IT IN MANAGEMENT

NEW SYLLABUS

GAUTAM BAPAT

NIRALI PRAKASHAN
ABHYUDAYA PRAKASHAN

A Book Of

IT IN MANAGEMENT

For
BBA Semester - III
As Per Revised Syllabus
Effective from June 2014

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Preface ...

I take an opportunity to present this book entitled as **"IT in Management"** to the students of Third Semester (BBA.). The object of this book is to present the subject matter in a most concise and simple manner. The book is written strictly according to the Revised Syllabus.

The book has its own unique features. It brings out the subject in a very simple and lucid manner for easy and comprehensive understanding of the basic concepts, its intricacies, procedures and practices. This book will help the readers to have a broader view on IT in Management. The language used in this book is easy and will help students to improve their vocabulary of Technical terms and understand the matter in a better and happier way.

I sincerely thank Shri. Dineshbhai Furia and Shri. Jignesh Furia, the publishers, for the confidence reposed in us and giving us this opportunity to reach out to the students of management studies.

I thank Mrs. Anita Panajkar and Ms. Nilima Sonakul for their important inputs time to time and Mr. Akbar Shaikh who painstakingly attended to all the details to make this book appear good.

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I have given our best inputs for this book. Any suggestions towards the improvement of this book and sincere comments are most welcome on niralipune@pragationline.com.

AUTHOR

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Syllabus ...

Unit 1 : Managing Hardware and Software Assets **[8 L]**

- Computer Hardware and Information Technology Infrastructure.
- Categories of Computers and Computer System.
- Types of Softwares.
- Managing Hardware and Software Assets.

Unit 2 : Managing Data Resources **[6 L]**

- Organizing Data in a Traditional File Environment.
- The Database Approach to Data Management.
- Creating a Database Environment.
- Database Trends.

Unit 3 : Networking **[12 L]**

- Concept, Basic elements of a Communication System,
- Data transmission media, Topologies, LAN, MAN, WAN, Internet.

Current Trends in IT Management:

- Use of Social Networks in Business.
- Use of ICT enabled application in Business.

  (design a case study to understand the requirement of IT infrastructure in management of business)

Unit 4 : The Internet and The New Information Technology Infrastructure **[12 L]**

- The IT infrastructure for the Digital Firm.
- The Internet : The IT infrastructure for the Digital Firm.
- The World Wide Web.
- Management Issues and Decisions.

Unit 5 : Understanding the Business values of System and Managing Change **[10 L]**

- Understanding the Business Values of Information System.
- The Importance of Change Management in Information System Success and Failure.
- Managing Implementations.

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Contents ...

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Chapter 1...

Managing Hardware and Software Assets

Contents ...

1.1 Introduction to Computer

- Now-a-days, computers are the integral part of our lives. Computers are used for the reservation of tickets for airplanes and railways, payment of telephone and electricity bills, deposit and withdrawal of money from banks, processing of business data, forecasting of weather conditions, diagnosis of diseases, searching for information on the Internet, etc.

- Computers are also used extensively in schools, universities, organizations, music industry, movie industry, scientific research, law firms, fashion industry, etc.
- The term computer is derived from the word compute. The word compute means to calculate.
- A computer is an electronic machine that accepts data from the user, processes the data by performing calculations and operations on it, and generates the desired output results.
- Computer performs both simple and complex operations, with speed and accuracy.
- A computer is a general purpose device that can be programmed to carry out a finite set of arithmetic or logical operations.
- A computer is an electronic device that manipulates information, or data. Computer has the ability to store, retrieve, and process data.
- A computer is a programmable machine. The two **principle characteristics of a computer** are:
  1. It responds to a specific set of instructions in a well-defined manner, and
  2. It can execute a prerecorded list of instructions (a program).

1.1.1 What is Computer?

- A computer is an advanced electronic device that takes raw data as input from the user and processes these data under the control of set of instructions (called program) and gives the result (output) and saves output for the future use.
- A computer can process both numerical and non-numerical (arithmetic and logical) calculations.
- A computer works in three stages:
  1. **Input (Data):** Input is the raw data entered into a computer from the input devices. It is the collection of letters, numbers, images etc.
  2. **Process:** Process is the operation performed on data as per given instruction. It is totally internal process of the computer system.
  3. **Output and Storage:** Output is the processed data (information) given by computer after data processing. Output is also called as Result. We can save these results in the storage devices for the future use.

1.1.2 Definition

- A computer is a programmable machine that can store, retrieve, and process data.

OR

- Computer is an electronic machine made up of various electronic devices (parts) to process data.

OR

- Computer is an electronic data processing device which does the: accept and store an input data, process the data input and Output the processed data in required format.

1.1.3 Characteristics

- The main characteristics (capabilities) of computer, which make them powerful and useful are:
  1. **Speed:** Computers are of high speed in its operation. The speed is measured in terms of Instructions Per Second (IPS). All modern computers can process information at a speed of a couple of Million Instructions Per Second (MIPS).
  2. **Accuracy:** Computers are highly accurate in arithmetic operations. They either give correct answer or do not answer at all. Errors can occur in computers but these are mainly due to human rather than technological weakness.
  3. **Reliability:** It is the ability of a computer to perform the same job exactly in the same way for any numbers of times.
  4. **Diligence:** A computer is free from monotony, tiredness, lack of concentration, etc. It can work for hours together without creating any error. If ten million calculations have to be performed, the computer can perform the ten millionth calculation with exactly the same accuracy and speed as the first one.
  5. **Power of Remembering:** Computers can store and recall any amount of information because of its secondary storage capability.
  6. **Integrity:** It is the ability of a computer to carry out a sequence of instructions.
  7. **Versatility:** A computer is capable of performing almost any task provided that the task can be reduced to a series of logical steps.
  8. **No Feelings:** Computers are devoid of emotions. They have no feeling because they are machines.

1.1.4 Computer Generations

- A generation in computer talk is a step in technology. Computers developed after ENIAC have been classified into five generations depending upon the technology used, processing techniques, computer languages, memory systems, I/O devices used etc.
- Following are the main five generations of computers:
  1. **First Generation:** The period of first generation is 1942-1955, (Vacuum tube based).
  2. **Second Generation:** The period of second generation is 1955-1964, (Transistor based).
  3. **Third Generation:** The period of third generation is 1964-1975, (Integrated Circuit based).
  4. **Fourth Generation:** The period of fourth generation is 1975-1989, (VLSI microprocessor based).
  5. **Fifth Generation:** The period of fifth generation is 1989-onwards, (ULSI microprocessor based).

1. First Generation Computers (1942-1955):

- The first generation computers used Vacuum Tubes and machine languages were used for giving instructions. The computer of this generation was very large in size and their programming was a difficult task.
- The first commercial electronic digital computer capable of using stored programs was called "Universal Automatic Calculator" (UNIVAC) built by Macuchy and Eckert in 1951. Punched cards were used for feeding and retrieving of information.
- The major first generation computers are UNIVAC -1, IBM -701, IBM -650, ENIAC, EDVAC, EDSAC, etc.
- These computers were the fastest calculating devices of their time. They could perform computations in milliseconds. Vacuum tube technology made possible the advent of electronic digital computers.
- The limitations of this generation computers are slow in operating speed, restricted computing capacity, very large space requirement, non-portability, etc.

2. Second Generation Computers (1955-1964):

- Computers are entered into second generation by the introduction of Transistors. Vacuum tubes were replaced by tiny solid-state components called transistors.
- Transistors were highly reliable, require less power and are faster than vacuum tubes. High Level Languages such as FORTRAN, COBOL, ALGOL etc. were introduced. The practice of writing programs in Machine languages were replaced by High Level Languages. Punched cards were used for input-output operations.
- Major second generation computers are IBM -1400 series, 7000 series, Honeywell 200, etc.
- The advantages of second-generation computers are:
  - (i) Smaller in size as compared to first generation.
  - (ii) More reliable, less prone to hardware failures.
  - (iii) Less heat generation.
  - (iv) Faster than a first generation computers, computational time is in microseconds.
  - (v) Better portability.
  - (vi) Easier to program and use.

3. Third Generation Computers (1964-1975):

- The third generation computers used the new technology, Integrated Circuits (IC) intented by Jack and Noyce in 1958. All electronic components like transistors, resistors and capacitors were fabricated on silicon chips.
- Computers were designed by making use of ICs. IC has higher speed, larger storage capacity and smaller size.

- Operating systems were introduced for use in computers. Significant advances in hardware technology made the introduction of keyboards and monitors for data input and output. More high level languages like Pascal, RPG were also introduced.
- Major third generation computers are IBM-360 series, ICL-1900 series, CDC's CYBER-175, etc.
- The advantages of third generation computers are:
  (i) Smaller in size as compared to previous generation computers.
  (ii) More reliable than second generation.
  (iii) Computational time is in nanoseconds.
  (iv) Maintenance cost is low.
  (v) Easily portable.
  (vi) Time sharing OS (Operating System) allowed interactive and simultaneous use of systems.
  (vii) Minicomputers made computers affordable to small companies.

4. The Fourth Generation Computers (1975-1989):

- The ICs used in third generation computers had about 10 to 100 transistors per unit. This technology was called Small-Scale Integration (SSI).
- Later, with the advancement of technology for manufacturing ICs, it is possible to integrate 10,000 transistors in a single IC. This technology is called Large-Scale Integration (LSI).
- Very Large Scale Integration (VLSI) can pack a million or more transistors on a single chip. LSI and VLSI technologies led to the introduction of Microprocessors.
- Computers which are designed using Microprocessors become the fourth generation computers. Magnetic disks become the primary means for external storage.
- Intel introduced the first microprocessor 4004 using LSI. The languages C, LISP, Prolog become popular. Present day computers are fourth generation computers.
- Major fourth generation computers are IBM System 370, CRAY –MPC, WIPRO 860, IBM AS/400/B60, IBM ps/2 MODEL 80, HCL Magnum, etc.
- The main advantages of fourth generation computers are:
  (i) Smallest in size.
  (ii) Very reliable.
  (iii) Heat generated is negligible.
  (iv) Very fast in computation.
  (v) Easily portable.
  (vi) GUI enabled users to quickly learn how to use computer.
  (vii) General purpose computer.
  (viii) Low cost.

5. Fifth Generation Computers (1989 onwards):

- Fifth generation computers are capable of parallel processing, high speed computing and artificial intelligence.
- They have an architecture which allows more neural problem solving ability. These machines use the principle of Artificial Intelligence (AI).
- They have the ability to understand natural languages like English, Malayalam, etc., thus they can converse with human beings. Computer languages such as LISP, PROLOG, C, C++, etc., are available to program such computers.
- Some computer types of this generation are Desktop, Laptop, NoteBook etc.

1.1.5 Computer Components

- Fig. 1.1 shows block diagram of a computer with its various components.

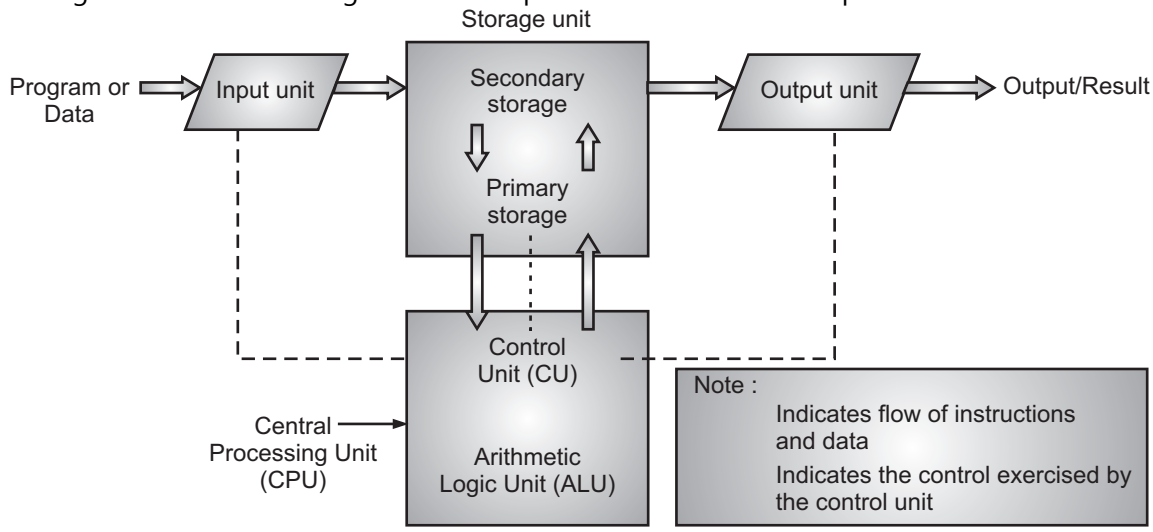

Fig. 1.1: Basic organisation of computer system

- A computer mainly consists of three units:

1. Input Unit:

- Input unit is used for entering data into the computer. Input unit contains devices with the help of which we enter data into computer.
- Input unit makes link between user and computer. The input devices translate the human readable information into the form understandable by computer i.e. in binary with the help of input interfaces.
- Some important input devices which are used in computer systems are Keyboard, Mouse, Joystick, Light pen, Trackball, Scanner, Graphic tablet, Microphone, Magnetic Ink Card Reader (MICR), Optical Character Reader (OCR), Bar Code Reader, Optical Mark Reader (OMR) and so on.

- An input device performs the following functions:
  (i) It accepts (i.e. reads) the list of instruction and data from the user.
  (ii) It converts these instructions and data in binary form which is understood by the computer.
  (iii) It supplies the converted instructions and data to the computer for further processing.

2. Process Unit:

- The task of performing operations like arithmetic and logical operations is called processing.
- The Central Processing Unit (CPU) takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit.
- CPU is the heart of every computer system that performs the user instructions.
- CPU itself has three components and ALU (Arithmetic Logic Unit), Memory Unit and Control Unit.
  (i) Arithmetic Logical Unit (ALU): This unit is responsible for arithmetic and logical operations. After you enter data through the input device it is stored in the primary storage unit. The actual processing of the data and instruction are performed by Arithmetic Logical Unit. The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison.
  (ii) CU (Control Unit): This unit is responsible for program execution, fetching information from memory, decoding it and sending it at appropriate place in the computer to execute it.
  CU unit controls the operations of all parts of computer. It does not carry out any actual data processing operations.
  Functions of control unit are:
  1. It obtains the instructions from the memory, interprets them and directs the operation of the computer.
  2. It is responsible for controlling the transfer of data and instructions among other units of a computer.
  3. It communicates with Input/Output devices for transfer of data or results from storage.
  4. It does not process or store data.
  5. It manages and coordinates all the other units of the computer.
  (iii) Memory or Storage Unit: The process of saving data and instruction permanently or temporally is known as storage. This unit can store instruction, data and intermediate results. This unit supplies information to the other units of the computer when needed. It is also known as internal storage unit or main memory or primary storage or Random Access Memory (RAM). Its size affects speed, power and capability.

There are two types of memories in the computer: primary memory (storage) like RAM and secondary memory (storage) like ROM.

Storage unit provides space for storing data and instructions.

Functions of memory unit are:

1. It stores intermediate results of processing.
2. All inputs and outputs are transmitted through main memory.
3. It stores all the data to be processed and the instructions required for processing.
4. It stores final results of processing before these results are released to an output device.

3. Output Unit:

- The result of computer processing is called as output. This result is communicated to user through a device called output device.
- Output unit consists of devices with the help of which we get the information from computer. This unit is a link between computer and users.
- Output devices translate the computer's output into the form understandable by user.
- Some important output devices which are used in computer systems are Monitors, Plotter, Printer and so on.
- The following functions are performed by an output device:
  (i) It accepts results produced by the computer which are in binary coded form and hence cannot be understood by us. e.g. suppose we want to add the results of products A B.
  (ii) It converts coded results to human readable form.
  (iii) It supplies the converted form to the user through devices.

1.1.6 Types of Computers [April 17, Oct. 17]

- Computers can be classified based on their principles of operation or on their configuration. By configuration, we mean the size, speed of performing computation and storage capacity of a computer.

1. Types of Computers based on Principles of Operation:

- There are three different types of computers according to the principles of operation. These three types of computers are shown in Fig. 1.2.

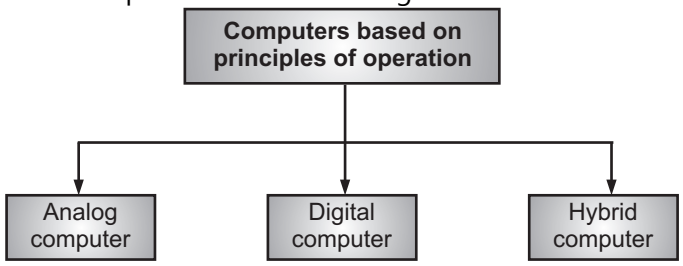

Fig. 1.2: Types of computers based on operation

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