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"Innovative Business Practices In Technological Era"
" Role Of Information Technology In Modern Technical Era"

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**Role of Information Technology In Modern Technical Era"

Abstract: Around one hundred and fifty years ago, businesses ran their day to day operations completely different from what businesses of the modern era do to run their day to day operations. People back then worked under candle light doing math calculations on paper, the old fashion way, before electricity came about in the early 20th century. Now, most of the civilized world wouldn't know what to do with themselves without technology. Imagine not even having a calculator for math or the internet to do research. Yes, I know, it is hard to believe people were able to survive without these advanced tools that we take for granted each day. The advances in communication combined with the evolution of the IT industry has made it possible for people to do business throughout the world in real time. Improvements in IT improve our lifestyles and business by allowing computers to reduce complications and enrich possibilities.

These days, the name "Information Technology" has managed to encompass many aspects of computer technologies invented in the past couple decades. These IT spectrums can be covered in many types of professional fields such as Management Information Systems, Computer Networking, and Software Design. Our ancestors couldn't even fathom what our society has accomplished. With the increasing new technologies coming out every day, employees in the Information Technology work force must constantly re-educate themselves with all the new technologies. This makes IT a very demanding field as it is always developing and perfecting. The process of improvement is what makes this such a desirable aspect to almost any business. It is very important for anyone in the IT field to always stay up to date with all newly developing technologies that relate to their industry. IT is now the complete backbone to almost any business and its ability to be competitive and efficient.

KEYWORDS: INNOVATION OF IT, ERA OF IT

I. Introduction:

Our world today has changed a great deal with the aid of information technology. Things that were once done manually or by hand have now become computerized operating systems, which simply require a single click of a mouse to get a task completed. With the aid of IT we are not only able to stream line our business process but we are also able to get constant information in 'real time' that is up to the minute and up to date.

The significance of IT can be seen from the fact that it has penetrated almost every aspect of our daily lives from business to leisure and even society. Today personal PCs, cell phones, fax machines, pagers, email and internet have all not only become an integral part of our very culture but also play an essential role in our day to day activities. With such a wide scope for the purpose of this article we shall focus on the impact of the internet in information technology.

II. Definition of Information Technology:

In the broadest sense, information technology refers to both the hardware and software that are used to store, retrieve, and manipulate information. At the lowest level you have the servers with an operating system. Installed on these servers are things like database and web serving software. The servers are connected to each other and to users via a network infrastructure. And the users accessing these servers have their own hardware, operating system, and software tools.

III. A History of Information Technology and Systems:

- **Four basic periods** Characterized by a principal technology used to solve the **input, processing, output and communication problems** of the time:
  A. Premechanical,
  B. Mechanical,
  C. Electromechanical, and
  D. Electronic

A. The Premechanical Age: 3000 B.C. - 1450 A.D.

- **Writing and Alphabets--communication.**
- **Paper and Pens--input technologies.**
- **Books and Libraries: Permanent Storage Devices.**.
- **The First Numbering Systems.**

- Egyptian system:
- The numbers 1-9 as vertical lines, the number 10 as a U or circle, the number 100 as a coiled rope, and the number 1,000 as a lotus blossom.
- invented between 100 and 200 A.D. by Hindus in India who created a nine-digit numbering system.
- Around 875 A.D.-zero developed.
- **The First Calculators: The Abacus.**
- One of the very first information processors.

B. The Mechanical Age: 1450 - 1840

- **The First Information Explosion.**
- Johann Gutenberg (Mainz, Germany)
- Invented the movable metal-type printing process in 1450.
- **Slide Rules, the Pascaline and Leibniz's Machine.**
- **Slide Rule:**
- **Invented in Early 1600s by William Oughtred**, an English clergyman
- Early example of an **analog** computer.
- **The Pascaline:**
- Invented by Blaise Pascal (1623-62).
- **One of the first mechanical computing machines**, around 1642.
- **Leibniz's Machine:**
- Invented by Gottfried Wilhelm von Leibniz (1646-1716), German mathematician and philosopher.
- **Babbage's Engines:**
- Invented by Charles Babbage (1792-1871), eccentric English mathematician.
- **The Difference Engine:**
- Working model created in 1822.
- The "method of differences".
- **The Analytical Engine:**
- Joseph Marie Jacquard's loom.
- Designed during the 1830s
- Parts remarkably similar to modern-day computers.
- The "store"
- The "mill"
- Punch cards

C. The Electromechanical Age: 1840 – 1940:

- **The Beginnings of Telecommunication.**
- **Voltaic Battery.**
- Late 18th century.
- **Telegraph.**
- Early 1800s.
- **Morse Code.**
- Developed in1835 by Samuel Morse
- Dots and dashes.
- **Telephone.**
- Alexander Graham Bell.

- In 1876
- **Radio.**
- Guglielmo Marconi
- In 1894
- **Electromechanical Computing:**
- **Mark 1:**
- Paper tape stored data and program instructions.
- Howard Aiken, a Ph.D. student at Harvard University
- Built the Mark I
- Completed January 1942

D. The Electronic Age: 1940 - Present.

- **First Tries.**
- Early 1940s
- Electronic vacuum tubes.
- **Eckert and Mauchly.**
- **The First High-Speed, General-Purpose Computer(GPC)** ***Using Vacuum Tubes:***

Electronic Numerical Integrator and Computer (ENIAC)

- Invented in 1946
- Used vacuum tubes (not mechanical devices) to do its calculations.
- first **electronic** computer.
- Developers John Mauchly, a physicist, and J. Prosper Eckert, an electrical engineer
- **The First *Stored-Program* Computer(s):**
- Early 1940s, Mauchly and Eckert began to design the **EDVAC - the Electronic Discreet Variable Computer**.
- John von Neumann's influential report in June 1945:
- "The Report on the EDVAC"
- British scientists used this report *and outpaced the Americans*.
- Max Newman headed up the effort at Manchester University
- Where the **Manchester Mark I** went into operation in June 1948--**becoming the first stored-program computer.**
- Maurice Wilkes, a British scientist at Cambridge University, completed the **EDSAC (Electronic Delay Storage Automatic Calculator)** in 1949--two years before EDVAC was finished.
- Thus, EDSAC became the first stored-program computer in general use (i.e., not a prototype).
- **The First (GPC) for *Commercial Use*: Universal Automatic Computer (UNIVAC):**
- Late 1940s, Eckert and Mauchly began the development of a computer called **UNIVAC (Universal Automatic Computer)**
- Remington Rand.
- First UNIVAC delivered to Census Bureau in 1951.
- **But**, a machine called LEO (Lyons Electronic Office) went into action a few months before UNIVAC and became the world's **first commercial computer**.

➢ **The Four Generations of Digital Computing.**

- **The First Generation (1951-1958).**
- Vacuum tubes
- **The Second Generation (1959-1963).**
- Vacuum tubes replaced by **transistors** as main logic element.
- **The Third Generation (1964-1979):**
- Individual transistors were replaced by **integrated circuits**.
- .**The Fourth Generation (1979- Present).**
- Large-scale and very large-scale integrated circuits (LSIs and VLSICs)
- Microprocessors that contained memory, logic, and control circuits (an entire **CPU = Central Processing Unit)** on a single chip.

Fourth generation language software products:

- E.g., Visicalc, Lotus 1-2-3, dBase, Microsoft Word, and many others.
- **Graphical User Interfaces (GUI)** for PCs arrive in early 1980s
- **MS Windows** debuts in 1983, but is quite a clunker.
- Windows wouldn't take off until version 3 was released in 1990
- Apple's GUI (on the first Mac) debuts in 1984.

Information technology, strated at the very early stage as the emergence of computer took place. Even before computer was invented the basic advancement of human activities are also a form of development. Thus we have seen the history of information technology step-by-step with the development of civilization.

IV. Development of Information Technology:

Information Technology is a technology that growth through the main base of computer technology. The development of computer technology that continues to bring the main implications of this technology in data processing that leads to information. The output of computer technology which is a component that is more useful than just a pile of data, computer technology and technology support operations process gets a new nickname, namely information technology.

Information Technology, also cited as Information Service (IS) or Management Information Service (MIS), can be defined as the development, design, study, implementation and management of computer related information. It can also be defined as the use of computer - hardware and software - to manage information.

Information technology prepared by the three main dimensions of technology, namely**:**

1. Computer technology, which is a key driver of information technology development.
2. Telecommunications technology, which became the core information distribution process.
3. Loads of information or content information, which becomes the main driver of information technology implementation.

The invention of computer technology since the beginning is meant to help alleviate human work to make it more effective and efficient. Computer development was followed by the birth of the Internet that is able to disseminate information quickly without the constraints of space and time. The development of communication technology also made progress from the start the discovery of the telegraph (long-distance digital communication system) in 1835, the telephone in 1876, long-distance telephone connections using satellites in 1952 to mobile phones are widely used in 1985.

The development of information content begins with the success of Markoni make radio, the discovery of motion pictures and television cameras. Starting in 1994 a series of important events in the development of emerging information technology quickly.

V. Why is Information Technology Important?

An industry set forth in the recent past - Information technology - has evolved with superlative momentum, and accrued a dignified status for itself, and all those associated with it. Now leet us see the importance of IT:

Information technology is used for storing, protecting, processing, securing, transmitting, receiving, and retrieving information. In business establishments, it is used predominantly to solve mathematical and logical problems. Information technology helps in project management systems as well. Firstly, planning is done, then the data is collected, sorted and processed, and finally, results are generated. It helps managers, and workers to inquire about a particular problem, conceive its complexity, and generate new products and services; thereby, improving their productivity and output.

The primary importance of information technology with regards to education is that various learning resources can be accessed instantly by students as well as teachers, with paramount importance laid on the convenience factor. Learners can also adapt to the multimedia approach, coupled with collaborative learning. The information is authentic with the updated information being widespread in terms of availability. Multiple communication approaches, like, chats, forums, emails, etc., can be adopted by them. Students may access the online libraries, in turn having distance learning programs perform a successful feat. In addition, IT has proved to be a significant employer. Many people with knowledge of computers have got jobs in this field, and have successfully made a career out of it. It has helped one find cures for several diseases; thereby, serving mankind in plentiful ways. Different kinds of software are provided for individuals with visual, or hearing impairment; thereby, aiding them in their passion to learn new concepts, and gather information parallel to their subject of interest.

Information technology, as aforementioned, functions in the background; nevertheless, it is also the backbone of the organization. If the IT system falls short of resources in order to make ends meet, the organization's efficacy is hampered. The IT workforce has become such an indispensable section of the organization that we expect it to function with absolute lucidity and alacrity; however, when this scenario ceases to exist - even if it is for a brief period - the infrastructural base of communication endures a beating.

The IT profession has opened doors to communication which is constructively channelized, being debarred from display of opacity of any form. In addition, the IT sector has been coveted the apotheosis of

flexibility. Be it an employee, or an entrepreneur, any given location could be his virtual work-station. You may conduct your office work even when you are not in your designated seat. Working from home is a steeplechase concept, gracefully adapted by organizations aplenty, with flexibility being its unique selling proposition. In this manner, your organization remains endowed with its necessary functioning - a behooving quality for any and every business enterprise to thrive. Communication is made easy with the overt influx of technology. Right from its inception, technology has never remained indolent; on the contrary, it has striven to prove its renewed potency with each passing day.

VI. Advantages of Information Technology:

We gain various advantages directly or indirectly from IT. Some of them are mentioned below:

Globalization:

IT has not only brought the world closer together, but it has allowed the world's economy to become a single interdependent system. This means that we can not only share information quickly and efficiently, but we can also bring down barriers of linguistic and geographic boundaries. The world has developed into a global village due to the help of IT allowing countries like Chile and Japan who are not only separated by distance but also by language to shares ideas and information with each other.

Communication*:*

With the help of IT, communication has also become cheaper, quicker, and more efficient. We can now communicate with anyone around the globe by simply text messaging them or sending them an email for an almost instantaneous response. The internet has also opened up face to face direct communication from different parts of the world thanks to the helps of video conferencing.

Cost effectiveness*:*

IT has helped to computerize the business process thus streamlining businesses to make them extremely cost effective money making machines. This in turn increases productivity which ultimately gives rise to profits that means better pay and less strenuous working conditions.

Bridging the cultural gap*:*

It has helped to bridge the cultural gap by helping people from different cultures to communicate with one another, and allow for the exchange of views and ideas, thus increasing awareness and reducing prejudice.

More time*:*

IT has made it possible for businesses to be open 24 x7 all over the globe. This means that a business can be open anytime anywhere, making purchases from different countries easier and more convenient. It also means that you can have your goods delivered right to your doorstep with having to move a single muscle.

Creation of new jobs*:*

Probably the best advantage of IT is the creation of new and interesting jobs. Computer programmers, Systems analyzers, Hardware and Software developers and Web designers are just some of the many new employment opportunities created with the help of IT.

VII. Disadvantages of information technology:

Unemployment*:*

While IT may have streamlined the business process it has also created job redundancies, downsizing and outsourcing. This means that a lot of lower and middle level jobs have been done away with causing more people to become unemployed.

Privacy*:*

Though information technology may have made communication quicker, easier and more convenient, it has also bought along privacy issues. From cell phone signal interceptions to email hacking, people are now worried about their once private information becoming public knowledge.

Lack of job security*:*

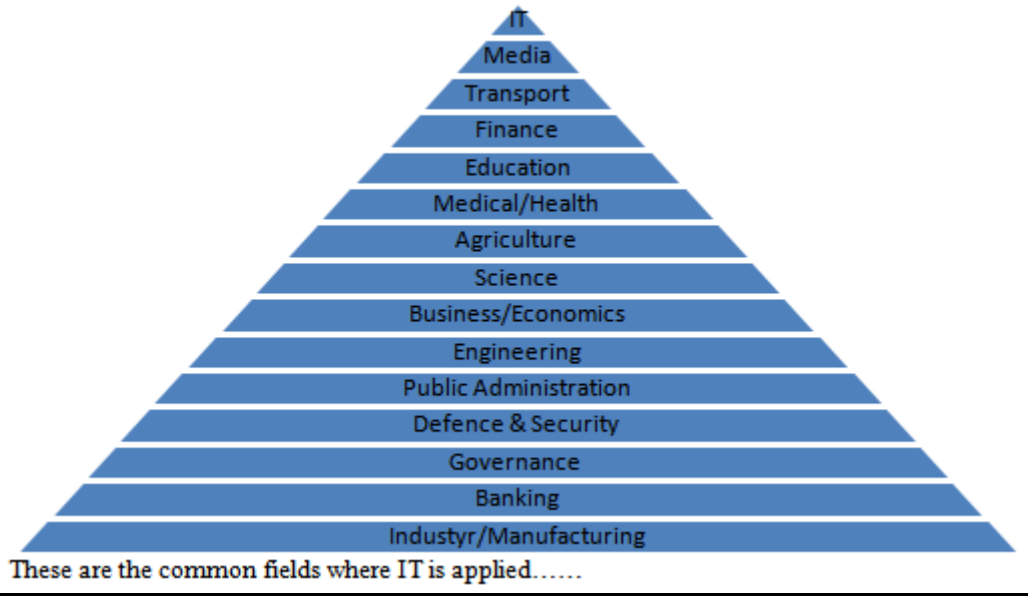
Industry experts believe that the internet has made job security a big issue as since technology keeps on changing with each day. This means that one has to be in a constant learning mode, if he or she wishes for their job to be secure.

Dominant culture*:*

While IT may have made the world a global village, it has also contributed to one culture dominating another weaker one. For example it is now argued that US influences how most young teenagers all over the

world now act, dress and behave. Languages too have become overshadowed, with English becoming the primary mode of communication for business and everything else.

Applications of Information Technology:



VIII. Types of Information Technology Application:

The application of information technology is closely related to the application of computer technology and data communication in life. Almost all areas of life today can take advantage of computer technology. Some types of applications are:

S.NO.	APPLICATIONS IN	EXAMPLES
1	Science	Astronomy
2	Engineering	Creation of robots using the concept of artificial intelligence for robots wiser.
3	Business / Economics	E-Business, E-Marketing, E-Commerce and others.
4	Public Administration	Application of sales / distribution of goods, payroll application, the application of academic schools and others.
5	Banking	E-Banking, ATMs, and M-Banking.
6	Education	E-Learning
7	Governance	E-government and state-owned property inventory applications
8	Health / Medical	Coronary Artery examination which is a non-invasive examination to establish the diagnosis of heart disease. By using this tool activity of the heart muscles can be seen directly on the screen monitor and other.
9	Industry/ Manufacturing	Computer simulation for testing of new system design.
10	Transportation	An application to set the aircraft's flight schedule.
11	Defense and Security	Data security system applications with encryption.
12	Media	Graphics, 3D animations
13	Finance	TallyERP.9(enterprise resource planning)
14	Agriculture	Agronomy and soil sciences

Development of information technology is very fast and more unpredicted. Human can use this development for negative and positive thing. So, be careful when follow the development of information technology.

IX. Conclusion

I trust this article has given you an idea about information technology and its importance in this day and age, also enlisting its advantages. The IT sector has developed tremendously and will continue doing so in/for the future. With the current scenario, it is, indeed safe to say that IT is the new 'It' sector. Ergo, when an enterprise is sealed with IT professionals that exhibit an undying, and relentless restlessness to achieve operational excellence, business just doesn't survive . . . it thrives! . . .