

Refocusing Computer Engineering and Computer Sciences in Educational Institutions For Economic Sustainability And Local Input Contents Of Computer And Mobile Phones In Nigeria

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Abstract: This paper is focus on the Refocusing Computer Engineering and Computer Sciences Education for Economic Sustainability and Local Input Contents of Computer and mobile phones in Nigeria. There is over ten millions computer system, and more than hundred millions mobile phones in use in Nigeria. All hardware, software and accessories of the computer systems/mobile phones components use in Nigeria are imported from foreign countries e.g. China, Taiwan, USA, Europe and Dubai in foreign currencies and when exchanged in Nigeria currency (naira). The foreign exchange trough the importation is of adverse to the country economy sustainability. Nigeria can improve her value added tax on locally made or assembled computer and mobile phones by fabricating some of the components and accessories from local raw materials. This could be achieved by refocusing and rebranding computer engineering and computer sciences education for students to acquire skills, and knowledge needed for industrial revolution and entrepreneurship for economic sustainability.

Keywords: Assemble computer, computer engineering, computer sciences, local input, economy sustainability, Nigeria

1. Introduction

In recent time the use of computer, IT tools, and technology has become sin-qua-non in day-day today activities of human endeavors. Some of these tools and technology are source from foreign countries like United States of America, United Kingdom, India, and china. In the year 2012, it was uncovered that Nigeria's personal computer ownership stand at 4.5 percent of her teeming population of 167million, [1]. Going by the result of the survey, it shows that over seven million Nigerian (7,515,000) has individual computer as at year 2012. There is no doubt that this number ought to have

increased to an appreciable number due to awareness, Knowledge, and Interaction with computer IT tools among Nigerian in recent time. The survey only gave the report of individual Owners of PCs, what of government own PCs at federal, states, and local government, in military and police, private and public institutions etc. Putting all these together, we are sure that computer in Nigeria as at the year 2012, when the survey was carried out will be over ten million. Nigeria is number seven country of the world by the number of mobile phones in use with 167,371,945 number of mobile

phone in use and connection per/100 citizen equal 94.5 [2].

The components of the computer and mobile phones been used in Nigeria are import from foreign countries like China, Taiwan, USA, Europe and Dubai in foreign currencies and when exchanged in Nigeria currency (naira) make the assembled system's price as expensive as the imported brands. Does that mean that Nigeria has no resources, technical know-how, or political will to embark on locally manufacturing of computer hardware, and mobile phone components and accessories? The number of professionally skilled people is relatively low. Semi and unskilled workers allegedly account for like 65% of employees in the industrial sector of Nigeria economy. While skilled workers account for like 10%, manual workers like 20%, technician like 5% of the industry workforce. Which way forward?

This research work is focused on Investigation of relevant of institution of learning in providing needed labor and skills towards enhancing local input contents of information technology and computer system in Nigeria by conducting an investigative research on relevant of computer engineering, and computer sciences for Economic Sustainability and Local Input Contents of Computer systems and mobile phones to be use in Nigeria. Data were gathered through the use of questionnaire and observation of resources in in some institutions where computer engineering and sciences are been offer as course of study. Data obtained was present and analyzed. Most indigenous IT and computer companies are mainly involved in the assembly process of imported parts. Hardly can one find a single component that is made in Nigeria from locally assembled PCs talk less of imported branded PCs. They import the parts, assemble them and give it brand name.

In this paper we proposed that computer engineering and sciences education needs to be refocus towards Economic Sustainability and Local Input Contents of Computer system and mobile phones to be use in Nigeria. The basic things that required are: The technological knowledge i.e. all kinds of skills, equipment's, process and product know-how that is primarily responsible for material abundance and transformation of a nation and economy, and appropriate infrastructures, to forge a head in turning the theoretical aspect of human life into practical and this will surely lead to

industrialization.

Problem Statement

Just of recent the president and commander of army forces of federal republic of Nigeria lament that Nigeria is broke, and suggested that effort should be made to employ other methods of generating income rather than concentrating on crude oil which is our main source of income presently. For Nigeria to survive the economy problem and become less dependent on other country for sustainability local input of ICT tools and infrastructure use in the country is very paramount as this will reduces importation, and promote job creation. This can be achieved by Refocusing Computer Engineering and Computer Sciences Education for Economic Sustainability and Local Input Contents of Local Assembled Computer in Nigeria.

Objectives of the Study

The objectives of this research work are to:

- Suggest to the gorvemnt the need for Enhancing Made in Nigeria ICT TOOLS and Infrastructures.
- Explore the relevant of computer engineering and sciences, in entrepreneurship development.
- Recommend to government the needs to promote computer engineering, and sciences education.
- Provision of alternative means of income generation in Nigeria.

Significance of Study

The significance of this study is to identify the role of computer engineering and sciences education in solving problem of importation as affected the economy of the nation. The results of this work will be valuable to Nigeria governments on the needs to supports and promote computer engineering and sciences education as the tool for entrepreneurship development, Industrial Revolution and Job Creation for economy sustainability in Nigeria.

Research Hypothesis

In this research work we have two null hypotheses to be tested using chi-square method. The results of this hypothesis will direct the researcher further in continuation of this work. This research hypothesis

is:

- Hypothesis HO1: Institutions with course in computer engineering, sciences or both has enough infrastructures towards preparing student for solving Nigeria problem as related to economy sustainability through ICT. Hypothesis HO2: Form of Cyberspace crime activities in Nigeria does not warrant serious network or data protection platform.
- Hypothesis HO2: The academic staffs in the institutions of learning in Nigeria are been equipped, and motivated for better performances towards preparing students of computer engineering and sciences for solving Nigeria ICT problem as regards made in Nigeria product and services.

2. Background to the Study

2.1 Computer Components Parts

A computer is really a system of many parts working together. The physical parts, which you can see and touch, are collectively called hardware, and software, on the other hand, refers to the instructions, or programs, that tell the hardware what to do [3]. Hardware of a modern personal computer of a modern computer includes: 1. Monitor; 2. Motherboard; 3. CPU; 4. RAM; 5. Expansion cards; 6. Power supply; 7. Optical disc drive 8. Hard disk drive; 9. Keyboard; 10. Mouse. See figure 1 below [4]. See figure 1.

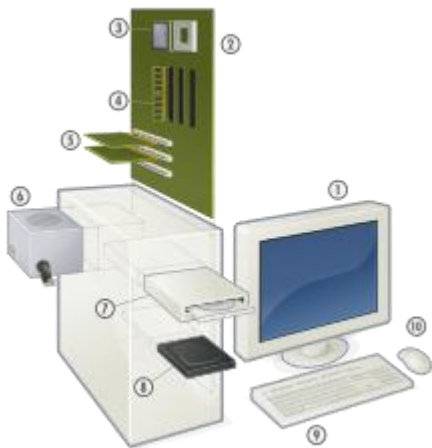


Figure 1: Computer Hardware Components

Computer Software is a generic term for organized collections of computer data and instructions, often broken into two major categories: system software that provides the basic non-task-specific functions of the computer, System software is responsible for controlling, integrating, and managing the individual

hardware components of a computer system so that other software and the users of the system see it as a functional unit without having to be concerned with the low-level details such as transferring data from memory to disk, or rendering text onto a display. Application software which is used by users to accomplish specific tasks. Application software is a technical term for a standard computer program designed for solving one problem or the other. Application software utilizes the capacities of a computer directly for a dedicated task. Application software is able to manipulate text, numbers and graphics. It can be in the form of software focused on a certain single task like word processing, spreadsheet etc. A software package covers a business, scientific or other routine that is common to many potential users. It could be adopted by all the users for their data processing operations. A package is usually supplied by a computer manufacturer or a software house [5].

2.2 Role of Engineering Sciences and Technical Education in Economy Sustainability

Problems of unemployment as experienced in the past and present Africa of ours have contributed to all source of vices in our society such as political hooliganism, armed robbery, cultism, child trafficking, vandalism, kidnaping, ritual killing, ethnic militias group etc. There is no doubt that the rate of unemployment in African continents is one of the significant catalysts to all social vices, such as kidnaping, ritual killings, political hooliganisms, vandalism, raping, armed robbery etc. It is so because and idle brain is the devil workshop. Consequent to that, government and people of Africa must partnership in providing last solution to the problem of unemployment in our continents. There is no other better method to overcome problem of unemployment compare to job creation/industrial revolution which could be achieved through entrepreneurship skills and experiences that is more quantifiable in science, engineering and vocational education. Therefore the government and people of Africa must ernes resources to promote engineering, sciences and vocational education as this will enhance job creation and industrial revolution [6].

3 Research Methodology and Data Analysis

3.1 Title and authors

The authors of this research work visited 38 higher institutions where computer engineering/computer

sciences are been running as a course. We give the summary of our observation from the various institutions visited. To avoid legal battled or any form of negative implication of the report here, we will not mention the detail of the schools visited and also not present the pictures of the condition of the institution laboratories. Six (6) of the institutions visited are private owned, and thirty two are public, out of which nineteen (19) belongs to federal, and remaining thirteen (13). Apart of the private institution, 90% of the public institution visited: the laboratory organization and management does not

have minimum requirements of a modern computer laboratory. The facilities such chairs; tables, light, computer equipment's, and ergonomic set up are very poor for enhancing skill acquisition towards economy sustainability.

3.2 Analysis of Data obtained from Questionnaire

Table 1, gives the demographic characteristics of the sampled population from 137 academic staff of the computer engineering and sciences faculty of the school visited.

TABLE I. Demographic Characteristics of Study Population

Departments	Males	Females	Total
Computer Sciences	41	46	87
Computer Engineering	33	17	50
Total	74	63	137

TABLE II. Academic Staff Responses to the Questions in the Questionnaire

Questions	Agreed	Dis-agree	Undecided
A The ratio of students to the lecturer in the department is ok for skill acquisitions towards economy sustainability using computer engineering or computer sciences as determinant factor. i.e. ratio 1:40	21	116	0
B Academic staffs in this college are always encouraged and sponsor to undergo training, seminar or conferences.	22	108	7
C Your institution library is equipped with modern textbooks in computer engineering and sciences.	45	89	3
D This institution has computer laboratory with minimum standard for skills acquisition in area of computer hardware and software design and manufacturing	19	118	0
E Available computer Laboratory in your institution is well set up to enable user work comfortably over a long period of time during practical course computer engineering/programming.	14	121	2
F Conditions of services, as in salary, office accommodation, internet resources etc. are favorable for academic staff in this college to discharge their duties towards preparing students for future nation problem solvers.	37	99	1

TABLE III: Chi-square For Table Ii

TABLE III: CHISQUARE FOR TABLE IIX	F	F'	$F - F'$	$(F - F')^2$	$X^2 = \frac{(F - F')^2}{F'}$
Agreed	158	274	-116	13456	49.1094891

Disagree	651	274	377	142129	518.718978
Indifferent	13	274	-261	68121	248.616788
Total	822	822			816.445255

From table III: X^2 value = 816.445255;

Degree of freedom = 3 - 1 = 2;

X^2 at .99 at 3 d.f = 5.991;

X^2 at .95 at 3 d.f = 9.210.

816.445255 > 9.210 > 5.991

The computed x^2 statistic exceeds the critical value in the table for 0.01 and 0.05 probability level, and then we reject the null hypothesis in this research work.

4 Suggestions For Refocusing Computer Engineering and Computer Sciences Education for Economic Sustainability and Enhancing of Made in Nigeria ICT tools and Infrastructure

- The required technological skills have to be produces by our polytechnics, colleges and universities. This entails the production of industry ready, and entrepreneurs graduate. This can only be made possible by:
 - Proper funding of education especially in engineering, sciences, and technical education.
 - Establishment of viable collaborative relation between the industry and the institutions.
 - Refocusing Computer Engineering and Computer Sciences Education for Economic Sustainability and Local Input Contents of Computer and mobile phones in Nigeria
- Government should start by tasking the stakeholder in ICT, the responsibility to design a policy for establishment of her own computer company and ICT research center where the computer component can be manufacture and research into advance computer will be taken place.
- Government should provide “Developmental aid” or low interest loans to indigenious companies willing to embark on local manufacturing of computer parts both hardware and software, and other ICT infrastructure and resources.
- When the private and government ownership computer company is functioning, offer should be made to improve an international standard

and quality, when that is understood, the government should enforce law through her national assembly to place embargo or high excise duty on importation of any of the components been locally manufactured.

- Brain drain is a menace that has to stop. The exodus of Nigeria best brain expert to America, Britain, Saudi Arabia, and Kuwait and so on in the past few years in search of greener pasture is affecting the takeoff of the manufacturing industries.
- Government should enforce a law making it compulsory for science, technology and engineering students of our polytechnics and university to be eligible for graduation and award of certificate must undergo a practical project that must involve design and production of certain things or components in his or her fields.
- The individual, group, private and government organization should appreciate and embrace made in Nigeria goods.

5 Conclusion

Nigeria can improve her value added tax on locally made or assembled computer and mobile phones by fabricating some of the components and accessories locally from local raw materials. This could be achieved by refocusing and rebranding computer engineering and computer sciences education for students to acquire skills, and knowledge needed for industrial revolution and entrepreneurship for economic sustainability. The trust of our technology policy should be to start from minor like manufacturing of mouse, keyboard, computer case, computer application packages software, mobile phone case, protector, ear piece etc., and then we can migrate gradually to the peak. When starting from the minor we gain experience, acquire capital and move ahead in collaboration with willing partners in the industrialized countries to own factories that can make chips, drives and boards. The government and private sectors have to show sincere commitment to making the manufacturing of computer and mobile phone components a reality, as this will have positive improvement on economy in term of job production and revenue to government.

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