# IMPACT OF ICT ON SOCIETY

What has the introduction of computers and information technology transformed our societies into?

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# Introduction

ICT influences our lifestyle both negatively and positively. It offers both opportunities and challenges in the society. Some of the effects of ICT in society include:

1. Effects on Employment
2. Effects on automated production
3. Issues of workers health
4. Cultural effects
5. Breakthrough in ICT

## 1. Effects on Employment

The introduction of compute based information systems has altered job market and the traditional way of doing work. It has resulted in:

- Job creation – creation of new jobs
- Job replacement – the replacement of workers by the computers
- Job displacement – replacement of the manual jobs by the computerized systems.

### i. Job creation

ICT has introduced new employment opportunities that were never there, like use of computers in financial institutions, reservation systems, in communication and industries. These have led to creation of new job titles like computer operators, programmers, network administrators, IT or IS managers, database administrators, software developers, system analysts e.t.c

### ii. Job displacement

This is a situation whereby an employee is moved from one department or place to another where requires less skilled manpower from a place that requires more and high skilled manpower e.g. copy typist using typewriters are still needed in organisations but now use computer word processor instead of typewriters. For those who don't know how to operate computers then, will be moved to departments where computers are not used or a clerk may end up being an office messenger if computers are introduced at the work place and he does have or willing to acquire the skills.

### iii. Job replacement

This is the process of an employee losing a job to computerized machines that replace them or sometimes they are replaced with a few skilled and highly trained people. Mostly, the eliminated jobs are those involving monotonous and unskilled labour e.g. a copy typist using typewriters may no longer be needed

in organisations that use computer application instead of typewriters while they don't have the require skills. For those who don't know how to operate computers then, will be kicked out of the organisation.

The plan to avoid losing competent employees is for the organisations to organize for in-service training for employees regularly to help them keep up with the rapid development of ICT.

## 2. Automated Production

This is the computerized of production process in industries where no manpower is required e.g. in food processing, oil refineries and vehicle assemblers.

### Advantages of Automated Production

i. It reduces costs of production because of efficiency of machines

ii. It leads to improved quality of services and better range of products.

iii. It has helped in reduction of accidents in sectors where much work is potentially hazardous e.g. mining and chemical productions.

iv. Provides efficient utilization of resources leading to less expenses e.g. raw material, personnel equipment e.t.c

### Disadvantages of Automated production

i. Leads to unemployment in areas that are labour intensive.

ii. High initial costs of setting up an automated system.

## 3. Issues of workers health

The use of ICT and computers has some effects on human health. These include:

i. Repetitive strain injuries

ii. Eye strain and headaches

iii. Electromagnetic emissions

iv. Environment issues

### i. Repetitive strain injuries (RSI)

These are injuries as a result of forced repetitive movement of the body parts that are needed when using the computer. They include the wrists, hand, arm muscle strain and neck strains.

To avoid this, you need to rest, sit in a relaxed position and changing the typing techniques.

### ii. Eye strain ad headaches

There is a danger of computer users to develop Computer Vision Syndrome (CVS) when they use them with monitors in close range. This is characterized by *double vision, eye strain* and *headaches.*

Monitors with good resolution and fitted with anti-glare screen to filter excess light are to be used.

### iii. **Electromagnetic emissions**

Electromagnetic emissions are the waves of electrical and magnetic energy that are emitted by current carrying conductors.

Users of the computer need to use low emission conductors to avoid exposing themselves to excessive emission.

### iv. **Environment issues**

#### a. **Energy consumption and radiation**

Computers consumed a lot of power and thus emitted a lot of heat and electromagnetic radiation. Environmental Protection Agency (EPA) however, launched *energy star policy* encouraging minimal use of power by electronic devices.

#### b. **Environmental pollution**

IT has contributed to environmental pollution as huge garbage damps of dead computer parts, printers, monitors, cartridges and other accessories are disposed in landfills. Most batteries contain toxic cadmium that can leak into underground water tables and catchment areas.

## 4. Stress

Most users of the computer feel that they are expected to produce more and do it faster as computers are fast and those monitored by computers feel under pressure

## 5. Isolation

This is where people conduct business and communication without ever coming face to face. Computer operators can entirely work taking their commands and instructions from a computer screen, sending and receiving information electronically without engaging in personal conversation. These make them feel isolated from other workers.

## 6. Computer chip toxin

Workers in computer chip manufacturing industries are exposed to toxic chemicals that may pose health problems.

## 7. Cultural effects

### i. **Moral effects**

The growth of ICT also provides challenges to our moral and cultural values as it has changed the way we talk, affect our privacy, human rights and integrity.

Internet users are exposed to *flaming* communication which the writing of online messages that use *derogatory, obscene* or *dirty* language. They also view pornographic materials that affect negatively morals.

### ii. Computer crimes

This is the use of computers and computer software for illegal purpose.

### Ergonomics

This is the science of designing the workplace for the comfort and safety of the worker. The need for better working environment has resulted to designing of special furniture to prevent backaches, special monitors to prevent eyestrains e.t.c

# Evolution of computer systems

Future trends in computer and information and communicating technology will be characterized by:

1. Rapid evolution in computer hardware and software.

2. Artificial intelligence

3. Expanded information super-highway

## 1. Rapid evolution in computer hardware and software

i. Future trends will see reduction of computer size and cost but increase in capability.

ii. The computers will be more intelligent and able to learn in their environment, understand human voice and respond.

iii. The software will be more versatile and easier to use.

iv. Industries will become more automated.

v. More application software will be available because of high speed and large available memory for programs.

vi. Education will have to gear itself to training students to computer assisted services rather than teaching them physically.

vii. Operating systems will handle real time data analysis and object oriented will be developed.

viii. It will improve user interfaces that offer users easier and more intuitive access to information.

## 2. Artificial intelligence (AI)

This is the ability of computers to think and reason like humans in learning, seeing, hearing and communicating. A more powerful, high speed and more memory is needed to accomplish this.

There are four main application areas of artificial intelligence namely:

1. Expert system

2. Natural language processing

3. Artificial neural networks

4. Robotics/Perception systems

## i.    Expert systems

An **expert system** is software that uses a knowledge base of human expertise for problem solving, or clarify uncertainties where normally one or more human experts would need to be consulted. Building an expert system is known as *knowledge engineering* and its practitioners are called *knowledge engineers*. The knowledge engineer must make sure that the computer has all the knowledge needed to solve a problem.

An expert system has three main components namely:

***Knowledge base:*** this is the expert system database of knowledge about a particular subject. It contains certain assumptions, beliefs, facts and procedures for solving particular problem.

***Inference engine:*** this is the software that controls that search for knowledge in the database and produces conclusions. It analyses the user problem.

***User interface:*** this is the display screen that enables the user to interact with the system

**Examples of expert system**

i.    **Mycin** – used to diagnose blood and meningitis infections

ii.   **Prospector** – used in predicting mineral deposits in certain geographical sites

iii.  **Delta** – used to help people repair diesel electric locomotives

## ii.    Natural language processing

This is the ability of a computer to understand human language and translate it to instructions upon which the computer can understand. Natural languages are usually ambiguous and may be interpreted differently by different people.

It is aimed at coming up with programming languages that would make computers recognize and understand natural languages either spoken or written.

**Voice recognition –** this is a system that will allow voice input. The user inputs data by speaking into a microphone. A few systems can't satisfactorily perform this task because of:

a.    Words with similar sound e.g. hear and here

b.    Different people pronouncing same words differently.

c.    One word having multiple meanings.

Computers with ability to recognize and read properly human voice, makes information systems and computerized application accessible to the physically challenged people.

**Voice synthesis –** is a machine that are able to create human voice or talk e.g. a computerized bank teller giving you your account balance in human like voice.

### iii.     Artificial neural networks

This is the use of electronic devices and software to emulate the cognitive learning process of the human brain and how it recognizes patterns. The artificial neurodes perceive environmental stimuli like light intensity and decides whether to pass a signal to the perceptive system or not.

Attributes of an artificial neural network include:

1. The neurodes can be trained to distinguish what constitutes a signal and what does not.

2. They are capable of recognizing patterns in large amount of data that are too complex for human brain. From the patterns they can predict and point out anomalies.

### iv.     Robotics

A **robot** is a computer controlled device that emulates a human being in carrying out tasks that would otherwise be dangerous and difficult. They are used for repetitious tasks and dangerous tasks in industries.

Researchers still are working on them wanting to make them perceptive systems. **Perception systems** are sensing devices that emulate the five common sense of a human being. They would operate under the control of a microprocessor.

## 3. Expanded information superhighway

This is the integration of the wired (cabled) and wireless technologies for the purpose of data and information transmission. The computers use the existing communication infrastructure and technology provided by the telecommunication, television and radio networks.

This has given rise to services such as video conferencing, distant learning and virtual learning centres, telecommuting, virtual office e.t.c