



Key concepts

- **e-Governance**
 - Types of interactions
 - Infrastructure
 - Benefits of e-Governance
 - Challenges
- **e-Business**
 - e-Commerce and e-Business
 - Electronic payment system
 - e-Banking
 - Advantages of e-Business
 - Challenges to e-Business
- **e-Learning**
 - e-Learning tools
 - Advantages of e-Learning
 - Challenges to e-Learning
- **ICT applications in health care**
 - Medical equipments
 - Patient records
 - Web based diagnosis
 - Telemedicine
- **ICT enabled services**
 - BPO
 - KPO
 - Call centres

IT Applications

Information Technology (IT) is growing rapidly. It has influenced almost every sphere of life and has become an integral part of our daily life. Various IT applications available today help to make life easier. For example, we can pay various utility bills, reserve railway or airline tickets and do online shopping from anywhere, anytime. IT is also extensively used in the field of education. One of its recent contributions is e-Learning with virtual classrooms. The possibilities of IT are increasingly used in e-Governance, e-Business and in health care applications as well.

This chapter discusses some of these areas where IT is widely used today. In the case of online shopping, the required items can be ordered and the same will be delivered at our door step. Cash transactions can also be made online. The field of education has also advanced with the development of IT. Teachers and students need not be in the same room as in the conventional teaching system. They can share virtual class rooms and make use of e-Learning materials, sitting in dispersed locations. Healthcare is another major area which uses IT for its assistance. With the use of new computer aided medical imaging devices and related technologies, various diseases can be diagnosed at a very early stage. IT also plays a

key role in conducting research for the development of new drugs. We also discuss various ICT enabled services in this chapter.

Information and Communication Technology (ICT) is the term often used as an extended synonym for Information Technology (IT). ICT is more specific in integrating telecommunication and computers comprising of many technologies for capturing, storing, processing, interpreting and printing information.

10.1 e-Governance

Information Technology (IT) has contributed much to the smooth functioning of governments. It comprises many technologies for capturing, processing, interpreting, storing and transmitting information. IT helps governments to take quick and judicious decisions. It also increases transparency and accountability in all its services. Information and Communication Technology (ICT) aided Governance is generally known as e-Governance.

e-Governance is the application of ICT for delivering Government services to citizens in a convenient, efficient and transparent manner. The objective of e-Governance is to ensure that the services of the Government reach the public promptly and effectively. In Kerala, we have many government departments like the Motor Vehicle Department, Education, Revenue, etc. which have successfully implemented e-Governance. Let us now discuss various types of interactions in e-Governance.

10.1.1 Types of interactions in e-Governance

e-Governance facilitates interaction among different stakeholders in governance. Categories of these interactions are described as follows:

Government to Government (G2G) - It is the electronic sharing of data and/or information among government agencies, departments or organisations. The goal of G2G is to support e-Governance initiatives by improving communication, data access and data sharing.

Government to Citizens (G2C) - It creates an interface between the government and citizens. Here the citizens enjoy a large range of public services. It increases the availability and accessibility of public services. It also improves the quality of services. Its primary purpose is to make the government citizen-friendly.

Government to Business (G2B) - Here, e-Governance tools are used to aid the business community to interact with the government. The objective is to cut red-tapism, save time, reduce operational costs and create a more transparent business environment while dealing with the government.

Government to Employees (G2E) - Government, being the biggest employer has to interact with its employees on a regular basis. This interaction is a two-way process between the government and the employees. The policies and guidelines for implementing

various government programmes are made available to the employees as government orders or circulars through e-Governance portals. The salary and personal details of government employees are also managed through e-Governance services. Use of ICT tools helps in making these interactions fast and efficient.

10.1.2 e-Governance infrastructure

In India, the e-Governance infrastructure mainly consists of State Data Centers (SDC) for providing core infrastructure and storage, State Wide Area Network (SWAN) for connectivity and Common Service Centers (CSC) as service delivery points. The integration of these three components of e-Governance is shown in Figure 10.1.

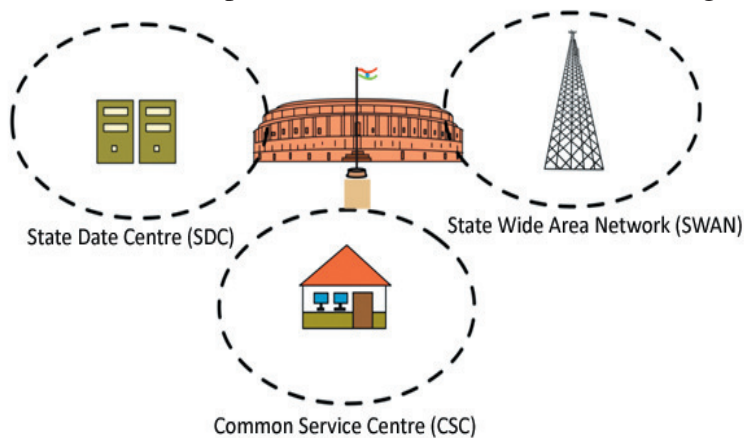


Fig 10.1 : e-Governance infrastructure

a. State Data Centre (SDC)

State Data Centre (SDC) is one of the important constituents of the core infrastructure for supporting e-Governance initiatives of National e-Governance Plan (NeGP). Under NeGP, it is proposed to create SDCs to combine services, applications and infrastructure and to provide efficient electronic delivery of G2G, G2C and G2B services. These services can be rendered by each state government through a common delivery platform. This platform is supported by a core connectivity infrastructure such as State Wide Area Network (SWAN) and Common Service Centre (CSC) connectivity that is extended up to the village level. State Data Centre provides several functionalities. These include keeping central data repository of the state, securing data storage, online delivery of services, citizen information/services portal, state intranet portal, disaster recovery, etc. SDCs also provide better operation and management control and minimize the overall cost of data management, resource management, deployment etc.

b. Kerala State Wide Area Network (KSWAN)

Kerala State Wide Area Network (KSWAN) has been set up as a backbone of the State Information Infrastructure (SII). It connects Thiruvananthapuram, Kochi and Kozhikode as its hubs and extends to all the 14 districts linking each of the 152 Block

Panchayats. The network also connects a large number of various offices of government departments. The infrastructure supports the integration of a large number of G2G, G2C services with the applications received from the State Data Centre.

c. Common Service Centre (CSC)

Common Service Centres (CSC) are the front-end delivery points of the government, private and social sector services for the rural citizens of India. A highlight of the CSCs is that it offers web-enabled e-Governance services in rural areas. It helps in utility payments such as electricity, telephone and water bills, submission of online applications and generating and distributing the certificates to the needy. Other services that could be offered through CSC are listed below:

- Agriculture services
- Education and training services
- Health services
- Rural banking and insurance services
- Entertainment services
- Commercial services

In Kerala *Akshaya* centres are working as Common Service Centres.

Akshaya centres

Akshaya centres were initially launched in the year 2002 in the Malappuram district in Kerala. Its intention was to impart e-Literacy to the citizens. Akshaya was conceived as a landmark ICT project by the Kerala State Information Technology Mission (KSITM) to bridge the digital divide and to bring the benefits of ICT to the entire population of the State. The services include e-grantz, e-filing, e-district, e-ticketing, submitting online application for ration card and electoral ID, Aadhaar enrolment, Aadhaar based services, insurance and banking services.



Akshaya was launched on 18th November 2002 by the former President of India, Dr. A. P. J. Abdul Kalam.

Akshaya works in the PPP (Private Public Partnership) Model. An Akshaya centre is owned by a private entrepreneur preferably from the same panchayath where the Akshaya centre is located and its selection is done by local self governments. The income for the Akshaya Entrepreneurs is the nominal service charge collected either from the citizen or paid by the government for each transaction.



അക്ഷയം

അവസരങ്ങളുടെ ജാലകം

www.akshaya.kerala.gov.in



Aadhaar is a 12 digit individual identification number issued as part of e-Governance by the Unique Identification Authority of India (UIDAI) on behalf of the Government of India. This number will serve as a proof of identity and address, anywhere in India. Any individual, irrespective of age and gender, who is a resident in India, can enroll in Aadhaar. Each individual needs to enrol only once which is free of cost. During the enrolment, demographic details (name, age, gender and address) and biometric details (photo, 10-finger-print and 2-iris-images) of a resident are entered. Each Aadhaar number will be unique to an individual and will remain valid throughout life. Aadhaar number will help you provide access to services like banking, taking mobile phone connections and other Government and Non-Government services.

10.1.3 Benefits of e-Governance

Implementing e-Governance has many advantages. It informs the public about the functioning of the government and the policies they are trying to implement. Major benefits of e-Governance are listed below:

- e-Governance **leads to automation of government services**, ensuring the information regarding the activities of public welfare is easily available to all citizens.
- e-Governance **strengthens the democracy** by ensuring greater participation of citizens at all levels of governance.
- It ensures **more transparency in the functioning** and thus helps eliminate corruption.
- It **makes every government department responsible** as they know that they are closely observed.
- Proper implementation of e-Governance **saves unnecessary visits of the public to offices**. It saves time and money.

10.1.4 Challenges to e-Governance

Though e-Governance has many benefits, it faces some challenges too. Let us have a look at a few challenges in the implementation of e-Governance.

- The existing digital divide is an obstacle in utilising the services of e-Governance. Those who live in remote areas with lower e-Literacy will face difficulty to access the services of e-Governance.
- e-Governance applications being computer/web based, security measures are highly required since there is possibility of cyber-attack.
- Usually a huge initial investment and planning are required for the proper implementation and maintenance of e-Governance services.
- Many people are anxious about the sharing of their personal information, biometry, etc. to the agencies designated for data collection.
- Integrity of various departments is very much essential for the efficiency and effectiveness of e-Governance.

10.1.5 Useful e-Governance websites

Table 10.1 shows the addresses of some websites that provide various services of the Government of Kerala. Figure 10.2 shows the home page of the Department of Higher Secondary Education, Kerala State and Figure 10.3 shows the home page of e-District portal.

Address of website	Purpose/Service
www.dhsekerala.gov.in	An official site of the Department of Higher Secondary Education, Government of Kerala that provides various facilities and services to students, teachers and school administrators.
www.edistrict.kerala.gov.in	It provides government services to the public.
www.incometaxindia.gov.in	It provides the services of Income Tax department.
www.keralamvd.gov.in	It is the official website of the Motor Vehicles Department of Kerala .
www.rti.gov.in	Right to Information Act 2005 mandates timely response to a citizen who requests for information from the Government or authorities under it.
www.itmission.kerala.gov.in	It is a Government of Kerala site which provides managerial support to various IT initiatives.
www.spark.gov.in	It is a web based G2E integrated solution for Service and Payroll Management.

Table 10.1 : Some e-Governance websites

The screenshot shows the home page of the Department of Higher Secondary Education (DHSE) website. The page is titled 'Education Portal' and is for the Government of Kerala. It features a navigation menu on the left with links for Help, Services, Downloads, Careers, and Contact. There are logos for data.gov.in, dial.gov, and india.gov.in. A login section for registered users is present on the right. A quote by Dr. A.P.J. Abdul Kalam is displayed in the center. Below the quote are logos for NSS AWARD, hsCAPnic, and CAPnic. A table at the bottom lists various services under categories like EXAMINATION, ACADEMIC, ADMINISTRATION, FINANCE, NSS, and CAREER GUIDANCE.

Fig. 10.2 : The home page of DHSE website



www.dhsekerala.gov.in

As an official site of the Department of Higher Secondary Education, Government of Kerala, www.dhsekerala.gov.in provides various facilities and services to students, teachers and school administrators.

The services include registration for the examinations, issue of hall tickets, publication of exam results, distribution of various circulars and notifications, etc. This site also provides facilities for downloading various forms and study materials including model question papers.

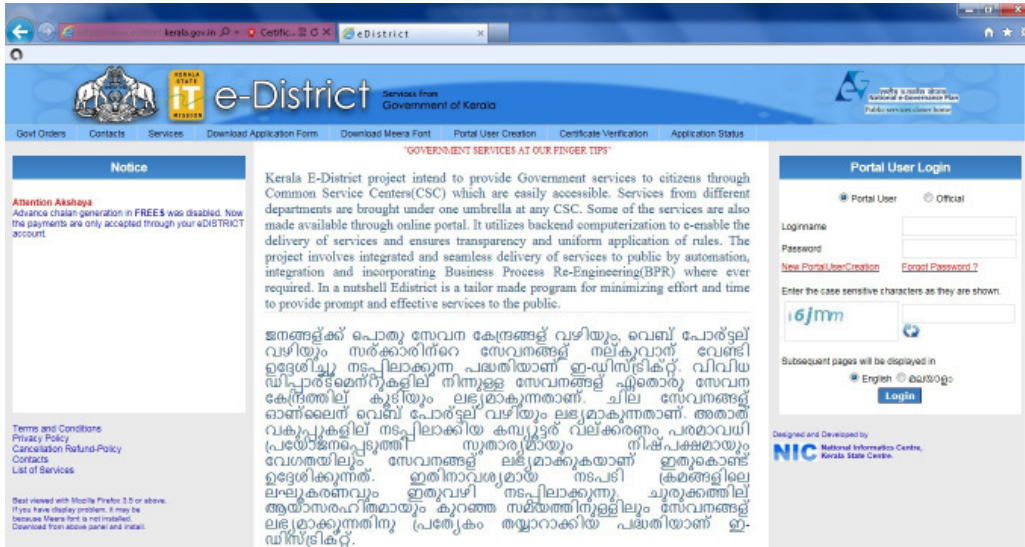


Fig. 10.3 : The home page of e-District portal.



e-District is a State Mission Mode Project under the National e-Governance plan. The project aims at supporting computerisation for services to the public.

In Kerala, issue of different certificates of the Department of Revenue is integrated with the e-District portal. It has simplified all complex procedures in government offices and made the citizens' life easy. It has been a difficult task for the citizen to obtain copies of public records, submit applications, meet officials, or to seek information regarding their day-to-day needs. This has caused the loss of his/her day's income, time as well as the cost of transportation. At government offices, sometimes, the relevant record, information, or official may not be available, resulting in repeated visits and additional expenses.

To avail a service in e-District, one has to apply online through the web portal or approach a nearby Akshaya centre with essential documents. Akshaya centre submits an online application on behalf of the citizen. This application through a work-flow reaches the village officer. After processing the application, the village officer forwards it to the next higher authority or approves it and issues the certificate using the digital signature. The availability of the certificate in the portal is informed with an SMS alert.



Check yourself

1. Name the application of Information and Communication Technology (ICT) for delivering government services to the citizens in a convenient, efficient and transparent manner.
2. Define the term e-Governance.
3. "e-Governance facilitates interaction between different stakeholders in governance". Say whether the statement is True or False.
4. Give an example for an e-Governance website.
5. What is KSWAN?

10.2 e-Business

We often visit shopping places and it takes a considerable amount of time and effort for shopping. What about the idea of shopping without leaving your home? It is one of the realities of the times. Almost all services and business are available online now. They are only a few clicks away.

e-Business is the sharing of business information, maintaining business relationships and conducting business transactions by means of the ICT application. Companies (business), public institutions (administration), as well as individuals (consumer) engage in e-Business. e-Business helps in effective e-marketing and increasing sales through effective use of e-Commerce services. It also reduces communication and travel cost through online meeting and shared workspace, etc.

10.2.1 e-Commerce and e-Business

Although the terms e-Commerce and e-Business are often used interchangeably there are differences. e-Commerce covers business transaction that involve exchange of money, whereas e-Business includes all aspects of running a business such as marketing, obtaining raw materials or goods, customer education, looking for suppliers etc. Thus e-Business is an extension of e-Commerce.

10.2.2 Electronic Payment System (EPS)

Can you think of living without money in your pocket? If somebody tells that he/she lived a week without touching currency notes, will you believe? Today we live in a world where almost every commodity has a price tag attached to it. Then how is it possible to buy something without giving money, the paper currency?

Electronic Payment System (EPS) is the solution. When we move on to electronic business, exchange of money also needs to be electronic. It is both convenient and secure if properly implemented. EPS plays an important role in e-Business.

A system of financial exchange between buyers and sellers in an online environment is called an **Electronic Payment System (EPS)**. The financial exchange is facilitated by a digital financial instrument (such as credit/debit card, electronic cheque or digital cash) backed by a bank and/or an intermediary.

10.2.3 e-Banking

Banking has also undergone drastic changes with the advancements in Information Technology. Our traditional concept of banking has changed a lot. For example, now there is no need to visit bank for making financial transactions. We can do the transaction using online banking facilities even while travelling. Facilities such as ATM, debit cards, credit cards, Internet banking and core banking help in transforming traditional banking into e-Banking. **e-Banking** or electronic banking is defined as the automated delivery of banking services directly to customers through electronic channel. It can access data without geographical limitations.

10.2.4 Advantages of e-Business

e-Business provides many advantages to customers and firms. Let us discuss some of the major advantages of using e-Business applications.

- ***It overcomes geographical limitations.*** If you have a physical store, you are limited by the geographical area where you can provide service. But with e-Commerce, this limitation can be overcome.
- ***e-Business reduces the operational cost.*** An e-Commerce merchant does not need a prominent physical location; it reduces the operational cost. A portion of money thus saved can be passed on to the customers in the form of discounts.
- ***It minimises travel time and cost.*** Sometimes customers have to travel long distances to reach their preferred store. e-Business allows them to visit the same store virtually.
- ***It remains open all the time.*** e-Business application services are always open (24×7). From the merchant's point of view, it increases the number of service requests they receive. From the customer's point of view an 'always open' store is more convenient.
- ***We can locate the product quicker from a wider range of choices.*** On an e-Business website the consumers can have a wider range of choices of a product from various sellers. Customers can quickly locate their preferences from the given product lists. Some websites remember customer preferences and shopping lists to facilitate repeat purchase. The features like product characteristics and price comparisons are the other attractions of e-Business applications.



The term **M-Business** or mobile business covers all the business activities, processes and applications performed by means of mobile devices such as mobile phone, PDA, etc. M-Business can be regarded as a branch of e-Business.

e-tailing (or electronic retailing) is the selling of retail goods on the Internet. It is the most common form of business-to-consumer (B2C) transaction.

10.2.5 Challenges to e-Business

Though e-Business has enormous potential in the business world, it faces many challenges, particularly in developing countries like India. Major challenges are discussed below:

- A good percentage of the population is unaware of IT applications and its uses. Surprisingly, most of the regular Internet users also lack knowledge about online business and its possibilities.
- Most of the customers, especially to rural population, do not possess plastic money- credit card, debit card and net banking system, which is necessary for e-Business.
- If not used with caution, customers may lose valuable information like their credit card number, passwords, etc.
- Products like apparel, handicrafts, jewellery, etc are often purchased after examining physically. But in online shopping, customers don't have this '*touch and feel*' advantage.
- For the success of e-Business of any organisation or company, perfect and efficient shipment service is a necessity.

10.2.6 Useful e-Business websites

Some popular e-Business websites are given in Table 10.2. Figure 10.4 and 10.5 are the home pages of some e-Business websites

Address of website	Purpose/Service
www.irctc.co.in	Indian Railway Catering and Tourism Corporation Limited web site for reservation and cancellation of railway tickets and hotels for accommodation.
www.amazon.com	US based retailer with headquarters in Washington.
www.ebay.in	It is one of the largest online shopping sites in India.
www.licindia.com	Insurance company website.
www.airindia.com	Online site for booking Air India flight tickets.
www.keralartc.com	Online website for KSRTC bus ticket booking.
www.bookmyshow.com	Movies and theatre ticket booking website.

Table 10.2 : Some e-Business websites

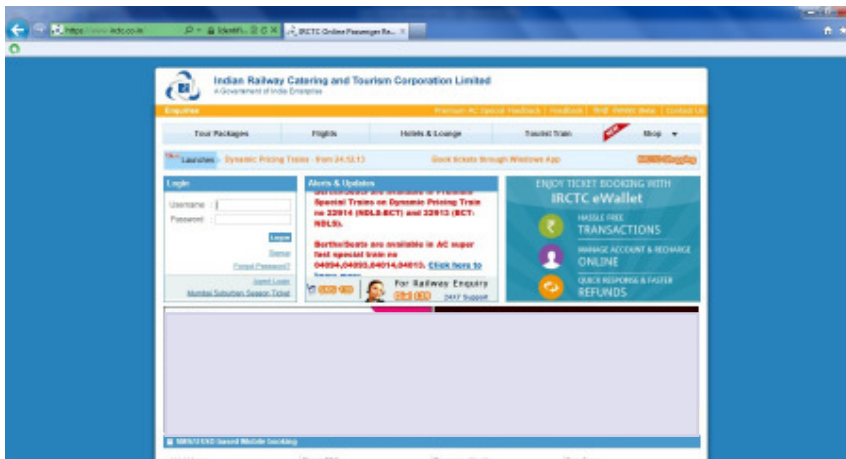
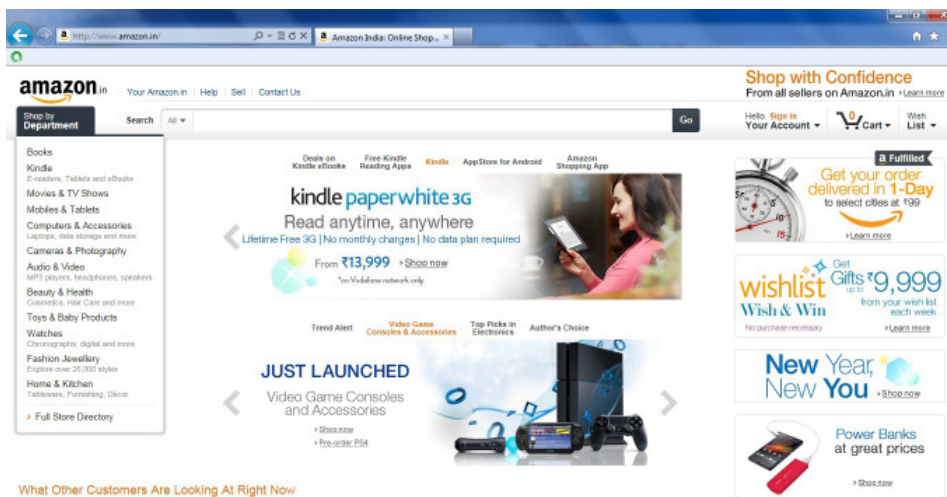


Fig. 10.4 : The home page of www.irctc.co.in



www.irctc.co.in

Indian Railway Catering and Tourism Corporation Limited (IRCTC) is a government of India enterprise. It handles the catering, tourism and online ticketing operations of the railways. IRCTC provides online booking facilities of railway tickets and offers other services like checking reservation status, train timing, reservation of hotels for the tourists across the country.



What Other Customers Are Looking At Right Now

Fig 10.5 : The home page of amazon.in



www.amazon.com

amazon.com, Inc is a US based company with headquarters in Washington. It is the world's largest retailer. Initially started as an online bookstore it soon diversified itself into selling software, video games, electronics, furniture, food, toys, jewellery, etc. The company also produces consumer electronics. Amazon has separate retail websites for different countries. In 2013, Amazon launched its site for India, www.amazon.in.



Check yourself

1. The system of financial exchange between buyers and sellers in an online environment is known as _____.
2. Define e-Business.
3. Define e-Banking.
4. Check whether the following statement is true or false.
"e-Business is an extension of e-Commerce".

10.3 e-Learning

We are familiar with the traditional classroom consisting of a teacher, students, teaching aids, etc. Think of a virtual class where you are attending classes as a student and a teacher is engaging class from a distant location, may be from a different country. Is this possible? Yes it is! Through e-Learning you can overcome many limitations of conventional teaching-learning process. The use of electronic media and ICT (Information and Communication Technologies) in education is termed **e-Learning**.

10.3.1 e-Learning tools

There are many tools for enhancing e-learning process. Some of the e-Learning tools are discussed below:

a. Electronic books reader (e-Books)

Think of going to school without bags packed with text books, but all necessary books are still with you in a small hand-held storage device! It is interesting, isn't it? e-Book reader is a device that can store lot of books in digital form. Portable computer devices that are loaded with digital book content via communication interfaces is called **electronic books reader**. It can open any book, any page quickly, without much effort. In principle, any web document can be downloaded from the Internet, sometimes by making online payment, and read whenever required. In some e-Book readers voice output is also available and the reader needs to just listen the audio of the text.

b. e-Text

Textual information available in electronic format is called **e-Text**. This text can be read and interacted with an electronic device like computer, e-Book reader, etc. e-Text can be converted to various formats to our liking using softwares. e-Text can be automatically read aloud with the help of a computer or an e-Text reader device. This is quite helpful for visually challenged people.

c. Online chat

It is a real-time exchange of text messages between two or more persons over the Internet. In the virtual class environment, online chatting is used to discuss the topics with teachers and other students. Chatting can be performed even with a low speed

Internet connection. Video chatting facility is also available. It however requires fairly high speed Internet connection and supporting devices such as web camera and speakers. On line chat is a framework that provides interaction in a social environment. It helps communicating with people at different places. This facility can also be used to deliver and transfer live lectures given by the faculty. Students can login from the remote locations and attend the lecture.

d. e-Content

Nowadays lot of e-Learning materials are delivered in different multimedia formats like videos, presentations, graphics, animations, etc. The e-Contents once prepared can be broadcasted through television channels, webcasted or uploaded in websites. Uploaded content can be downloaded, viewed and saved for future reference. The multimedia contents have more scope to convey the subject matter effectively. It can show actual or simulated activities which are not possible in the traditional classroom based teaching.

e. Educational TV channels

There are many telecasting/webcasting channels which are dedicated for the e-Learning purpose. These channels broadcast recorded classes on various subjects, interviews with experts, lab experiments, etc. Some of these channels can be watched in the Internet also. Dooradarshan's 'VYAS' and Kerala Government's 'VICTERS' channel are examples of educational television channels.

10.3.2 Advantages of e-Learning

e-Learning has lot of advantages. They are listed below:

- e-Learning has the ability to offer courses on variety of subjects to large number of students from distant location.
- In e-Learning cost for learning is much less. It saves journey time and money, instructor fees, etc.
- People with limited financial resources are very much supported by the lower cost of e-Learning.
- It provides facility to do online courses from various nationally or internationally reputed institutions.
- Time and place is not a constraint for e-Learning.

10.3.3 Challenges to e-Learning

Listed below are some of the challenges faced by e-Learning:

- Face to face contact between students and teachers is not possible.
- Proper interaction among teachers and students are often limited due to the lack of infrastructural facilities.
- Equipment and technology (computer and high speed Internet) requirement restrict adoption of e-Learning.
- Learners who require constant motivation may not be serviced adequately.
- Hands-on practicals in real laboratory scenario is also a constraint in e-Learning.

10.3.4 Useful e-Learning websites

The summary of useful e-Learning websites are shown in Table 10.3. Figure 10.6 shows the home page of IGNOU (Indira Gandhi National Open University)

Address of website	Purpose/Service
www.ignouonline.ac.in	Website of Indira Gandhi National Open University, one of the leading open universities offering various courses in the distance education mode.
www.nptel.iitm.ac.in	National Programme on Technology Enhanced Learning (NPTEL) provides e-Content through online Web and Video for courses in Engineering, Science and humanities streams.
www.ncert.nic.in	Website of National Council of Educational Research and Training. Includes many features such as providing study materials and reference materials in Hindi and English.
www.spoken_tutorial.org	It is an IIT Mumbai initiative. It provides software training through the spoken tutorials. All the courses are offered totally free of cost as it is funded by the Government of India.
www.w3schools.com	W3Schools is a web developer information website, with tutorials and references relating to web development topics such as HTML, CSS, JavaScript, PHP, SQL, and JQuery.
www.gcflearnfree.org	GCFLearnFree.org is supported by the Goodwill Community Foundation. It provides easy-to-follow lessons in mathematics, science and technology and English to help anyone anywhere learn skills and gain knowledge.

Table 10.3 : Some e-Learning websites



Fig. 10.6 : The home page of IGNOU site



www.ignouonline.ac.in

IGNOU (Indira Gandhi National Open University) is an open university under Government of India. The website provides several features including eGyankosh, which is a digital repository available in text and video format. The site also provides webcasting facility linking to education channels - Gyandarshan, Gyanvani and EDUSAT. Virtual class provides links to all the online programmes conducted by the University.

Fig .10.7 : The home page of NPTEL website



www.nptel.iitm.ac.in

NPTEL is an abbreviation for National Programme on Technology Enhanced Learning which is an initiative by seven Indian Institutes of Technology (IIT) and Indian Institute of Science (IISc) for creating course content in engineering and science. Web based Course materials have been developed for different courses and are accessible freely through the website. Lecture contents are also made available in web site through video.



Check yourself

1. Real-time exchange of text messages between two or more persons over Internet is termed _____.
2. Pick the odd one out:
(a) e-Book reader (b) e-Text (c) television channels (d) e-business
3. Define e-Text.
4. Give an example for an e-Learning tool.

10.4 ICT applications in health care

Developments in ICT have contributed much in the field of medical practice and medical care. There is an enormous range of opportunities for significant cost reduction and service enhancement through IT applications in health care. Let us discuss some of the changes that ICT has brought about in the field of medicine and healthcare.

10.4.1 Medical equipments

Most of the modern medical equipment work with the support of computers. Scanners like CT and MRI depend on computers to process their data into a readable format. Micro-processors are used to control a variety of support devices. Computer guided lasers are used in surgery, even in the removal of brain tumours. Some hand-held devices are also available that help patients to lead normal life. A device for self-monitoring of sugar levels for people with diabetes is an example.

10.4.2 Electronic Medical Record (EMR)

There has been a move to store all patients' records in digital format. This is known as Electronic Medical Record (EMR). An EMR is mostly used by doctors for diagnosis and treatment. There are many advantages in keeping patients record in electronic format.

Some of them are listed below:

- It is a more economical way of storing data.
- Access to medical history of patients will be easier and quicker.
- Transfer of records will be quicker between doctors and hospitals.
- Data can be examined to analyse the medical conditions of the patients.
- Prescription will be legible and are stored for later reference.

10.4.3 Web-based support/diagnosis

On the Internet you can find a wide variety of medical information, including information about available treatments/alternative therapies, access to medical research/journals, support groups for people suffering from particular conditions, etc .

Some websites also provide facility for symptom diagnosis - for people who wish to get primary awareness about their health problem without the help of a doctor. However there are some risks involved here. This can lead to incorrect diagnosis and cause false complacency or anxiety.

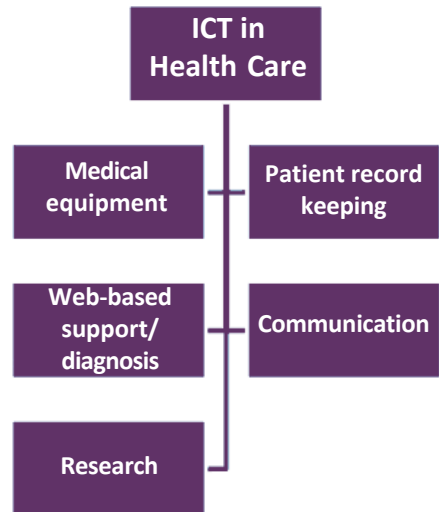


Fig. 10.8 : ICT in health care

10.4.4 Telemedicine

Telemedicine has been used to share observations and prescriptions with the experts in the medical field. A surgeon in one part of the world can procure medical expertise from another who is far away, while performing surgery. It reduces cost and time. A patient in a critical condition can get attention from a surgeon who may not be physically available at the operation theatre. Wireless transmission helps medical personnel, transport workers and hospitals to keep in touch in emergency.

10.4.5 Research and development

Over recent years drug discovery has been a concern for many in the pharmaceutical industry. Escalating costs and increasing complexity suggest that traditional research and development methods are to be changed. Now the convergence of information and bio-technology is revolutionising drug discovery and design. Today, drugs meant for specific purposes can be developed with the use of advanced computers. Use of IT may radically alter the cost associated with the discovery of drug over the coming years. Thus IT helps in diagnosis, treatment of patients and better running of hospitals.

10.5 ICT enabled services

ICT enabled services, also called web enabled services cover the entire range of operations which make use of ICT for improving services provided by an organisation. These services provide a wide range of career options that include opportunities in call centres, BPOs, medical transcription, etc. Some of the common ICT enabled services are discussed in the following sections.

10.5.1 Business Process Outsourcing (BPO)

Outsourcing is a term used in the business field. It is a practice used by different companies to reduce costs by transferring portions of work to outside suppliers. It is the process of hiring another company to handle business activities for you. Business process outsourcing (BPO) is a subset of outsourcing. It involves contracting of the operations and responsibilities of specific business functions to a third-party service provider. Outsourcing sometimes involves transferring employees and asset from one firm to another.

Companies implement Business Process Outsourcing (BPO) because it increases their efficiency and saves cost. Processes such as human resource management, customer care services, payroll, etc. are some of the processes that are usually given to BPO.

10.5.2 Knowledge Process Outsourcing (KPO)

Knowledge Process Outsourcing (KPO) is a form of outsourcing. Here knowledge and information related work is carried out by a different company or subsidiary within the same organisation. It helps in saving costs and resources. Some of the core processes outsourced in KPO include: data search, data integration, market research, fraud analytics, etc. The KPO sector has experienced explosive growth in recent years. Industries that are increasingly using KPO include legal, financial services, management and consulting.

10.5.3 Call centre

Call centres are becoming a very important part of any business/service organisation. Call centres facilitate the public for the payment of bills, purchase of goods, etc. A **call centre** is a telephone service facility set up to handle a large number of both incoming and outgoing calls for an organisation.

Call centres are also called service centres, sales centres, contact centres, etc. Basic responsibility of a call centre is to handle the telephone calls for supporting various services provided by an organisation. Call centres are used by telemarketing companies, computer product help desks and any large organisation that uses the telephone to sell products and carryout services. Generally the calls can be classified as in-bound calls and out-bound calls. In-bound calls are usually meant to seek assistance, help, or to order, while out-bound calls are meant for sales promotion or other messages.

Some firms, however, specialise only in calls that are in-bound or out-bound. Most telephonic orders are handled by call centres and not by the manufacturers or suppliers of goods or services.

10.5.4 Teleconferencing

Teleconferencing is a meeting or conference held between two or more parties in remote locations, made possible by the use of IT infrastructure and services.

Teleconferencing is used to connect several different people from several different locations. It is used in educational, business and administrative fields. Saving time, reducing travel expense and including several people in a decision-making process are some of the advantages.

10.5.5 Video conferencing

Video conferencing is a type of teleconferencing wherein we can include the video of the parties involved in the conference. Videoconference allows people at remote locations join in a conference and share information. A video camera and a speakerphone are connected to a computer and the computers are connected to the network or Internet.

Video conferencing is a facility which enables participants in distant locations to take part in a conference by means of audio and video communication.



Let us sum up

Information Technology (IT) is a fast growing field. It is widely used in our day today activities. Business transactions, government activities, learning processes, research and medical field, etc. are some of the major areas where IT is substantially utilised. The explosion in the development of communication owes much to information technology. The use of IT helps people communicate with less effort and minimum cost. ICT is another term often used as an extended synonym for IT. Some of the ICT enabled services include BPO, KPO, Call centre, Teleconferencing and Video conferencing. Hence IT and ICT enabled services have become inseparable part of modern society.



Learning outcomes

After the completion of this chapter the learner will be able to

- list the facilities of e-Governance, e-Business, e-Learning.
- explain the tools used in e-Learning.
- list the ICT applications in health care.
- list various advantages and challenges faced in implementing e-Governance, e-Business, e-Learning applications.
- use some of the useful websites in each area.
- utilise various ICT enabled services.

Sample questions

Very short answer types

1. Name an electronic device using which we can easily read e-Text.
2. Write the full forms of BPO and KPO.
3. Name any two e-Learning tools.

Short answer types

1. List out different types of interactions in e-Governance.
2. Differentiate between BPO and KPO.
3. What are the advantages of e-Governance?
4. What are the duties of Akshaya?
5. Write down the function of Call centres.

Long answer types

1. What are the major challenges faced in the implementation of e-Learning ?
2. Compare the advantages and disadvantages of implementing e-Business?
3. Explain any three IT enabled services in detail.
4. Discuss in detail various uses of IT in health care field.
5. What is Common Service Centre (CSC)? List some of the services offered through CSC.