.' It can be freely accessed by anyone in the country by self-registering into the system.

Peer-to-peer virtual groups are formed wherein the group members can add their opinions to the real world academic dialogue.

8.4 E-LEARNING SYSTEMS: VIRTUAL LEARNING ENVIRONMENT

The Virtual Learning Environment (VLE)[3] makes possible for a course designer to present to students through a single and consistent interface; all the components of a course, such as:

- the syllabus of the course;
- administrative information;
- a notice board for up-to-date course information;
- student registration and tracking facilities, if necessary with payment options;
- basic teaching materials. These may be the complete content of the course, if the VLE is being used in a distance learning context, or copies of visual aids used in lectures or other classes, where it is being used to support a campus-based course; and
- additional resources, including reading materials and links to outside resources in

[1] General Public License (GNU) is a series of widely used free software licenses that guarantee end users the freedom to run, study, share, and modify software.
[2] Moodle is a Learning Platform. It is a free Open Source software package designed to help educators create effective online material.
[3] Also called Managed Learning Environment (MLE), Learning Management System (LMS), Course Management System (CMS), Learning Support System (LSS) or Learning Platform (LP).

libraries and on the internet.

A web page of VLE will include:

- navigation menu and icons giving access to automated tools and content pages to the learners;
- self-assessment quizzes, which can be scored automatically;
- formal assessment procedures; and
- electronic communication support including e-mail, threaded discussion, and a chatroom with or without a moderator.

Besides VLE provides differential access rights for instructors and students and causes production of documentation and statistics in the format required for institutional administration and quality control.

All these facilities are capable of being hyperlinked. Also, easy authoring tools for creating the necessary documents including the insertion of hyperlinks are provided. In addition, VLE is capable of supporting numerous courses, so that students and instructors in a given institution (and indeed across institutions) experience a consistent interface when moving from one course to other. Virtual learning software packages like Moodle, works toward a student-centered learning solution by helping educators create quality online courses.

Open Universities and other institutions of higher education are increasingly turning to VLEs in order to:

- economise on the time of teaching staff, especially when they are also involved in research and administration. The traditional 'talk-and-chalk' teaching is yet to be there, but using a VLE almost certainly absorbs less instructor time;
- provide a service for students, who increasingly look to the internet, as the natural

medium for finding information and resources;

- ensure that quality control requirements are met by providing a standard vehicle for collecting the required information; and
- facilitate the integration of distance and campus-based learning or of learning on different campuses.

Rather, open schools and distance education universities should be encouraged to make use of such learning platforms, where it is possible for every learner to have an access to an online learning space and e-portfolio.

In India, we have conceived an e-learning system namely 'E-Vidyapeeth'. It is a Learning Management System and an e-learning infrastructure product. It has been developed with a vision to transform the internet into a powerful environment for teaching and learning. This system can be used for launching almost all the courses offered by various universities and educational institutions. This system makes it easy to publish documents, lectures, and exercises for faculty members and lab faculty members. Besides, it will be a main portal for all the students to get the most up-to-date information for their lectures and exercises. With the help of this system, monitoring student performances will become easier. The system helps in:

- student registration
- enrollment
- course delivery
- online examination
- discussion
- chat
- white board

- calendar
- administration
- faculty operations

8.5 DIGITAL LIBRARY

According to Wikipedia, a digital library is a library in, which a significant proportion of the resources are available in machine-readable format accessible by means of computers, as opposed to print or microform[4].

In libraries, the process of digitization began with the services in the following order:

First: cataloguing services

Second: periodical indexing and abstracting services;

Third: periodicals and large reference works

Finally to book publishing.

Some of the largest and most successful digital libraries are Project Gutenberg, ibiblio, and the Internet Archive.

Advantages

The Wikipedia Dictionary has summarized the following advantages of the digital libraries, as compared to the traditional libraries:

	Traditional libraries	Digital libraries
• **Storage Space**	limited	greater with digital information requiring very little physical space

[4] Microforms are scaled-down reproductions of documents, typically either films or paper, made for the purposes of transmission, storage, reading, and printing.

		to contain them.
• **Maintenance Cost**	greater owing to payment	lower, as they do away with the staff, book maintenance, funds to rent additional books
• **Innovation**	casual	innovations in technology is immediately adopted to provide users with improvements in electronic and audio book technology. New forms of communication, such as, wikis[5] and blogs are also presented.
• **Physical Boundary**	yes	no, as the user need not to go to the library physically. It is widely accessible around the globe with internet.
• **Availability**	limited	24x7
Access	limited	multiple, as the same resources can be used at the same time by a number of other users.
• **Approach**	time consuming	structured access to much richer content in a more structured manner, i.e. we can easily move from the

[5] A wiki is a collaborative tool that allows students to contribute and modify one or more pages of course related materials. Wikis are collaborative in nature and facilitate community-building within a course.

		catalogue to the particular book then to a particular chapter and so on.
• **Information Retrieval**	time consuming	the user is able to use any search term bellowing to the word or phrase of the entire collection. Digital library will provide very user-friendly interfaces, giving click able access to its resources.
• **Preservation and Conservation**	difficult	an exact copy of the original can be made any number of times without any degradation in quality.
• **Networking**	no	a particular digital library can provide the link to any other resources of other digital library very easily. Thus, a seamlessly integrated resource sharing can be achieved.

However despite the advantages, certain gaps are to be looked into. Some of these success gaps are discussed below:

Disadvantages

Digital libraries:

- cannot reproduce the environment of a traditional library. Many people also find reading printed material to be easier than reading material on a computer screen although this depends heavily on presentation as well as personal preferences; and
- can see some of its content becoming out-of-date and its data becoming inaccessible

due to technological developments.

However, despite these disadvantages, the future holds good for digital libraries, as service providers such as Google are undertaking large scale digitization projects. As digital libraries continue to make improvements in book handling and presentation technologies, such as, through Optical Character Recognition, E-books and Internet Archive, there is a tremendous scope for e-learning today and in times to come.

8.6 CLOUD STORAGE IN EDUCATION SECTOR

Cloud storage is a cloud computing model in, which data is stored on remote servers accessed from the Internet, or 'cloud.' It is maintained, operated, and managed by a cloud storage service provider on storage servers that are built on virtualization techniques. More and more educational institutions are teaching courses that involve picture or video editing, creating animations or composing music, all of which require a vast amount of storage space. As in most areas of IT, much has been made of moving storage into 'the cloud.' For a particularly large educational institute, a high capability cloud service provider can provide storage and organization for all involved.

8.7 DIGITAL PORTFOLIO

According to the Wikipedia Dictionary, a digital portfolio is an evolving tool that documents ones personal, academic, and professional development. It is a visual guide that maps out where one has been, where one is going, and how one plan to get there. The digital portfolio can also serve, as a tool to communicate one's plan to others.

Digital portfolio is a hypermedia document. This simply means that the portfolio is a set of screens (or pages in software terminology) that is linked by buttons on the screen. When the user clicks on a button, the programme reacts typically by navigating to another screen or by showing some additional information.

The opening page of the digital portfolio is an identification of the student and his/her school. In the bar along the bottom of the screen are several buttons; clicking on any of the words in that bar elicits an action. For example, clicking on the 'photo button' allows the user to see a digitized photo of the student. Clicking on the 'information button' shows a screen with additional information about the student, such as his/her years of enrollment and other administrative data. Clicking on the 'instructions button' brings up a screen that tells the user how to navigate through the portfolio.

Digital portfolios are a way of displaying student achievement through class assignments, community service, and occupational experience. A digital portfolio means that students can save their work to a disk, a CD, a web page, or an internet storage bin. It not only allows students to bring samples of their work to local college and/or job interviews, but it also enables them to send samples of their work at the touch of a keypad to colleges and businesses throughout the country.

Objectives

The purpose of digital portfolio is to:

- allow one to create a tool to assist in presenting what one is learning and planning in his/her personal, academic, and professional life and how this learning and planning interconnect;
- provide academic plan that will help one to articulate what one is learning in classes. The portfolios embody student work from every discipline with an emphasis on future academic and career goals. It depicts what one is learning about oneself and one's academic goals.

8.8 CONCLUSION

It has been oft mentioned in the context of education that e-learning misses the human interaction part owing to virtual teaching and virtual classrooms and some critiques like R.

S. Peters argue that the process is no longer 'educational in the highest philosophical sense.' There are others, who point out that e-learning software developers tend to limit their focus on course delivery and content, while online education institutions require a much wider range of educational services, especially, the quality and feedback part of it.

No doubt these inhibitions are likely to be raised, especially, by the traditionalist. But these doubts can be solved with the help of a number of learning systems provided by the electronic mode. The web-conferencing programmes, such as, Macromedia Breeze facilitates face to face interactions between the teacher and the learner, thus enabling feedback and expert subject matter to the learners. Again 'blended learning' can be made available by either combining distance learning with direct contact 'close at hand' human educational resources; or combining software driven resources with human intervention (computer mediated- through email or chat; or non-computer mediated- face to face or telephone; or combining software driven resources with any other educational resource- TV, radio, books, tapes, etc.).

Also it is important that teachers or trainers should be made to adopt technology in their teaching styles to provide pedagogical and educational gains to the learners. Training programmes should transform the teachers from just being information consumers to that of information producers. They should not only use internet to access resources but they should be able to create, produce, and expand this information and add to the information repository.

E-learning has, thus, rendered convenience of online learning to thousands of learners, who can not avail the benefits of higher education due to several constraints, such as, of time, cost, geographical location, age, etc. ICT has enhanced distance learning. The teaching community is able to reach far flung areas and learners are able to access qualitative learning environment from anywhere and at anytime. E-learning has proved to be cost effective for both learners and institutions in comparison to the traditional

learning. It has fuelled the growth of e-learners in the world today.

ACTIVITY

You have studied the useful role played by ICT in education and training. Narrate some e-experiments carried out by educational and training institutions in India/abroad.

8.9 KEY CONCEPTS

Computer Based Training: is a general term that relates to all training that is delivered with the assistance of a computer. Delivery of CBT can be via CD, the internet or shared files on a network.

Educational Animation: depictions that support the learning of dynamic content by providing direct information about how changes occur over time.

Hyper linking: a hyperlink or simply a link is a reference in a hypertext document to another document or other resource. As such, it is similar to a citation in literature. Combined with a data network and suitable access protocol, a computer can be instructed to fetch the resource referenced. Hypertext is a user interface paradigm for displaying documents. The most famous implementation of hypertext is the World Wide Web.

Managed Learning Environment: is a Virtual Learning Environment (VLE) combined

with a Managed Information System (MIS).

Moodle: is a software package designed to help educators create quality online courses. Such e-learning systems are sometimes also called Learning Management System (LMS), Course Management System (CMS), Virtual Learning Environments (VLE), Education via Computer-Mediated Communication (CMC), or just Online Education. Moodle advocates social-constructivism as a pedagogical perspective, whereby learners construct their knowledge through discussions, thereby enhancing their thinking skills. Moodle works towards a student- centered learning solution by building upon a social- constructivist pedagogy.

Blog: is a website in which items are posted on a regular basis and displayed in reverse chronological order. The term blog is a shortened form of weblog or web log. Authoring a blog, maintaining a blog or adding an article to an existing blog is called 'blogging'. Individual articles on a blog are called 'blog posts', 'posts' or 'entries'. A person who posts these entries is called a 'blogger'. A blog comprises hypertext, images and links (to other web pages and to video, audio and other files). Blogs use a conversational style of documentation. Often blogs focus on a particular 'area of interest', such as political goings-on.

Blogs can be hosted by dedicated blog hosting

services, or they can be run using blog software on regular web hosting services. In the early 21st Century, blogging has quickly emerged as a popular and important means of communication.

A blog has certain attributes that distinguish it from a standard web page. It allows for easy creation of new pages: new data is entered into a simple form (usually with the title, the category and the body of the article) and then submitted. Automated templates take care of adding the article to the home page, creating the new full article page and adding the article to the appropriate date- or category-based archive. It allows for easy filtering of content for various presentations: by date, category, author or other attributes. It usually allows the administrator to invite and add other authors, whose permission and access are easily managed.

Wiki: the name is based on the Hawaiian term wiki, meaning 'quick', 'fast', or 'to hasten' (Hawaiian Dictionary). A wiki is a type of website that allows users to easily add and edit content and is especially suited for collaborative writing. The term wiki also sometimes refers to the collaborative software itself (wiki engine) that facilitates the operation of such a website. In essence, wiki is a simplification of the process of creating HTML web pages combined with a system that records each individual change

that occurs over time. Some wikis allow completely unrestricted access so that people are able to contribute to the site without necessarily having to undergo a process of 'registration' as had usually been required by various other types of interactive websites, such as, internet forums or chat sites.

A wiki enables documents to be written collectively in a simple markup using a web browser. A single page in a wiki is referred to as a 'wiki page', while the entire body of pages, which are usually highly interconnected via hyperlinks, is 'the wiki'; in effect, a very simple, easier-to-use database. A defining characteristic of wiki technology is the ease with which pages can be created and updated. Generally, there is no review before modifications are accepted. Most wikis are open to the general public without the need to register any user account. Sometimes session log-in is requested to acquire a 'wiki-signature' cookie for auto signing edits. More private wiki servers require user authentication. However, many edits can be made in real-time and appear almost instantaneously online. This can often lead to abuse of the system.

World Links: is a global non-profit organization whose mission is to improve educational outcomes, economic opportunities, and global understanding for youth

through the use of information technology and new approaches to learning.

Microfiche: is one of the most compact analogue storage media that provides a comprehensive research library in institutions that could not otherwise afford the floor space. Each microfiche card holds about 100-130 pages depending on the size of the original. A library of 20,000 microfiche, that is, 10,000-20,000 books fits in a cabinet about 1.5×0.5×2 meters.

Synchronous: provides for real time communication. The learner and the facilitator are online at the same time. It is a computer-assisted training where the instructor and participants are involved in the course, class or lesson at the same time. Learners receive the content on the screen and may communicate through internet or any other media. Web conferencing is an example of synchronous e-learning. Participants can log on with a trainer and interact with participants at multiple facilities or locations.

Asynchronous: computer-assisted training where the instructor and the participants are involved in the course, class or lesson at different times. Participation can be through World Wide Web, threaded discussion boards, blogs and e-mail. Asynchronous mode allows participants to access training materials round the clock, even when other

students and/ or instructor are not present. Rather, asynchronous communication mode may permit the learner and the facilitator not to be online at the same time.

Threaded Discussion: is simply a chronological listing of people's comments (with their names linked to their comments). It is a web-based electronic bulletin board. It organizes class discussions into easy to read threads (a thread is a single posted message from one person, and to read the thread you simply click on the thread to read the message). The professor or instructor poses a question for the student to answer, and then each student is responsible to respond to the question. It is verysimple for students to use and is simple for faculty to customize to their own particular teaching needs. Each threaded discussion site may have a different look and navigation and will have information on how to use and participate in a discussion.

Learning Management System: (LMS) is a software package usually on a large scale that enables the management and delivery of learning content and resources to students facilitating 'anytime, anywhere' access to learning content and administration. It is a system for management and tracking of the

involvement of participants with specific content, usually with the assistance of a database. Typically, the system tracks who is scheduled to participate in specific training programmes, who has begun the programme, who has completed the training, and what were the

participants' test scores. At a minimum, the LMS usually allows for student registration, the delivery and tracking of e-learning courses and content, and testing and may also allow for the management of instructor- led training classes. In the most comprehensive of LMS, one may find tools, such as, competency management, skills-gap analysis, succession planning, certifications, virtual live classes and resource allocation (venues, rooms, textbooks, instructors, etc.). Mostsystems allow for learner self-service, facilitating self- enrollment and access to courses.

Some LMS vendors do not distinguish between LMS and LCMS, preferring to refer to both under the term 'LMS', but there is a difference. The LCMS, which stands for 'Learning Content Management System', facilitates organization of content from authoring tools and presentation of this content to students via the LMS. LMS are based on a variety of development platforms, from J2EE-based architectures to Microsoft. NET, and usually employ the use of a robust database

back-end. While most systems are commercially developed, free and open-source models do exist. All LMS cater to and focus on different educational, administrative and deployment requirements. Open source LMS is growing fast in the education and business world.

Authoring tools: is a software application used to create multimedia content typically for delivery on the World Wide Web. This can include several types of tools including: HTML editors and e-learning Authoring Tools.

An HTML editor is a software application for creating web pages. Authoring tools can enable, encourage and assist users (authors) in the creation of accessible web content through prompts, alerts, checking and repair functions. It is just as important that all people be able to author content as it is for all people to have access to it. The tools used to create this information must, therefore, be accessible themselves. Adoption of these guidelines will contribute to the proliferation of web content that can be read by a broader range of readers and authoring tools that can be used by a broader range of authors.

Hypermedia: an extension to hypertext that supports linking graphics, sound, and video elements in addition to text elements.The WWW is a partial hypermedia system, since it supports sound and video files. New

hypermedia systems will allow objects in computer videos to be hyperlinked.

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UNIT 9 E-COMMERCE

Structure

9.0 Objectives

9.1 Introduction

9.2 E-commerce: Meaning and Tools

9.2.1 Intranet

9.2.2 Extranet

9.3 E-commerce: Benefits

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9.6 ICTs and Banking

9.7 Computerization of Treasury System

9.8 Conclusion

9.9 Key Concepts

9.10 References

9.0 OBJECTIVES

After studying this Unit, you should be able to:

- explain the meaning of e-commerce;
- describe the ICT tools applied in processing commercial transactions;
- examine the benefits and limitations of e-commerce;
- discuss electronic payments and electronic markets;
- highlight the role of ICTs in banking operations; and
- discuss the role of computerization in facilitating the treasury system.

9.1 INTRODUCTION

The enormous potential of Information and Communication Technologies (ICTs) to fundamentally transform the nature of economic growth and development has induced both wide-ranging hopes and apprehensions. ICTs are fast flowing phenomenon with rapid and successively overlapping waves of technical advancements and market transformation. The induction of ICTs has provided a platform for economic growth in the countries across

the world.

In this Unit, we will discuss the applications of ICT in the financial and commercial sector of the economy. We will discuss about various applications such as e-payment, e-trading, e-markets, e-banking and e-treasury that facilitate e-commerce. To begin with, we will explain the meaning of e-commerce and various tools facilitating it.

9.2 E-COMMERCE: MEANING AND TOOLS

Conducting business electronically using networks and internet is known, as electronic commerce. Electronic commerce (EC) is an emerging concept that describes the buying and selling of products, services, and information via computer networks, including the internet. EC uses several technologies ranging from Electronic Data Interchange (EDI) to e-mail for commercial transaction processing.

EC applications began in early seventies with innovations, such as, electronic transfer of funds. However, the applications were limited to large corporations and a few small businesses. Then came Electronic Data Interchange (EDI), which expanded EC from financial transactions to other kinds of transaction processing and extended the types of participating companies from financial institutions to manufacturers, retailers, and other forms of business. Today, EC is rapidly outgrowing its limited operational sphere to everywhere in the entire globe.

Intranet, extranet, and requisite computer hardware and software are used in processing EC transactions. We will now discuss these tools individually.

9.2.1 Intranet Commerce

The use of intranet is increasing rapidly not only, as an internal communication system, but also, as a facilitator of electronic commerce. It uses internet-based technology to provide access to a variety of information on a firm, most of, which would otherwise

require multiple software licenses, substantial data conversion time, and different user interfaces. Intranets can facilitate electronic commerce inside a corporation, as they can be used in selling corporate products to employees and/ or selling or trading services and products among business units. Intranet can facilitate external trade as well.

Intranet can facilitate transaction processing in the following ways:

- **Efficient Transaction Entry**

  Wherever appropriate, data needed by systems to support financial functions are entered only once and are updated through electronic means, consistent with the timing requirements of normal business or transaction cycles. This helps in reducing errors in transactions, as they are now maintained electronically.

- **Common Transaction Processing**

  Common procedures are used for processing similar kinds of transactions, which permit the transactions to be reported in a consistent manner.

- **Consistent Internal Controls**

  Internal controls over data entry, transaction processing, and reporting are applied consistently throughout the system to ensure the validity of information and the protection of financial resources (Source: unknown).

Intranet is well suited to replace many paper-based information delivery systems within a firm, resulting in lower costs, easier accessibility, and greater efficiency. Client access to certain parts of a firm's intranet via an extranet is a value-added service at relatively low cost that acts, as a powerful marketing and communication tool.

9.2.2 Extranet Commerce

The exact definition of an extranet is still evolving, but the most universally accepted one is a network that links business partners to one another over the internet by tying together

their intranets. The term 'extranet' comes from 'extended intranet'. The main goal of extranet is to foster collaboration between organizations.

An extranet uses the same basic infrastructure components including services, TCP/IP[1], e- mail, and web browsers as the internet. It makes communication over the internet secured. It links the company's intranet with suppliers, customers, and trading partners. Extranet may be used, for example, to allow inventory databases to be searched by outsiders or to transmit information on the status of an order. An extranet enables people, who are located outside a company, to work together with the company's internally located employees.

An extranet, like an intranet, is typically protected by a firewall and is closed to the public. It is open to selected suppliers, customers, and other business partners, who access it on a private wide area network over the internet or on a Virtual Private Network[2] (VPN), which increases security and functionality.

9.3 E-COMMERCE: BENEFITS

Few innovations in human history encompass, as many benefits, as electronic commerce. The global nature of technology, low cost, opportunity to reach millions of people, interactive nature, variety of interaction possibilities and resourcefulness, and rapid growth of the supporting infrastructure, especially the internet, result in many benefits to organizations, individuals, and society. These benefits are just starting to materialize, but they will increase significantly, as EC expands.

We will discuss the benefits of EC in terms of:

- Organisations

[1] TCP/IP, or Transmission Control Protocol/Internet Protocol, is a suite of communication protocols used to interconnect network devices on the internet.

[2] A virtual private network, or VPN, is an encrypted connection over the Internet from a device to a network. The encrypted connection helps ensure that sensitive data is safely transmitted. It prevents unauthorized people from eavesdropping on the traffic and allows the user to conduct work remotely.

- Consumers; and
- Society

Let us begin with the benefits to organizations.

9.3.1 Organization

EC expands the market place to national and international markets. With minimal capital outlay, a company can easily and quickly locate more customers, best suppliers, and most suitable business partners worldwide. In addition, it:

- decreases the cost of creating, processing, distributing, storing, and retrieving paper-based information;
- allows reduced inventories and overhead by facilitating 'pull-type supply chain management'. In a pull-type system, the process starts from customer order and uses just-in-time processing. This allows product customization and lower inventory cost;
- reduces the time between the outlay of capital and receipt of products and services;
- supports business re-engineering process efforts. when processes are changed, productivity of sales people, knowledge workers, and administrators can increase by cent percent or more;
- lowers telecommunications cost; internet is much cheaper than value-added networks [3](VANs);
- helps small businesses to compete with large companies;
- enables organizations to reach customers outside their immediate area at a minimum cost;

[3] A value-added network (VAN) is a private, hosted service that provides companies with a secure way to send and share data with its counterparties. Value-added networks were a common way to facilitate electronic data interchange (EDI) between companies.

- allows organizations to reach a wide range of suppliers, thereby reducing the cost of supplies and services;

- permits the creation of efficient markets in an industry in, which buyers and sellers can share benefits;

- allows companies to auction surpluses or obsolete products quickly with little expenses; and

- facilitates global trade, allowing companies to penetrate foreign markets.

9.3.2 Consumers

EC:

- provides customers with more choices; they can select from many vendors and from more products;

- frequently provides customers with less expensive products and services by allowing them to shop in many places and conduct quick comparisons;

- allows quick delivery of products and services;

- enables customers to shop or do other transactions 24 hours a day, year round, from almost any location;

- permits customers to receive relevant and detailed information in seconds, rather than in days or weeks;

- enables consumers to get customized products from PCs to cars at competitive prices;

- makes it possible to participate in virtual auctions;

- allows customers to interact with other customers in electronic communities and to

exchange ideas, as well as, compare experiences; and

- capitalizes on the general movement from a market-centric to a customer-centric environment.

9.3.3 Society

EC:

- enables more individuals to work from home and to do less travelling, resulting in less traffic on the roads and lower air pollution;
- allows some merchandise to be sold at lower prices, so less affluent people can buy more and raise their standard of living;
- enables people in third world countries and rural areas to enjoy products and services that otherwise are not available to them. This includes opportunities to learn professions and earn college degrees; and
- facilitates delivery of public services, such as government entitlements, by reducing the cost of distribution and increasing the quality of the distributing system.

9.4 ELECTRONIC COMMERCE: LIMITATIONS

There are technical and non-technical limitations in the successful implementation of EC in the country. We will discuss the technical and non-technical limitations separately.

9.4.1 Technical Limitations

The technical limitations are below mentioned:

- there is lack of system security, reliability, standards, and communication protocols;

- there is insufficient telecommunication bandwidth;
- software development tools are still evolving and changing rapidly;
- there are difficulties in integrating the internet and EC software with some existing applications and databases;
- there is need for special web servers, in addition, to the network servers (additional cost);
- there is possible problem of interoperability, meaning that some EC software do not fit with some hardware or are incompatible with some operating systems or other components; and
- accessibility to the internet is still expensive and/or inconvenient for many potential customers.

However, these limitations can be overcome with time. Appropriate planning can help in minimizing them.

9.4.2 Non-Technical Limitations

Other than technical issues, there are non-technical issues that centre EC. These issues are given below:

- many legal issues are yet unresolved;
- government regulations and standards do not have a finesse enough for many circumstances;
- benefits of EC, such as, web advertisements are difficult to measure. In addition, the methodologies for justifying EC are still in the developmental stage;
- EC is still evolving and changing rapidly. Many people are looking for the situation

to stabilize before they can enter EC operation;

- customers resist change. To switch from a real to a virtual store may be difficult for many people. It seems that people do not yet sufficiently trust paperless, faceless transactions;
- there are not enough support services. For example, copyright clearance centres do not exist and quality evaluators or qualified EC tax experts are rare;
- there is a perception that EC is expensive and unsecured, so many do not want to use it yet;
- there is not yet sufficiently large number (critical mass) of sellers and buyers that is needed for profitable EC operations; and
- EC could result in breakdown of human relations.

Despite these limitations, rapid progress is occurring in EC. As experience accumulates and technology improves, the ratio of EC benefits to cost will increase, resulting in a greater rate of EC adoption.

9.5 ELECTRONIC PAYMENTS

In EC, payments between buyers and sellers can take place electronically or can be done off line. There are different modes of e-payments. Some of them are briefly mentioned below:

9.5.1 Electronic Cash

Despite the use of cheques, credit cards, and other methods of payments, cash is still the most prevalent consumer payment instrument. Merchants prefer cash as they do not have to pay commission to credit card companies and they can put the money to use, as soon as, it is received. In addition, some people pay with cash because they do not have

cheques or credit cards, or they want to preserve their anonymity.

9.5.2 Electronic Cheques

E-cheques are similar to regular cheques. They are secured by public-key cryptography and are even suitable for some micro payments. Here is how they work:

Step one

The customer establishes an electronic cheque service with a bank or financial institution;

Step two

The customer contacts a seller, buys a product or a service, and e-mails an encrypted electronic cheque; and

Step three

The merchant deposits the cheque in his or her account; money is debited in the buyer's account and credited to the seller's account.

Like regular cheques, e-cheques carry an encrypted signature that can be verified. The payer can attach additional information to the cheque. Properly signed and endorsed e-cheques are exchanged between financial institutions through electronic clearing houses. An e-cheque can also be used, as a payment instrument in EDI [4]applications.

9.5.3 Electronic Payment Cards

Electronic payment cards have been in use for several decades. The best known are credit cards, which use magnetic strips that contain limited information, such as the card's number.

To increase security of e-payments, a sender can sign a message electronically with what is called a digital signature.

[4] Electronic data interchange (EDI) is the concept of businesses electronically communicating information that was traditionally communicated on paper, such as purchase orders and invoices. Technical standards for EDI exist to facilitate parties transacting such instruments without having to make special arrangements.

9.6 ICT AND BANKING

ICTs are also being used in the banking sector facilitating banking operations and transactions. With the application of ICTs in banking operations and computerization of banks, banking activities have become easy, efficient, speedy, and transparent. With the setting up of ATMs one may get the banking services at any place in the country.

Rendering online banking services has offered users an unprecedented level of control over their finances. Electronic banking has enabled capabilities ranging from paying bills to securing loans electronically.

9.7 COMPUTERISATION OF TREASURY SYSTEM

With computerization of treasuries, the efficiency and accuracy of financial transactions had been improved tremendously. The Treasury Information System (TISNIC) – version 3.0 software helps in:

- bill passing;
- budget controlling;
- online cheque generation;
- receipt accounting; and
- accounting through computer at the treasury level and generating information for theState Government, Financial and Statistical Directorate, Drawing and Disbursing Officers, and HODs.

9.8 CONCLUSION

There is a profound impact of ICTs on the functioning of vital sectors of the economy

today. Commerce, trade, agriculture, banking, rural development is affected by the electronic transformation being brought about by technologies. Financial and commercial transactions have been facilitated through electronic mode of payments, electronic trading system, electronic markets, and electronic banking. Infrastructure in the form of institutions for software development, more resources in terms of finances, and professionals and security are very much required to make e-economy more viable.

ACTIVITY

1. By now you would have got enlightened with the role and applications of ICTs in various sectors of our economy. Please let us know the role played by ICTs in budgetary functions of the government.
2. Narrate about any experiment or software existing for rural economic development in our country.

9.9 KEY CONCEPTS

E-commerce : business that is conducted over the internet using any of the applications that rely on the internet, such as e-mail, instant messaging, shopping carts, web services, UDDI, FTP, and EDI, among others. Electronic commerce can be between two businesses transmitting funds, goods, services and/or data or between a business and a customer.

EDI : short for Electronic Data Interchange, the transfer of data between different companies using networks, such as VANs or the internet. As more and more companies get connected to the internet, EDI is

becoming increasingly important, as an easy mechanism for companies to buy, sell, and trade information. ANSI has approved a set of EDI standards known as the 'X12' standards.

Extranet : a buzzword that refers to an intranet that is partially accessible to authorized outsiders. Whereas an intranet resides behind a firewall and is accessible only to people who are members of the same company or organization, an extranet provides various levels of accessibility to outsiders. You can access an extranetonly if you have a valid username and password and your identity determines which parts of the extranet you can view. Extranets are becoming a very popularmeans for business partners to exchange

TCP : abbreviation of Transmission Control Protocol and is pronounced as separate letters. TCP is one of the main protocols in TCP/IP networks. Whereas the Internet Protocol deals only with packets, TCP enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent.

WAN : a computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs). Computers connected to a wide-area network are often connected

through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the internet.

Pull type : to request data from another programme or computer. The opposite of pull is push, where data is sent without a request being made. The terms push and pull are used frequently to describe data sent over the internet. The World Wide Web is based on pull technologies, where a page isn't delivered until a browser requests it. Increasingly, however, information services are harnessing the internet to broadcast information using push technologies. A prime example is the PointCast Network.

VAN : Value Added Network refers to a private network provider that leases communication lines to its subscribers. VAN provides specialized services, such as, assisting with EDI, extra security, message delivery or access to a particular database.

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UNIT-10: E- GOVERNANCE AND URBAN DEVELOPMENT

Structure

10.0 Objectives

10.1 Introduction

10.2 Urban Mission Mode Projects under National E-Governance Plan (NeGP)

10.3 ICT Infrastructure

10.4 E-Governance Projects in Urban Areas

10.5 Smart Cities Mission

10.6 Conclusion

10.7 References

10.0 OBJECTIVES

After studying this Unit, you should be able to:

- discuss the role of ICT in urban governance;
- explain the Urban level Mission Mode Projects under National e-Governance Plan;
- describe the e-governance projects in urban areas.

10.1 INTRODUCTION

Central to the communications revolution is the deployment of ICT in urban areas. High-quality infrastructure, innovation, investment, well-connected firms, efficiencies in energy and budgets, are often cited, as ICT-driven benefits to urban areas. Government of India and state governments have realized the potential benefits of E-Governance in urban development. Efforts were made to streamline administration and integrate urban services with the help of ICTs. States

like Karnataka, Kerala, and Andhra Pradesh have created best urban e-governance models. Government of India has provided institutional, infrastructural, and financial support in designing, developing, deploying e-governance solutions for most of the urban problems.

10.2 URBAN MISSION MODE PROJECTS UNDER NATIONAL E-GOVERNANCE PLAN (NEGP)

Mission Mode implies that the objective and the scope of the project are clearly defined, that the project has measurable outcomes and service-levels, and the project has well-defined milestones and timelines for implementation. Mission Mode Projects (MMPs) are owned and spearheaded by various Line Ministries across Central and State levels.

The following table shows the MMPs that are related to urban areas.

Table 10.1

Urban level Mission Mode Projects of National e Governance Plan

Sl. No	Name of the MMP	Objectives	Services Provided
1	**Common Service Centre** (Nodal Agency)	To provide high quality and cost-effective video, voice, and data content and services, in the areas of -e-governance, education, health, telemedicine, entertainment as well as other private services.	Offers web-enabled e-Governance services in rural areas, including application forms, certificates, and utility bill payments.
2	**E-District** (Nodal Agency: Department of IT, Govt. of India)	To enhance efficiencies of the various departments at the district level to enable seamless service delivery to the citizens.	Redesigning of the existing processes and delivery mechanism to facilitate an efficient and effective service delivery structure Backend computerization to enable efficient delivery of

			government services Providing a system of spreading information on the Government schemes Status of current activities.
3	**E-Municipality** (Nodal Agency: Ministry of Urban Development)	To overcome the challenges being faced in the villages by the citizens. Cater to the needs of the village folk by providing reliable communication infrastructure. Services to the citizens (Licenses, Certificate etc). Revenue mobilization for implementing schemes at the Gram Panchayat level. Monitoring mechanism for the schemes.	Issue of Trade Licenses and NoC House Related Services Certificate of Birth and Death, Income, and Solvency Digitization of the Village Infrastructure on a Map.
4	**Urban Governance** (Nodal Agency Ministry of Urban Development)	Proposal stage	Proposal stage

10.3 ICT INFRASTRUCTURE

Districts are the basic administrative units of government at the grass roots. They have spearheaded the movement towards automation with the establishment of NIC centers at every district headquarters. These NIC centers connect the districts with state and central governments with the help of a network called DISNIC. These ICT infrastructure and applications of the NIC centers also support citizen needs at district level. Electronic service delivery beyond district level requires physical presence of channels of interaction and communication among government departments and citizens. Significant efforts are made by central and state governments to build these channels of delivery closest to the citizen and increase the reach up to

the last mile. This is done by providing networks and infrastructure across the geography of the district. These modes of delivery are generally government establishments (PRIs, DC Office). However, in some cases these are also kiosks and CSCs, which are based on Public Private Partnerships (CSCs). Penetration of these modes/channels of delivery varies from state to state. In most of the states, government services are delivered at the district level only, but in few states these service delivery channels have also penetrated to village and village Panchayat levels. The most popular service delivery channels are DC Office, SDO Office (Sub Divisional Office), Block/Tehsil Office, CSCs (Common Service Centers), and Internet. Most of the states are delivering services at District level through multiple delivery channels, as mentioned above. Andhra Pradesh, Jharkhand, Kerala have penetration till the village level and services are being delivered through various delivery channels. Andaman and Nicobar, Gujarat, Haryana, Himachal, Madhya Pradesh, Meghalaya, Odisha, Punjab, Puducherry, Rajasthan, Tamil Nadu, Tripura, and Uttarakhand have penetration up to the block level. CSCs are being used, as a common channel of delivery of services in Bihar, J&K, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Nagaland, Tamil Nadu, and UP. Integrated Citizen Service kiosks offer a convenient method of reaching the government at the time and location of choice. "Reach and range" is key to any service offering and an essential component to bridging the digital divide and the government has an opportunity to provide it through extensive use of these kiosks. These kiosks have evolved, as an effective service channel.

10.4 E-GOVERNANCE PROJECTS IN URBAN AREAS

I. Transportation

Services provided in this area are:-

- Issuance of Time Table of buses departures.
- Provision of booking facility for Interstate transport.
- Transportation Improvement Program.
- Regional Transportation Plans.
- Congestion Management Process.
- Transportation Demand Management.

Various projects:

- CFST-Citizen Friendly Services of Transport Department by Andhra Pradesh government to provide services such as issue of learner licenses, issue of driving licenses, renewal of driving licenses etc.
- 'Vahan'(vehicle) and 'Sarathi' (driver)-The backend applications Vahan & Sarathi help in speeding the overall work flow in the transport department.
- OSRTC-The Orissa State Road Transport Corporation project was started to provide transport related facilities online.
- HRTC-Himachal Road Transport Corporation project is for online bookings, cancellation of seats, for enquiry about departure of buses, availability of seats and buses etc.

II. Online Payment of Bills and Taxes

- Online Transaction
- Payment of Bill
- Payment of taxes
- Payment of house EMIs

Various Projects:

- FRIENDS: - This project is started by Kerala Government for its citizens to make online payment of electricity and water bills, revenue taxes, license fees, motor vehicle taxes, university fees etc.
- E-SEVA:-Electronic seva by Andhra Pradesh government to pay utility bills, availing of trade licenses, and conducting transactions.
- BWSSB water billing, and collection system - This e-governance project is started by the Bangalore government. In this every month bills of houses are generated through BGS software.
- Domestic - This project is started by Daman and Diu. It is an Electricity Billing System for domestic consumers.
- E-Pourasabha Municipal Application-E-Pourasabha is an e-governance application for urban local bodies. It is implemented for tax collection system, collection of property tax, water tax, and such related taxes.

III. Information Services

With these kinds of projects people can get any kind of information with just a single click.

Various projects:-

- LokMitra- By the government of Himachal Pradesh. The services offered include information about vacancies, tenders, market rates, matrimonial services, village e-mail.
- Mahiti Shakti- By Gujarat government to provide information related to its working to the citizens.

- OLTP[1]-In Andhra Pradesh under this Project, the state government has 16 government departments connected on a single network.

IV. Municipal Services

Services provided are:

- House Tax Assessment, Billing, and Collection.
- Maintenance of Records of Land & property.
- Issue of Death Certificates.
- Registration of Properties.
- Review and Approval Authority for Site Plans

Various projects:-

- E-Panjeeyan(registration)-It is started by Assam government to deal with the computerization of the document registration work at Sub Registrar Office.
- Palika-The Palika property tax software captures the basic details of the owner and his/her property, payment details, and receipts.
- TRIS-Tripura Registration Information System is meant for capturing of online photograph and biometric impression, request for duplicate document, etc.

V. Roads and Traffic Management

- Network of Roads and Bridges
- Road Construction and their Maintenance

[1] Online transaction processing (OLTP) provides transaction-oriented applications in 3-tier architecture. Administers day to day transaction of an organization.

- Traffic Management
- Safety, Accident, and Pollution Control

Various projects:

- BHOOSWADEENA: This project is computerized land acquisition system with tight integration with BHOOMI. The purpose of this project is to develop a system to automate the process of land acquisition.
- Rajasthan State Pollution Control Board (RSPCB): The project relates to setting up of computer based system by fulfilling the hardware, software, and networking requirements.
- The project will be beneficial to the Government, Central Pollution Control Board, RSPCB itself.
- Citizen Friendly Services of Transport Department (CFST) project is started by the government of Andhra Pradesh to undertake pollution control, road safety, awareness about road signs, and safety of its citizens.

10.5 SMART CITIES MISSION

The ever-increasing application of data and the Internet of Things is supporting a much more collaborative relationship between city governments, citizens, and businesses. This trend is driving the smart cities phenomenon worldwide. The definition of a smart city continues to evolve, but a consistent component is the application of ICT and the Internet of Things[2] to address urban challenges. Many conceptual frameworks of smart cities also consider

[2] The Internet of things describes the network of physical objects—things or objects—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet.

sustainability, innovation, and governance, as important components, in addition to, the application of ICT. The International Telecommunication Union defines a smart sustainable city as "an innovative city that uses information and communication technologies and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects."

Smart Cities Mission is an urban renewal and retrofitting program by the Government of India started in 2005 with a mission to develop 100 cities all over the country making them citizen friendly and sustainable. The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with the state governments of the respective cities. The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Area based development will transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving livability of the whole City. New areas (Greenfield)[3] will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information, and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment, and enhance incomes for all, leading to inclusive Cities.

[3] Greenfield project is one that lacks constraints imposed by prior work. The analogy is to that of construction on Greenfield land, where there is no need to work within the constraints of existing buildings or infrastructure. In software development, a Greenfield project could be one of developing a system for a totally new environment, without concern for integrating with other systems, especially not legacy systems. Such projects are deemed higher risk, as they are often for new infrastructure, new customers, and even new owners.

10.6 CONCLUSION

ICTs play a key role in urban development. Both central and state governments in India have tried to augment delivery of basic urban services like bill payments, building permissions, issuance of certificates, etc. with the help of ICTs. National E-Governance Plan has provided specific Mission Mode Projects like Common Service Centres, E-District, E-Municipality, and Urban Governance. Recently, GoI has come up with Smart Cities Mission, which gives primacy to the adoption of smart solutions for urban problems using ICTs.

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UNIT 11 INFORMATION POLICY: RIGHT TO INFORMATION ACT 2005

Structure

11.0 Objectives

11.1 Introduction

11.2 Need for Right to Information

11.3 Right to Information Act 2005: An Introduction

11.4 Duties and Responsibilities

11.5 Information Commissions-Central and State

11.6 Powers and Functions of Information Commission

11.7 Role of Government

11.8 Reporting Procedure

11.9 Right to Information Act 2005- An Appraisal

11.10 Suggestions

11.11 Conclusion

11.12 References

11.0 OBJECTIVES

After studying the Unit, you should be able to:

- explain the need to have a right to information;
- discuss the Right to Information Act 2005;
- describe the duties and responsibilities of the officials concerned;

- explain the powers and functions of the Information Commission; and
- analyze the critical success gaps in the implementation of the Act and suggest ways towards its effective implementation.

11.1 INTRODUCTION

The time that we live in is also known as the information age. The technological revolution has brought us to an era where information is easily transmitted from one corner of the world to another. But, the functioning of the government is still marred by the hangover of the licence raj and there is an inherent inertia in the government servants to part with information they hold. However, over the last few years, there has been an increasing demand for greater accessibility to information, mostly in order to curb corruption and promote greater accountability of government agencies towards the citizens.

In India, the Constitution has established a government that is of the people, for the people and by the people. Thus, the people have a right to know how the government is functioning. A series of Supreme Court verdicts has also recognized that the right to know is an intrinsic part of the right to freedom of speech and expression. The court has opined that the citizen has a fundamental right to information, that is, 'to know', in order to formulate and express his or her views. The fundamental right to know is also further strengthened by the right to life and personal liberty, and also by the right to equality, both of which are provided for by the Constitution of India, since this implies that all stakeholders must have an access to the facts that affect their lives.

Right to information lies at the root of all fundamental rights. Failure of the state to provide access to information or state suppression of information can lead to human rights violations. The right to information is fundamental to the realization of rights, as well as effective democracy, which requires informed participants.

This Unit seeks to familiarize the learners with the need for a right to information law and

also about the key provisions of the Right to Information Act 2005.

11.2 NEED FOR RIGHT TO INFORMATION

Therefore, right to information is essential for citizens of a truly democratic state for the following reasons:

- ensure a transparent government which is accountable to the people
- establish a two-way dialogue between the citizens and the government
- enable a citizen to make well-informed decisions
- tackle corruption
- ensure better monitoring of the services provided by the government

All this needs machinery for enabling the citizen to exercise this right. Moreover, no right is absolute. Thus, there is also a need to define the parameters within which the citizen can exercise the right to information, without jeopardizing the security of the nation and infringing the privacy of another individual. It is also important to spell out the responsibilities of the government functionaries, who have to actually provide the information to the citizens. A law on right to information sets out, in a systematic manner, all these aspects and provides the machinery for the same. If a citizen goes to a government office and demands an officer to show all his files because it is his fundamental right, the officer is most likely to refuse unless there is a specific provision that binds him to do so. Thus, the right to information laws provide for forms in which one can apply, where one can apply, in how many days one should get the information, and what if the information is not provided within the stipulated time frame.

11.3 RIGHT TO INFORMATION ACT 2005: AN INTRODUCTION

In May 2004, United Progressive Alliance (UPA) Government came into power at the

Centre. The national campaign for right to information received a major boost with UPA Government's Common Minimum Programme promising to make the Right to Information Act more progressive, participatory, and meaningful.

The Right to Information Bill 2004 (RTI Bill 2004) was tabled on 23 December 2004 in the Lok Sabha. It was referred by Parliament to the Department Related Standing Committee on Personnel, Public Grievances, Law and Justice for consideration. A range of civil society activists appeared before the Committee and gave their recommendations. The Report of the Committee (including a proposed amended version of the RTI Bill) was tabled in the Lok Sabha on 21 March 2005. The Lok Sabha passed the bill on 11 May 2005 and Rajya Sabha on 12 May 2005. On 15 June 2005, President A.P.J. Abdul Kalam gave his assent that made Right to Information Act 2005. With Presidential assent, the Central Government and State Governments had 120 days to implement the provisions of the Bill in its entirety. The Act came into force on 12 October 2005.

As per the Right to Information Act 2005 (RTI Act 2005), the right to information includes the right to:

- inspect works, documents, and records;
- take notes, extracts, or certified copies of documents or records;
- take certified samples of material; and
- obtain information in form of printouts, diskettes, floppies, tapes, video cassettes, or in any other electronic mode or through printouts.

Important Definitions

Some of the important terms used in the RTI Act 2005 and their definitions, as per the Act are given below:

- **Information:** records, documents, memos, e-mails, opinions, advice, press releases,

circulars, orders, logbooks, contracts, reports, papers, samples, models, data material held in electronic form and information about private bodies can be accessed under existing laws by a public authority.

- **Public Authority:** any authority or body or institution of self- government established or constituted by or under the Constitution or by any other law made by Parliament or the State Legislature, and includes anybody or a non-government organization owned, controlled or substantially financed, directly or indirectly by funds provided by the appropriate government.

- **Record**: includes any document, manuscript, and file; any microfilm[1], microfiche[2], and facsimile copy of a document; any reproduction of image or images embodied in such microfilm; and any other material produced by a computer or any other device.

- **Central Public Information Officer and State Public Information Officer:** the Central Public Information Officer (CPIO) designated under sub-section (1) and a Central Assistant Public Information Officer (CAPIO) designated under sub-section (2) of Section 5. It is the duty of every public authority to designate, as many officers as, the CPIOs or SPIOs, as the case may be, in all administrative units or offices under it, as may be necessary to provide information to persons requesting for the information under this Act, within one hundred days of the enactment of this Act. Besides, as per sub-section (2), every public authority shall designate an officer, within one hundred days of the enactment of this Act, at each sub-divisional level or sub-district level, as a CAPIO or a SAPIO, as the case may be, to receive the applications for information or appeals under this Act for forwarding the same forthwith to the CPIO or the SPIO or senior officer specified

[1] Microfilm is a 35mm film on, which printed materials are photographed at greatly reduced size for ease of storage. The digital lens on the microfilm reader enlarges the image, allowing you to read the contents.

[2] Microfiche is a card made of transparent film used to store printed information in miniaturized form. To read the card, one places it under the lens of a microfiche reader machine, which magnifies it.

under sub-section (1) of Section 19, as the case may be. It is the duty of the Central or State PIO to deal with requests from persons seeking information and render reasonable assistance to the persons seeking such information, and for this purpose he can take assistance of any other official, as he deems fit.

- **Appellate Authority**: the officer immediately senior in rank to the PIO and appointed by the appropriate public authority, as such.
- **Central Information Commission**: the CIC is constituted under sub-section (1) of Section 12 of the Act. It consists of a Chief Information Commissioner and such number of Information Commissioners, as deemed necessary (but not more than ten). They are to be appointed by the President on recommendation of a Committee consisting of the Prime Minister, the Leader of Opposition in the Lok Sabha, and a Union Cabinet Minister nominated by the Prime Minister.
- **Chief Information Commissioner and Information Commissioner:** the Chief Information Commissioner and Information Commissioner are appointed under sub-section (3) of Section 12 of the RTI 2005 by the Central Government. Every Information Commissioner shall hold office for a term of five years from the date on, which he enters his office or till he attains the age of sixty-five years, whichever is earlier, and shall not be eligible for reappointment.
- **State Information Commission**: the SIC is constituted under sub-section (1) of Section 15. The Commission shall consist of the State Chief Information Commissioner, and such number of State Information Commissioners, not exceeding ten, as may be deemed necessary. They are to be appointed by the Governor on recommendation of a Committee consisting of the Chief Minister, the Leader of Opposition in the State Legislative Assembly, and a State Cabinet Minister nominated by the Chief Minister.

- **State Chief Information Commissioner and State Information Commissioner**: the State Chief Information Commissioner and the State Information Commissioner are appointed under sub-section (3) of Section 15. The State Chief Information Commissioner and the State Information Commissioners shall be persons of eminence in public life with wide knowledge and experience in law, social service, management, journalism, science and technology, mass media, administration, and governance.

- **Competent Authority**

  (i) Speaker in the case of the House of the People or the Legislative Assembly of a State or a Union territory having such Assembly; and the Chairman in the case of the Council of States or Legislative Council of a State;

  (ii) Chief Justice of India in the case of the Supreme Court;

  (iii) Chief Justice of the High Court in the case of a High Court;

  (iv) President or the Governor, as the case may be, in the case of other authorities established or constituted by or under the Constitution; and

  (v) Administrator appointed under Article 239 of the Constitution.

Procedure for Obtaining Information

The detailed procedure for applying for obtaining information under this Act has also been laid down by the Government. The applicant can apply in writing or through electronic means in English or Hindi or in the official language of the area, to the PIO, specifying the particulars of the information sought for. The applicant is not obliged to give the reasons for asking for the information. The applicant has to make the application along with the prescribed fee. However, no fee is to be paid by a person living below the poverty line.

Information has to be provided to the applicant within 30 days of making application to the PIO. In case the application has been made to the APIO, 5 more days are added.

However, in cases involving life and liberty of an individual, information has to be made available within 48 hours. In case information sought involves the interests of a third party, the maximum time limit will be 40 days, that is, 30 days plus 10 days given to the third party to make its representation.

However, as per Section 8 and 9 of the Act, the PIO can reject the application if the information asked falls under the category of information not to be disclosed, or if it infringes the copyright of any other body than the state. If the PIO fails to provide the information within 30 days, it would be deemed to be a refusal, and the applicant will have a right to go into appeal to the Appellate Authority or the Information Commission. The Act also provides for a fine on the PIO at the rate of Rs. 250 per day, subject to a maximum of Rs. 25,000, if there is a delay beyond 30 days in providing information.

The first appeal is an internal appeal to the Appellate Authority within the organization, who has to decide the appeal within 30 days. The second appeal is external, and is made to the Central or State Information Commission, as the case may be, within 90 days of the rejection by the Appellate Authority. However, the delay in filing appeal beyond 90 days may be condoned, if sufficient cause is shown. There is no time limit for the Information Commission to decide the appeal. The burden of proof for rejecting the application lies on the PIO. An appeal can be made against the order of the Information Commission only before the High Court and not to any lower courts.

11.4 DUTIES AND RESPONSIBILITIES

The various authorities and officers constituted and appointed under the RTI Act 2005 have been assigned specific duties under the Act. The Act is quite unambiguous in this regard, and specific time frame has been laid down to fulfill these responsibilities.

Public Authority

A public authority has been defined, as any authority or body or institution of self-government established or constituted by or under the Constitution or by any other law made by Parliament or the State Legislature, and includes anybody or a non-government organization owned, controlled, or substantially financed, directly or indirectly by funds provided by the appropriate government.

The obligations of the public authority are to proactively disclose the following details about itself:

- particulars of its organization, functions and duties;
- powers and duties of its officers and employees;
- procedure followed in its decision-making process, including channels of supervision and accountability;
- norms set by it for the discharge of its functions;
- rules, regulations, instructions, manuals, and records used by its employees for discharging the functions;
- statement of the categories of the documents held by it or under its control;
- particulars of any arrangement that exists for consultation with members of the public, in relation to the formulation of policy or implementation thereof;
- statement of the boards, councils, committees, and other bodies consisting of two or more persons constituted by it. Additionally, information, as to whether the meetings of these are open to the public, or the minutes of such meetings are accessible to the public;
- directory of its officers and employees;
- monthly remuneration received by each of its officers and employees, including the system of compensation, as provided in its regulations;

- budget allocated to each of its agency, indicating the particulars of all plans, proposed expenditures, and reports on disbursements made;
- manner of execution of subsidy programmes, including the amounts allocated and the details and beneficiaries of such programmes;
- particulars of recipients of concessions, permits, or authorizations granted by it;
- details of the information available to or held by it, reduced in an electronic form;
- particulars of facilities available to citizens such as the working hours of a library or reading room, if maintained for public use;
- names, designations, and other particulars of the public information officers; and
- any other information.

Also, it is the duty of each public authority to appoint PIOs in each and every office under its jurisdiction and also to appoint Assistant PIOs at sub-divisional level. The public authority is also obliged to appoint appellate authorities within an organization.

Public Information Officers

PIOs are officers designated by the public authorities in all administrative units or offices under it to provide information to the citizens requesting for information under the Act.

The duties of a PIO are as follows:

- PIO shall deal with requests from persons seeking information and where the request cannot be made in writing, to render reasonable assistance to the person to reduce the same in writing;
- if the information requested for is held by or its subject matter is closely connected with the function of another public authority, the PIO shall transfer, within 5 days, the request to that other public authority and inform the applicant immediately;

- PIO may seek the assistance of any other officer for the proper discharge of his/her duties;

  PIO, on receipt of a request, shall as expeditiously as possible, and in any case within 30 days of the receipt of the request, either provide the information on payment of such fee, as may be prescribed or reject the request for any of the reasons specified in S.8 or S.9. Where the information requested for concerns the life or liberty of a person, the same shall be provided within forty-eight hours of the receipt of the request;

- if the PIO fails to give decision on the request within the period specified, he shall be deemed to have refused the request;
- where a request has been rejected, the PIO shall communicate to the requester - (i) the reasons for such rejection, (ii) the period within, which an appeal against such rejection may be preferred, and (iii) the particulars of the appellate authority;
- if allowing partial access, the PIO shall give a notice to the applicant, informing:
  (i) that only part of the record requested, after severance of the record containing information, which is exempt from disclosure, is being provided;
  (ii) the reasons for the decision;
  (iii) the name and designation of the person giving the decision;
  (iv) the details of the fees calculated by him or her and the amount of fee, which the applicant is required to deposit; and
  (v) his or her rights with respect to review of the decision regarding non-disclosure of part of the information, the amount of fee charged, or the form of access provided.

11.5 INFORMATION COMMISSIONS- CENTRAL AND STATE

The Central Information Commission (CIC) is constituted by the Central Government through a Gazette notification. It shall consist of a Chief Information Commissioner and Information Commissioners, not exceeding ten in number, who will be appointed by the President of India on recommendation of a Committee consisting of the Prime Minister, the Leader of Opposition in the Lok Sabha, and a Union Cabinet Minister nominated by the Prime Minister. The President of India, according to the form set out in the First Schedule, will administer oath of office. The Commission shall have its Headquarters in Delhi. Other offices may be established in other parts of the country with the approval of the Central Government. Commission will exercise its powers without being subjected to directions by any other authority.

Similarly, the state government through a Gazette notification shall constitute the State Information Commission. It will have one State Chief Information Commissioner and not more than 10 State Information Commissioners to be appointed by the Governor on recommendation of an Appointments Committee headed by the Chief Minister. Other members include the Leader of the Opposition in the Legislative Assembly and one Cabinet Minister nominated by the Chief Minister. The Governor, according to the form set out in the First Schedule, will administer oath of office. The headquarters of the State Information Commission shall be at such place, as the state government may specify. Other offices may be established in other parts of the state with the approval of the state government.

Eligibility Criteria

Candidates for Chief Information Commissioner/Information Commissioners must be persons of eminence in public life with wide knowledge and experience in law, science and technology, social service, management, journalism, mass media, administration, and governance. Chief Information Commissioner/Information Commissioner shall not be a Member of Parliament or Member of the Legislature of any state or Union Territory. He

shall not hold any other office of profit or connected with any political party or carrying on with any business or pursuing any profession.

The qualifications for appointment, as State Chief Information Commissioners/State Information Commissioners shall be the same as that for Central Commissioners.

Terms and Conditions of Appointment

The Chief Information Commissioner shall be appointed for a term of 5 years from date on which he enters upon his office or till he attains the age of 65 years, whichever is early. Chief Information Commissioner is not eligible for reappointment. Salary will be the same, as that of the Chief Election Commissioner. This will not be varied to the disadvantage of the Chief Information Commissioner during his service. (S.13)

The Information Commissioner shall hold office for a term of five years from the date on, which he enters upon his office or till he attains the age of sixty-five years, whichever is early and shall not be eligible for reappointment, as Information Commissioner. His salary will be the same as that of the Election Commissioner. This will not be varied to the disadvantage of the Information Commissioner during his service. Information Commissioner is eligible for appointment, as Chief Information Commissioner but will not hold office for more than a total of five years including his/her term, as Information Commissioner.

The salary of the State Chief Information Commissioner will be the same, as that of an Election Commissioner. The salary of the State Information Commissioner will be the same, as that of the Chief Secretary of the state government.

Removal

The Chief Information Commissioner or any Information Commissioner shall be removed from his office only by an order of the President on the ground of proved misbehavior or incapacity after the Supreme Court, on a reference made to it by the President, has,

on inquiry, reported that the Chief Information Commissioner or any Information Commissioner, as the case may be, ought on such ground be removed.

If the Chief Information Commissioner or an Information Commissioner in any way, is found to be concerned or interested in any contract or agreement made by or on behalf of the Government of India or participates in any way in the profit thereof or in any benefit or emolument arising there from otherwise than as a member and in common with the other members of an incorporated company, he shall, for the purposes of sub-section (1), be deemed to be guilty of misbehavior.

The President may suspend from office, and if deem necessary prohibit also from attending the office during inquiry, the Chief Information Commissioner or Information Commissioner in respect to whom a reference has been made to the Supreme Court under sub-section (1) until the President has passed orders on receipt of the report of the Supreme Court on such reference.

Notwithstanding anything contained in sub-section (1), the President may by order remove from office the Chief Information Commissioner or any Information Commissioner due to any of the following reasons:

If he/she-

- is adjudged an insolvent; or
- has been convicted of an offence, which in the opinion of the President, involves moral turpitude; or
- engages during his/her term of office in any paid employment outside the duties of his/her office; or
- is in the opinion of the President, unfit to continue in office by reason of infirmity of mind or body; or
- has acquired such financial or other interest, as is likely to affect prejudicially

hisfunctions, as the Chief Information Commissioner or Information Commissioner.

Similarly, the State Chief Information Commissioner or a State Information Commissioner shall be removed from his office only by an order of the Governor on the ground of proved misbehavior or incapacity after the Supreme Court, on a reference made to it by the Governor, has on inquiry, reported that the State Chief Information Commissioner or a State Information Commissioner, as the case may be, ought to be removed from office on such ground.

11.6 POWERS AND FUNCTIONS OF INFORMATION COMMISSION

The powers and functions of the Central and State Information Commissions are given, as below:

CIC/SIC has a duty to receive complaints from any person who:

- has not been able to submit an information request because a PIO has not been appointed;
- has been refused information that was requested;
- has received no response to his/her information request within the specified time limits;
- thinks the fees charged are unreasonable; and
- thinks information given is incomplete or false or misleading

CIC/SIC also can receive complaints on any other matter relating to obtaining information under this law and has the power to order inquiry, if there are reasonable grounds. They will have the powers of Civil Court in such matters, such as:

- summoning and enforcing attendance of persons, compelling them to give oral or

written evidence on oath and to produce documents or things;

- requiring the discovery and inspection of documents;
- receiving evidence on affidavit;
- requisitioning public records or copies from any court or office;
- issuing summons for examination of witnesses or documents; and
- any other matter, which may be prescribed.

All records covered by this law (including those covered by exemptions) have to be given to CIC/SIC during inquiry for examination.

They have the power to secure compliance of their decisions from the public authority. This includes:

- providing access to information in a particular form;
- directing the public authority to appoint a PIO/APIO, where none exists;
- publishing information or categories of information;
- making necessary changes to the practices relating to management, maintenance, and destruction of records;
- enhancing training provision for officials on RTI;
- seeking an annual report from the public authority on compliance with this law;
- requiring it to compensate for any loss or other detriment suffered by the applicant ;
- imposing penalties under this law;
- rejecting the application. (S.18 and S.19)

Also, the Information Commission can impose a penalty on the PIO at the rate of Rs. 250/- per day up to a maximum of Rs. 25,000/- for any of the following reasons:

- refusal to receive application;
- not furnishing of information within time limit without reasonable cause;
- malefide denying of information without reasonable cause;
- knowingly giving incorrect, incomplete, misleading information;
- destroying information, which was the subject of request; and
- obstructing furnishing of information in any manner.

For persistent violation of the law the IC can recommend disciplinary action against the errant official.

11.7 ROLE OF GOVERNMENT

The RTI Act 2005 lays down a very comprehensive role for the Central and state governments. As per Section 26 of the Act, the appropriate government may, subject to the availability of physical and financial resources:

- develop educational programmes for the public, especially disadvantaged communities, on RTI;
- encourage public authorities to participate in the development and organization of such programmes;
- promote timely dissemination of accurate information to the public;
- train officers and develop training materials;
- compile and disseminate a User Guide for the public in the respective local language; and
- publish names, designation, postal addresses, and contact details of PIOs and other information, such as, notices regarding fees to be paid, remedies available in law, if

request is rejected, etc. (S.26)

As per Sections 27 and 28 of the Act, Central Government, state governments, and the Competent Authority, as defined in S.2 (e), are vested with powers to make rules to carry out the provisions of the Right to Information Act, 2005.

If any difficulty arises in giving effect to the provisions of the Act, the Central Government may by order published in the Official Gazette make provisions necessary for removing the difficulty. (S.30)

11.8 REPORTING PROCEDURE

The Act prescribes a detailed reporting procedure for all public authorities, Information Commissions and officers under the Act.

Each Ministry has a duty to compile reports from its Public Authorities and send them to the Central Information Commission or State Information Commission, as the case may be.

Each report will contain details of number of requests received by each public authority, number of rejections and appeals, particulars of any disciplinary action taken, amount of fees and charges collected, etc.

Central Information Commission will send an annual report to the Central Government on the implementation of the provisions of this law at the end of the year. The State Information Commission will send annual report to the State Government.

Central Government will table the Central Information Commission report before Parliament. The concerned state government will table the report of the State Information Commission before the Vidhan Sabha.

11.9 RIGHT TO INFORMATION ACT 2005- AN APPRAISAL

The RTI Act covers a wide spectrum of bodies and officials from the Central Government, the state governments, Panchayati Raj Institutions, local bodies, and significantly all bodies including non-governmental organizations (NGOs) that are established, constituted, owned, controlled, or substantially financed by the government. By bringing private bodies within the purview of the law, it will ensure that the government collects information from them.

It may be said that this Act is much more comprehensive than all the previous laws that were proposed under the right to information. It has within its purview a much wider spectrum of public bodies and the scope of information exempted from disclosure is also much limited. Moreover, the exemption from disclosure is also not absolute, since the public authority can decide to disclose the information, if it is essential in public interest. An important feature of the legislation is that it overrides the provisions of the Official Secrets Act, 1923, or any other law that could be used to obstruct access to information. For the first time security forces and intelligence agencies will not be completely exempt from the application of such a law. Citizens can seek information from these agencies in matters relating to allegations of corruption or violations of human rights, subject to the approval of the Information Commission.

However, a lot of controversy has been generated around the issue of exempting file noting from the purview of RTI Act 2005. The civil society has raised strong objections against the directive of the DoPT that file noting will not be provided. It has been argued that the note sheet reflects the mind of government, bares the intention of an individual officer, and whether his advice and consent were grounded on established rules. It is only by allowing thorough public scrutiny of the evidence of how the government works

at every level that corruption can be fought. However, the government has argued that the noting, opinions, advice of senior government officials on files, and the like should be excluded from coverage under the Act, as their opening up is likely to inhibit officials in their decision-making, thus slowing down the processes of government in the long run.

The fact that people would have to pay a fee to obtain information has also been debated. It is the view of some sections of the civil society that this would make the information accessible to only those privileged few, who can pay for it. Even though the Act provides that the fee charged should be reasonable and also that persons below poverty line should be exempted from paying the fee, it is felt that this may be a hurdle in making information accessible to all sections of the society.

Another issue that has been raised is regarding the proactive disclosure of information. It is felt that very little information seems to be disclosed proactively by the public authorities. Some activist groups have argued that public authorities should disclose even that information, which is sought by a majority of applicants under the state RTI Acts. For example, the various public authorities should automatically disclose the information regarding their major projects, the cost of construction, and the expected date of completion.

An additional weakness concerns the appointment of the Information Commissioners. Information Commissioner will hear appeals from people, who believe that government officials have wrongfully withheld information from them. Setting up Information Commissioners is a radical new initiative under the new Act and is a very positive step towards transparency. To ensure the independence and autonomy of the Information Commissioners, the original Bill provided that a selection committee for appointing Information Commissioners would consist of the Prime Minister, the Leader of the Opposition in the Lok Sabha, and the Chief Justice of India. However, the final Act has

dropped the Chief Justice and replaced him with a Cabinet Minister nominated by the Prime Minister. Similarly, at thestate level, the Chief Minister will nominate a Cabinet Minister to the Committee. This dominance of the Appointment Committee for Information Commissioners/Chief Information Commissioners by government representatives could lead to bias and political interventionin the selection process.

Another concern that is raised is that the structure of penalties imposed may not be an enough deterrent. Even though the penalties have been strengthened in the new Act, in practice, there may be some confusion about how they will be imposed. The penalties clause imposes daily penalties not only for delays in providing information but also for destruction and falsification of records or the deliberate provision of inaccurate or misleading information. However, it is not clear as to how a daily penalty can be calculated for destroying a record. It is also argued that the penalties are not stringent enough in so far, as that only fines can be imposed and there are no prison sentences for very serious offences. But what if someone destroys documents revealing major corruption. Hence, severe penalties must be available to fit the crime. Also, there are no penalties, if a public authority does not comply with the Act and does not appoint the PIOs underthe Act.

It has also been suggested that rather than asking the state governments to frame their own rules, the Central Government should frame the uniform rules for the entire country, so as to ensure uniformity. Also, the Act provides that state governments should set up Information Commissions, but in some cases the state government may not have sufficient resources for the same. The relationship between the Central and the State Information Commissions is also not clearly defined. In some cases, the state governments have already enacted a state Right to Information Act. However, the future of these state Acts is not clear. The RTI Act 2005 does not clearly indicate whether the state Acts will continue, and what happens, if there is a conflict between the two.

It has also been argued that, as part of globalization and privatization, a lot of information is now available with private agencies. Hence, it is important to bring the private sector also under the purview of this Act.

Besides the above, training and awareness of the officials, employees, and masses has to be undertaken on a serious front.

11.10 SUGGESTIONS

The RTI Act 2005 lays the framework for one of the most comprehensive and broad based right to information legislation. However, in order to make the Act an effective vehicle for bringing about greater accountability and transparency in the government, there is a need for disseminating greater awareness both amongst the general public and the government officials. There is a need to focus on some of the following issues:

- it would be very helpful for the central government to clarify the position on how to implement the new law in the states, particularly in those states that already have an RTI Act. It is felt that, if the Central Act is well implemented, State Acts might eventually fade away;
- the Act contains a number of ambiguities in relation to the practical functioning of the new Information Commissions, which remain in need of urgent clarification. The relationship between the Central and the State Information Commissions also needs to be clearly laid down;
- each public authority must clarify who would be responsible for managing, monitoring, and interfacing with the Information Commission and the state's nodal agency for the Right to Information law. Governments must also put in place application and appeals

monitoring systems, to ensure that proper information can be collected for the annual reports required to be produced by the Information Commissions;

- the rules should be consistent across the country to minimize confusion in implementation;
- there is an urgent need to develop a training strategy, as a matter of immediate priority, which should identify the officials for undertaking training, monitoring of training programmes, and preparing of training modules and materials. It should be time-bound;
- there is a need to sensitize government employees at all levels about the provisions of the RTI Act 2005 and their role in its effective implementation. Also, there is a need to change the systems of record keeping in government to ensure ready access and formatting in the desired form. This may also need a substantial investment in infrastructure and office automation. The employees will also have to be trained for digitization of information and the amendment in office procedures that may be required for the same;
- the new RTI law places obligations on all public authorities to raise awareness about the law, its key provisions, and how to access it, as a right amongst the public. The obligations involve developing, organizing and producing educational materials and programmes. However, this involves setting up of an infrastructure, which may require a lot of financial support. The Central Government may indeed provide financial assistance and guidance to the state governments in this regard;
- the Act also needs to put in place a mechanism to ensure that all public authorities implement the Act in its truest spirit. At present, only the Information Commissions have the power to ensure this. However, there are no specific penal provisions against the non-compliant public authorities. The penal provisions have to be clearly spelt out.

11.11 CONCLUSION

The Right to Information Act 2005 is a landmark in enabling the fundamental rights to citizens of India. If implemented well, it could be a major step towards a more accountable and transparent government. However, given the culture of secrecy in the government sector and the unwillingness of government servants to part with information, the task is certainly not a simple one. It is more so because of the lack of awareness on part of the masses, who are actually to receive benefit from this legislation.

However, if the government is in a position to process requests for information under the Act, it will have to start managing information better now. Information will have to be kept in such a form, where it is readily accessible and also possible to be easily formatted. This may involve a substantial amount of digitization and computerization of information, which will in turn help the government to function better with officials now able to access information easily and quickly. This will lead to greater transparency and effective monitoring.

If the public authorities are indeed able to rise up to this responsibility of effectively implementing the RTI Act 2005, it will indeed bring a sea change in the way the government functions and will lead to a truly vibrant and strong democracy in our nation.

ACTIVITY

Most of the states have implemented the Right to Information Act. Let us know about the implementation of the Act in your State.

11.12 REFERENCES AND FURTHER READINGS

http://persmin.nic.in/RTI/WebActRTI.htm

UNIT 12 ICT IMPLEMENTATION IN GOVERNANCE: ISSUES AND CHALLENGES

Structure

12.0 Objectives

12.1 Introduction

12.3 ICT Implementation in Governance: Issues, Challenges, and Suggestions

12.4 Conclusion

12.5 References

12.0 OBJECTIVES

After studying this Unit, you should be able to:

- highlight the issues and challenges facing ICT implementation in governance; and
- suggest measures to address these issues and challenges.

12.1 INTRODUCTION

Technology is transforming governments, especially, in the performance of their functions. This is the sole reason for governments all over the world embracing technology and becoming electronically viable. ICT enables and facilitates good governance agenda of transparency, accountability, empowerment, decentralization, andfiscal reforms. It is this agenda that governments of today are aspiring to achieve. Governments are using ICTs in restructuring their traditional organizational set up, re-engineering the work processes, interacting with citizens and stakeholders, rendering services and information, and efficient human resources management, financial management and decision-making.

Hence, ICTs are playing a significant role in enabling governments to pursue the agenda of good governance. However, skilled manpower, ICT infrastructure, ICT architecture,

resources, political leadership, committed bureaucracy, and citizen awareness are required to enable ICTs to perform this role. But lack of human resources, organizational, and technological infrastructure has posed hindrances to the effective implementation of ICT in governance. This has not resulted in its optimal use. Many of the ICT-based projects have, therefore, resulted in wasteful expenditure and ineffective service delivery. The challenge is to overcome these hindrances and provide for an optimal exploitation of ICT in governance.

In this Unit, we are going to discuss the issues that pose a challenge to the optimal use and implementation of ICT in governance. We will also be dealing with measures, which help in addressing these issues and challenges effectively. However, for information of our students, we have used the words 'e-governance', 'e-government' and 'ICT-based projects' interchangeably, even though they mean different and are distinct.

12.2 ICT IMPLEMENTATION IN GOVERNANCE: ISSUES, CHALLENGES, AND SUGGESTIONS

Herein, we will examine some of issues and challenges in the execution of ICT in governance and also the suggestions to make the implementation effective.

Vision and Priorities

We suffer from the lack of clear vision and priorities when it comes to e-governance. Our vision is not broad and does not involve the interests of various groups in the society.Vision for e-governance should emanate from societal concerns of multi-stakeholders.

These concerns will become the bases for drawing up and designing the priority areas for e-governance. E-government plan/project should be open and collaborative based on multi-stakeholders' participation. Public meetings, opinion polls, participation in committees, etc. should be the basis of drawing the vision and securing vital inputs of different sectors. The Working Group emphasizes on the need to define a vision that

represents the priority objectives of government and the shared vision of all stakeholders. Ashared vision of e-government means a shared stake in the outcome.

Robert Schware and Bhatnagar mention about the involvement of users in the 'Computer-aided Administration of Registration Department (CARD) Project' in Andhra Pradesh. A group of users were selected to participate in the various tasks to redesign business processes in the Registration Department and subsequently participate in the design and development of the software. No external technical personnel were recruited, which provided a sense of system ownership and even control on technology by the users. This fostered a sense of ownership and trust in the Project. Likewise, the SmartGov initiative in Andhra Pradesh involved the stakeholders and end-users at all stages of the Project.

Re-engineering

E-government applications should be preceded with re-engineering of the administrative processes in the government departments and organizations. Most often, e-government applications are implemented in a 'quick time frame' without adequate re-engineering of the existing organizational structure and work procedures. If ICT has to enable efficiency in governmental functioning, it is necessary that the departments carry out a rearrangement and re-organization of their administrative structure and work processes. Ife-government application is implemented without re-engineering, it becomes difficult to make subsequent changes in the work processes once the e-government application is implemented. Hence e-government may not work and the resources can get wasted. Therefore, the complex work processes and procedures have to be simplified before initiating ICT projects or programmes.

Subhash Bhatnagar emphasizes that the reforms should be in place before an e-government application is implemented so that the immediate impact and efficiency and transparency gains associated with e-government application can be acquired. Re-

engineering administrative processes, according to him, therefore requires implementation of substantive reform in organizational structure, a change in culture and mindset, training and improvement of skills, and putting in place the appropriate supporting ICT infrastructure to enable online processes that are timely and efficient to both the user and the government department.

Citizen-Centeredness

E-governance projects must be citizen-centric. Such projects should provide for improved service delivery, public participation, accessibility to comprehensive and qualitative information, and improved quality of life for a large number of citizens. They should focus on how citizens use and process increasing amounts of information in their everyday life. Websites should be designed to give complete information so that an individual may not have to follow up again with a visit or call. Projects facilitating citizen services should be based on the needs of the people and how they can be best delivered electronically. This will not only enable projects to address to specific needs of identified communities but gain public trust and promote wider usability.

But, as G. Anathakrishnan points out that for most citizens the only brush with e-government is a visit to rudimentary websites put up by individual departments that offer no alternative to the difficult relationship they have with government to get their entitlements. In theoretical terms, Anathakrishnan says that e-governance in the country is still largely in the information phase and faces an uphill task to reach interactivity and actual delivery of services. Merely computerizing the departments and automating the traditional and old procedures will not result in responsive e-government.

According to Jaju, the bane of most of the government databases is that it is driven by individuals rather than systems and hence most of it is never updated once the individual departs. It is therefore, essential that transactions be compulsorily routed through the database so that it is routinely and sub-consciously updated and remains relevant and

dynamic at all times to the benefit of all, that is, the government and the people.

ICT has to be used, as a tool, to lead to an information and knowledge based society 'where the citizens feel empowered and enriched by accessibility to information and social, economic, and political opportunities' (Working Group) and also participating andinteracting in policies and decisions affecting them.

Also, use of local languages will definitely help more citizens to avail the services. Technologies, such as, GIST and language software can be used for transliteration from English to other languages. Subhash Bhatnagar points out to the need to built local language interfaces, especially when addressing the rural population. He finds that intermediaries, such as, volunteers/ kiosk owners/paid employees play a positive role in applications, where information is disseminated to rural/illiterate populations. Hence, he recommends employing the intermediaries when it comes to ICT interface with rural population.

Further, there must be feedback mechanisms and interactive dialogues to get the opinion of multi-stakeholders on the working and benefits of the projects. As Bhatnagar mentions that advisory groups must be set up with the users, former officials, experts, and civil society members for this purpose.

Communication Strategy

The benefits of e-government projects must be properly communicated to the beneficiaries through an effective communication strategy using media. This has to be taken into account most significantly, as the best use of projects can be made possible, when it reaches the larger target groups or clientele. Usually, people are not aware of the same and/or are not even mobilized to make use of the same. E-government projects usually fail to become an additional channel to deliver services owing to a limited proportion of citizens using them. Without a critical mass using the e-government applications, the cost recovery does not seem promising. Public should be made aware of the changes and benefits that e- projects and programmes can accrue to them. Equally, the government should also explain the reasons, when they were not able to meet the benchmarks.

Gopa Kumar Krishnan states that conscious efforts are required to drive citizens to the portal through advertising campaigns and education. According to the Working Group, the interest and commitment to e-

government can be sustained with strong promotion effort through various media channels such as radio, posters, public meetings, and newspapers that can generate public excitement and also increase political will.

E-literacy

For communication strategy to be effective there must be a literate and e-literate community to use the e-governance applications. The citizens, especially the rural, must be provided with training in basics of computer, internet, and web. In Kerala, e-literacy programme has been taken up in full swing, which ensures one member from a family to be computer literate. This innovative experiment known as 'Akshaye Project' has bridged the digital gap by making at least one member in each family e-literate and creating shared access through computerized kiosks-Akshaye Kendras- for citizens to get information in the local language (G. Anathakrishnan). There are going to be over 3,000 information hubs, that is 'Akshaye Kendras' across the State to provide several value-added services on a single platform to the citizens. Such projects promote e-literacy, which enables wider usability of e-government applications. Such projects must be replicated by other states as well.

Political Will and Leadership

Political will and leadership is a needed for initiation, successful implementation, and sustenance of e-government programmes and projects. Political support and commitment to ICT projects can really bring in the desired change in governance. Political leaders need to have the will, resolve, and leadership to take on risks, overcome resistance, secure funds, and publicly subscribe, uphold, and support e-government. Rather, the political leaders must be made e-literate that can help them to understand the benefits arriving of such projects, and motivate them to employ ICT in their departments and deliver effective public services to the people.

The greatest problem is of sustenance, as with change in political power e-governance projects are not carried further with the same zest and zeal by the new minister. As Bhatnagar points out that frequent change in the ministers may create problems when the new minister is not supportive of the ideas and innovations implemented by his/her predecessor. Change in the political leadership also result in changes in administrative

leadership that may create problems especially through implementation. However, if the backup support from the citizens, businesses, and public sanctity through legislature is existing, e-governance projects can be carried forward with the same fervor, even when there is a change in political leadership.

Transparency and Accountability

E-government projects or websites do not focus much on the objectives of ensuring transparency and accountability of the government officials or departments. As Katherine Reilly puts it that numerous websites created by government departments are ineffective because they tend to focus on the single objective of providing electronic access to information. Not enough effort is made to ensure transparency and accountability. Achieving or increasing accountability or transparency is unplanned in the design objectives, as Gopa Kumar Krishnan finds that reduction of corruption is often incidental and not part of the design objectives of e-government initiatives.

According to him, there has to be an implicit hierarchy and sequentiality of objectives on, which e-government applications should focus. Increasing access to information, presenting the information in a manner that leads to transparency of rules and their application in specific decisions, and increasing accountability by building the ability to trace decisions/actions to individual civil servants are the successive stages in the hierarchy. These stages will ensure reduction in corruption and openness in administration. Departmental websites should fulfill these objectives. Departments should publish budgetary allocations and expenditure on the web. There should be systems for tracking status of applications for a variety of licenses. There must be sharing of the citizen's charter and performance data on the web. These steps by officials and departments will definitely increase accountability and transparency.

Resistance to Change

The fast and smooth implementation of e-government gets hampered by the officials'

resistance to it. If the government is to excel in a corporate way, officials' readiness to bring about this corporate culture within government is essential. 'The level of resistance to change and level of involvement by officials in setting policies and practices will greatly impact how fast or smooth the implementation of e-government will be' (Working Group). Bureaucracy, that is, officials and employees at all levels, resist to e-government initiatives due to reasons, such as fear of losing jobs, losing power, unfamiliarity with technology, increased work, losing unofficial payments, having no monetary and professional gains, etc.

Bhatnagar cites the example of SmartGov initiative in Andhra Pradesh in 2002, which brought about electronic application in workplaces by integrating workflow and knowledge management, and thereby increasing efficiency of file handling processes by introducing the concept of a paperless office. But it faced implementation challenges and resistance from employees. Many senior officials and staff did not use the ICT applications and applied the manual system in their day-to-day work. They found it time consuming to operate via the SmartGov. The officials felt that they could sign a physical file within seconds than an electronic file. Hence, even after the SmartGov move, the manual system prevailed. Technical and management problems such as, deployment of hardware, getting the software loaded and employees to operate it, and too many vendors for handling different aspects of network maintenance and hardware maintenance created difficulty. In some departments, the number of PCs installed was inadequate. One PC was shared among three people that drastically reduced the efficiency of the officials and staff. As a result files were dealt and transferred physically. Thus, SmartGov did not create enthusiasm among the government departments and evoked resistance from the employees and officials.

To overcome this resistance, it is necessary to involve the officials at the early stage of e-government planning. Their suggestions and feedback to improve the e-government plan at any stage should be welcomed and acted upon. The plan should highlight the benefits

with the application of ICT in day-to-day work that can boost their confidence and trust in the system. Equally, they must be imparted training in ICT usage in departmental work, decision-making, and service delivery. Successful projects generally spend about ten percent of the budget on training. Training will reorient them with new perceptions in their jobs, develop competencies, and make them knowledgeable. Benchmarks and parameters should be set to assess the performance of the employees and officials. 'Officials should find returns in the form of professional opportunities and rewards for successful adoption of new procedures, work practices, and responsibilities.

Innovative compensation packages and professional perks' should also be offered (Working Group).

Resources

Human and financial resources are required for the effective implementation of e-governance projects. Human capital in terms of skilled professionals with experience in designing, procuring, evaluating, and implementing ICT solutions is very much needed in government. Hence more technological institutions are required to provide technologicalprofessionals in the country.

Equally, financial resources and budget has to be earmarked to ensure initiation and sustenance of projects. In the words of Subhash Bhatnagar, costs of e-government projects depend on the initial conditions-whether the application is built from scratch replacing an existing manual system or is an extension of an existing computerized system. Major cost elements are hardware and software at the back end, data conversion, training, maintenance, and communications infrastructure to link the public access points to the back end. Costs vary quite dramatically, according to scope and scale of application. But most often resource constraints force departments to use in-house software that are not updated. Hence, the organizations tend to economize on hardware and software purchase. E-government projects, therefore, need to be provided with enhanced budget and financial resources.

Back-end Computerization

Back-end computerization is required in all departments to enable better delivery of front-end services to the citizens. It has to be complete and in place before the front end services are delivered. All related database of different departments should be computerized, consolidated and centralized. All departments have to be linked to this shared central database and operate through it, so that any transaction done is automatically updated in the central database. This will help in providing a comprehensive range of services to its benefactors.

However according to Bhatnagar, enough resources, political leadership, and interdepartmental coordination are required, which at present seems lacking. There is absence of countrywide policy on data standardization and data sharing. Security provisions have also not been adequately handled in designing systems.

Public-Private Partnership

Public-private partnership is necessary in all stages of e-governance, that is, from planning and implementation to monitoring and evaluation. Private sector collaboration, partnership, and participation can enable the government to draw resources and expertise from the private sector. Equally, private sector can help the government projects to become responsive and committed to its customers and beneficiaries. Techniques of marketing, projects' adaptability to customers' needs, and attracting and retaining customers can be well learnt from the private sector (Working Group). Design, software development, data preparation, and training can easily be outsourced to them.

However everything cannot be outsourced, as the government must retain its prerogative in policy-making and decisions pertaining to accessibility and pricing. In the words of Bhatnagar, systems analysis, which provides the necessary cues for re-engineering,

should be conducted internally. Moreover, it is better for governments to implement pilots on their own so that cost structure and implementation issues can be well understood. This understanding can be useful in defining contracts, when scaled-up versions are to be implemented on a wider scale.

Bhatnagar emphasizes that for successful execution of public-private partnership strategies, it is important to recognize that contracting arrangement should deliver gains to all partners. Often the fact that private sector needs to make profits is forgotten by the government contracting agencies.

Information Policy

An information policy is imperative. Officials are hesitant to share information with the citizens and other stakeholders. They do not disseminate information across governments or departments. ICT is basically information processing and sharing with different sectors and citizens. Hence, an ICT policy is necessary, which makes it mandatory on the part of officials to provide information to the public.

> We have recently enacted the Right to Information Act 2005, which enables and empowers every citizen to seek information from government, inspect any government document, and seek certified copies thereof. Some laws on Right to Information also empower citizens to inspect any government work or to take sample of material. The government departments are required to host and disseminate information pertaining to development programmes and other services online for the public, businesses, and other stakeholders.
>
> Many of the state governments have not yet implemented the Act, even though the date set for the implementation got over by October 2005. There must be a follow up action and stringent measures against such a callous attitude of the state governments in the full implementation of the Act.

Legal Recognition

Legal recognition is required for easy and smooth ICT transactions. An Act has to be provided to confer legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, which involve the use of alternatives to paper-based methods of communication and storage of information, and electronic filing of documents with government agencies. Such an Act renders legal sanctity to ICT based transactions and facilitates smooth government and business dealings.

Governments all over the world have taken different approaches in implementing a legal framework for e-government and e-commerce. Some have opted for the creation of an umbrella law that encompasses all e-transactions. A large umbrella law saves the need for amending a multitude of laws that address procurement, tax, archives, etc. The 'UNCITRAL Model Law on Electronic Commerce[1]' is a generic law adopted by many countries like Australia, Hong Kong, Korea (Republic), Singapore, and the Philippines. The Model Law provides that electronic communications should be given equivalent legal effect and specifically addresses how certain types of electronic communications could substitute existing paper-based means of satisfying requirements of writing, signatures, and contract formation (Samtani and Harry).

We have promulgated the Information Technology Act 2000, (see Annexe) which provides for authentication of digital signature, legal recognition of electronic records, use of electronic record and digital signatures in government and its agencies; attribution, acknowledgement, and dispatch of electronic records; secure electronic record and digital signatures, regulation of certifying authorities of digital signatures, duties of subscribers, penalties and adjudication, Cyber Regulations Appellate Tribunal, offences, and

[1] The United Nations Commission on International Trade Law (UNCITRAL), by the means of Model Law on Electronic Commerce (MLEC), sought to provide a set of internationally acceptable rules with an aim to remove legal obstacles and increase legal predictability for e-commerce. It has further improved the efficiency in international trade by providing equal treatment to paper based and electronic information, thus enabling the use of paperless communication.

amendments to the Indian Penal Code, the Indian Evidence Act 1872, the Banker's Book Evidence Act 1891, and the Reserve Bank of India Act 1934 (IJPA, July-August 2000).

Legal framework and information security are very important criterion for promoting a positive e-environment for business and commercial transactions. Security, protections, legal reforms, privacy, and recognition of digital interactions and signatures are, therefore, the critical prerequisites. This also poses faith and trust of businesses and citizens in e-government applications and enhances usability and sustainability.

New Projects

New and future e-government projects should be initiated after taking cognisance of the already existing or undertaken projects. Proper study and diagnosis of the expenditure, results, and issues/obstacles in the existing programmes should be undertaken. Today, we see a great amount of duplication existing in e-government efforts, which has led to adverse costs, time, and energy. Ideas and suggestions from successful ICT projects are not usually obtained or acquired that can be later adapted, as per the context. A handbook with key project findings should be prepared that can be used, as a resource guide for developing new projects.

New e-government projects should be started on a pilot basis. Pilot projects expose the potentials and challenges in implementation. This can help in reviewing and revising the projects for better results in future. Such pilot studies enable to judge the aptness of the project, skills and knowledge of employees, adequacy of financial resources, and thereby strengthen the project and its implementation. Problems and challenges can be immediately met that will ensure smooth and effective execution and realization of the project in future.

E-government projects should be based on realistic targets that can be achieved in quick succession in a definitive way with very little risk involved. For this reason, the projects

should be small rather than large and ambitious. According to Bhatnagar, it is necessary to take small steps with activities that are manageable within a relatively short time frame. This allows greater flexibility for tailoring the system and formulating a long-term strategy based on the actual experiences of the organization and feedback from the client. Many local governments and state governments have seen impressive results because they are well placed to implement small, focused projects that involve low risk. Anathakrishnan points out to the phased effort of the State of Kerala in modernizing its local self-government institutions, which began with ten institutions and now is applied to more than 1250 panchayat institutions. The Project has used the local bodies, as the base to deliver services, fostering involvement of the rural population, and increasing accountability at the grassroots. Rather, what started off with 600 kendras in Malappuram district has expanded to cover 6000 points Statewide.

Bridging the Digital Divide

E-government applications should be widespread, so as to cover disadvantageous and rural and remote areas of the country. The disadvantaged population should be able to access internet and web for various services and information that holds value for them. Grassroots organizations and NGOs have to play an important role in 'interpreting the information-related needs of rural communities and in making information and knowledge usable by such communities' (Bhatnagar).

Provision of technological infrastructure is a must. If the targeted clientele are not able to access services owing to the need of technological infrastructure, e-government plan must build the same for such regions. This will help in bridging the digital divide or gap between the rural and urban areas.

Monitoring and Evaluation

Independent monitoring and evaluation of e-government projects and programmes is

necessary to judge their effectiveness. A legal authority/cell must be constituted in each ministry/department for effective coordination, time management, cost management, and monitoring and evaluation of respective projects. Success must be judged or measured on the basis of well-laid down performance criteria, including:

- volume of transactions handled electronically
- response time to inquiries
- length of trouble-free operation
    - number and percentage of public services rendered electronically
    - number of new services delivered electronically
    - percentage of territorial area covered
    - number and percentage of constituents/beneficiaries accessing information or services electronically
    - increased convenience or efficiency in delivering information or services
    - length of time for procuring goods, services, and information; and
    - reduction in the cost for citizens and government (Working Group)

Bhatnagar states that currently, there are no frameworks or methodologies to accurately measure the success or failure of an e-government project. Success is often judged on the basis of media reports, recognition by international agencies, and assessment provided by the project implementers. In all of these cases, clients who are supposed to benefit from these projects render no feedback. If feedback is recorded, it is usually anecdotal and not based on a systematic survey. It is, therefore, important that e-government projects have an in-built component of periodic assessment by an independent agency. This is, in addition, to a continuing feedback mechanism from the clients.

Detailed audit report can highlight various reasons of project failure such as, poor management, delays in implementation, inadequate documentation of procedures, improper security aspects, inadequate training efforts, lack of connectivity, lack of data

collation, non-implementation of citizen charter, and inadequate monitoring and involvement of officials…(Bhatnagar). Hence, a continuous and detailed audit is a must to determine the aptness of e- government projects.

12.3 CONCLUSION

For successful application of ICTs in governance, there is need to give importance to certain crucial factors. These factors pertain to proper planning, well laid down vision and priorities, ICT architecture and infrastructure, professionals and skilled manpower, commitment and leadership of ministers, acceptance by officials, transparency and accountability, citizen-centeredness, adequate finances, public-private partnership, legal recognition, well laid down information policy, documentation; and monitoring and evaluation.

These factors can lay down the roadmap for e-governance in countries, especially, of the developing world. Before setting on board an e-governance project, all the above-mentioned aspects need to be addressed to enable the project to make its visible impact. Countries like India must definitely take cognisance of these factors and plan and implement its e-governance strategy effectively.

ACTIVITY

Narrate some of the issues and challenges faced in implementation of an e-government project. You can explain with the help of some examples. Please let us know your view points that can improvise such projects.

12.4 REFERENCES AND FURTHER READINGS

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