NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF EDUCATION

COURSE CODE: BED313

COURSE TITLE:- OFFICE INFORMATION TECHNOLOGY

se Team

se Developer: Dr. Inegbedion, Juliet O.-NOUN

se Writer: Mr. Liadi, Hakeem Olaniyi (NOUN)

Miss Nkonyeasua Okoro (IUO)

se Editor: Dr. Inegbedion, Juliet O, (NOUN)

seCoordinator: Mr. Liadi, Hakeem Olaniyi

Faculty of Education

National Open University of Nigeria

Published 2015

ed 2020

LE OF CONTENTS

ow to get most from the course

utor and Tutorials

ummary

RODUCTION

313: OFFICE INFORMATION TECHNOLOGY

course is designed to equip business students with knowledge and skills relating to efficient functioning of the modern business office.

AT YOU WILL LEARN

will learn about the structure, functions and practices applicable to a modern business office.

RSE AIMS

course aims at producing competent business educators who will be versed in organisation's management and acquaint them with the basic knowledge of office information technology that will be used in decision making. In order to enable you meet the above aims, modules constituting of units have been produced for your study. Apart from meeting the aims of the course as a whole, each course unit consists of learning objectives which are intended to ensure your learning effectiveness.

RSE EXPECTED LEARNING OUTCOMES (OBJECTIVES)

The course's expected learning outcomes (objectives) are meant to enable you achieve/acquire the following:

1) Understand and gain in-depth knowledge of information and communication handling procedure in the organisation.

2) Acquire knowledge and skill for handling office information and communication procedure.

3) Develop understanding and practical knowledge of information security in the organization.

4) Understand the basic concept of office automation.

RKING THROUGH THIS COURSE

are required to thoroughly work through all the units in this course. There are four modules in all.

RSE MATERIALS

najor components of this course are:

urse Guide

dy Units

xt books

S

or

signment file

sentation Schedule

DY MODULES AND UNITS

reakdown of the four modules and 14 study units are as follows:

DULE 1: SYSTEM ADMINISTRATION

1 Present-day office arrangement

2 Office environment

3 Types of office machines (manual and electronic gadgets)

4 Information technology and information processing tasks

MODULE 2: INFORMATION AND COMMUNICATION HANDLING PROCEDURE

1 Management information system

2 Office automation

3 Computer security

4 Information systems disaster recovery alternative

MODULE 3: INFORMATION SYSTEM INFRASTRUCTURE MANAGEMENT

1 Hardware

2 Software types and their capabilities

3 IT and E-business enabling software

4 Managing people in the organization

DULE 4: INFORMATION SECURITY

1 Information technology strategies

2 The future for information technologies

GNMENT FILE

vill find in this file all the details of the assignments you must attempt and submit to your tutor for marking. The marks you obtain from these assignments will count towards your final course grade. You will find further information on the assignments in the assignment file which you will find later in the section on assignment in this course guide.

SENTATION SCHEDULE

oresentation schedule, which is included in your course materials, gives you the important dates for the completion of tutor-marked assignments and for attendance of tutorials. Remember, you are required to submit all your assignments on due dates. You should guard against falling behind in your work.

ESSMENT

assessment will be based on tutor-marked assignments (TMA) and a final examination which you will write at the end of the course.

OR MARKED ASSIGNMENTS (TMA)

unit contains at least one or two assignments. You are advised to work through all the assignments and submit them for assessment. Your tutor will assess the assignments and select four, which will be marked and the best three will be selected which will constitute 30% of your final grade. The tutor-marked assignments may be presented to you in a separate file. Just know that for every unit there are some tutor-marked assignments for you. It is important you do and them submit for assessment.

L EXAMINATION AND GRADING

end of the course, you will write a final examination which will constitute 70% of your final grade. In the examination, which shall last for two hours, you will be required to answer three questions out of at least five questions that may be given to you.

RSE MARKING SCHEME

able shows how the actual course marking is broken down.

	nts. Best three marks of the four count as 30% of course marks
ion	course marks
	marks

TO GET THE MOST FROM THIS COURSE

tance learning, the study units replace the university lecture. This is one of the great advantages of distance learning; you can read and work through specially designed study materials at your own pace, and at a time and place that suit you best. Think of it as reading the lecture instead of listening to the lecture. In the same way a lecturer might give you some reading to do, the study units tell you when to read and which are your text materials or set books. You are provided exercises to do at appropriate points, just as a lecturer might give you an in-class exercise. Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next to this is a set of learning outcomes. These learning outcomes let you know what you should be able to do by the time you have completed the unit. These learning outcomes are meant to guide your study. The moment a unit is finished, you must go back and check whether you have achieved the learning outcomes. If this is made a habit, then you will significantly improve your chances of passing the course. The main body of the unit guides you through the required reading from other sources. This will usually be either from your set books or from a reading section. If you run into any trouble, telephone your tutor. **Remember that your tutor‘s job is to help you. When you need assistance, do not hesitate to call and ask your tutor to provide it.** The following is a practical strategy for working through the course

DDITION, DO THE FOLLOWING:

1. Read this course guide thoroughly, it is your first assignment
2. Organize a study schedule. Design a 'Course Overview' to guide you through the course. Note the time you are expected to spend on each unit and how the assignments relate to the units. Important information, e.g. details of your tutorials and the date of the first day of the semester, are available from the study centre. You need to gather all the information into one place, such as your diary or a wall calendar. Whatever method you choose to use, you should decide on and write in your own dates and schedule of work for each unit.
3. Once you have created your own study schedule, do everything to stay faithful to it. The major reason that students fail is that they get behind with their course work. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.
4. Turn to Unit 1 and read the introduction and the learning outcomes for the unit.

5. Work through the unit. As you work through the unit, you will know what sources to consult for further information.

6. Keep in touch with your study centre. Up-to-date course information will be continuously available there.

7. Assemble the materials. You will need your set books and the unit you are studying at any point in time.

8. Well before the relevant due dates (about 4 weeks before due dates); keep in mind that you will learn a lot by doing the assignments carefully. They have been designed to help you achieve the learning outcomes of the course and, therefore, help you pass the examination. Submit all assignments not later than the due date.

9. Review the learning outcomes for each study unit to confirm that you have achieved them. If you feel that you are not sure about any of the learning outcomes, review the study materials or consult your tutor.

10. When you are confident that you have achieved a unit's learning outcome, you can start on the next unit. Proceed unit by unit through the course and try to pace your study so that you keep yourself on schedule.

11. When you have submitted an assignment to your tutor for marking, do not wait for its' return before starting on the next unit. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comments, both on the tutor—marked assignment form and also the written comments on the ordinary assignments.

12. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved all the units' learning outcomes (listed in the Course Guide).

ORS AND TUTORIALS

ates, times and locations of these tutorials will be made available to you, together with the name, telephone number and address of your tutor. Each assignment will be marked by your tutor. Pay close attention to the comments your tutor might make on your assignments as these will help in your progress. Make sure that assignments reach your tutor on or before the due dates.

tutorials are important, therefore try not to skip any. It is an opportunity to meet your tutor and your fellow students. It is also an opportunity to get the help of your tutor and discuss any difficulties you might have encountered during the course of your reading.

313 OFFICE INFORMATION TECHNOLOGY (2 CREDIT UNITS)

The course includes various office services and automation, information and communication handling procedures, office functions, types of office machines (manual and electronic gadgets) as they apply to different departments in the office. The future and trends of office information technology are also covered in the course

MODULE 1 SYSTEM ADMINISTRATION

UNIT 1 PRESENT DAY OFFICE ARRANGEMENT

1.0 INTRODUCTION

Whether you are businessman, a marketer, an accountant or in a managerial capacity in an organization, you require a space where you will carry out or conduct your day-to-day work. This space could be referred to as an office. In this unit we are going to look briefly at the basic meaning and function of an office, types of office as well as activities relevant to office work.

2.0 LEARNING OUTCOMES

At the end of this unit Students' should be able to:

1. Define an office

2. State the function of an office

3. Enumerate types of an office work environment

3.0 MAIN CONTENT

3.1 **Definition and Functions of an Office**

An office is a room, space, where administrative work,,example document preparation, information dissemination, secretarial duties, are done. In essence, an office is a place in an organization where business, clerical and professional activities take place. An office has the ability to self-portray the kind of duties that take place in it. Functions of an Office

1. **Office as information Centre** - Office acts as information centre of an organization because it is the organ that are charged with the responsibility of collecting information from within and outside the organization.

2. **Office as channel of communication**- office serves as a channel through which written communication move from top to bottom and vice visa.

3. **Office as co-ordination centre** - Office aids in co- ordination. The process of co-ordination will be impossible without the office. Office provides necessary information to various departments and as such serves a well -placed machinery for co-ordination.

4. **Office acts as link with customers** -Office is regarded as the channel, which links a business organization with its customers. The enquiries, orders and complaints from customers are taken care of by the office through direct personal contact.

5. Office acts as link between shareholders and the company-Officeprovides a good linkage with shareholders by providing share certificate, share transfer, issue of dividend warrants, issue of notice on company's meeting and answering the enquiries made by the shareholders. It also acts as a servicing department for creditors.

3.2 **Types of office**

The office type has a significant influence on employee’s performance and motivation. Presently there isn’t any rule that must be followed as to how an office should look like. It’s only important that planners and users work together to analyze and determine needs and requirements of their desired work space. If it has to be a big or small office, it would depend on what obtains in there, the nature of the business that office environment would look like. Basically, there are two types of office:

1. Personal/closed office
2. Open office

SELF ASSESSMENT EXERCISE

(a) Define an Office

(b) State five functions of an office

Answer to the Self -Assessment Exercise

(a) An office is a place in an organization where business, clerical and professional activities take place

(b) Function of an office includes:

✓ Office as a co-ordination centre

✓ Office as a channel of communication

✓ Office acts as a link between the shareholders and the company

✓ Office acts as a channel with customers

- ✓ Office serves as information centre

4.0 **CONCLUSION**

Determining the type of office whether- big or small office would depend on the nature of the business of that office. An office has that ability to self-portray the kind of duties that take place in it.

5.0 **SUMMARY**

An office is a room, space, where administrative works from document preparation, information dissemination, are done. Functions of an office were also elucidated. Office serves as information centre, Office as a channel of communication, as co-ordination centre, as link with customers, acts as link between shareholders and the company.

6.0 **TUTOR MARKED ASSIGMENT**

Enumerate and explain five functions of an office.

6.1 Guide on Tutor-marked Assignment.

i. Office as information Centre - Office acts as information centre of an organization because it is the organ that is charged with the responsibility of collecting information from within and outside the organization.

ii. Office as channel of communication- office serves as a channel through which written communication move from top to bottom and vice visa.

iii. Office as co-ordination centre - Office aids in co- ordination. The process of co-ordination will be impossible without the office. Office provides necessary information to various departments and as such serves a well -placed machinery for co-ordination.

iv. Office acts link with customers -Office is regarded as the channel which links a business organization with its customers. The enquiries, orders and complaints from customers are taken care of by the office through direct personal contact.

v. Office acts as link between shareholders and the company-Officeprovides a good linkage with shareholders by providing share certificate, share transfer, issue of dividend warrants, issue of notice on company's meeting and answering the enquiries made by the shareholders. It also acts as a servicing department for creditors.

7.0 **REFERENCES/FURTHER READING**

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures.* Zaria: Jerry Press

3. “Organizational Structure Types and Design Strategy.” *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 2 OFFICE ENVIRONMENT

1.0 **INTRODUCTION**

Work spaces are areas that afford you the chance to carry out the specified office function from day to day. There are offices that are typically used for predictable office activities like reading, writing and computer work. There are types of work space that support different official activities. Therefore, office layout refers to the way the office is arranged to facilitate the flow of work. There are two types of office work environment / layout. These are

(a) closed/personal office and

(b) open office work space

2.0 **LEARNING OUTCOMES**

At the end of this unit, students should be able to:

1. Differentiate between personal work space and open work space
2. State the merits and demerits of open work space
3. Identify factors to consider in planning office work space

3.0 **MAIN CONTENT**

3.1 **Closed office/Personal Work space**

1. Personal Workspace

A closed/personal office is an office where each individual is given his/her separate office. It also allows you to manage your private and work life in the same place. As the name implies, it is your private, default work area. The beauty of this is that it is just you having access to your notes, tasks and tags stored, where your notes and tasks are only visible to you. Below is a pictorial view of what a personal work space should look like

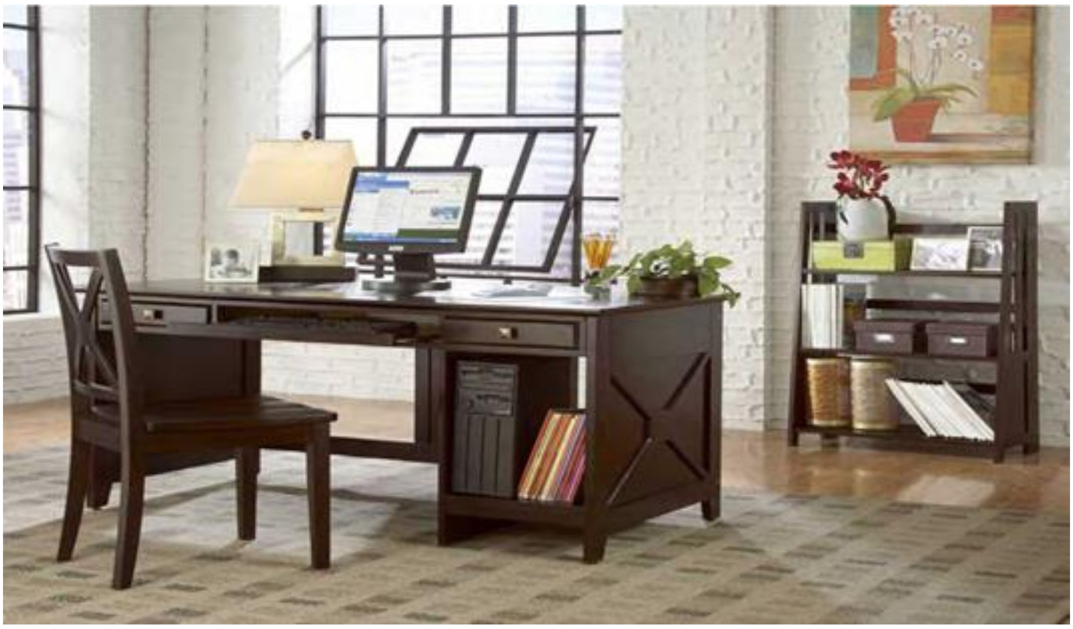


Fig 1.2a, diagram of a personal work space

3.2 **Open office/work space:**

An open plan office is one in which more than one person share the same room. An open office is suitable for activities which demand frequent communication, and routine activities which need little concentration. An Open office work space should look like this:

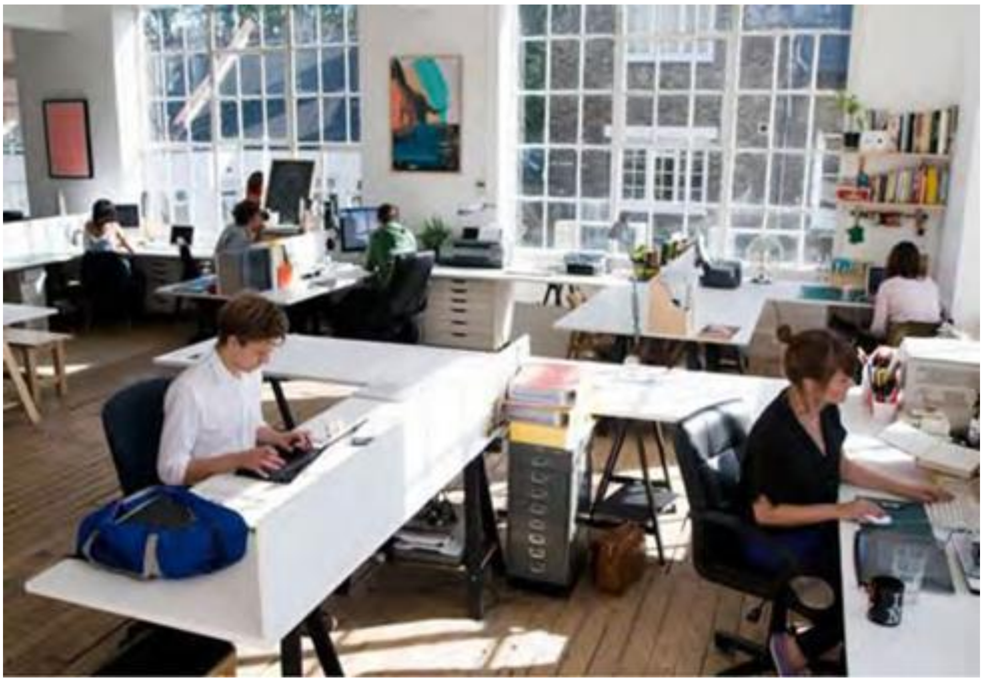


Fig1.2b: Diagram of an Open office work space

3.3 Team work space:

A semi-enclosed work space is an office space for two to eight people (employees). It is suitable for teamwork with demands for frequent internal communication and a medium level of concentration.

3.4 Cubicle work space:

A semi-enclosed work space for one person (employee).It is very suitable for activities that require medium concentration and a reasonably low level of interaction. This is employed by really small offices that hope to manage work space and still get the best out of it.

Below is a pictorial view of what a cubicle work space actually looks like.

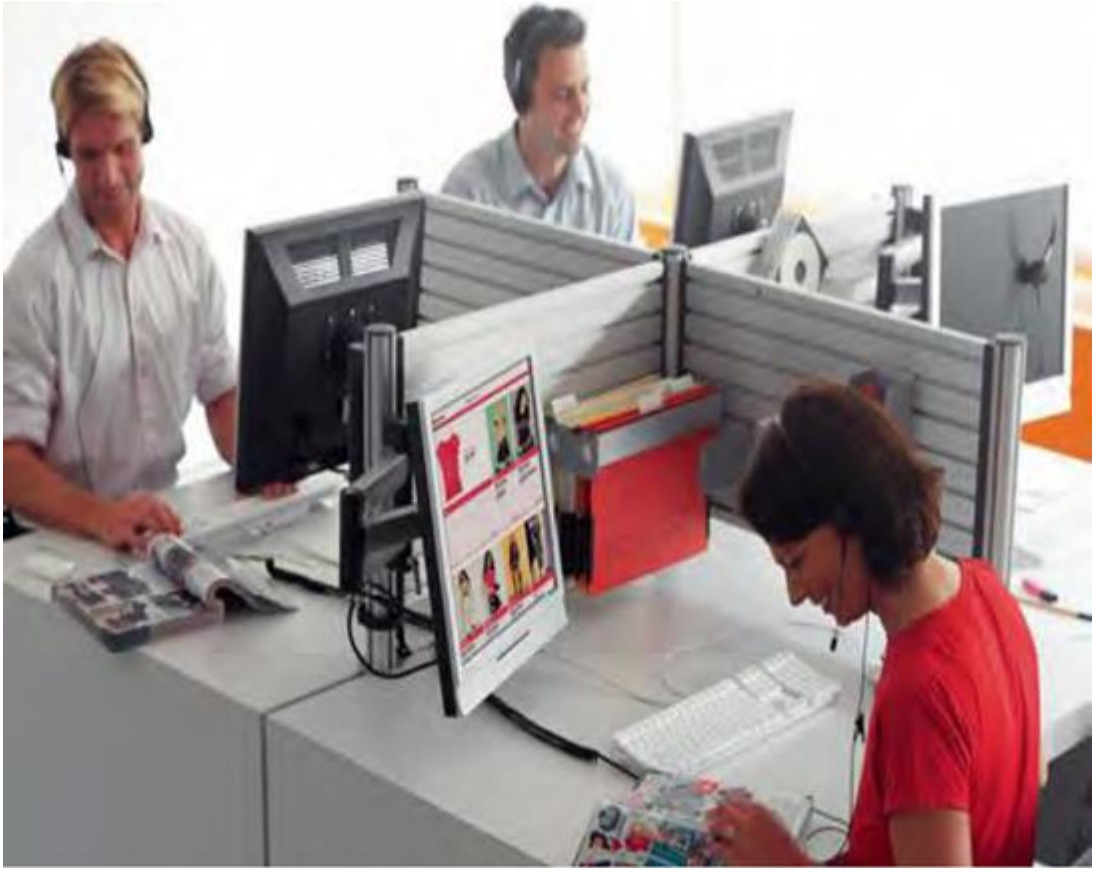


Fig1.2c: Diagram of a cubicle work space of a business office environment

3.5 Shared office work space:

It is an enclosed work space, designed for the comfort of at least two or three office staff.

It is appropriate for semi-concentration and collaborative work for very small groups.

Below is a pictorial view of what a shared office work space actually looks like.

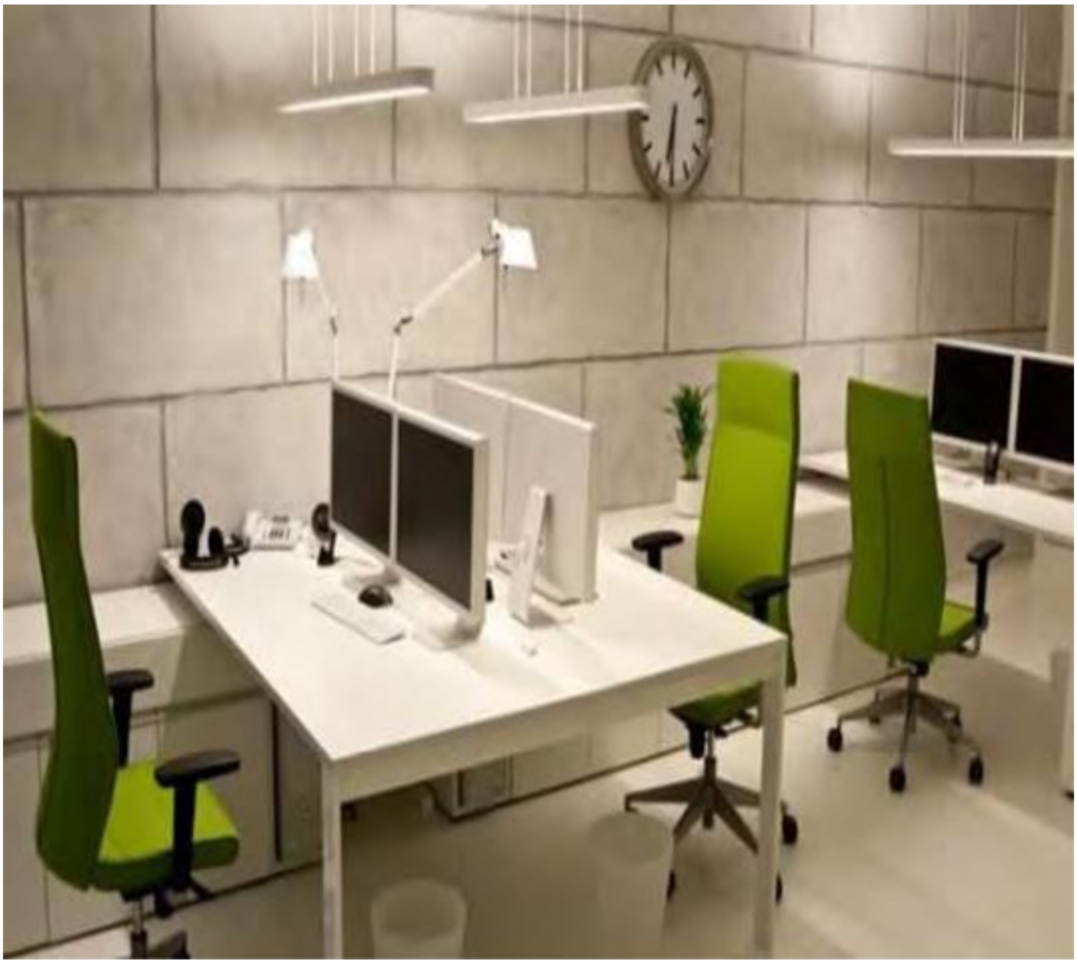


Fig1.2d: Diagram of an ideal shared work space

3.6 Comparison of closed/ personal work space and open work space

k Environment		
l	i. It gives room for privacy, in case of confidential discussions. ii. The occupant of the office can concentrate because there is very little disturbance from other employees.	i. It is not economical. Large space may be occupied by one individual. ii. Separate facilities, e.g. computers, telephones may have to be provided for each office. iii. It may be difficult to supervise staff. iv. It might slow down the flow of some activities which require constant interaction among employees.

rk space	i. It is easy to supervise since everybody is in view. ii. It economizes space. iii. Exchange of information among staff is easy and this facilitates the flow of work. iv. Certain facilities may be used commonly, e.g. printers v. Lower energy costs. vi. Few communication barriers. vii. Could easily be rearranged.	i. Some senior staff do not like the idea of been "dumped" in the same room with their subordinates. ii. There is no room for privacy for people who wish to discuss confidential matters.Noise from movements in and out of the office and office machines might disturb some staff.

3.4 Planning an Office environment

The following factors are taken into consideration in planning the environment of an office

1. Business needs: Office environment should provide an environment suitable for the business of the organization. For example, the layout of a bank will be different from that of an accounting firm
2. Space Availability: Planning an office environment will depend on quality and type of office space available for use.
3. Accommodation Standards: Organizations often have a policy on the minimum standard of accommodation for each staff grade. Administration staff may work in open plan offices whereas managers may have individual offices on seniority basis.
4. Statutory Requirement: Legal requirements, as contained in relevant legislations, affect the planning of office work space.

SELF ASSESSMENT EXERCISE

1. Briefly explain personal work space

2. Enumerate four merits of open work space

3. Identify three factors to consider in planning work space environment.

Answer to Self -Assessment Exercise

1. Personal work space is an office where each individual is given his/her separate office

2. Merits of open work space include:

I. Certain facilities may be used commonly e.g. printers

ii. Lower energy costs.

iii. Few communication barriers.

iv. Could easily be rearranged.

3. The following factors should be taken into consideration in planning work space environment:

a. Statutory Requirement: Legal requirements, as contained in relevantlegislations also affect the planning of office work space.

b. Space Availability: Planning an office environment will depend on quality and type of office space available for use.

c. Accommodation Standards

4.0 CONCLUSION

The contents of this unit are to help you understand the office environment and the factors to be considered in planning the work space environment.

5.0 SUMMARY

This unit discussed open plan office as one in which more than one person share the same room. An open work space is for more than ten people at a time. Comparison was made between personal work space and open work space in terms of their merit and demerits. Finally, factors to be considered in planning work space/office were discuss

6.0 TUTOR MARKED ASSIGNMENT

State four merits of an open work space

6.1 Guide on Tutor-marked assignment

Merits of open work space:

a. Certain facilities may be used commonly e.g. printers

b. Lower energy costs.

c. Few communication barriers.

d. Could easily be rearranged.

7.0 REFERENCE/FURTHERS READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures.* Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5 . Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 3 TYPES AND USES OF OFFICE MACHINES (MANNUAL AND ELECTRONICS GADGET)

1.0 Introduction

1.0 **INTRODUCTION**

Office equipment used vary from one office to another. Office equipment are used to improve and ease mobility in and around the office environment. The usefulness office equipment will be looked at in this unit as well as the types of office machines(both manual and electronics gadget) used in the office.

2.0 **LEANING OUTCOMES**

At the end of this unit, students should be able to:

a) Identify types of office machines

b) State the usefulness of office machine

3.0 **MAIN CONTENT**

3.1 **Usefulness of Office Machines**

Office machines:

a) Improve the quality of work.

b) Aid or speed up the performance of routine functions.

c) Saves space.

d) Help to simplify the work of employees

3.2 **Types of Office Machines**

The main types of machines you are likely to meet in most offices are:

Manual office equipment - stapler, perforator, paper shredder, filing cabinet, binding machine, paper cutter, manual typewriter

i) Stapler: For holding documents together

ii) Perforator: used for punching holes in documents

iii) Paper shredder: used in shredding unneeded documents to protect against leakage of content in the process of disposal.

iv) Filing cabinet: For storage of folders and protection of documents from fire outbreak, theft among others.

v) Binding Machine: used for putting sheets of a document or content of a file together

vi) Paper cutter: A manual equipment used to trim paper to a required size.

vii) Manual typewriter: used for typing documents. Its use is fast becoming obsolete

Electronic office equipment–photocopier, facsimile(fax) machines, calculating machine, scanner, computer

a. Photocopier: This is a machine used to make copies from original documents. The original document may be handwritten, printed or typewritten. Photocopiers are used to prepare extra copies of documents.

b. Facsimile (Fax) Machine: This machine scans printed, typewritten texts and images and transmits them through telephone lines to a receiving fax machine that converts the electronic signals back to the original text or image. The machine converts printed material or images into electronic signals. Suitable for transmission through telephone lines, cables or satellite networks, facsimile machines could store messages and transmit them later at a time when transmission costs are cheaper.

c. Calculating Machine: This is used mainly in the office for calculations and complex computations

d. Scanners: used for scanning images of documents to computers for printing, storage, display or communication via the internet.

e. Computers: Perhaps the most common equipment in modern offices, it is used for data and word processing, document storage, communication, presentation etc.

Types of Computers used in any office environment:

1. Personal Computer (PC): Initially produced by IBM in 1981, for executing a single task by a single user at the time. Today, a single person can execute many tasks simultaneously (multitasking).
2. Apple Macintosh (Mac): They are computers made by the Apple company and are usually produced for personal use
3. Laptop computer (notebook): it consists of LCD display and a small keyboard. Although they are relatively small computers, they still perform thesame functions as personal computers.
4. Personal Digital Assistant - PDA (Palm): These are small computers that can fit into pocket or the user's palm. It is developed for performing basic personal/business functions like:

   a) Maintaining the address book,

   b) Accessing and browsing the Internet,

   c) Sending/receiving e-mails, etc. and

SELF ASSESSMENT EXERCISE

Explain the following electronics equipment

1. Photocopiers

2. Computers

3. Facsimile (Fax) Machine

4. Scanners

Answer to the Self-Assessment Exercise

a. **Photocopiers:** A machine used to copy from original documents. The original document may be handwritten, printed or typewritten. Photocopiers are used to prepare extra copies of documents

b. **Computers**: Common equipment in modern offices, it is used for data and word processing, document storage, communication, presentation among others.

c. **Facsimile** (Fax) Machine: This machine scans printed, typewritten texts and images and transmits them through telephone lines to a receiving fax machine that converts the electronic signals back to the original text or image. The machine converts printed material or images into electronic signals. Suitable for transmission through telephone lines, cables or satellite networks, facsimile machines could store messages and transmit them later at a time when transmission costs are cheaper.

d. **Scanners**: used for scanning images of documents to computers for printing, storage, display or communication via the internet.

4.0 CONCLUSION

Office equipmentsare actually used to improve and ease mobility in and around the office environment. Office machines are used because: they improvethe quality of work, aid or speed up the performance of routine office functions, saves space. Help to simplify the work of employees.

5.0 SUMMARY

Office equipment used varies from one office to another. In this unit, types and usefulness of office equipment were examined. Office equipment include perforator, filing cabinet, computer, binding machine

6.0 TUTOR MARKED ASSIGNMENT

State and explain four types of computers used in an office

6.1 Guide on tutor-marked assignment

Types of Computers used in any office

1. Personal Computer (PC): Initially produced by IBM in 1981, for executing a single task by a single user at the time. Today, a single person can execute many tasks simultaneously (multitasking).

2 Apple Macintosh (Mac): They are computers made by the Apple company and are usually produced for personal use

3 Laptop computer (notebook): it consists of LCD display and a small keyboard. Although they are relatively small computers, they still perform the same functions as personal computers.

4 Personal Digital Assistant - PDA (Palm): These are small computers that can fit into pocket or the user's palm. It is developed for performing basic personal/business functions like maintaining the address book,

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures.* Zaria: Jerry Press

3. “Organizational Structure Types and Design Strategy.” *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 4: INFORMATION TECHNOLOGY AND INFORMATION PROCESSING TASK

1.0 INTRODUCTION

This unit is broken down in two parts. The first partlooks at information technology perspective, benefits of information technology as well as categorists of information processing task and IT tools used. The second part concerns methodologies and formats in which they are made use of(synchronizing these hardware with their respective software). It is important that we view this unit this way because the importance of Information Technology in any office cannot be over-emphasized as can be seen in our present-day office.

2.0 Learning Outcomes

At the end of this unit, you should be able to:

i) Know and identify how information technology can become a vital and integral part of every official and business plan.

ii) List any three ways in which IT is used.

3.0 **MAIN CONTENT**

3.1 **INFORMATION TECHNOLOGY**

The office is that part of an organization or business that handles the information dealing with operation, accounting, payroll, billing, because office labor practically consists of activities such as document preparation, filing, performing simplecomputations, checking information, intra-office communication and external communication.

Information Technology (IT) can be said to be any computer- based tool that people use to work with information and support the information and information processing data needs of an organization. It also involves other equipment and information transmission systems like facsimiles, telex, e-mail, teleconferencing GSM, telecommuting

Information Technology (IT) has become a vital and integral part of every official and business plan, of organization; from multi-national corporations who maintain mainframe systems and databases to small businesses that own a single computer in a small office.

IT can be used in the following ways:

i) Information processing tasks, e.g. office automation

ii) To support management decision making e.g. use of DTP, research and training

iii) To support information sharing through use of network, e.g. telecommuting and teleconferencing

iv) To support innovation e.g. producing automation (i.e. Computer-Aided Manufacture (CAM), engineering analysis and design, system development, e-marketing.

Fig3.1: A typical office environment having modern equipment

The activities in the office can be described as:

a) A set of activities resulting from requests for service, each with a specific precedence that requires a supporting file system

b) A set of people carrying out specific tasks, communicating with and referencing a supporting file system

c) A gigantic database with users accessing and manipulating data

The virtual office has no boundary.

The application of Information technology. It actually modernizes the office environment, making communication and other office duties easy and creating a need for business minded individuals who can use the latest technologies to connect, support, and coordinate workers in remote locations in and around the office environment.

Ideally an online Office Management program should be designed for you (students)at under graduate levels to:

a) Be able to develop technical, interpersonal, administrative and communication skills through modern administrative assistant training.

b) To become familiar with present-day hardware devices and technologies such as smart phones and tablets and software, mobile computing; cloud computing and document sharing.

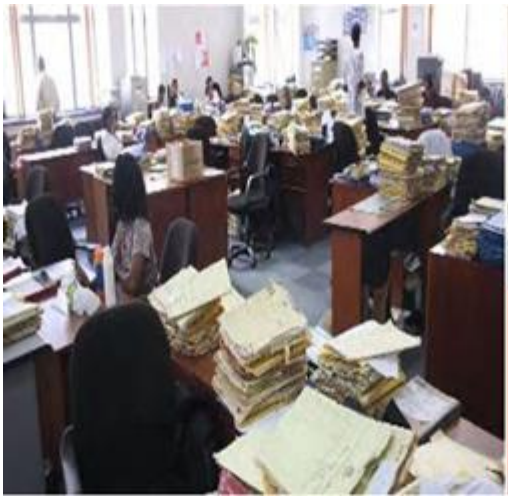


Fig3.1a,A traditional office environment

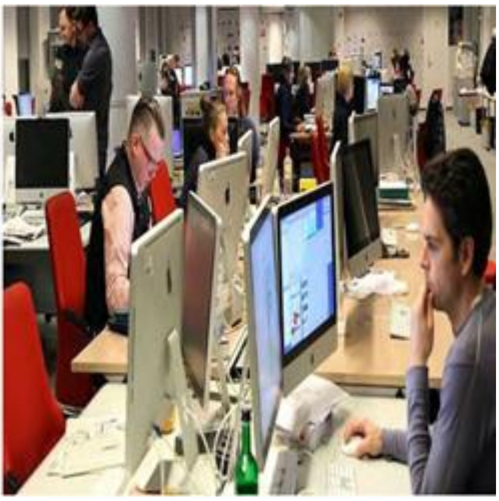


Fig3. 1b, A typical office environment improved by technology.

Most software and information technology companies seek to employ those having strong programming skills, system analysis skills, software testing skills, debugging (error detection) skills.It is easier to acquire practical skills required to become a software developer from the university. This degree encompasses the complete process of software development from software design and development to final testing. In this stage, the individual’s logical and critical reasoning/thinking abilities are important to become a software professional.

Computers are being improved upon so that they can ease mobility in and around the office environment, giving rise to the introduction of laptops. The use of laptops, often with printers, scanners, fax machines and other office equipment, makes possible a better result.

3.2 **Benefits of Information Technology**

Some benefits that can arise from the crafting information technology in an office environment include

1. Ease in disseminating information
2. Communication between individuals in the office becomes faster
3. Protection and proper documentation are made possible as the system ensures that data is structured and standardized,
4. Using infra-red printing and wireless networking cards enables staff to print their work fast and connect to each other’s network, especially with the use of e-mail, electronic communication, and, possibly, internet access even without cables.

3.3 **Information Processing Tasks and the tools used**

1. Capturing information: That is obtaining information at its point of origin. The tools used consist of input technologies such as mouse, keyboard
2. Conveying information: that is presenting information in its useful form. The tools used consist of output technologies such as the screen, printer
3. Converting Information: that is processing data to create information. The tools used here consist of processor and internal memory
4. Storage of information: that is storing information for used at a later time. The tools used consist of storage technologies such as hard disk, CD-ROM and DVD.

5. Communication of information: that is sending information to other people or other locations. The tools used consist of telecommunications technologies such as modem, satellite and digital computer.

3.4 **Methodologies and format in which information system can be employed**

The knowledge of information system is essential for organizational heads because most offices need information system to survive and prosper. It's often said that the better an information system there is in any organization, the wider the coverage even at locations on long distances. Information systems provide problem-solving power that most organizations need to effectively function at local and global scale. This include communication amongst people in the same organization and communicating with distributors and suppliers in the business world

1. Again, those with a good amount of information technology skills are able to carry out the processing and storing of information within and around the office which is one major way information technology has improved our office environment.
2. Next, communication between staff with the use of mobile phones and other Information Technology devices as a field emphasizes the securemanagement of large amounts of variable information and its accessibility via a wide variety of systems both local and world-wide. Information Technology allows people to make informed decisions in work places.
3. Information Technology introduces style and dynamism in any office environment its being employed.
4. It also provides businesses with that desired edge over their competitors, creating a whole new opportunity and provides organisation with the required skills needed for rapid expansion in information technology

industry. Major stake holders in the areas of information technology include:

a. **Project manager**

He/ She would be the bridging gap between the production team and client. So he/she must have a fair knowledge of the industry they are in so that they are capable of understanding and discussing problems with either party

b. **Network engineer**

A network engineer is more of a developer, He/she is concerned with everything that has to do with the network of computers, developing telecommunication network topologies, internetworking service requirements for switched telephone networks and also the required hardware and software.

c. **Software architect**

A Software architect is a computer expert who makes advanced design choices and dictates technical standards, including software coding standards tools and platforms Main responsibilities include limiting choices available during development just by either choosing, creating or defining standard ways pursuing applications development and framework in any organization.

d. **Systems analyst**

A systems analyst act as liaison between the client and the developers. They make use of computers and other related systems to design new IT solutions, modifying and enhancing them or adapt existing systems and integrate new features or improvements, all with the aim of improving business efficiency and productivity.

e. **Systems administrator**

Sometimes called the ‘sysadmin’ he/she is responsible for maintaining a more than one user (multi-user) computer system, including a Local- Area Network (LAN) whose typical duties include

i. Providing really large storage spaces

ii. Performing processes to prevent the spread of viruses

iii. Setting up user accounts

iv. Adding and configurations of new workstations.

f. **Programmer**

A computer programmer is also known as a developer, coder, software engineer. He is one who specializes in writing codes for many kinds of software, or one whopractices or professes a formal approach to programming, He makes use of primary programming computer languages like C, C++, C#, python, Java

g. **IT support technician**

IT support technicians help to find and correct software and hardware problems for computer users in and around the giving office environment.

a. CONCLUSION

Reading through the content of this unit, emphasis has been placed on the importance of identifying a good working space as can be seen from simple definitions, equipment with which to make working a bit less stressful than it used to be, the importance of unit and management towards attaining desired official goals and ensuring sanity with the use of information technology

5.0 SUMMARY

This unit explains information technology as any computer- based tool that people use to work with information and support the information and information processing data needs of an organization. It also involves other equipment and information transmission systems and not just computer such as facsimiles, telex, e-mail, teleconferencing GSM, and telecommuting. Also discussed werebenefits of information technology, categorists of information processing task and IT tools used, and the methodologies and format in which it can be employed

6.0 TUTOR-MARKED ASSIGNMENT/ ANSWERS

1. What kind of work space would you characterize a conference room into? Give reasons for your answer.

Answer

A conference room can be characterized as an open work space, because

a) An open work space is for more than ten people having to perform routine duties that need very little concentration.

b) It's usually well spaced and it is suitable for activities which demand frequent communication

2. From which of these work space patterns would you achieve better results assuming you were employed?

Answer

One cannot really say a particular work space would be better or preferred because it depends on factors like:

i. The kind of job that is being done. Examples are production, manufacturing, or pay roll office.

ii. Next, it would depend on first the vision of the planner and how he/ she would want it to look like. Secondly on the employee, the kind of work space that he/ she would assume the employee can function better in and produce results. Meaning all the work space are important at some point.

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

MODULE 2: INFORMATION AND COMMUNICATION HANDLING PROCEDURE

UNIT I: MANAGEMENT INFORMATION SYSTEM

1.0 **INTRODUCTION**

Management Information system is an organized approach to the information needs of an organization's management at every level in making operational, tactical and strategic decisions. Its objective is to design and implement procedures, processes and routing that provide suitably detailed reports in an accurate consistent, and timely manner.

2.0 LEARNING OUTCOMES

At the end of this unit, student should be able to:

1. Define management information system

2. State the nature of data, information and communication

3. State functions performed by information

3.0 MAIN CONTENT

3.1 Knowledge requirement of MIS

Management information system can be defined as a system which converts data from internal sources into information and communicate that information, in an appropriate form, to managers at all levels in all functions to enable them to make activities for which they are responsible.There are wide ranging knowledge requirements for MIS which includes, the nature of data and information, general system concepts, organization principles, planning and decision walling control principles, management functions and the use of information technology.

3.2 The nature of data, information and communication

Data is the term for collection of facts and figures, e.g. hours worked, invoice values, usage rates, items received. These basic facts are stored, analyzed, compared, calculated and generally worked on to produce messages in the form required by the user, i.e. the manager, which is termed information. In essence, information is processed data which is understood by the user

3.3 Functions of information

The functions performed by information include:

i) Improving/ increasing knowledge.

ii) Reduction of uncertainty.

iii) A control mechanism.

iv) A means of communication.

v) A memory supplement.

vi) An aid to simplification of office work.

3.4 The Value of Information

Information has no value in itself. Its value derives from the value of the change in decision behaviour caused by the information being available minus the cost of providing the information, date capture, handling, recording and processing. It is only when data are communicated and understood by the recipient and transformed into information, that value may arise provided that the information is used to improve decision making.

3.5 Characteristics of good Information

Good information is that which is used and which creates value.

Good information is one which is:

a) Relevant for its purpose.

b) Sufficiently accurate for its purpose

c) Complete enough for the problem.

d) From a source in which the user has confidence.

e) Communicated to the right person.

f) Communicated in the time for its purpose.

g) That which contains the right level of details.

h) Communicated through appropriate channel of communication

i) That which is understandable by the user.

SELF ASSESSMENT EXERCISE

1. Define Management Information System.
2. Enumerate five functions performed by information

Answer to the self assessment exercise

1. MIS can be defined as a system used to convert data from internal sources into information and to communicate that information, in an appropriate form, to managers at all levels in all functions to enable them to make effective decisions for planning and controlling the activities for which they are responsible.
2. The functions performed by information include:

   i) Reduction of uncertainty

   ii) A control mechanism.

   iii) A means of communication

   iv) Improving/increasing knowledge

   v) A memory supplement

4.0 **CONCLUSION**

Management Information System must be designed and operated with due regard to organizational and behavioural principles as well as technical factors. Management must be informed enough to make an effective contribution to system design and information specialists such as system analysts, operation researches and others must become aware of managerial functions and needs so that, jointly, more effective MIS are developed.

5.0 SUMMARY

In this unit, the definition of Management Information System and the knowledge requirement of MIS have been examined. Also discussed were the nature of data, information and communications, the functions performed by information, the value of information as well as characteristics of good information.

6.0 TUTOR-MARKED ASSIGNMENT

Explain the nature of data, information and communication

6.1 Guide on tutor-marled assignment

Data is the term for collection of facts and figures, e.g. hours worked, invoice values, usage rates, items received. These basic facts are stored, analyzed, compared, calculated and generally worked on to produce messages in the form required by the user, i.e. the manager, which is termed information. In essence, information is processed data which is understood by the user

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

6 Information security management system (ISMS), BSI standards 100-1.

7 Greenberg, A., Mack, B. J., Schwartz, A. (http://bit.ly/1x86VJQ)

8 Information technology. Strategic implementation plan *SCIT/4/2. ANNEX 2...* (http://bit.ly/1 AcuO54 *)*

UNIT 2: OFFICE AUTOMATION

1.0 INTRODUCTION

The use of information technology and modern communication system may itself be a factor in the way organizations are structured. Automation means using computer technology to speed up the performance of existing task. The computer does not change the task structure, it simply makes it easier.

2.0 LEARNING OUTCOMES

At the end of this unit, students should be able to:

1. Explain Automation
2. Identify quality of person responsible for managing office automation.

3. Enumerate services offered by Computer Bureau x.

3.0 **MAIN CONTENT**

3.1 Office Automation Project

1. Meaning of office automation
2. Application of area of office automation
3. Adverse effect of office automation on worker

Traditionally, the responsibility of introducing new computer projects was that of the DP manager. However, computerization and other office automation projects can cover a large number of varied office tasks and affect most, if not all, office staff. Although the DP manager has the technical Know-how, he doesn't necessarily have the managerial skills and knowledge to understand how automation affects:

a. Working arrangements in the office

b. The style or structure of the organization

c. Attitudes of personnel

The person responsible for supervising/managing office automation projects ought, ideally, to be someone who:

a. Is aware of the different requirements of different users of the same system (especially in network systems or multi-users systems);

b. Is aware of the need to design new systems which fit in with different and changing objectives;

c. Understands how organizations, and people within them, function effectively;

d. Sees office automation as a means of making changes and improvements, not as an end in itself;

e. Has a technical awareness.

The office automation manager should be given specified responsibilities, which might include the following:

a. Developing recommending and coordinating plans for office automation projects

b. Working with the accounting department to produce cost/benefit justification for each new project.

c. Producing (and enforcing) guidelines, policies and standards for:

i. The procurement of hardware

ii. The procurement of software

iii. Personnel and pay matters

iv. Installation and testing

v. Maintenance of systems Excel Profession Centre, Ibadan

d. Dealing with hardware and software suppliers

e. Staff education and training in new systems

f. Monitoring new technological development and trends

g. Advising other managers and computer users in the organization

h. Involvement in system analysis, design and installation.

3.2 **Meaning of Office Automation**

An Office Automation System is a conglomerate of various technologies intended to improve the efficiency of office work by replacing the routine clerical secretarial and paper-based tasks with computer based equipment.

Application area of office automation system

Some of the application areas of office automation system are:

1. Word Processing: This involves hardware and software tools that allow the computer to behave like a typewriter.
2. Desktop Publishing: This refers to technologies used to send messages or documents from one electronic work station to another. Its uses in business include facsimile, voice mail and electronic-mail box.

3. Electronic Mail: This refers to technologies used to send message or document from one electronic work station to another. Its uses in business include facsimile, voice mail and electronic-mail box.

4. Teleconferencing: This refers to the holding of meetings among people who are at physically different sites. The types of teleconferencing are Video and Audio-teleconferencing.

5. Desktops Organizers: These are software packages that provide users with electronics equivalent of organizing and coordinating tools likely to be found on an office desk. Tools such as calendar, card file, notepad, clock and calculator are examples.

6. Archival Storage: This refers to offline storage used for historical and longtime storage of materials. Some common technologies used to store archival materials are magnetic tape and compact disc.

Adverse effect of office automation on office workers

1. Possible harmful effects and dangers of display devices to user's eyes.
2. Possible reduction in number of office workers

3.3 **End-user computer**

Traditionally the only people who had direct contact with computer were the systems professionals (programmers, systems analysis).

The introduction of personal computer, terminals, networks, user-software, databases has altered the position dramatically and has led to the growth of end-user computers by users-not indirect use through systems professional. Users includemanagers, office staff, sales people, and production workers.

End-user computing is a large and growing field and some of the applications are listed below:

1. Decision support systems
2. Expert systems
3. Executive Information systems

4. End-user programming

5. Computer based training

6. Search and retrieval of information

7. Text handling and publishing

NOTE: An expert system is a computer system which embodies some of the experience and specialized knowledge of an expert. An expert system enables a non-expert to achieve comparable performance to an expert in the field. It uses a reasoning process which bears some resemblance to human thought.

The unique feature of an expert system is the knowledge base, which is a network of rules which represents the human expertise. These rules and linkages are derived from discussions with experts and analysis of that decision-making behavior.

Expert systems have been developed in a number of fields. They include medical diagnosis selection of selling methods personal tax planning credit approval in banking product pricing, and air crew scheduling.

3.4 **Information Centre (IC)**

An IC is small unit of staff with a good technical awareness of computer systems, whose task is to provide a support function to computer users within an organization. They also provide help to users who wish to develop their own programs and act as a go between or link between computer users and the organization's own DP department or external software and hardware suppliers. ICs are of particular value where distributed data processing is used or where micro-computersare spread throughout an organization. In circumstances were non-computer-technical people are in charge of files, software and hardware they need technical support and advice from time to time.

Typical services IC provides are:

a. Identifyingareas where it could usefully be employed

b. Providing technical advice on existing and new hardware (capabilities, limitations, speeds).

c. Showing users how to deal with all types of software (application packages, O/S).

d. Encouraging good practice throughout the Organization, e.g. system/ program documentation, back-up procedures, quality checks

e. Helping to avoid over-laps, duplicating of effort

f. Providing general IT training and specialist training on new developments, equipment software.

g. To provide assistance and guidance to users developing their own systems.

3.5 **Other DP Resources**

Many organizations do not employ specialist DP staff because they cannot afford the costs of full time systems analysts and programmers. If an organization does not wish (or cannot afford) to have its own in house computer staff but it requires technical information, or needs expert advice on systems development, it can employ an office automation manager or set up an information centre. Alternatively, or additionally, it may use external DP resources. This might involve buying application packages from a supplier, and a range of other resources and services.

3.6 **Computer Bureaus**

These are organizations which provide DP facilities to their clients.

The range of resources offered by computer bureaus is considerable, with some offering a complete range of services while others specialize in particular areas. The services offered include:

a. **Data Preparation:** Transcribing data from sources documents into a machine readable form (e.g on to magnet tape. disks and file conversion on system implementation)

b. Hiring Computer Time: Providing data on its own computer.

c. Do it yourself: Providingthe computer but the client will provide operators, programs.

d. Consultancy: a bureau may provide advice and assistance in areas such as feasibility studies, system design, equipment evaluation.

e. Software: a bureau may design, write, test and provide software for a particular application, or may design and/ or adapt application packages;

f. Timesharing/Remote Job Entry (RJE): The client uses his own remote terminal, to process data on the bureau'scomputer.

g. Turn Key Operation: The bureau' undertakes the client's conversion to a computer system, and all the client has to do is 'turn the key' to commence using the systems.

h. A system integration service to provide an interface between oneorganization and another.

SELF ASSESSMENT EXERCISE

1. Briefly explain the meaning of automation

2. State three (3) roles of persons responsible for managing office automation.

3. Identify four services rendered by computer Bureaus.

Answers to self assessment exercise

1. Automation means using the computer technology to speed up the performance of existing tasks. The computer does not change the task structure; it simply makes it more efficient.

2. The person responsible for supervising office automation projects ought ideally to be someone who:

   a. Is aware of the different requirements of different users of the same system (especially in network systems or multi-user systems)

   b. Sees office automation as a means of making changes and improvements, not as an end in itself.

   c. Is aware of the need to design new systems which fit in with different and changing objectives.

3. **The services offered include:**

a. **Data preparation:** Transcribing data from source documents into a machine-readable form (e.g. on to magnet tape, disk) including the services offered for file conversion on system implementation.

b. **Hiring Computer time:** a bureau will process the client's data on its own computer.

c. **Do it yourself:** a bureau will provide the computer but the client will provide operators, programs.

4.0 CONCLUSION

Computerization and other office automation projects can cover a large number of varied office tasks and affect most, if not all office staff. End-user computing is a large and growing field with some applications, like decision support system, expert system, executive information system. On the other hand, while an IC is a small unit of staff with a good technical awareness of computer users within the organization computer bureau are organizations which provide DP facilities to their clients.

5.0 SUMMARY

This unit examined the definition of automation and office automation projects. Automation is a means of using computer technology to speed up the performance of existing tasks. The data processing manager has the technical know-how, but he doesn't necessarily have the management skills and knowledge to understand how automation affects working arrangement in the office, the style or structure of the organization and attitude of personal. End-user computer, information centre and other resources were discussed. Finally, it was explained that computer Bureau are organization which provide DP facilities to their client.

6.0 TUTOR MARKED ASSIGNMENT

a. What is office automation?

b. Explain six areas that office automation can be applied

6.1 Guide on tutor-marked assignment

a. Office Automation System is a conglomerate of various technologies intended to improve the efficiency of office work by replacing the routine clerical secretarial and paper-based tasks with computer based equipment.

b. Some of the application areas of office automation system are:

1 Word Processing: This involves hardware and software tools that allow the computer to behave like a typewriter.

2 Desktop Publishing: This refers to technologies used to send messages or documents from one electronic work station to another. Its uses in business include facsimile, voice mail and electronic-mail box.

3 Electronic Mail: This refers to technologies used to send message or document from one electronic work station to another. Its uses in business include facsimile, voice mail and electronic-mail box.

4 Teleconferencing: This refers to the holding of meetings among people who are at physically different sites. The types of teleconferencing are Video and Audio-teleconferencing.

5 Desktops Organizers: These are software packages that provide users with electronics equivalent of organizing and coordinating tools likely to be found on an office desk. Tools such as calendar, card file, notepad, clock and calculator are examples.

6 Archival Storage: This refers to offline storage used for historical and longtime storage of materials. Some common technologies used to store archival materials are magnetic tape and compact disc.

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net*.: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 3: COMPUTER SECURITY

1.0 **INTRODUCTION**

Failure to secure information may consequently result in irrecoverable losses and harm the credibility of an organization. ICT system and data processed by such system may be made dysfunctional due to a number offactors such as natural factors, technical failure, human error and fault, malicious software, international attacks, computer crime and international terrorism.

2.0 **LEARNING OBJECTIVES**

At the end of this unit, students should be able to:

i. Explain computer security

ii. Identify measures to,be put in place for computer security.

3.0 MAIN CONTENT

3.1 Computer Security

Computer security can be defined as the protection of systems from accidental or deliberate threats that might cause unauthorized modification, disclosure or destruction as well as the protection of information systems from degradation or non availability of services. Computer security is concerned with protecting computer systems, computer files and databases from external sources of damage.A breach of security may result into any of the followings.

i. Loss of confidentiality

ii. Loss of availability of computer services through unscheduled interruption and breakdown.

Security measures must be proactive and reactive, sound in principle and effective in operation. Security must be considered from two perspectives, namely; operation and physical.

Operation Security has two purpose namely:

i. Prevention of unauthorized users to access or use data

ii. Prevention of authorized users from misusing the data or damaging it throughignorance

3.2 Computer Security Measure

Computer security measures can be in the following ways:

i) Prevention

ii) Pro-activeness

iii) Deterrence

iv) Recovery

v) Correction

vi) Physical security

Prevention and Proactive measures include the following:

a. Precautionary measures to safeguard the system from external threats and unauthorized persons.

b. Protect and defend the system from illegal operations by authorized personnel e.g. the use of operator permissions, restrictions of access to certain functions.

c. Immune the system from damage and neutralize the effect of operations inimical to the correct performance of the systemprocedures for threat avoidance are:

i) Sense and report unauthorized operations.

ii) Discover and identify illegal operations and intruders.

d. **Difference** Deterrence measures ensure that illegal operations are not encouraged and that erring employees are not allowed to become bad influences to others. Deterrence measures include appropriate incentives and penalties to restrain same persons or other users to perform such acts in future.

e. **Recovery:** Recovery procedures are procedures put in place to minimize the effects of unscheduled interruptions/breakdowns and provide a means to ensure continuous operations and prevent financial losses to the business.

f. **Correction:** Remedial actions are actions taken to bring the system back on track after recovery. This may include procedures to make necessary amendments and fine tune the system to achieve desired performance levels.

g. **Physical Security:** This relates to the ability to physically protect the hardware and media that hold programs and data from destruction, loss or damage. This means of achieving physical security depends on the control environmentand the nature of the threat.

Physical Security measures may include the following:

1. Physical access control
2. Fire prevention and detection equipment
3. Provision of uninterrupted power supply (UPS) equipment
4. Introduction and enforcement of a strict backup routine with a copy of the data stored in a secure location offsite.

Password Security: The first thing to think about when you implement an office security policy is password. It seems to be so obvious, and yet it is often overlooked. Here are some common-sense guidelines for keeping your password secure:

Dos

1. Change your password often (monthly is recommended)
2. Use letter/number/special character combination
3. Choose a password that is easy to type
4. Choose a password that is easy to remember
5. Make your password at least six characters long.

Don’ts

1. Don’t use your first or last name.
2. Don’t use the name of your pet, spouse or children
3. Don’t use your login or username
4. Don’t leave a password on somebody’s voice-mail
5. Don’t use the same password for all your password needs.

SELF ASSESSMENT EXERCISE

1. What do you understand by computer security?
2. Enumerate five computer security measures that can be put in place

Answer to the Self Assessment Exercise

i) Computer security is concerned with protecting computer systems, computer files and databases from external source of damage. Computer security means the protectionof systems from accidental or deliberate threats that might cause unauthorized modification.

ii) Computer security measures include.

- Prevention
- Proactiveness

- Detection
- Deterrence
- Physical Security

4.0 CONCLUSION

Security measures must be proactive and reactive, sound in principle and effective in operation.

5.0 SUMMARY

Computer security is concerned with protecting computer systems, computer files and databases from external sources of damage. In this unit, we have examined the computer security measures needed to be put in place includeretentiveness, pro-activeness, detective, deterrence, recovery, correction andphysical security were discussed

6.0 TUTOR MARKED ASSIGNMENT

State five measures that can be taken to safeguard the computer.

6.1 Guide on tutor marked assignment

Computer security measures can be in the following ways:

Prevention, Pro-activeness, Deterrence,
Recovery, Correction, Physical security

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 4: INFORMATION SYSTEM RECOVERY PLAN

1.0 INTRODUCTION

A good business continuity plan will take into account all types of events affecting both critical information system facilities and end user's normal business operation functions. In addition to these, in case of the worst scenario, short term and long term fallback provisions are required. For the short term, an alternate processing facility may be needed to meet immediate operation needs, as in the case of a major natural disaster. In the long term, a new permanent facility must be identified for disaster recovery and equipment to provide for continuation of information system processing services on a regular basis.

2.0 LEARNING OUTCOMES

After studying this unit, the students should be able to:

a) Explain information system contingency and disaster recovery plan.

b) Identify causes of disaster

c) State information systems disaster recovery strategies

3.0 **MAIN CONTENT**

3.1 **Information system contingency and disaster recovery plan**

Information system contingency planning, otherwise called Business Contingency Planning (BCP), is a process designed to reduce an organization's business risk arising from an unexpected disruption of its information system which is critical to the organization.

BCP is primarily the responsibility of senior management, as they are entrusted with safeguarding both the assets and the viabilities of organization.

3.2 **Disasters and disruptive events to information system**

Disaster can be defined as disruptive incidences that cause critical information system resources to be inoperative or non-functioning for a period of time and thereby adversely affecting business operations.

3.3 **CAUSES OF DISASTER**

a) Natural calamities, such as floods, severe thunderstorms and fire.

b) Electrical power, telecommunications and delivery services that are no longer supplied to the company.

c) Event caused by human beings, such as attacks from hackers or viruses.

3.4 **INFORMATION SYSTEM DISASTER RECOVERY STRATEGIES**

Information systems disaster recovery strategy is a combination of preventive, detective and corrected actions to be taken. They are:

a) Removing the threat altogether

b) Minimizing the likelihood of occurrence

c) Minimizing the effects of occurrence.

Removing the threat and minimizing the risk of occurrence can be addressed by the implementation of physical and environmental security, while minimizing the effect can be achieved by implementing built-in resilience through alternative routing and redundancy.

In selecting a recovery strategy, the following should be considered:

a) The criticality of the business process and the applications supporting the process

b) Cost

c) Time required to recover and

d) Security

SELF ASSESSMENT EXERCISE

i. What is disaster recovery plan?

ii. Give any three key element required in a disaster recovery plan

Answers to self assessment exercise

A disaster recovery plan is an arrangement that provides for immediate access to an alternative computer hardware and the restoration of software program data and telecommunication facilities in case of the unexpected.

Key elements required in disaster recovery plan are:

a) An emergency plan

b) A backup plan

c) A recovery plan

d) A test plan

4.0 CONCLUSION

Information systems disaster recovery strategy is a combination of preventive, directive and corrective measures. In case disruption, especially when there is serious damage to primary, physical facility, there is need for off-site backup alternatives. Such off site backup facilities include hot site, warm site, cold site and mobile site.

5.0 SUMMARY

A disaster recovery plan is defined as an arrangement that provides for immediate access to the alternative computer hardware and the restoration of software programs, data and telecommunication facilities in case of the unexpected. Also discussed were information system contingency and disaster recovery plan, disaster and disruptive events to information system, causes of disaster as well as information system disaster recovery strategies

6.0 TUTOR MARKED ASSIGNMENT

a) Give any three causes of disaster

b) What is a system contingency and disaster recovery plan?

6.1 Guide on tutor marked assignment

a) Natural causes of disaster:

- Natural calamities, such as floods, severe thunderstorms and fire.
- Electrical power, telecommunications and delivery services that are no longer supplied to the company.
- Event caused by human beings, such as attacks from hackers or viruses.

b) Information systems disaster recovery strategy is a combination of

- preventive, detective and corrected actions to be taken. They are:
- Removing the threat altogether
- Minimizing the likelihood of occurrence
- Minimizing the effects of occurrence

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures.*

Zaria: Jerry Press

3. “Organizational Structure Types and Design Strategy.” *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*.
Zaria: Concept+Designs & Prints.

MODULE 3: INFORMATION SYSTEM INFRASTRUCTURE MANAGEMENT

Unit1: Hardware

Unit2: Software types and their capabilities

Unit3: IT and e-business enabling software

Unit4: Managing people in the organization

UNIT1: HARDWARE

1.0 Introduction

2.0 Learning outcomes

3.0 Main content

3.1 Information systems infrastructure management

3.2 Need for an information system infrastructure

3.3 Basics of the information technology

3.4 Hardware

3.5 Basic principle of computers

3.6 Types of computers used in any office environment

3.7 Managing hardware infrastructure

4.0 Conclusion

5.0 Summary

6.0 Tutor-marked assignment

7.0 Reference/ further reading

1.0 INTRODUCTION

This unit explains Information Technology (IT). IT is a technology in which computers are made use of to process, store, protect and transfer information. Computerizations in any office environment helps staff with duties like document preparation, information management and decision making. Such a system may be as modest as a group of independent word processors, or as complex as adistributed set of large, communicating computers. Within this spectrum is a central computer with several interactive terminals, or a set of small interconnected computers. In either system, the office worker would need a work station to perform his work, and that work station would be capable of electronically communicating with other work stations. You should be able to identify the equipment that make life and working conditions better around the office before the end of this unit

2.0 LEARNING OUTCOMES

You should at the end of this unit, be able to.

a) Identify hardware used in any office environment.

b) State means of upgrading the office to the standard necessary to meet modern office environment

c) Identify systems used for gathering information, process, store, or analyze data

d) Difference between Office Information System(OIS) and data processing system.

3.0 MAIN CONTENT

3.1 **The Information Systems Infrastructure Management**

Any area where people live or work needs a supporting infrastructure, which entails the interconnection of basic facilities and services enabling the area to function properly. A comprehensive example would be that of a city, whose infrastructure includes components like streets, power, telephone, water, and sewage system, banks, schools, markets/ retailing shops, places of worship and law enforcement. Both the area’s inhabitants and the businesses would definitely be depending on that infrastructure.

Cities with a good infrastructure are considered more habitable than cities with poorer infrastructure and are much more likely to attract businesses and residents. The same goes for the office. Valuable employees often choose offices with better facilities and management processes.

The Need for an Information System Infrastructure

As people and companies rely on basic infrastructure to function, businesses also rely on an information system infrastructure, like the use of hardware, software, networks, data, facilities, human resources and services, to support their decision making, business processes and competitive strategy. Almost all of an organization’s business processes depend on the fundamental information system infrastructure, even though to different degrees. For example, an organization’s management needs an infrastructure to support a variety of activities, including reliable communication networks to support collaboration between departmental heads and staffs, suppliers and customers, accurate and timely data and knowledge to gain business intelligence, and information systems to aid decision making and support office and business processes. The summary is organizations rely on a complex but organized information system infrastructure to effectively thrive in this competitive digital world.

There are a variety of different systems used for gathering information, process, store, or analyze data in an effort to better manage the organization. The following make it easy for modern organizations to rely on these infrastructures, they include:

i) Hardware

ii) Software

iii) Communications and collaboration

iv) Data and knowledge

v) Facilities

vi) Human resources

vii) Services

We would briefly discuss each of these components and highlight their role in an organization's information system infrastructure.

The difference between office information system (OIS) and data processing systems is that a data processing system is used to implement algorithms which ordinarily proceeds without the need for human interaction. Typical data processing systems compute payrolls, implement accounting systems, manage inventories among others.

2.4 **HARDWARE**

An Office Information System(OIS) is made up of a collection of highly interactive self-sufficient tasks that execute in parallel; the OIS tasks include document preparation, staff payment (payroll), document management, communication and aids in decision-making.

The computer consists of:

a. hardware - physical computer parts that are visible

b. Software - set of commands that are "understandable" to the computer; instructions to the obvious parts, giving orders what to do.

The information systems hardware is an integral part of the Information System infrastructure. It consists not only of the computers used in an organization, but also of networking hardware. While the computing hardware is essential to an organization's infrastructure because it is needed to store and process organizational data, the networking hardware is needed to connect the different systems to allow for collaboration and information sharing. Companies often face difficulties in making decisions as regards their hardware. Constant innovations within the information technology sector lead to ever-increasing processor speeds and storage capacities but also to rapid obsolescence. Information system executives therefore face countless complex questions like:

1. Which hardware technologies should be chosen?

This is when a company decides which office equipment is of utmost importance to it at the moment. Would it be new computers rather than a Typewriter, coffee maker, office phone (CDMA (code division multiple access) / wireless), a fax machine, a photocopier, a printer, a new shelf?

2. At what time interval should these equipments be replaced?

This means when should any of these equipment be classified as too old and unfit for usages i.e. when are they due for a change and how soon should it be done. Most importantly how easy would it be if you have to make do with the equipment assuming they (equipments) don't meet up with the desired technology in the office?

3. How can the information system be secured best?

This decision is best resolved by management responsible for the office information security technology.

4. What performance and storage is needed today? Next year?

This is also to be resolved by management board in charge of optimization of information technology present in any given office to help realize these goals

5. How can reliability be assured?

When goals are set for those in charge, methods towards making sure the office utilizes its potential which is to make sure information technology is realized.

Input and output devices of a computer hardware system Input devices:

- keyboard
- scanner
- touchpad
- Mouse Trackball. The most important office equipment with fast improving intentions is the computer.

Basic principle of computers

As data enters the computer through one or more input devices, the computer then processes the data and transmits the result to the output devices. Output devices can be human inter-faces e.g. a screen or another electronic device like a storage device or computer network.

Types of Computers used in an office environment:

a) Mainframe Computers: These are large, powerful and expensive computers that could be used by more than one user at the same time, within large organizations

b) Personal Computers (PC): Initially produced by IBM in 1981, for executing a single task by a single user at the time, now, a single person can execute many tasks simultaneously (multitasking) using a PC

c) Apple Macintosh (Mac): They are computers made by the Apple company and are usually produced for personal use

d) Laptop computers (notebook): They consist of LCD display and a small keyboard. Although they are relatively small computers, they still perform the same tasks as other computers.

e) Personal Digital Assistant - PDA (Palm): These are small computers that can fit into a pocket or the user's palm. They are developed for performing basic personal/business functions like:

i) Maintaining the address book

ii) Accessing and browsing the Internet

iii) Sending/receiving e-mails

iv) Managing personal or business tasks and assignments

Note: PDAs have now been replaced by modern smart phones that combine the features of a PDA with that of a mobile phone have and camera. Beside notebooks and palms, there are other portable digital devices such as mobile phones, Smart phone (mobile phone with advanced functions such as email, Internet browser, e-book reader).

The most important components of the computer are:

1. Motherboard - MBO; this is the computer’s "backbone", responsible for communication between components and help in the transmission ofinformation.

Central Processing Unit - CPU: It commands execution, data transmission, computer function control.

Basic characteristics:

It has speed (in Mega Hertz (MHz), Giga Hertz (GHz)), amount of memory (Cache in Bytes)

2. Random Access Memory - RAM; it’s known as memory container for programs that are currently running on the system.

Basic characteristics:

Speed (in MHz, GHz), capacity (in Bytes), data rate class (DDR SDRAM, SDR SDRAM)

3. Permanent memory:

i) Hard Disk Drive - HDD: It’s a memory device used for permanent data storage. The data is stored on the magnetic platters. The HDD is also made of electromagnetic heads, used for reading and recording data with the exception of the newest disk called Solid Staten Drive (SSD). It is made up of two parts; internal and external hard disk.

ii) Basic characteristics include:

iii) Disk platters rotation speed (in RPM) capacity (in GB), connection interface (IDE, SATA)

iv) Floppy Disk Drive - FDD

v) Optical Disks - CD, DVD

4. Graphics processing unit (GPU): It is for processing and displaying images on the monitor and consists of a graphics processor and its own working RAM memory

Basic characteristics:

- RAM size
- Connection interface/slot type

5. ports:

i) Parallel Port

ii) Serial Port

iii) Universal Serial Bus (USB)

There are other common devices for storing and transferring data from one computer to the other like:

iv) USB flash drive

v) diskette and ZIP diskette

vi) CD and DVD discs.

vii) Memory cards.

Communication and Collaboration between office systems

One of the reasons why information systems in organizations have become so powerful and important is the ability to interconnect, allowing internal and external constituents to communicate and collaborate with each other. The infrastructure supporting this consists of a variety of components, such as the networking hardwareand software that facilitate the interconnection of different computers, enabling collaboration literally around the world. However, having a number of interconnected computers is necessary but not sufficient for enabling communication and collaboration; companies also need other hardwares and softwares. An example is e-mail servers, along with communication software such as Microsoft Outlook, which are needed to enable a broad range of internal and external communication. Further, it has become increasingly important for companies to be able to utilize videoconferencing to bridge the distances between a company's offices or between a company and its business partners, saving valuable travel time and enhancing collaboration. However, as there are vast differences in terms of quality, costs and functionality of these systems, companies have to assess their communication needs and carefully decide which combination of technologies best supports the goals of the organization.

Data and Knowledge

This is probably among the most important assets an organization has, as data and knowledge are essential for both gaining business intelligence and executing business processes. Managing this resource however requires an infrastructure with sufficient capacity, performance and reliability. For example, companies like Amazon.com needs databases to store customer information, product information, inventory, transactions and so on.

Management here would need trained professionals who are relatively well educated and can create, modify, and/or synthesize knowledge. Organizations must effectively utilize their knowledge to gain a competitive advantage.

Facilities, although not directly needed to support business processes or business intelligence, they are needed for the information system infrastructure. Although not every company needs facilities such as those used by Google's data center, managers would need to carefully consider where to house the different hardware to be used, software and data centers.

An office desktop computer may not need much in terms of power, nor does it generate much heat. However, massive clusters of computers or server farms, i.e. a vast number of servers to support the information processing needs of a large organization, need housing facilities. In addition, there is also the need to protect important equipment from intruders and other elements such as water or fire.

The most prominent threats to an organization's Information System (IS) facilities come from floods, seismic activity, rolling blackouts, hurricanes and the potential of terrorist activities. Other issues to consider are the questions of availability; for example, can an organization afford to have its Web site unavailable for a minute, for an hour, or even for a day?

Human Resources

Another issue faced by companies is the availability of a trained workforce. Although even large facilities do not require large support staffs except they are well trained. This is one of the issues faced by offices or companies having very large data centers. While the construction of facility creates a large number of construction jobs, helping the area's unemployment situation, permanent jobs require special skills so much of the workforce will be "imported" from other regions. For this reason, many companies try to locate facilities in common areas.

Designing the Information System Infrastructure

Every organization has its growing needfor a comprehensive information systems infrastructure. A number of solutions have emerged and are continuing to emerge. While some of these solutions are already common business practice, others are just now starting to be adopted. We would attempt to create solutions as to effectively designing information systeminfrastructure.

Managing the Hardware Infrastructure

As earlier stated, the hardware is an integral part of the Information System infrastructure within and around the office, businesses environment and research facilities. For instance, auto manufacturers, such as Japan's Toyota, use large supercomputers to simulate automobile crashes as well as evaluate design changes for vibrations and wind noise.Another example is the U.S. Department of Energy's Lawrence Livermore National Laboratory that makes use of supercomputers for simulating nuclear explosions.

It is expected as that every organization would face such large-scale computing problems. The demands for computing resources are often fluctuating, leading to either having too few hardware (resources)to resolve problems or having too many idle hardware. To address this problem, many organizations now turn to:

i) On-Demand Computing

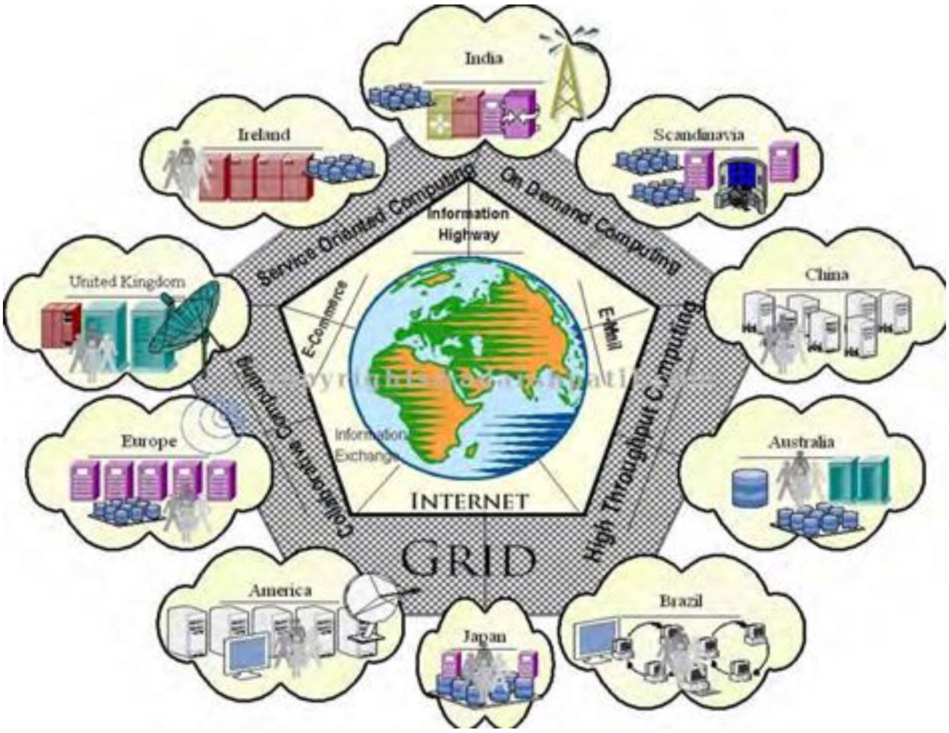
On-demand computing is a way to address some unpredictable computing needs, making it possible to allocate the available resources on extreme users' need basis which would most times be on a pay-per-use basis. For example, more bandwidth will be allocated to a videoconference, while other users who do not need thebandwidth at that time receive less. Similarly, a user running complex data mining algorithms would actually receive more processing power than a user merely doing some word processing. At times, organizations prefer to “rent” resources from an external provider. This form of on-demand computing is referred to as utility computing, which happens when the resources in terms of processing, data storage, or networking are rented on an as-needed basis and the organization receives a bill for the services used from the provider at the end of each month. For many companies, utility computing is an effective way for managing unforeseen demand, controlling costs.In essence, all tasks associated with managing, maintaining, and upgrading the infrastructure are left to the external provider and are typically bundled into the “utility” bill. The point is this, if you don’t use, you don’t pay.

ii) Grid Computing

Although today’s supercomputers have tremendous computing power, some tasks are even beyond the capacity of a supercomputer. Indeed, some complex simulations can take a year or longer to calculate even on a supercomputer. Sometimes, an organization or a research facility would have the need for a supercomputer but may not be able to afford one because of the extremely high cost. One of such example is the fastest supercomputers whose cost runs into some billions in Naira, and this does not represent the total cost of ownership as it does not include all the other related costs for making the system operational. e.g. personnel, cost of facilities, storage, software. Additionally, the organization may not be able to justify the cost because the supercomputer may be needed only occasionally to solve a few complex problems.

Grid computing refers to combining the computing power of a large number of smaller, independent, networked computers, often regular desktop PCs, into an interconnected system in order to solve problems that only supercomputers were previously capable of solving. As a major characteristic, grid computers are regarded as very specialized systems because they allow organizations to resolve(smaller or larger) re-occurring problems

To make grid computer work, large computing tasks are broken into small chunks, each of which can then be completed by the individual computers



The figure shows how a grid computer works, linking and resolving problems by breaking each task in to smaller bits to be resolved. However, the grid will always poses a number of demands in terms of the underlying network infrastructure or the software managing the distribution of the tasks. Further, many grid computers perform on the speed of the slowest computer, thus slowing down the entire grid. Many companies and big offices actually do start out with a grid computing infrastructure and attempt to overcome these problems by using a dedicated grid. I.e. when the individual computers, or nodes, are just there to perform the required task just like in the grid's computing.

The advantages of a dedicated grid include:

a) Easy to set up and manage

b) It’s cost effective when compared to purchasing a supercomputer.

c) As the grid evolves new nodes could always be added,

d) Dedicated grids become more heterogeneous over time.

One factor that adds to the popularity of using dedicated grids is the falling cost of computing hardware. Just a few years ago, companies have attempted to utilize idle resources as much as possible and set up heterogeneous computing grids. However, the added complexity of managing heterogeneous grids poses a large cost factor so that today it is often more cost effective to set up a homogeneous, dedicated grid; in this case, the savings in terms of software and management by far offset the added costs for dedicated computing hardware in terms of both acquisition and maintenance.

iii) Edge Computing

Another recent trend in IS hardware infrastructure management is edge computing. With the decrease in cost for processing and data storage, computing tasks are now often solved at the edge of a company’s network. In other words, rather than having massive, centralized computers and databases, multiple smaller servers are located closer to individual users. This way, resources in terms of network bandwidth and access time are saved. If a computer needs several hours to compute a certain problem, it might be a good choice to send the task over a network to a more powerful computer that might be able to solve that problem faster. However, as the costs for computing power have decreased tremendously over the years, many problems can be computed locally within a matter of seconds. It is no longer economic to send such problems over a network to a remote computer.

SELF ASSESSMENT EXERCISE

Identify five most important components of acomputer Answer to the self Assessment Exercise.

1. Central Processing Unit - CPU: commands execution, data transmission, computer function control.
2. Random Access Memory - RAM; it's known as memory container for programs that are currently running on the system.
3. Graphics processing units (GPU): It's for processing and displaying images on the monitor, and also consists of a graphics processor and its own working RAM memory
4. Permanent memory: Hard Disk Drive - HDD: It's a memory device, used for permanent data storage. The data is stored on the magnetic platters.
5. Ports: Parallel Port, Serial Port, Universal Serial Bus (USB)

\

4.0 **CONCLUSION**

This unit covered hardwares being used in office environment, their functions with respect to present-day information technology. An office cannot really be complete without the use of information technology, as this equipment usually makes life really easy within the office, as the offices would really be ordinary without the information technology.

5.0 SUMMARY

The most important components of computer were treated, we also discussed advantages of a dedicated grid were discussed.

6.0 TUTOR MARKED ASSIGNMENT

What are the types of computers used in an office?

6.1 Guide on tutor marked assignment

Types of Computers used in an office environment

a. Mainframe Computers: These are large, powerful and expensive computers that could be used by more than one user at the same time, within large organizations

b. Personal Computers (PC): Initially produced by IBM in 1981, for executing a single task by a single user at the time, now, a single person can execute many tasks simultaneously (multitasking) using a PC

c. Apple Macintosh (Mac): They are computers made by the Apple company and are usually produced for personal use

d. Laptop computers (notebook): They consist of LCD display and a small keyboard. Although they are relatively small computers, they still perform the same tasks as other computers.

e. Personal Digital Assistant - PDA (Palm): These are small computers that can fit into a pocket or the user's palm. They are developed for performing basic personal/business functions like:

v) Maintaining the address book

vi) Accessing and browsing the Internet

vii) Sending/receiving e-mails

viii) Managing personal or business tasks and assignments

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net*.: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 2: SOFTWARE TYPES AND THEIR CAPABILITIES

1.0 **Introduction**

In this unit, we will examine different types of soft ware, from open software to cheap and accessible software, that are used in/on any every day computer. The unit will also point out features of real user friendly software department and /or what unit it is applicable to. It is possible for software to be installed with the required hard ware making it possible to send and receive information from within and around the office through mails and most social media.

2.0 **Learning Outcomes**

At the end of this unit, you should be able to:

a. Identify the actual software to be used that is compactable with a particular network and for which particular hardware.

b. State when particular operating software is good for which particular job, and which type is actually user friendly.

c. State how to effectively reduce cost on software usage at any time.

3.0 **Main content**

3.1 **Software**

There are various types of software that enables companies to utilize their information system hardware with the network. Software assists organizations in executing business processes and competitive strategy. Consequently, with increased reliance on information systems for managing the organization, effectively utilizing software resources has become critical and complex. Companiesthat have tomanage updates on software, fixing bugs, and managing issues related to software licenses on every computer used.

Software is defined as a computer program which, unlike hardware, is an indescribable part of the computer. It’s written to perform a single or multiple tasks on computer using the built-in hardware.

Softwareis an essential component of computer system, regardless of where the system is being used, because it enables hardware communicate with each other to get the desired work done.

Managing the Software Infrastructure

With growing use of information system to support office, schools, organizations’ business processes and the need for business intelligence, organizations have to rely on a variety of different softwares. However, continuously upgrading operating systems and applications software is not cost effective both in terms of labor and the actual products needed for most schools, training centers, offices or even big organizations.

To reduce such costs, many companies have turned to the use of open- source software, integrating various software tools, or using application service providers for their software needs.

3.2 **Web Services**

To perform business processes and for business intelligence, it is often essential todraw information from different sources or different applications. However, with the increasing complexity of an organizations software needs, it is often impossible to get all of the various applications to integrate seamlessly.In some cases, software companies (such as Microsoft) offer a wide range of products, all of which can interoperate quite well. However, business organizations sometimes shy away from being completely dependent on a single vendor for their software needs. One way to increase independence while still being able to integrate various software applications is the use of Web services. Web services are Web-based software systems used to allow the interaction of different programs and databases over a network.

Using Web services, companies can integrate information from different applications running on different platforms. For example, they can use Web services offered by Google to integrate search functionality into their own Web site, or can use Web services offered by MapQuest to provide guests with an interactive map to your house.

The main goal of implementing a service-oriented architecture is the integration of different applications using Web services. In a service-oriented architecture, different business tasks, or services, are integrated to better perform various business processes. These services are typically vendor-independent and can thus be used tointegrate data and capabilities of different systems running on different platforms. This capability and the reusability of different services actually allow businesses to quickly react to changes in the business environment.

3.3 **Types of Software**

1. Operating systems (OS) is known as that basic program a computer that is automatically loaded when computer is started up. Examples of OS are::

   a. Linux (Debian, Ubuntu, Fedora, Knoppix)

   b. Microsoft Windows (XP, Vista)

c. Mac OS X (Cheetah, Panther, Snow Leopard)

2. Application software - Types of software that can be used on an installed operating system, such as:

a. Office programs - Open Office.org, Microsoft Office

b. Antivirus program - Avira, Sophos, Kaspersky,Avast, McAfee, Panda, Norton . (should Microsoft security essential be regarded as an antivirus, and why)

c. Web browser: Mozilla Firefox, Microsoft Internet Explorer, Opera, Safari, Google chrome.

3. E -accessibility options

a. Voice recognition software,

b. Screen reader,

c. Magnifying tool,

d. On-screen keyboard.

Operating System (OS) software for client and server computers

The basic computer application software been used includes:

a. Software for word processing, spreadsheets, presentations, and graphics;

b. Educational software applications; and

c. Internet-related and -delivered software, including browsers, Java applications, and interactive tools on websites

Operating System Software

Particularly in the area of software development, the open-source movement has taken off with the advent of the Internet, and people around the world are contributing their time and expertise to develop or improve software, ranging from operating systems to applications software that are used by systems in most offices. As the programs' source code is freely available for use and/or modification, this software is referred to as open-source software.For instance, the operating system software to be used on client or end-user computers depends on the type of hardware purchased for use. For example, If Apple computers are purchased, Apple’s OS, which comes with the computer, will likely be used the client computers. If computers with Intel or Intel compatible CPUsare purchased, the computer would likely come with a version of the Microsoft Windows OS. Nevertheless, a larger and more robust network that may need to be securely managed will require special network operating system software installed on the network’s server to manage the functions of the network, including links to printers and other peripherals, e-mail, file sharing, security functions, and communication among linked computers.

Open Source Software (OSS)

One of the most prevalent examples of open source software is the operating system Linux. It was first developed as a hobby by a final year university student (Linus Torvalds) in 1991.He first developed the version for himself, and then he made the source code of his operating system available to everyone who wanted to use it after which he improved on what he had done. Because of its unique stability, Linux has become the operating system of choice for Web servers, In addition to the Linux operating system, other open-source software’s have been gaining increasing popularity because of their stability and low cost. A good example of open-source application software is the Firefox Web browser and the office productivity suite Open Office. While there are many upsides to open-source software, some vendors still stress the “hidden” costs of running this software.

One largely debated topic by experts is the superiority of open sourced software when put to use in offices, schools, business organizations etc, as compared to those commercialized software products for client and server operating systems. The answer is not easy since it involves policy, commercial, technical, and educational concerns.

An example is that of the educational system. The ultimate factor to be looked out for in making technology decisions is if the software supports the learning needs of students, (assuming it's used by a school) and if it helps the teacher in all ramifications. If the software and hardware solutions do not ultimately serve the teaching and learning process, then even "inexpensive" or "free" options can be very costly educationally. If the key educational software programs cannot be used on systems with "free" OS software, then the "free" solution could become very expensive. Similarly, educational use and needs for computers are often quite different from corporate needs. That's why decision making about technology choices for schools needs to reflect these differences at all times.

One of the most popular open source software products used for computer operating system software is Linux. It became popular because it's available, free of charge and has a large development and user community. It is used only rarely as a client operatingsystem (on the end terminal or PC at the user's desk), mainly because few software applications, such as word processing, can be used on computers running Linux.

Benefits of Open Source Software (OSS)

The technical benefits of operating system and network operating system software are the software's reliability, performance, scalability, security and cost. A variety of comparisons have shown that servers running Linux crash less and perform better than commercial and other OSS software. Secondly, Linux can be used on a wider range of computer platforms than any other operating system. It's also the most popular operating system software for Internet servers, accounting for about 30% of all Web servers in the world.

Next, it is actually a more secure option than commercial Open Source Software. Finally, several studies have shown that Linux and other open source software usually have significantly lower initial costs than commercial operating system software.

3.4 **Networks**

A computer network is a collection of computers and other hardware components interconnected by communication channels that allow sharing of resources and information within and outside the office environment.

The scope in communication has increased significantly in the past decade; this wouldn't have been possible without continuous advancement in computer network and the technologies that make communication between networked computers possible. Wired and wireless networks actually allow computers, printers and other devices in an office environment share internet access, files among other things. A combination of wired and wireless network connections provide the most flexibility and ease of installation.

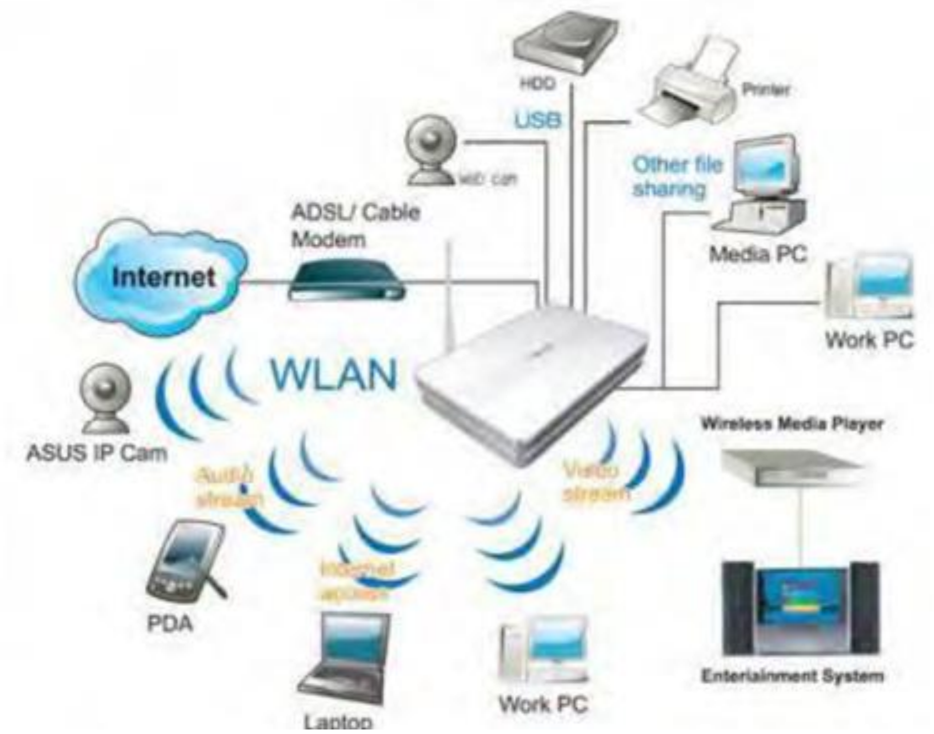


Fig: A wired and wireless network LAN (Local Area Network):

A small network that physically connects nearby computers (within the firm, organization, or a household)

WAN (Wide Area Network):

A much larger network that covers a city or a region

Intranets and Internets

Messages within an office can be transmitted electronically (intranet) as well as around the universe (Internet). Office staffare able to exchange information over the computer via the Net through e-mail, which can be sent simultaneously to persons around the world.

Internet

It is known as a world network of connected computers, connected through WANand LAN.The intranet is an internal computer network, used within a company, whereby relevant information such as telephone directories, calendars of events, procedure manuals, job postings, human resources information and general information about on-goings around the office can be posted and updated. With the intranet, one is able to communicate online with individuals within a designated work environment.

Extranet

The Internet is a global computer network that permits millions of computers around the world to communicate via telephone systems and other communication lines.

They don’t necessary have to be exclusively members of that organization, they can outsourced experts for performing common tasks. The extranet It is also known as the digital information super-highway and is a part of the World Wide Web. The Internet is a public worldwide computer network full of information and comprising of inter-connected networks that span the globe.

Web Pages

It is one of the services that can be used on Internet which enables oneto view and search contents in the form of web-pages. For organizations or anyone, who wish to post information or sell products to do so, web page programs, such as Macromedia, Dream-weaver and Site Rack, enable users to create their own web pages. Such web page enables users to create their own web pages. Other services on Internet that can gainfully be applied in most offices are.

1. Instant messaging (IM)

Google Talk, Skype, Windows Live Messenger, Yahoo! Messenger

2. Voice over Internet Protocol (VoIP)

Protocol used for voice transfer over IP network. It basically enables staff in an organization and users in general to simply make phone-calls

3. Really Simple Syndication (RSS)

Used for dissemination of information or articles among others. Published on web page using RSS channel, RSS news usually consists of title, few sentences and link to a web page where users can read the whole article. Users have to subscribe to RSS channel in order to receive news in their RSS reader.

Web-based e-mail

Web mail is an internet service that allows people within and around the sameoffice to easily send messages and files to anyone around the world from any computer provided they are connected to the internet. With a registered account, users can send and receive messages, images and any other type of information.

E-mail is keyed messages sent from one computer to another, using a network linking the units. Sending messages from one computer to another betweencolleagues, coworkers, helps to ease problems with communication in the office environment

Voice Mail

Voice mail is also another form of e-mail. It is more like words converted or digitized into electronic computer language. This form of communication is transmitted electronically by phone lines for immediate delivery or can be stored in a computer mailbox. The recipient is able to retrieve the message by dialing a code number to access the mailbox. The computer reconverts the message to the caller's voice and the recipient is able to hear the voice message.

Internet data transfer

Download - data obtained from internet and stored on personal computer Upload - retrieving data gotten from internet on personal computer back to internet server

Self Assessment Exercise

Which device performs both input and output activity at the same time? Answer to the self Assessment Exercise

Touch screens.They enable the user to interact directly with what is displayed, rather than using a mouse, touchpad, or any other intermediate device (other than a stylus, which is optional for most modern touch screens).

4.0 CONCLUSION

The use of present day systems within and around the office environment has been proven in this unit.They cannot exist alone without software and this software can be easily understood mainly because they have been proven to be user friendly.

There is also room for more and more improvements in the area of software development that would become compactable with future hardware for office use

5.0 SUMMARY

This unit covered software usage and application with respect to hardware. It also covered how to manage the software infrastructure, open source software.

6.0 TUTOR-MARKED ASSIGNMENT

Q1. How can an organization reliably protect its facilities from threats such as viruses or man made threats?

Q2. What is the difference between a notebook and a Personal Digital Assistant - PDA (palm)?

Q3. What is the difference between a LAN, WAN, and Internet?

6.1 Guide on tutor marked assignment

To get round these problems, there are essential questions that should be addressed by the software engineer has to provide answers to the following questions:

- ✓ Which network operating system as a software engineer, should be used/prescribed?
- ✓ What technical support is really available if the different options are cost effective?
- ✓ What type of network operating system software is commonly used in office, schools, small businesses and government agencies in your locality?
- ✓ What types of network operating system software are presently being used?
- ✓ Is the network operating system software also available in a language version to match languages commonly spoken by both technicians and users?

Proponents of using Linux in educational computer environments often emphasize the fact that Linux is "free" and that the money saved from not having to purchase operating system or network operating system software is a sufficient reason to use it. Unfortunately, this argument is flawed. In terms of education, educating teachers and students with free software like Linux is advocated. At what point do you think it becomes a more expensive choice.

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures.* Zaria: Jerry Press

3. “Organizational Structure Types and Design Strategy.” *Organizational Structure.net*.: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 3 INFORMATION TECHNOLOGY AND e-BUSINESS ENABLING SOFTWARE

1.0 Introduction

2.0 Learning Outcomes

3.0 Main Content

3.1 Sales Force Automation (SFA)

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/ further reading

1.0 INTRODUCTION

Computer has taken over a lot of activities which bring into play various IT services.

2.0 LEARNING OUTCOMES

At the end of this unit, student should be able to:

a. State the advantages of SFA

b. State the disadvantages of SFA

3.0 MAIN CONTENT

3.1 Sales Force Automation (SFA) - Information system used in marketing and management that helps automate sales and sales force management functions. When combined, marketing information systems (done frequently) are called CRM. SFA automatically records all stages in a sales process, which includes contact management system, sales lead tracking system sub systems. Elements of SFA are sales forecasting, order management and product knowledge.

I. Advantages of SFA to a sales manager –

a. SFA automatically present easy to understand tables, charts or graphs of information on call sheet.

b. Activity reports, information request, order book and other information are sent more frequently.

c. Analyze automatically information using sophisticated statistical technique presenting the result in a user friendly way.

d. Giving the sales manager very useful information.

II. To marketing managers,

a. SFA gives information that is useful in understanding the economic structure of the industry.

b. Identify segment within the market.

c. Identifies target, identifies best customer in place.

d. Develops new products and others marketing manager duties.

III. To the Company,

a. SFA create competitive advantage by increasing productivity.

b. Ensure effective time management of sales manager and staff.

c. Management response time reduced due to better communication with field sales staff thus company become more alert and more agile.

d. Increase customer satisfaction which in turn lead to increased customer loyalty.

e. Reduced customer acquisition costs, reduced price elasticity of demand and.

f. Increase profit margins.

DISADVANTAGES OF SFA

a. Some users claim that it is difficult to work with

b. Requires additional work i.e. inputting data.

c. Dehumanizes a process that should be personal.

d. Requires continuous maintenance, information updating and system upgrading.

e. It is difficult to integrate with other MIS

SELF ASSESSMENT EXERCISE

SFA has some advantages. Enumerate five such advantages.

Answer to the Self Assessment Exercise

To the Company, SFA creates competitive advantage by increasing productivity, efficient effective time management of sales manager and staff. Management response time is reduced due to better communication with field sales staff thus company becomes more alert and more agile; increase customer satisfaction, which in turn leads to increased customer loyalty, reduces customer acquisition costs, reduces price elasticity of demand and increases profit margins.

4.0 CONCLUSION

SFA Information system used in marketing and management that helps automate sales and sales force management functions particularly in e- business environment.

5.0 SUMMARY

This unit explains SFA functions. It also discussed the advantages of SFA sales managers, marketing managers as well as to the company. It discussed the disadvantages of SFA which include difficult to work with; requires additional work i.e. inputting data, dehumanizes a process that should be personal; requires continuous maintenance.

6.0 TUTOR MARKED ASSIGNMENT

State five disadvantages of SFA

6.1 Guide on tutor marked assignment

a. Some users claim that it is difficult to work with

b. Requires additional work i.e. inputting data

c. Dehumanizes a process that should be personal

d. Requires continuous maintenance, information updating and system upgrading

e. It is difficult to integrate with other MIS

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*.

Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

UNIT 4: MANAGING PEOPLE IN THE ORGANIZATION

1.0 **INTRODUCTION**

If an office is not properly managed, it becomes difficult to produce desired result.Even if it has the desired information technology and at the required standard, it would be difficult to produce results.

This unit discuses the roles of management in an office. It also discuss the important role of planning in an organization.

2.0 LEARNING OUTCOME

After studying this unit, students should be able to:

a. Understand the manager's job, and why certain decisions are been made.

b. Understand managers ability to "make sense" out of the many situations faced by organizations and how they formulate action plans to solve organizational problems.

3.0 MAIN CONTENT

3.1 MANAGEMENT

Managers perceive business challenges in the environment, set organizational strategy for responding and allocate human and financial resources to achieve the strategy and coordinate the work. Managers exercise responsible leadership. Management's job is to "make sense" out of the many situations faced by organizations and formulate action plans to solve organizational problems. In order to attain this, managers must do more than manage what already exists. They must also create, and even re-create, new products and services in the organization from time to time. A substantial part of management responsibility is creative work driven by new knowledge and information. Information technology can play a powerful role in redirecting and redesigning most organizational plans.

Managerial roles and decisions vary at different levels in any organization. Senior managers are saddled with the responsibility of making long-term strategic decisions about what products and services to produce.

Middle managers carry out programs and plans of senior management. Operational managers are responsible for monitoring the firm's daily activities. All levels of management are expected to be creative, develop novel solutions to a broad range of problems. Each level of management has different information needs and information system requirements.

The duties of a manager cannot be over emphasized, More often than not they a saddle with series of responsibilities if the organization is to succeed. These responsibilities include:

i. Planning: Planning is the key function of management, it is the process of determining in advance.What should be accomplished, when, by whom, how, and at what cost. It also includes outlining philosophy, policy, objectives, to be accomplished and the techniques for accomplishment

ii. Organizing: Establishing structures and systems through which activities are arranged, defined, and coordinated in terms of some specific objectives

iii. Directing: making decisions, present the decisions in the form of instructions and serving as the leader of the enterprise.

iv. Coordinating: Inter-relating various parts of the work as it relates to the office

v. Reporting: keeping informed those to whom you are responsible, both staff and the public.

vi. Budgeting: Making financial plans, maintaining accounting and management control revenue and keeping costs in line with objectives.

Planning

Regardless of whether it is planning long-term program priorities or planning a two- hour meeting, the planning aspect of management is the major contributor to the success and productivity of the an organization. Planning is the process of determining an organization's goals and objectives and making provisions for their achievement. It involves choosing a course of action from available alternatives.

Planning is the process of determining organizational aims, developing premises about the current environment, selecting course of action, initiating activities required to transform plans into action and evaluating the outcome. Planning at managerial level usually depends on their level in the organization followed by the type and size of the organization.

Generally, there are four major types of planning exercises:

1. Strategic
2. Tactical
3. Contingency
4. Managerial

Tactical planning occurs at middle and lower management level and it is concerned with implementing strategic plans for the organization.

Contingency planning anticipates possible problems or changes that may occur in the future and prepares to deal with them effectively as they arise

Strategic Planning

Strategic planning occurs at top management level and it involves determining organizational goals and how to achieve them.

Strategic planning has to do with determining the basic objectives of an organization and allocating resources for their accomplishment. strategy determines the direction in which an organization needs to move to achieve its objectives. It also acts as a road map for carrying out the strategy of any office and achieving long-term goals. Occasionally a gap exists between strategic plan and real results. To boost organizational performance, people must be a key part of the strategy.

Strategic planning is different from long-term planning. Long-range planning builds on current goals and practices and proposes modifications for the future. On the other hand, strategic planning, considers changes or anticipated changes in the environment that suggest radical moves away from current practices. When doing strategic planning, the organization should emphasize team planning. By involving those affected by the plan, the manger builds an organization wide understanding and commitment to the strategic plan. The elements of strategic plans include:

a. Organizations mission statement - What

b. Strategic analysis - Why

c. Strategic formulation - Where

d. Long-term objectives implementation - When and How

e. Operational plans - When and How

These plans form the framework for focusing organizational resources on the most strategic areas by using a staged approach. updated plans are implemented by work teams at all levels of management. Work-team objectives include:

1. Involving all levels of staff in consultation
2. Designing and implementing a process to develop-goals and objectives for the organization and unit; a strategic process for the next five to ten years
3. Defining and clarifying organizational structures and identifying functions, customers and service delivery models
4. Identifying changes and staged approaches needed to move from the current situation to what will be required over the next three to five years
5. Identifying and recommending priorities for policy and program development
6. Incorporating goals for expenditure reduction, service quality improvement, workforce management, accountability, technology and business process improvement
7. Stating the start date and first report date. This way, departments would take their assigned duties seriously as there would be an expected date of completion.

Managerial Planning helps in combining resources and expertise to achieve the overall objectives of an organization. Managerial planning focuses on the activity of a specific unit and involves what needs to be done, by whom, when and at what cost. The strategic planning process serves as an umbrella over the management planning process which deals with the following:

1. Establishing individual goals and objectives
2. Forecasting results and potential problems
3. Developing alternatives, selecting alternatives and setting priorities
4. Appraising how the management unit has succeeded in meeting its goals and objectives

Decision making

Closely related to both strategic and managerial planning is the process of decision making. Decisions need to be made wisely under varying circumstances with different amounts of knowledge about alternatives and consequences. It's concerned with the future and may be made under conditions of certainty, conditions of risk, or conditions of uncertainty

Under conditions of certainty, managers have sufficient or complete information and know exactly what the outcome of their decision will be.

Managers are faced with a less certain environment. They may, however, know the probabilities and possible outcomes of their decisions, even though they cannot guarantee which particular outcome will actually occur.

In such cases, there is a risk associated with the decision and there is a possibility of an adverse outcome. Most managerial decisions involve varying degrees of uncertainty. This is a key part of managers' activities. They must decide what goals or opportunities will be pursued, what resources are available, and who will perform designated tasks. Decision making, consists of several steps:

Step1:	Identifying and defining the problem
Step2:	Developing various alternatives
Step3:	Evaluating alternatives
Step4:	Selecting an alternative
Step5:	Implementing the alternative
Step6:	Evaluating both the actual decision and the decision-making process

The structure of every organization is unique in some respect, but all organizational structures are consciously designed to enable the organization to accomplish its goals. Typically, the structure of an organization evolves as the organization grows and changes over time.

There four basic decisions that managers have to make as they develop an organizational structure, although they may not be explicitly aware of these decisions:

1. Division of labor. The organization's work must be divided into specific jobs.
2. Departmentalization. Unless the organization is very small, the jobs must be grouped in some way.
3. Span of control. The number of people and jobs that are to be grouped together must be decided, which is related to the number of people that are to be managed by one person.
4. Authority. The way decision-making authority is to be distributed must be determined.

In making each of these decisions, a range of choices are possible. At one end of the spectrum, jobs are highly specialized with employees performing a narrow range of activities; while at the other end of the spectrum employees perform a variety of tasks. In traditional bureaucratic structures, there is a tendency to increase task specialization as the organization grows . In grouping jobs into departments, the manager must decide the basis on which to group them. The most common basis, is by function. For example, all accounting jobs in the organization can be grouped into an accounting department; all engineers can be grouped into an engineering department and so on.

SELF ASSESSMENT EXERCISE

Q1 How do managers combine order and chaos in a way that optimizes both?

Answer to Self Assessment Exercise

A1. (a) The ability to continuously scan the external environment, locates and analyze emerging developments, quickly turn the resulting information into actionable decisions;

(b) The capacity to quickly and easily make decisions and, more important, move resources from where they are to where they need to be to activate these decisions;

(c) The ability to create, adapt and use information and knowledge to not only improve current operations, but also to constantly challenge current ways of thinking and operating.

4.0 CONCLUSION

We have succeeded in understanding the importance of managing people (staffs) in any organization properly to produce the desired result would require some kevel of determination on the part of those involved and their ability to make strategic plans. It Management can perform their duties easier and faster, and how much training can/ should be given to staff with respect to information technology as opposed the use of manual equipment to do the given task as the level of competence wont and cannot be measured which in turn would be regarded as bad management tactic and no manager want to be called that.

5.0 SUMMARY

In managing people in any organization, planning and strategy would be useful in making required useful decision

6.0 TUTOR-MARKED ASSIGNMENT/ ANSWERS

State four basic decisions managers make in developing organisational structure

6.1 Guide on tutor marked assignment

Four basic decisions managers make as they develop an organizational structure:

a. Division of labor. The organization's work must be divided into specific jobs.

b. Departmentalization. Unless the organization is very small, the jobs must be grouped in some way.

c. Span of control. The number of people and jobs that are to be grouped together must be decided, which is related to the number of people that are to be managed by one person.

d. Authority. The way decision-making authority is to be distributed must be determined.

7.0 REFERENCES/FURTHER READING

1. Amoor, S.S. (2020). *Office Secretarial Standard Practices*. Zaria: ABU Press.

2. Sani, A. (2015). *Executive Office Practice and Procedures*. Zaria: Jerry Press

3. "Organizational Structure Types and Design Strategy." *Organizational Structure.net.*: http://www.organizationalstructure.net/.

4. Pitts, J & Radebaugh (2018). *Principles of Information Technology Management*. New York: Laudon & Laudon.

5. Sani, A. (2018). *Entrepreneurship in Business Education*. Zaria: Concept+Designs & Prints.

MODULE 4: INFORMATION SECURITY

Unit1: **Information Technology Strategies**

Unit 2: **The future for information technologies.**

UNIT1: INFORMATION TECHNOLOGY STRATEGIES

1.0 INTRODUCTION

This unit covers all security plans and strategy to move the office/ organization forward. It possible for an organization to have desired information technology and still not be able to function properly because the organization is threatened by anumber of factors ranging from natural causes to technical issues, human errors/ faults, malicious software, intentional attacks, computer crime, and international terrorism these and more were also treated.

2.0 LEARNING OUTCOMES

At the end of this module students should be able to explain

a. The importance of securing important official information from any impending electronic dilemma (from the use of computers)

b. How to deal with any issue that may have risen from the use of computers

c. Common errors people/ office staffs make that introduce the issues stated in A and be able to avoid them.

d. What information means in different organizations and how they apply them?

e. What standards on information security there are and be able to follow them

3.0 MAIN CONTENT

3.1 INFORMATION SECURITY

The Internet has no owner, no rules and limits are in place to regulate the use of personal information and prevent it from beingwrongly used by third parties. Serious security and problems are also associated with other Internet-based services, such as email, file transfers.

A failure to secure information may consequently result in irrecoverable losses and harm the credibility of an organization. ICT systems and data processed by such systems may be made dysfunctional due to a number of factors. (natural factors, technical failures, human errors and faults, malicious software, intentional attacks, computer crime, and international terrorism). The Internet enables mutual communication between information resources and information seekers either among organization or among individuals. The consequences of information in the wrong hands may be devastating, particularly in some specific areas. An organization is therefore obliged to ensure that information is protected against misuse and to minimize consequences where such misuse has occurred.

Information is of important value to organization. That is why organizations build unique systems that are supportive of their goals and must therefore be protected appropriately. Information is either created, stored, transported, or processed using information technology (IT). Organization understand the necessity to adequately protect their IT landscape. Information technology security incidents, such as disclosure or manipulation of information can have wide- ranging, adverse affects to a business and can prevent an organization from performing its tasks, resulting in high costs.IT security primarily deals with protecting information stored electronically and with its processing.

The core principles of information security, namely confidentiality, integrity and availability, form the basis for its protection. Additional generic terms used in information security include, authenticity, validity, reliability, and non-deniability. Information security is not only threatened by willful acts such as computer viruses, interception of communications or computer theft. The following can also affect information security

a. After an unsuccessful software update, applications cease to function or data has been modified without being noticed.

b. An important business process is delayed because staff members familiar with the software application are not around.

c. Confidential information is inadvertently passed on to unauthorized persons by a staff member Establishing information security is not a project with a limited timespan but a continuous process. The appropriateness and effectiveness of all elements of the information security management system, must be checked continuously. This means that not only individual information security safeguards must be checked, but the information security strategy must be reviewed on a regular basis.

The implementation of information security safeguards should be evaluated at regular intervals by means of internal audits. These also serve the purpose of collating and evaluating the experiences made in day-to-day practice. In addition to audits, it is also necessary to perform drills and implement measures for increasing staff awareness

Strategic information technology

To enhance the effectiveness of information technology management, there are several strategies based on certain fundamental principles and philosophies for achieving specific goals

General Strategy

The strategic plan will address several inter-related projects- each can be managed separately, but will be closely coordinated to ensure that inter-dependencies are identified and the common information technology and data standards are deployed for the existing technicalstandards, they will be adopted wherever practical. The information technology infrastructure is to be managed separately from the application software and the data, recognizing that each component application software, data and infrastructure has a distinct life cycle.

Strategy

The main task in information security is to develop a uniform platform for the building of information society is based on legal principles and ensuring adequate protection. In order to accomplish this task, it is necessary to create a Strategy for Information Security in an organization, and also as a basic document and, subsequently, to elaborate on and implement the specific tasks as defined under such strategic documents of most advanced information societies, or other bodies responsible for information security

Strategic objectives

The following strategic objectives have been set in order to ensure and maintain the necessary level of information security

1. Prevention: To ensure adequate protection of an organizations space and data so as to prevent the occurrence of security incidents in any/ many ways possible.
2. Readiness: Ensuring effective response to security incidents and the time necessary to restore the operation of information and communication systems after an incident has occurred.
3. Sustainability: To maintain and upgrade an organization's competence in information security, it is best practice that before policies can agreed upon, as it relates to security strategy, they should first deliberated upon and only the policies that are approved upon by management are adopted.

Information Infrastructure Strategies

A robust architecture-information technology infrastructure will be implemented.

The International Bureau, with advice from The Standing Committee on Information Technologies (SCIT) will implement an information technology infrastructure based on open system.

A secure network will be implemented to interconnect intellectual property offices.

At the beginning, a virtual private network and Internet technology will be used.

Strategic priorities

The basic strategic priorities are as follows:

1. Protection of human rights and freedoms.
2. Building of awareness and competence in information security.
3. Creation of secure environment.
4. Improvement of effectiveness in information security management.
5. National and international cooperation
6. Enhancement of national competence

3.2 INFORMATION TECHNOLOGY STRATEGIES

In small organizations, provisions for IT security may be simple, with each person holding fast to his/ her own responsibility for personal computer and files. However for large the need to establish formal security policies and procedures becomes more important. Usually when managers and their staff consider the issue of IT security, regardless of the organization the run, they will all have similar concerns. Each group will want a certain level of security for their data, procedures that are clear and easy for employees to follow. In addition to these general needs, each organization has special concerns related to its mission and goals. Offices heads must emphasize information security policies in the appropriate context in order to pursue stated objectives effectively. Also office heads shouldn’t leave out the importance of the cost involved with implementing good security practices these procedures and technologies are investments and should be properly evaluated against the costs of potential losses.

Small and Medium-Sized Businesses

Forsmall or medium size businesses, the top priority would be profit, customer service, business continuity and sustainability, SMEs are also bound by local, regional or national laws and may be accountable to a range of authorities, depending on the business they are engaged in and the business environment of the country in general. Therefore, their security focus first would be focused on two main areas:

a. Enterprise data protection from corporate spies or attackers and

b. Customer data protection, including credit card and transaction information.

Non-profit Organizations

In non-profit organizations, managers and employees are more focused on their effectiveness in the field, coordination with communities and partners and their reputation. The security of such organizations would be very low or of no importance because first of all their systems would be of very low standards. This is expected from most non-profit organizations due to the budget constraints thus they will first be facing a substantial challenge as they seek to provide uninterrupted service to their constituencies and maintain a positive image to their donors, peers and sometimes those overseers.

Universities

As with non-profits organizations, budget constraints, disbursed networks, and a wide range of technological skill are present in the university systems. Universities may face a greater number of internal threats, from students who may find hacking as a new challenge in the institutional system and engage in it

In addition, universities may be operating under a set of unique internal policies more like government regulations, they usually would need to comply with.

In the university environment, the personal data protection is extremely important, as files contain sensitive information including identification numbers, health records of students and staff alike, and academic transcripts. Potential attackers could steal, modify, or destroy such data, causing serious damage to the credibility and effectiveness of the university system.

Government Agencies

In government agencies, IT deployment may be assessed in terms of efficiency, ease-of-use and ability to link up with other departments and agencies as needed. While profitability is generally not relevant in governmental agencies like nonprofits, there are often budget controls that limit the agency's ability to acquire the latest in hardware and software security. In some cases governments agencies must keenly focus on data protection in targeted environment as their databases contain sensitive information on individuals, including personal identification, health, criminal, and tax records. Unfortunately, even in industrialized countries, data protection in government agencies lags behind the information security train and suffers from antiquated systems, inadequate funding, and overworked staffs that lack the core competencies in IT security.

3.3 INTERNATIONAL COOPERATION IN INFORMATION SECURITY

International cooperation in information security is necessary in order to ensure compatibility of solutions and sufficient level of protection of the global ICI. International cooperation is also necessary due to the complexity of the area of information security resulting in a situation where majority of countries do not have sufficient capacities to build the necessary knowhow individually, and development and implementation of necessary solutions may take undesirably long even for the most advanced countries.

Norms and standards

International standardization organizations (ISO) publish norms stipulatingsecurity requirements with respect to information and communication systems. Standards

Standards are intended to codify the successful practice of security in an organization. They are generally phrased in terms of “shall.” Standards generally are platform independent, and simply a metric to determine if they have been met.

They are developed in support of policy and change slowly over time. They might also cover such issues as how to screen new hires, how long to keep backups and how to test UPS systems. Standard does not name a particular backup mechanism or software package. It clearly states, however, what is to be stored, how long it is to be stored and how often it is to be made.

3.4 SECURITY COST AGAINST BENEFITS

One of the most difficult tasks is weighing up the costs for information security against the benefits and risks. It is initially very important to invest in measures that are particularly effective or that can provide protection against especially high risks. Experience shows that the most effective measures are not always the most expensive. It is therefore essential to understand the dependence of the business processes and tasks upon information processing so that appropriate information security safeguards can be selected.At this point it should be emphasized that information security is only achieved by interaction between technical and organizational measures. The investments in technology can be read in the budget directly.

In order to justify cost security products must be deployed in such a manner that they are of maximum benefit. The products must therefore be carefully selected for the purpose they are to serve and must be operated in the appropriate manner i.e. they must be integrated in the holistic security concept and staff members must be trained on how to use them. Technical solutions can also be replaced by organizational security measures. However, experience has shown that it is difficult to ensure not organizational measures are implemented consistently.

3.5 A BRIEF DISCUSSION OF THE ROLE OF INFORMATION SECURITY MANAGEMENT SYSTEM (ISM)

A management system describes the people, processes and technologies used to manage the activities of any organization. Each organization often develops its own unique structure that is quite supportive of the goals of that organization. Each office reflects different discipline depending on the values and culture of the organization. So, offices are defined with different areas of focus such as enterprise management, environment, health, safety, quality, web content, personnel, risk and other important issues with different emphasis on security factors such as the well-known triad of confidentiality, integrity, availability, or on privacy or product assurance. Though individual organization build a unique system, the management systems have several common elements, which include policy, planning, implementation and operation, performance assessment, improvement and management review.

ISMS is that risk management strategy of the organization chartered and empowered by the Security Policy Statement and managed by the Information System Security Officer because its focused on managing information security within an organization. of growing concern to many organizations is the challenges presented in the information society and natural threats (fire, flood, earthquake) or human induced (viruses, SPAM, privacy, hacking, industrial espionage) security challenges.

The information protected does not just in electronic format in computers or network. It includes paper-based information and extends to intellectual property.Therefore, a security system that is Properly implemented can be effectively used by either small or larger organizations, and can be tailored to protect information in organizations including data processing centers, software development, e-commerce, health care organizations, finance, manufacturing, service organizations, non-governmental organizations, universities and colleges of education, and not-for-profit organizations.

How does an ISMS support information security?

An effective implementation of the framework ensures that a management team, extensively committed to information security, provides appropriate resources to support the processes each organization needs to achieve appropriate information security, provides appropriate resources to support the processes that the organization needs to achieve appropriate information security, a procedure that includes the basic management of the system, training and awareness. It emphasizes a risk management process that guides the choice of safeguards and, the metrics necessary to ensure that chosen controls are implemented correctly. Companies operating across several jurisdictions have the added challenge of identify and complying with the prediction

Note: ISMS is an organization-specific information security roadmap. Its documentation includes:

- Security Structure Organization Chart
- Risk Management Strategy
- Information System Security Officer job description
- Management Security Forum charter
- ISMS Document Control Plan

- Security Risk Assessment
- Statement of Applicability
- Customer Code of Conduct
- Security Perimeter Demarcation drawings
- The benefits of using ISMS,

Organization operating the standardized ISMS framework can be rest assured that they are measuring and managing their information security processes in a structured manner, reflecting best practices that can be applied to meettheir official and business needs. Such a framework helps an organization ensures that security-resource is spent on the most effective areas for the business.

Security Policy Statement

The security policy statement is a general, top-level statement of intent for upper management, similar to a "Mission Statement." Its intent is to show upper management's commitment to information security goals and thus, empowers the Security Organization Structure. The Security Policy Statement includes statements to the effect that the policy of the organization is that:

- Confidentiality of information will be assured
- Integrity of information will be maintained
- Regulatory and legislative requirements will be fulfilled
- Availability of information to authorized users will be met
- Information security training will be available to all staff
- Breaches of information security, actual or suspected will be reported to, and investigated by the Information System Security Officer

The non-specific nature of the Security Policy Statement does make it appropriate for public disclosure.

Duties of an Information System Security Officer

A formal job description of the principal duties of an Information System Security Officer would include:

- Establish and review the security risk assessment
- Record and resolve security incidents
- Lead the management security forum
- Prepare management security forum security briefs
- Lead the incident response team
- Maintain the statement of applicability
- Evaluate changes in asset base and resultant security implications
- Consult and advice on general information security issues
- Select controls and risk mitigation
- Monitor ongoing compliance with security standards
- Establish and maintain contacts with external security resources

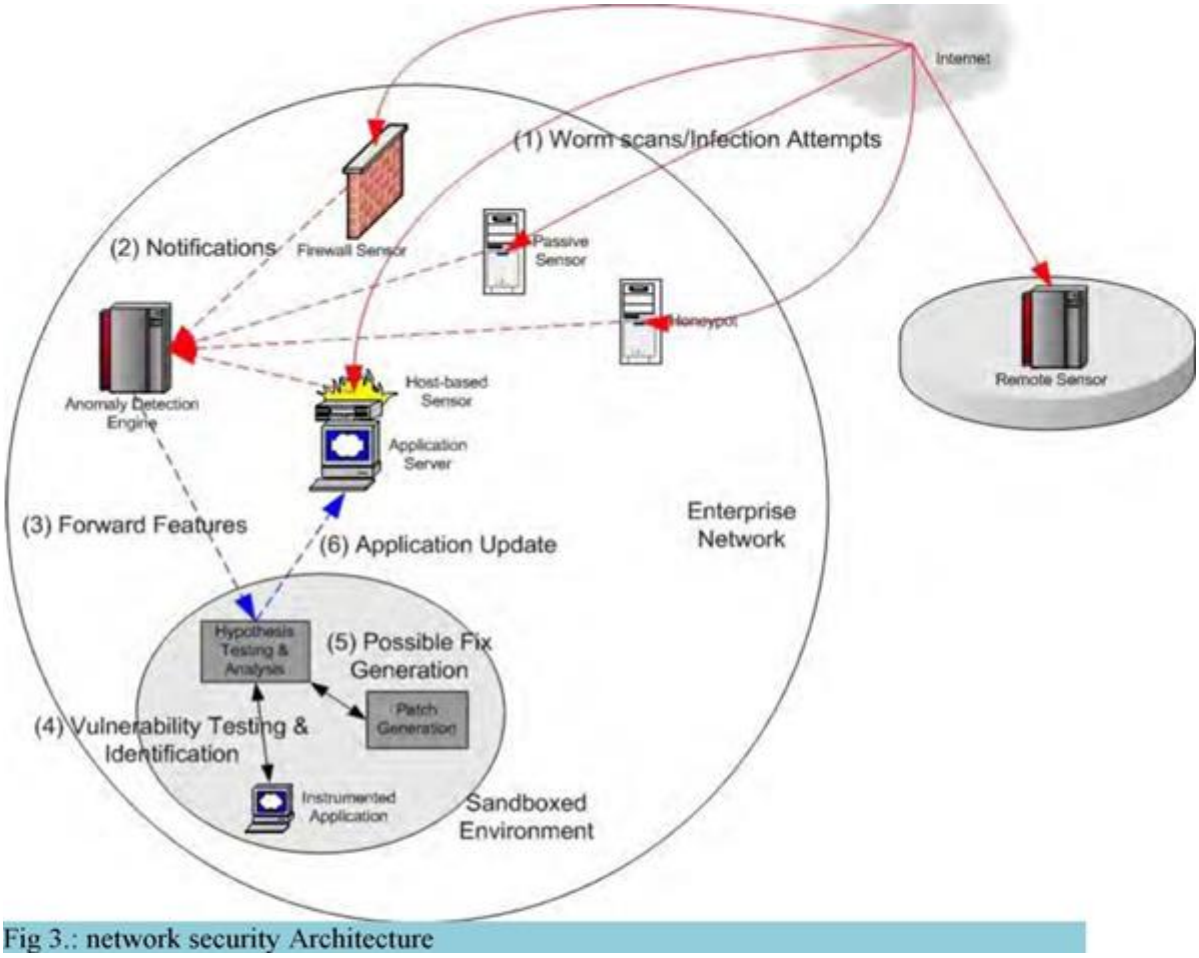


Fig 3.: network security Architecture

Security Management

Security Management consists of the Chief Information Officer, Engineering Manager, Data Center Manager, and the Information System Security Officer. Other members could be included as required.

Management Security Forum duties include:

- Develop security objectives, strategies and policies
- Discuss status of security initiatives
- Provide ongoing management support to the security process
- Obtain and review security briefings from the Information System Security Officer
- Serve as an alternative channel for discussion of security issues
- Yearly review and approval of the Information Security Policy
- Yearly review and approval of the ISMS

- Review security incident reports and resolutions
- Formulate risk management thresholds and assurance requirements

Security Response

Incident Response Team - formed to create and carry out an Incident Response Plan. The team should include staff with various skills covering all aspects of an organization's information processing system. Tools are procured, same way members are trained, and rosters established. The team is saddled with the Incident Response mission to:

- Prepare for an incident
- Identify an incident
- Control the incident
- Eliminate the intruder
- Recover from the intrusion
- Learn from the incident

Methodologies include processes to:

- Identify, escalate, and de-escalate security events
- Assess organizational security
- Maintain organizational security

External Liaisons- This could be easily established with local law enforcement agencies within and around the organization, as well as with legal and public relations entities. For business enterprises it creates a trust for intending customers and it goes a long way to installing fear in the mind of the employees.

Security Maintenance

Exploit Tracking option- qualified specialists in different organizational networking elements are tasked with tracking relevant exploits and reporting information of concern to the Information System Security Officer in that organization.

Change Control Board -The change control process includes change submission request and evaluation, as well as recovery and back-out procedures. In addition, a Document Control plan is initiated to control the ISMS documentation.

Security Infrastructure

a. Plans/Programs are developed to meet information security goals. These Plans and programs can address:

- Information security awareness
- Change control
- Incident response
- Intrusion detection
- Business continuity
- Acceptance test

b. Guidelines are established to formalize adoption of information security best practices. Guidelines usually address:

- Organizational security
- Access control
- Data protection
- Router configuration

c. Policies are established to communicate conceptual information security organizational goals in the Information Security Policy.

d. Standards – They are established to support the implementation of Information Security Policy. Standards can address:

- Personnel security
- Employee conduct
- Data classification
- Data labeling
- Data encryption
- Data recovery
- Data routing
- Access control
- Firewall standard
- Network security
- Network application
- Data switching
- Logging
- Data transmission
- Alarm

e. Procedures established to detail information security implementation in support of relevant standards and policies. Procedures can address:

- Risk management
- Backup/Restore
- System user add/delete/modify
- Customer provisioning
- Equipment maintenance
- Asset control
- Alarm
- Security maintenance
- Terminal server add/modify/delete

- Password/shared secret change
- Firewall setup
- Incident response

Security Education

Security Awareness Program - personnel must have the knowledge to understand the significance of their actions. Human interaction may act in ways that undermine security controls, causing security breaches. A Security Awareness Program is chartered to:

- Clarify why security is important and controls are needed
- Clarify employee security responsibilities
- Serve as a forum to discuss security questions

The Security Awareness program should include “new hire” orientation, and ongoing Refresheractivities.

Brief history of ISO/IEC 27001 and the increased international use of ISMS

BS 7799-1, the "Code of Practice for Information Security Management," began as a British standard. First published in 1995, it contained best practice security controls to support industry and government organizations in the implementation and improvement of information security. Once it was published, organizations recognized the value in a common framework and its popularity grew. In 1998 BS 7799-1 was revised, taking into account identified improvements and updates adding new controls in consideration of the developing technologies such as e- commerce, mobile computing and third party activities. The international interest in the code of practice (part 1) led to its submission as the basis for an ISO standard. Subsequently ISO/IEC 17799 was published as an international standard in December of 2000. ISO/IEC 17799 is now maintained within the remit of Working Group 1 of the information security committee ISO/IEC JTC1 SC27 "IT Security Techniques". It is impossible to ascertain those organizations using

ISO/IEC 17799 presently, but it is known as the most popular security standard in terms of sales and is referenced not just by BS 7799-2, but by a host of other frameworks and guidelines. After BS 7799-1 was development in 1995, the need to define the management system to host the controls in the "Code of Practice" was identified and BS 7799-2 "Specifications for Information Security Management System" was developed. In order to align BS 7799-2 with the quality management system standard ISO 9001:2000, it was revised and re-published in 2002. Other countries published their own national standards substantially based on BS 7799 including the Netherlands (SPE20003), Australia/New Zealand (AS/NZS 4444), Denmark and Sweden (SS627799), and India (IS14357:2002). BS 7799 was translated into different languages such as Chinese (Mandarin), Danish, Dutch, French, German, Japanese, Korean, Swedish and so o. The definition of the ISMS itself is given by ISO/IEC 27001:2005. By defining the fundamental best practices of the management system, this standard ensures that a risk assessment is made, and that this is used to correctly select the safeguards from the code of practice given in ISO/IEC 27002 (17799:2000). A "statement of applicability" documents the applicable safeguards and is a flexible document, depending on the vulnerabilities and threats that have been identified for the organization in question.

The structure of the standards

ISO/IEC 27001 is designed to be of a general use, i.e. provide consistency between disparate organizations. The organization in question can be a university or a collage, Multi-national Corporation or a small project team, a small business, or even a non-commercial organization.

ISO standards for information security

In the international standards organizations ISO and IEC, it was decided to consolidate the standards for information security in the 2700x series since the number of standards is constantly increasing. The most important standards here are:

- ISO 13335

The ISO 13335 standard "Management of Information and Communications Technology Security" (formerly "Guidelines on the Management of IT Security") is a general guide for initiating and implementing the IT security management process. It provides instructions but no solutions for managing IT security. The standard is a fundamental work in this area and is the starting point or reference point for a whole series of documents on IT security management.

- ISO 17799

The aim of ISO 17799 "Information Technology - Code of Practice for Information Security Management" is to define a framework for IT security management. ISO 17799 is therefore primarily concerned with the steps necessary for developing a fully-functioning IT security management and for integrating this securely in the organization, as defined by ISO 17799, Information security is characterized as the preservation of:

- Confidentiality: ensuring information is accessible only to those authorized to have access.
- Integrity: safeguarding the accuracy and completeness of information and processing methods.
- Availability: ensuring that authorized users have access to information and associated assets when required.

As a standard that is primarily conceptual, ISO 17799 is actually not:

- A technical standard

- Product or technology driven
- An equipment evaluation methodology such as the Common Criteria/ISO 15408which deals with functional and assurance requirements of specific equipment
- Related to the “Generally Accepted System Security Principles,” (GASSP) which is a collection of security best practices
- Related to the five-part “Guidelines for the Management of IT Security”, or GMITS/ ISO

The necessary IT security measures are stated in of the ISO/IEC 17799 standard. The recommendations relate to the management level and contain almost no specific technical information. Their implementation is one of the many options available for fulfilling the requirements of the ISO 27001 standard.

- ISO 27001

Due to the complexity of information technology and the demand for certifications, numerous manuals, standards and national norms for information security have emerged over the years. The ISO 27001 "Information Technology (Security Techniques) Information Security Management Systems Requirements Specification" is the first international standard for management of information security that also allows certification.

ISO 27001 provides general recommendations for, among other things, the introduction, operation, and improvement of a documented information security management system that also takes the risks into account. The controls from ISO/IEC 27002 are referred to in a normative annex. The readers however, are not provided with any assistance for the practical implementation.

- ISO 27002

The goal of ISO 27002 (previously ISO 17799:2005), "Information technology - Code of practice for information security management", is to define a framework for information security management. ISO 27002 is mainly concerned with the steps necessary to establish a functioning security management system and anchor it in the organization. The necessary security safeguards are described briefly in the ISO standard ISO/IEC 27002. The recommendations are primarily intended for the management level and do not contain much specific technical information for this reason. The implementation of the security recommendations in ISO 27002 is one of many ways to fulfill the requirements of ISO Standard 27001.

Note: Standard ISO 17799 was merged with ISO 27002 at the beginning of 2007 without effecting any changes to its contents in order to underscore the fact that it belongs to the ISO2700x series of standards. It is also not appropriate to describe them in detail here, but by looking at the various high-level paragraphs of the standard the breadth of activities can be appreciated. This code of practice cannot address every situation, Thus the standard allows further controls to be specified when needed. The control areas include:

- Security Policy
- Organization of Information Security
- Asset management
- Human Resources Security
- Physical and Environmental Security
- Communications and Operations Management
- Access control
- Information Systems Acquisition, Development and Maintenance
- Information Security Incident Management
- Business Continuity Management

- Compliance

- ISO 27005

This ISO Standard "Information security risk management" contains general recommendations or risk management for information security. Among other items, it prescribes the method for risk management. ISO/IEC 27005 replaces the previous standard ISO 13335-2. "Management of information and communications technology security, secondly, it provides guidelines for the management of information security.

- ISO 27006

ISO Standard 27006 "Information technology - Security techniques - Requirements for the accreditation of bodies providing certification of information security management systems" specifies requirements for accrediting of certification bodies for ISMS and also handles specific details of the ISMS certification process.

- Other standards in the ISO-2700x series

The ISO 2700x series of standards will probably be made up of ISO standards 27000-27019 and 27030-27044 in the long term. All standards in this series handle different aspects of security management and are based on the requirements in ISO 27001. The other standards should contribute to improved understanding and the practical application of ISO 27001. They handle, for example, the practical implementation of ISO 27001, i.e. with the measurability of risks or with methods for risk management.

The benefits of implementing ISMS may be divided into two major groups: internal and external benefits.

The internal benefits include:

- Heads of management get an independent review and report of the strength and weakness of the organization’s ISMS.
- People/ employees have the tendency to follow rules and regulations if they believe that they could/will be audited.

The external benefits include:

- The reputation of an organization can be of vital importance to an organization working in the information fields. Just one publicized security incident can destroy years of work and significantly affect the goodwill of the organization research has shown that the value of a company can be affected by an incident.
- If your organization's sector is one in which information security is valued, then a certified ISMS can offer a differentiator between you and your competitors. "Would

You rather do business with a company that has an accredited third party's assurance that the management system for information security is solid enough, or one that doesn't?"

- Certification by an accredited certification body may offer you a defense should you ever be subjected to litigation in relation to information security related issues. If you can prove that you follow industry best practices then perhaps you may make the case that you had taken reasonable precautions.

There are some basic steps of certification.

a) For an organization to be fully certified, commitments from leading heads throughout the process are essential and vital to success.

b) Define and implement the system. Make sure that you think very carefully and understand the implications of your chosen scope. There are several guidelines and consultants who can help you achieve this before you go ahead and deal.

c) . Hang the certificate on the wall! It’s simple but extremely important/ effective.

d) Be ready for surveillance audits designed to ensure that you are maintaining and improving on the standard that you initially achieved.

Common pitfalls

The typical pitfalls in implementing ISMS are related to:

- Lack of Senior Management's commitment
- Scope issues: insufficient, inaccurate, or even completely inappropriate
- Awareness of employees: Many organizations face the challenge of ensuring that their staff are aware of the applicable policies such as activating screensavers, firewalls and virus detection systems.
- Expertise of employees: The problem exists not only on the expert level, but also on management and user levels. Technology changes with an ever increasing speed, is partially the reason, however there is also the lack of training at ALL levels. Organizations are just simply not providing sufficient training to their employees.
- Implementation flaws: flaws such as open firewalls, routers with default passwords, deactivated security measures are quite often the result of a lack of awareness or expertise of employees.
- No risk assessment: This could eventually result in spending resources in areas that are less important, and ignoring those that are more important.
- Insufficient resources: organizations are constantly in the process of allocating resources. The challenge for many organizations is the proper/correct allocation of resources - many ISMS systems suffer in this area because management fails to conduct an adequate risk assessment.

Protection of human rights and freedoms

The potential offered by Information Technology may be misused; therefore ways should be sought to protect legitimate interests of all stakeholders involved in the use of Information Technology. However, traditional regulatory and defense mechanisms

Developed in the past may only hardly be carried over into the digital space. In particular, ethics and moral, which are being formed gradually, belong to a private sphere of individuals, or communities at the most, and have no legal force. Good legislation is necessary in order to make sure that detected crimes tending to violate human rights and freedoms are effectively prosecuted. Amidst growing security problems of the digital space (computer crime, organized crime, terrorism),it will be necessary to define a legal framework for the protection of digital space

Building awareness and competence in information security

Analyses have shown that many security incidents are caused by insufficient expertise and knowledge of informatio6n system administrators, users, as well as information security managers. On that account, the issue of their qualification and education needs to be addressed.

Qualification does not entail only education but, above all, experience and expertise in any given field. In the light of potential threats, it is necessary to achieve the required level of security awareness i.e.by understanding the need and nature of information security among all its users in order to safeguard the digital space and, subsequently, translate security awareness into a competence.

The following strategies would help to achieve and retain workable level of security awareness and competence if followed:

- Raising awareness using the Internet, mass media and methodology material, among citizens, commercial and non-commercial organizations and public institutions of the risks related to the use of ICT and of means available to protect against threats.
- Strengthen educational activities by making information security course as basic part of information classes being taught at school and Introduce programmers to enhance security awareness and competence of ICT users, special requirements for information security.

(See you tube video on office information security 1- http://bit.ly/ZLPznM)

Creation of secure environment

The role of the state is to create good conditions for co-operation among all involved stakeholders in any office environment. This includes, in particular, laying down a legal framework, drafting strategic documents and methodology materials, determining competences, obligations and responsibility. Another important task is to create uniform information security standards and coordinate how they are issued. **Security Education and training**

Security Awareness Program - office personnel must have the knowledge to understand the significance of their actions. Human interaction may sometimes act in ways that undermine security controls, causing security breaches. Therefore, a Security Awareness Program is chartered to:

- Clarify why security scheme is important and what control measures are needed
- Educateemployee on responsibilities towards achieving the desired goals or Objectives

Security level

The Security Awareness program should include “new hire” orientation, and ongoing refresher activities. A critical factor directly affecting the ability to find and implement adequate solutions to security problems is individual’s competence in any organization, which is closely related to obtaining knowledge. In this respect, the following need to be analyzed:

- Knowledge needs of the ICT user categories (lay users, IT specialists and information security experts).
- Capacity and content of what is taught in-school and other training types available like lifelong learning, corporate trainings, e-learning,

Based on these analysis, the following can be proposed

- Information security (IS) into Information Technology (IT) or other relevant causes introduced at lower levels and improved upon at higher levels.

- A lifelong learning scheme, mainly the basic and later a follow-up training course for those who would later become specialists in the field of Information Technology (IT).
- To publish and support publishing of specialized literature and methodology documents addressing particular issues of information security.

(See you tube video on office information security 2, 3- http://bit.ly/ZLPznM , http://bit.ly/1 vDEyO 1)

SELF ASSESSMENT EXERCISE

Enumerate major duties of an Information System Security Officer

Answer to the Self Assessment Exercise

The duties of an Information System Security Officer include to:

- Establish and review the Security Risk Assessment
- Record and resolve security incidents
- Lead the Management Security Forum
- Prepare Management Security Forum security briefs
- Lead the Incident Response Team
- Maintain the Statement of Applicability
- Evaluate changes in asset base and resultant security implications
- Consult and advice on general information security issues
- Select controls and risk mitigation

4.0 CONCLUSION

Security issues within and around any organization cannot be over emphasized, the unit tried to point common overlooked information security issues, provided points in form of solution and training that could be followed and easily digested.

We are aware that resolution on how information security issues around the office cannot be exhausted so it's imperative that we take note of upcoming ideal and look out for related solutions and improvement

5.0 SUMMARY

Information security issues were treated alongside various information technological issues, some common causes pointed out, and how they could be resolved,

6.0 TUTOR-MARKED ASSIGNMENT

State three things that information security characterises

6.1 Guide on tutor marked assignment

Information security is characterized as the preservation of:

a. Confidentiality: ensuring information is accessible only to those authorized to have access.

b. Integrity: safeguarding the accuracy and completeness of information and processing methods.

c. Availability: ensuring that authorized users have access to information and associated assets when required.

7.0 REFERENCES/FURTHER READING

1 (http://bit.ly/1DZ8bxG)

2 Information security management system (ISMS), BSI standards 100-1.

3 information technology security handbook by Sadowsky, G., Dempsey, J. X.,

4 Greenberg, A., Mack, B. J., Schwartz, A. (http://bit.ly/1x86VJQ)

5 http://www.itdesk.info/

6 (http://bit.ly/1 yTJnpT)

7 Information technology. Strategic implementation plan *SCIT/4/2. ANNEX 2...* (http://bit.ly/1 AcuO54 *)*

8 (http://web.mit.edu/security/www/gassp1.html),

9 (www.commoncriteria.org),

UNIT 2: THE FUTURE FOR INFORMATION TECHNOLOGIES

1.0 INTRODUCTION

This module discusses the future for information technology in the office environment. Compared to present day technology and how useful these equipment would be when introduced

2.0 LEARNING OUTCOME

At the end of this unit, you should be able to:

a. Explain what is Autonomic computing,

b. Recognize or identify one when you see it regardless of the form its taking.

3.0 **MAIN CONTENT**

The future for information is autonomic computers, a world where systems are self-managingpresently we have systems managed by individual inputs, though they are actually being improved upon in terms of gathering information, speed, processing, simulating etc. The future is where the computers would have to think for itself and the ideas is already being employed in the making of autonomic systems

If you think about the biological systems like the human body, they're tremendously complex and very robust. The human body, for example, is constantly making adjustments. Your heart rate and your breathing rate are being controlled. All of these things happen beneath the level of conscious control.So biological systems give us a metaphor for thinking about computer systems. When we take a look at theattributes of biological systems, we find some attributes there that we wish our computer systems had, like self-healing, self-configuring and self-protecting attributes. We can begin to build the attributes that we see in biological systems into complex computer systems.

3.1 Autonomic Computing

Autonomic computing is about making systems self-managing. This is a term that was coined by Paul Horn of IBM Research to help direct attention away from traditional notions of how people think about computer systems and more towards biological systems.

A biological system is more like the human body which is extremely complex. The human body, for example, constantly makes adjustments like controlling ones breathing rate. These and more, usually happen beneath the level of conscious.

Looking at the attributes of biological systems, we can find attributes that we wish our computer systems had, like self-healing, self-configuring and self-protecting. We can begin to build the attributes that we see in biological systems into complex computer systems. In the end, it translates into real customer benefits because these more complex systems would be easier to administer.

The vision of autonomic computing represents an amazing combination of revolution and long term economizing. Indeed the deployment, maintenance, and evolution of enterprise systems often require enormous efforts by extremely valuable staff, whose successes add visibly little business value but are however vital and their failures catastrophic for the whole enterprise. Autonomic computing, in its broadest sense, seeks to reduce the need for such heroic efforts and their consequential risks.

.2 The vision for Autonomic systems

The increasing use of information systems to collate, analyze, locate, summarize and process information has had an immense impact on modern life. That so much change has occurred in back offices makes it easy to underestimate the extent to which the design, construction, and especially maintenance of these systems challenge the capabilities of engineers.

In some minds, autonomic computing remains closely associated with the original IBM initiative. To the IEEE and other organizations, the term broadly describes the application of more highly developed technology to the management of advanced technology. Including visions are clearly related: organic computing, bio-inspired computing, self-organizing systems, ultra-stable computing, autonomous and adaptive systems. All these could be described as autonomic initiatives.

Enterprise systems are only one of a class of complicated systems that function consistently and reliably, independent of detailed human involvement. Many management tasks can no longer be manual operators. The system itself must take responsibility to adapt its own operation in the face of changing conditions. This need for self-adapting behavior characterizes the domains in which autonomic computing ideas are gaining traction.

To take two examples:

a. The main cost for the operator of a data center is power, thus the provisioning of systems to match workloads and service-level obligations becomes a critical business success factor, as no human operator can provide services with sufficient efficiency.

b. Applications like environmental sensing cause networks to meet the real world in ways that preclude direct human management. The viability of environmental sensing-essential for effective science and policymaking-therefore depends on sensor systems' ability to self-manage in the face of a changing environment.

The most widely recognized elements of autonomic systems are their self-properties: For systems to be self-managing they should be self-configuring, self-healing, self- optimizing, self-protecting and exhibit self-awareness, self-situation, selfmonitoring, and self-adjustment despite their seeming simplicity, these goals mask a complex interaction between the behaviors of systems and their goals, users, and their relationships with the external environment. A system can only be optimised against some external criteria, as such self-optimization implies that these criteria are made available in some way to the management system. The composition and analysis of systems probably imply that the criteria be explicit, symbolic, and machine-readable rather than embedded implicitly into algorithms.

3.3 Resolutions made possible by the autonomic computer within the industry

As computing power has increased, it gives the ability to create much larger kinds of applications. This complexity comes at a cost because humans are sitting behind the scenes, making all these machines work together. Thehope is to see autonomic computing behavior in the computer systems, so it becomes less costly for people to build these complex applications; in fact, some people believe that the costs of managing these systems undermine the benefits these systems provide, even if the organization decides to use outside services. To overcome this, academic and industry researchers, like IBM have begun working on autonomic computing systems, which are self-managing, meaning they need only minimal human intervention to operate. In other words, in a traditional computing environment, system operators often have to fine-tune the computer's configuration in order to efficiently solve a particular type of complex problem. In an autonomic computing environment, the ultimate goal is to allow the system to do everything else on its own, completely transparent to the user. In order to deal with any malicious attacks (e.g., by automatically quarantining infected parts of a system) clearly, these are some

Formidable tasks researchers have to address, however considering the time and money that is currently spent on managing and maintaining IT infrastructures, autonomic computing systems are prospects for the future. Thus, an autonomic computing system must know itself and be self-configuring, self-optimizing, self-healing, and self-protecting.

In order to optimally perform different tasks, an autonomic system must know itself; meaning it must know its configuration, capacity, and current status, and know which resources it can draw on.

Secondly, in order to be able to use different resources based on different needs, the system should be self-configuring, i.e. the user does not have to take care of any configuration issues. Self-configuring means issues relating to upgrade issue, although people may actually prefer to exercise some level of control over their personal systems. Autonomic computing isn't about making people go away; it is really changing the nature of the partnership between system administrators and the computers. It is putting more of the burden on the computers and less on the system administrators. Meaning the system administrator plays a lesser role than in a non autonomic computing system

Next, as any parts of a system can malfunction, an autonomic system should be selfhealing so that any potential problems are detected and the system is reconfigured so as to allow the user to continue performing the tasks, even if parts of the system are not operational.

Finally, as almost any computer system can be the target for an attack, autonomic computing systems must be aware of any potential dangers and must be able to deal with them.

Major benefits of an autonomic system to administrators and users would be:

d. For users, if the autonomic systemis successful, it would reduce the number of times you have to call your help desk.

e. For administrators, we think it translates into the need to spend less time on small routine double checks on their machines. If the machines are self-tuning, less timewould be spent on checkups and more time on thinking about interesting issues like how much benefit to the company the section of the infrastructure will produce.

The difficulty and the risk of something going wrong in building an autonomic computing system with this high level of complexity in terms of the software and technique been used is really very high. To be able to deal with these problem the key really is standards. An example is the Open grid

services architecture known, as the OGSA standard. It is an important method to standardize the way these autonomic elements begin to communicate with each other. Technical challenges in autonomic computing system could be daunting, especially large-scale autonomic systems with tens of thousands or hundreds of thousands of computers or devices that are all somehow working together and self-optimizing to some extent, it could be some of the elements are making trade-offs against other elements. There is still a lot of challenge on how to build and test systems for now. Howeversteps are being taken to achieve these goals in the longer run

There's a social issue, which in some ways is just as difficult as the technology issues. There is the need for these heterogeneous systems multiple computers from multiple vendors-lots of software from lots of different people to work together. If it's all going to work, you would really need people to buy into the right standards. This is a social problem.

4.0 CONCLUSION

The future for information technology is such that it is bright because there will definitely be improvements on heterogeneous computers like the ones we have discoursed. This implies that there is room for much improvement to be made as there are gaps between present technology and the future. Though we are in the future to some extent

5.0 SUMMARY

We looked at the future of office information technology, the hopes for the future and other plans. This we treated from the angle of a heterogeneous system.

6.0 TUTOR MARKED ASSIGNMENT

Discuss the needed essentials before a system can be self-managing.

6.1 Guide on tutor marked assignment

For systems to be self-managing, they should be self-configuring, self-healing, self- optimizing, self-protecting and exhibit self-awareness, self-situation, self-monitoring, and self-adjustment despite their seeming simplicity, these goals mask a complex interaction between the behaviors of systems and their goals, users, and their relationships with the external environment. A system can only be optimised against some external criteria, as such self-optimization implies that these criteria are made available in some way to the management system. The composition and analysis of systems probably imply that the criteria be explicit, symbolic, and machine-readable rather than embedded implicitly into algorithms.

7.0 REFERENCE/ FURTHER READING

1 (http://bit.ly/1DZ8bxG)

2 Information security management system (ISMS), BSI standards 100-1.

3 information technology security handbook by Sadowsky, G., Dempsey, J. X.,

4 Greenberg, A., Mack, B. J., Schwartz, A. (http://bit.ly/1x86VJQ)

5 http://www.itdesk.info/

6 (http://bit.ly/1 yTJnpT)

7 Information technology. Strategic implementation plan *SCIT/4/2. ANNEX 2...* (http://bit.ly/1 AcuO54 *)*

8 (http://web.mit.edu/security/www/gassp1.html),

9 (www.commoncriteria.org),