



A

TERM PAPER

ON

**OPERATION, MAINTENANCE AND MANAGEMENT
OF ENGINEERING EQUIPMENTS FOR SUSTAINABLE
DEVELOPMENT IN NIGERIA**

FOR ENG384

BY

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ABSTRACT

Computer engineering exists at the intersection of technology and innovation. A dynamic professional field, computer engineering offers varied career paths in both hardware engineering (e.g. microprocessors) and software development—each which drive computing advances in industries ranging from aerospace to healthcare. The following guide provides a high-level overview of computer engineering, including a look at different degree and career paths, related skills and technologies, earning potential and employment outlook.

INTRODUCTION

WHO IS A COMPUTER ENGINEER?

Computer hardware engineers "research, design, develop and test computer systems and components such as processors, circuit boards, memory devices, networks and routers," according to the U.S. Bureau of Labor Statistics (BLS). Computer hardware includes:

microprocessors;

memory chips: random-access memory (RAM), read-only memory (ROM) and nonvolatile rewritable flash memory;

data storage devices: hard disks, solid-state drives and optical drives;

input devices: keyboards, mice, joysticks and gaming controllers, cameras, microphones, scanners, touch screens and remote sensors;

output devices: printers, monitors, audio devices and remote controls; and

networking components: adapters, modems, switches and routers.

An important function of computer engineers is to integrate these components into computer and network systems. This all requires a good working knowledge of electrical engineering.

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LITERATURE REVIEW

COMPUTER ENGINEERING ON OPERATION OF ENGINEERING EQUIPMENTS

Computer engineers are the link between electronics engineering and computer science disciplines. They develop and test computer software and hardware to keep up with the ever-growing technological world. To effectively do their job, computer engineers equip themselves with a number of tools. Some of these tools are the kind commonly found in electronic hardware stores.

Computers

A computer engineer should have an upgraded personal computer in his arsenal of tools. A huge portion of his time is spent working with computers. Engineers in this field tend to customize their computers to suit their needs. The customizations are either in terms of software or hardware, most of them being system updates and upgrades. These engineers usually aim at making their computers powerful enough to smoothly perform intensive functions like programming and circuit designing.

Specialized Computer Software

Numerous special software programs are available that can help to simplify the work of computer engineers. For instance, computer engineers use disk imaging software to create exact copies of hard drives including the operating systems installed on them. The imaging software comes in handy to recover systems from hardware faults and other problems. These engineers can also customize the images to suit particular needs and make them available online for anyone to access. Other popular software these professionals use are developer tools and software for programming and Web design and also anti-spyware programs for protection against spyware and malware.

Electrical Testing Tools

Engineers in the computer business use many techniques and principles that they borrow from electronics engineers. They must be conversant with all computer hardware components, which are usually electronic circuits cascaded together. Some of the electrical testing tools computer

engineers have in their possession are multimeters and tester screwdrivers to help them inspect and diagnose delicate computer circuits. These tools help them to identify faulty components or broken circuits in the system and sometimes help them test whether a newly installed component is working properly.

Electrical Repair Tools

Computer engineers should also have the necessary tools to help them repair faulty computer parts. Some of the repair tools they carry around are wire cutters and strippers, which help them prepare the data cables and buses necessary for data transfer. Another very important tool a computer engineer may have is a soldering iron, which melts solder from faulty integrated circuit chips to help loosen them during extraction. The iron can also be used to fix new IC and small wires onto circuit boards.

COMPUTER ENGINEERING ON MAINTENANCE OF ENGINEERING EQUIPMENTS

Why Computerized Maintenance?

- Maintenance : A significant portion of cost of doing business leading to optimum usage of maintenance.
- Planning & scheduling is one of the ways for optimization.
- Amount of clerical work or paper shuffling associated with such planning & scheduling is a great problem.
- Computerization can solve such problem.
- A good computerized system can provide information about availability of materials, costs of job, facility or type of work so on.

Elements of Computerized Maintenance

- Assignments of cost Equipment identification Employee lists Priorities
- Store catalog
- Equipment Bill of materials Cause codes
- Action codes

Advantages of Computerized Maintenance

- Large quantity of data can be stored
- Less response time
- Better accuracy of information
- Cost optimization
- Less paper work
- Easy feedback of information
- Number of alternative solutions are possible
- Accurate forecast and better planning

Limitations of Computerized Maintenance

A computerized maintenance management is a fine and powerful tool for assisting but has limitation of

- Authenticity of work request
- Sketching of work
- Decision about materials
- Other constraints effecting maintenance

Operating characteristics of a Good System

1. online enquiry

- Work orders • Materials
- Equipment

2. CustomReport generation

- Work order • Materials
- Equipment

3. Performance Reports

- Hours analysis
- Backlog summary
- Closed job summary • Schedule compliance by hours

Implementation of CMMP

Program definition

Information required. What??

Organizing responsibilities of

Maintenance planning and scheduling

Uploading information like employs list, parts list, equipments list etc.

Maintaining the files based on durations defined Forms preparation for data entry

Security for system regarding usage and modifications.

Implementation of CMMP

Orientation

Orientation of CMMS from the highest level to the lowest level workforce.

Training

All users to write a work request

All users how to exercise the priority system

All data entry people for the procedures to enter the correct data.

Maintenance management and concerned people how to read and interpret reports and other available information.

Maintenance of Equipments

Maintenance

Modifications

Facilities (Buildings, Control rooms, Floors, Lifts)

Equipments (Mechanical, Electrical etc)

• **Rotary**

• **Stationary**

Computerized Maintenance Model

• Breakdown distribution

Indication of time between failure

- Breakdown period:

Time for which equipment remains out of service

- Length of time for the actual repair time of the equipment

Maintenance Decision Making

- Equipment conditions
- History of failure
- Direct cost of maintenance
- Inventory values and material movements • Man-hours spent on maintenance
- Overtime paid and use of other facilities
- Performance of the maintenance workforce • Reliability and maintainability of equipment

Computerized Maintenance Planning

- **Major Question...**
- Were the communications clear and adequate for the people associated with the work?
- Was the job plan simple enough to understand?
- Effective planning.....
- Better access to the information
- Better planning of available resources • Better control
- Overall cost reduction

Computerized Maintenance Planning

- Communication gap
- Computer vendors role
- Master plan
- Management information system (MIS) • Managerial participation
- Information needs
- Human acceptance

RECOMMENDATION AND CONCLUSION

Conclusion

Although computer engineering has affected our global community in many ways, it is difficult to discern whether these technological advancements have made improvements or adverse impacts upon society and on the field of industrialization, economic growth and sustainable development goals. Although computer engineering has affected our global community in many ways, it is difficult to discern whether these technological advancements have made improvements or adverse impacts upon society and on the field of computer engineering. In this presentation we have explored both the improvements and the impediments that computer engineers has provided in the various aspects of computer engineering; some of these aspects include: industrialization, economic growth and sustainable development goals.

Recommendation

Computer Engineers develop and improve the software programs and hardware that make computers run. Computer Engineers may specialize in either software or hardware.

From operating system software, such as Windows and Linux, to individual computer programs, such as Photoshop and Microsoft Office, Software Engineers turn piles of hardware into fully functional computers. Hardware Engineers develop the hardware of computers, including the motherboards, graphics and audio cards and drives that are later programmed by Software Engineers.

REFERENCES

- A comprehensive list of necessary skills and abilities for computer engineers can be found at MyMajors.com.
- Look for top-rated computer engineering programs at TopUniversities.com.

- Report on the future of technology, written by Dejan Milojicic, president of the IEEE Computer Society and a team of nine technologists.