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Information Technology

ICT - A BOOSTER DOSE FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT Growth or development of any society is necessary with the time and the same is ensured by the development of every individual belonging to the society. In todays age one thing which has changed the life of an individual in a very positive way is ICT. The applications of ICT discussed in this paper have proved that ICT has now become a booster dose for sustainable development of an individual and the society at large. There are sectors like education, banking, business, agriculture, transportation, surveillance where ICT has done wonders to ease the life of every one barring few sectors like medical and judicial system. The paper also sheds light on the advantages and disadvantages of ICT.

INTRODUCTION

Although there is no single definition of Information and Communication Technology (ICT), it can be described as the integration of information technology componemts including hardware, software, middleware, data, information, storage and multimedia systems that enables the users to access the services anytime anywhere. ICTs have been the basis for human existence from time immemorial and this has driven man to incessantly look for the methods and ways to perk up the processing of data and communicating the information to one another irrespective of geographical distance in real-time [1].

COMPONENTS OF ICT

The components of ICT are shown in Figure 1. and include hardware, communication technology, data stored and the data transmitted.

(a) Hardware: Hardware includes the device which is used for communication and can take the form of a Personal Computer, Laptop, Tablet and Smart Phones. They all may vary in their physical specifications, but at the same time all are able to communicate in real time with the other devices located remotely through communication technology.

(b) Communication Technology: It is the technology used to provide connectivity among the devices involved in communication. It includes both wired media and wireless media. Broadband and Leased Connection are the examples of wired communication technology. Wireless communication media includes 2G, 3G and 4G. For implementing ICT, faster communication technologies like broadband and 4G are suitable as ICT generally demands real time transfer of information specially audio and video.

Hardware (PC/Laptop/Tablet/Smartphone)	**Communication Technology** (Broadband/2G/3G/4G)
Data Stored (Mass Data on Servers/Cloud)	**Data Transmitted** (Text/Image/Audio/Video)

Figure1. Components of ICT

(c) Data Stored: It is actually the data stored on different servers and sent to the concerned device when demanded. In today's computing world there is a large volume of data which has to be maintained. The technology like cloud has been found suitable for storing mass data so that the data is available anywhere anytime.

(d) Data Transmitted: It is the data that is actually sent or received by the communicating device. Transmitted data may be in different forms like text, image, audio and video.

APPLICATIONS OF ICT

ICT has revolutionized each and every prevailing sector around the globe. There are sectors like education, banking, business, agriculture, transportation, surveillance (Figure 2.) where ICT has done wonders to ease the life of everyone, but there are a few areas like Judicial system, medical facilities where ICT has to show its expertise in the coming era.

Figure2. Applications of ICT

(a) ICT- An Education Enhancer

For sustainable development, a stable economy and well-oriented society, education is the basic requirement for all irrespective of the geographical boundaries and also, it should not be time bound which means 24*7 availability. Keeping this in view, ICT is channelized to provide solutions to all the concerns. Government as well private education agencies are working together to provide platform through ICT in order to facilitate teachers and educate students around the globe. There are many initiatives taken by government

EDUSAT, the first Indian Satellite launched in 2004 by Indian Space Research Organization(ISRO) exclusively to serve interactive distance education system, is one of the examples of the initiative taken by the government. NCERT, an autonomous organization is also dedicatedly working for improving and imparting education to one and all. e-pathshala is one of its programmes working in the same direction- learning on the go. Besides focussing on the basic education efforts could be seen in the higher education. MOOC(Massive Open Online Courses) provides platform to all- teachers, students, working professionals to enhance their skill and knowledge. It also provides the forum to support community interactions among the unlimited learners enrolled in that

particular course. NPTEL, NMEICT, Coursera are some of the examples of MOOC successfully providing education via web.

ICT in education sector has oiled the track for teachers and learners in the following ways:

- Development and sharing of free and open digital learning content.
- Preparing teachers to make teaching effective and improving the retentive memory of students by the use of Multimedia content (images, audio & videos). Teachers can effortlessly clarify complex lessons and ensure students' understanding.
- Making teachers to create interactive lessons and construct the classes more interesting and pleasant, which could improve student attendance and attentiveness.
- ICT is a source through which the latest knowledge and updates are disseminated to the mass. The material is developed by the experts and researchers which meets the requirement of high quality education.

(b) ICT in Banking Sector
With the advent of ICT banking sector has felt a great insurrection in its operations and handling different tasks. It is a universal fact that banks has to deal with voluminous amount of data pertaining to their customers and continuously dealing with the same manually was a tedious task. Banking sector is smoothing the day to day operations and tasks using ICT and now banks are offering the services at finger tips to its customers. ATM, Internet Banking, Mobile Banking and Electronic Payments are the facilities that banks are providing to their customers saving their both time and efforts in operating with their bank accounts. Saranya. J et.al. [3] showed that out of a sample collected 77% of respondent are aware of ICT in banking. This data is encouraging towards the usage of ICT in banking sector.

© Business Transformation through ICT
Information and Communication Technology (ICT) has a profound impact on the business world and on the economic structure of the nation. Today's business environment is very pulsating and is rapidly changing as a result of scientific and technical improvement, increased consciousness and demands from customers. The best examples of the transformed business world are Flipkart, Amazon, Snap deal. After facing some initial challenges in doing business using ICT they are the best presenters of a successful business. According to Financial express [4] Flipkart has a sales growth close to 40% in the financial year 2016 and the company now seek to have a growth of over 60% in the financial year 2017. ICT has transformed the business sector by bringing a revolutionary change in doing business and by providing a platform to showcase innovation.

(d) ICT in Judicial Reform
It will not be an exaggeration if someone says that everyone wants to be away from the black coat and the court. It is simply because of the plethora of cases pending in the court for the justice. There are some cases where person does not get justice even after his death and in some cases he keeps on oscillating between dates.

- As e-government initiatives prolong to renovate the nature of India's bureaucracy and boost the quality of government services, there is a atmosphere of great hopefulness that ICT will also come to play a central role in judicial reform efforts. Mumbai court set a very good example by directing David Headley to appear via video- conference [2].
- Mr. C P Gurnani, CEO of Tech Mahindra gave a valiant statement that with ICT, India's 300 year case backlog can be reduced to three years in a short span of time[5].
- The main characteristics of this recently envisioned e-justice system include the use of video hearings which reduce time and cost of transportation and case filing operation systems.
- On May 10, 2017 Prime Minister of India Shri. Narendra Modi launched the Integrated Case Management System of the Supreme Court - the first step taken by the top court towards becoming a paperless and digital [5]. The existing 24 High

Courts will also be integrated with the Supreme Court using this ICT based system.

(e) ICT in Agriculture
ICT in agriculture provides a wide range of solutions to farmers. e-agriculture is offering ground-breaking ways to use ICTs to address the issues in agriculture. Department of Agriculture & Cooperation (DAC), Ministry of Agriculture, Govt. of India has launched Kisan Call Centers providing extension services to the farmers. The main aim of these centres is to resolve the issues raised by farmers in their local language. Other ways have also been introduced to encourage Indian farmers to become more ICT-friendly, which include E-Choupal, E-Krishi, KisaanMitra and many more. Various mobile applications have also been launched by the Government of India for the farmers, including Mandi Trades, KisanSuvidha, PM Fasal Bima Yojna, Agri Market and M-Kisan Application. By using these applications the farmers can get information about their crops, the market rate of crops, buy and sell crops etc.

(f) ICT in Transportation
With the onset of ICT in travel, a dynamic change in the life style of people could be seen. ICT has redefined the word transportation by providing easy online ticketing system, real time information for travellers, Navigation through GPS, transport safety and information system. The meaning of planning for a travel has been changed with the use of ICT. More advancements in the area of transportation are yet to arrive in public life which includes driverless cars, vehicular networks for traffic management and many more.

(g) ICT in Surveillance
Surveillance is a major concern when it comes to securing a building or an area. ICT is playing a major role in securing home and offices with the help of electronic surveillance 24 hours a day continuously. And similarly with the use of ICT monitoring public places has become very easy and convenient for the administrative staff in a city. Furthermore, ICT based attendance systems and access control systems have also been developed and implemented in many organizations and institutions.

ADVANTAGES OF ICT
The following advantages of ICT can be experienced:
- 24 X 7 Access - It is very convenient for the users as the information can be accessed round the clock.
- Time Saving - Apart from 365 access, it is time saving as one can access the services according to one's availability.
- Reduction in Cost - As compared to the other modes of communication, ICT is providing the information and services at lower cost.
- User Friendly - It only requires the basic operations and the world is on the finger tip.
- Saving Paper - ICT has taken a huge step in making our society paperless.
- Connect Geographically Dispersed Regions - One can easily access information from anywhere there is no boundary that delimits the access.

LIMITATIONS OF ICT
The limitations of ICT are given below but these may be eliminated by taking appropriate measures in the future.

- Network Connectivity - In some remote areas still there is a network connectivity problem and therefore people are deprived of the technologies.
- Computer literacy: Before the use of ICT the basic computer literacy is required, which is again a bottleneck for some people who are still restricted to traditional methods.
- Resistance to change/ Negative Tendency: To adopt a new thing / technology one has to have a positive mindset. Negative tendency of some people who have made their comfort zone in old and outdated methods resist to accept the changing world and technology.

• Setting up Infrastructure: Installation cost of equipments used for communication via the web is quite expensive.

CONCLUSION

ICT will continue to show exciting developments and its impact on each and every sector to ease the life. With the applications of ICT which have been discussed in this paper, it has been proved that ICT has become now a booster dose for sustainable development of an individual and the society at large. Many more advancements in ICT are yet to be developed and implemented for the positive growth of the processes and functions existing in a society. The work presented in this paper is significant to every individual as this paper has focused upon the applications of ICT which are related in one or other manner with the day to day operations in the life of an individual.

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