

4.1.5 Capabilities and Limitations of ICT

Advantages of ICT Over Manual Methods of Processing Data

- Repetitive Processing – Computers can carry out the same or similar tasks (e.g. mail merge, payroll) over and over very quickly and with a high level of accuracy.
- Speed of Processing – A computer system can process raw data very quickly to produce information.
- Data Storage Capacity – Traditionally, a company's information would be stored on paper in filing cabinets which takes up expensive storage space. A computer system can store the same amount of data in a fraction of the space. Other advantages include the ability to backup data easily and increase security by password protection or encryption.
- Speed of Searching – Another big advantage of a computerised data storage system over a paper based system is that searches are virtually instantaneous.
- Speed of Data Communications – Data can be sent from one side of the world to the other in a matter of seconds via the internet (e-mail) compared to days using traditional post ('snail mail').
- The Ability to Produce Different Output Formats – Information can be output from a computer system, either on-screen or printed, in the form of graphs, charts, reports, pictures, sound etc.

Factors Affecting the Efficiency of Data Processing Systems.

- **Input (GIGO)** – Even the most advanced data processing system will give inaccurate information if the data input is not accurate.
- **Hardware** – The system must incorporate suitable hardware for the system to work efficiently (e.g. a barcode scanner in a shop or library, a plotter in architect's office or a powerful processor and graphics card in a CAD/CAM system).
- **Suitability of the Operating System** – The right choice of operating system is vital for a system to work efficiently (e.g. a real time control system for air traffic control, a real time transaction for ticket sales or a batch processing system for payroll or billing)
- **Software** – There are a number of problems that may arise when selecting appropriate software especially if the software is to be developed for a specific purpose:
 - Possible changes in circumstances during development
 - Time taken to implement the software
 - Compatibility of the new software with current hardware and data
 - Financial Costs
 - Insufficient testing resulting in 'bugs'
 - Poor communications with the user – the solution may not meet the user's requirements

- The ability of the user – will they need any training
- Maintenance problems (perfective, adaptive and corrective)
- Technical support.

Questions

1. The owner of a video store is considering updating the manual record keeping system to an ICT-based system to get better quality information.
 - a. Other than the financial costs of purchasing hardware and software, describe two other factors that must be considered in setting up and maintaining the system. 2 x [2]
 - b. State two advantages that up-to-date, accurate and complete information will give the store owner. [2]
2. Describe 3 advantages of a computerised system over a manual method of processing data. 3 x [2]
3. Information Technology is widely used in business to process large amounts of data.
 - a. Discuss **two** advantages of ICT over manual methods of processing data, using suitable examples in each case. [4]
 - b. Describe **three** factors affecting the efficiency of data processing systems. [3]