

ENGINEERING ACTIVITIES IN NIGERIA BY NIGERIANS

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CHALLENGES”**

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This paper discusses briefly about some of the activities carried out by engineering professional bodies such as NSE (Nigerian Society of Engineers) and COREN (Council for Regulation of Engineering in Nigeria), the history of Engineering in Nigeria. The paper also highlights some of the bad practices carried out by some acclaimed engineers and the engineering ethics in Nigeria.

Unfortunately, the practice of Engineering in Nigeria is still far below International Standards due to lack of discipline, improper coordination of engineering activities and lack of extensive training of engineering students. For Engineering in Nigeria to improve considerably well, the younger generation must be properly drilled and trained to meet up with challenges they will face in the engineering field. This boils down to education. Simply making university students go through industrial attachment for six months is not enough. The teaching of engineering in the universities and Polytechnics in Nigeria has to be improved by ensuring viable partnership between universities, Polytechnics and Industries/companies for the purpose of:

- (1) Providing students with qualitative and quantitative education
- (2) Training engineering graduates who will be competent to design, supervise the construction of infrastructures and machines, drive the economy and achieve set goals of the industries by developing new products and systems that will satisfy the customer's needs.
- (3) Companies looking up to universities to help them handle challenges and universities looking up to industries to help them grow and enhance educational facilities.

The work of engineers is the perceived needs of society and commercial application.

The history of engineering in Nigeria traces its root to the establishment of the Public Works Department (P.W.D) of southern Government in Lagos in 1896, the P.W.D comprised mainly of three sections (Civil, Mechanical and Electrical).It was responsible for the management of engineering problems in the southern Government of Nigeria. As the country entered into independence in 1960, the three regions (North, East and West) had their separate P.W.D. Evidence of Engineering and Technology in Nigeria is seen in development and adaptation of appropriate machines and equipment for easing out tedium and drudgery in certain operations in agriculture and industries developed by

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these government agencies. The indigenously developed adapted machines and equipment are now becoming regular exhibits at trade fairs, shows and exhibition that are regularly organized by government agencies, associations and private industries (Rai et al 2001).

Engineering has been defined as that Art of Science that harnesses the resources of nature to produce and maintain an artifact for the benefit and convenience of mankind. It is the practice of designing machines, bridges, railways, electrification of cities, communication equipment, and petrochemical industries e.t.c., it is the application of science to solve societal problems. Profession is defined as a type of job that needs special training or skill, especially one that needs a high level of education.

COREN was established under the provision of the Engineer's Registration to oversee the Registration of engineers and to accredit engineering programs among other things. The purpose of registration is to make sure that only competent people are involved in the practice of engineering to ensure safety and also to enhance the standard of engineering activity in the nation.

NSE serves as a general umbrella for all engineers and parent body for all other engineering society in the nation. There are however other engineering society existing under the society.

Engineers, like other professionals have a critical role to play in the physical and social economic transformation of the country. While hitherto, there has not been sufficient acknowledgement of the indispensable role of engineers in the scheme of things in this country, the age calls for a re-thinking of policy formulation and implementation such as to reorganize the necessity to harness the abundant ingenuity of our engineers in the resolution of the numerous challenged confronting the country, especially in the area of physical transformation and social-economic development. Henceforth our engineers must participate fully in all Engineering projects whose contracts are usually awarded to foreign concerns, occasioning thereby humungous hemorrhage in terms of the nation's foreign exchange earnings. The failure, thus far, to carry our engineers along in mega projects has stymied the growth and development of the Engineering profession in Nigeria.

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Since Oil account for up to 95% of the annual income of the country's total revenue, it became imperative that most of engineering activities in Nigeria is practiced in the sector and its allies. It involves all field of engineering e.g. Mechanical, Electrical, Civil, Petroleum, Chemical etc. Engineering activities in Oil industries by Nigerian in Nigeria have been quite commendable and successful. Initially it was mainly handled by expatriates whom were better trained than Nigerian. However, recent records showed that more Nigerians are greatly involved in real businesses of Oil industries. This is because of better training that is being constantly acquired by Nigerians in Engineering, Local Content legislature and Competency in their different offices.

This is another area that of great engineering concern in Nigeria. Although it has not seen the light of the day however it involves almost all profession of engineering. (Mechanical, Electrical, Civil, Mine, Metallurgical etc). Nigeria started steel project since 1980 but she has not been able to complete the projects do to numerous problems. Rolling mills were built in strategically area across the federation. Although significance progress has been made in steel sector but it hasn't been a huge success. This is because upon the huge amount of money invested in the project, Nigeria still depends on imported steel material for local needs.

Successful development of engineering activities in Nigeria undermined by several of problems:

- In most government and private establishments in Nigeria, engineering personnel are assuming to know all. A civil engineer can be employed to do the work of an electrical engineer, chemical engineer, Mechanical Engineer etc at the same time instead of seeking the services of engineering professionals in these other areas of engineering.
- Corruption: Most engineering projects in the country is carried out using the fifty percent (50%) rule, thereby embezzling the capital and not the profit. That is, contractors giving even more than fifty percent of the total cost of a project to some corrupt government officials and politicians before actually embarking on a project and in most cases, since the remaining part of the money will not be enough to do the job, the project may not be carried out and if it is carried out at all, it is usually sub-standard or abandoned.

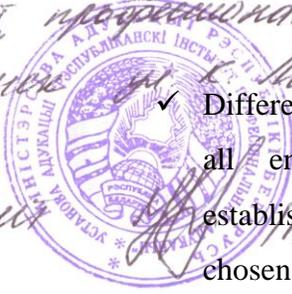
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➤ Non-Engineers carrying out engineering contracts using engineering credentials:
Most engineering contractors carry out engineering projects using engineering credentials of engineering professionals in order to win or get engineering contracts.

- Politics: the nature of the training of the engineers does not actually expose him/her to be actively involved in politics, though they may be passively involved. For instance a power engineer in a power station can not be actively involved in politics. Since power stations are usually sited in secluded areas.
- Existing engineering facilities and infrastructures not being upgraded: **most** engineering establishment ever since they were commissioned have not been upgraded , thereby not able to meet up with the present day demand.
- Non-adherence to workshop sections in conferences: most engineering conferences do not adhere to workshop sections, usually after technical paper presentation, then, it is all over.
- Attitude towards maintenance: our industries and infrastructures are built “once and for all” without any routine maintenance work; the result is the general decay of industries and infrastructures in the country.
- Reverse engineering not in our engineering curriculum; hence, making technology transfer some how difficult.
- Engineers not fellowshipping with their colleagues; .most engineering personnel occupying managerial positions are not registered with the Nigerian society of Engineers (NSE) and the council for the regulation of engineering in Nigeria. (COREN). Hence , such person’s may seem not concern with the advancement of engineering and technology in the country.
- Research and Development: Government lackadaisical attitude towards research and development hinders research opportunities in research institutions and universities. Government considers research and development to cost a lot of money and there is no link between research institutes, universities and industries in the country.

The following suggestions will help in no little way to overcoming some of the earlier enumerated challenges faced by Nigerian Engineers in carryout their Activities

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- ✓ Different engineering personnel in various fields should be employed in all engineering Departments in both government and private establishments , so that specific jobs can be given to an engineer in his/her chosen area of specialization .That is, there should be division of labour.
- ✓ The pay package of engineers in Nigeria should be commensurate with their counterparts in Europe and America, so that they will not be tempted to embezzle the capital of any project.
- ✓ Engineers should be disciplined and avoid non-engineers using them to achieve their selfish aim. They should only tender their certificate when they are involved in a project. And establishments should be mandated by the Nigerian society of engineers, to employ at least one registered engineer.
- ✓ Just as the office of the Attorney General is occupied by a lawyer, the offices of the ministers and commissioners of energy, works and housing, Environment and transport should be specially for engineers.
- ✓ Existing engineering facilities and infrastructures should be upgraded with the present day state of the art facilities in order to meet up with the present day demand.
- ✓ Engineering conferences organised in Nigeria should always adhere to workshop sections after technical paper presentation, this will go a long way to develop our local technology.
- ✓ Routine maintenance work should be carried out , on a regular basis after a project have been commissioned , this will increase the life span of such infrastructures and facilities.
- ✓ Reverse engineering should be introduced into our educational curriculum , in order to make technology transfer very easy , we should all embrace the popular “Igbo made “ and stop using foreign labels on our locally manufactured goods.
- ✓ Engineers should be mandated to belong to their professional bodies and without this , they should not be allowed to practice. That is , they should be mandated to fellowship with their professional colleagues.

- ✓ Government should make money available for engineering research and development, in order for the country to advance technologically.

The Nigerian government should lay special emphasis on the engineering activities carried out by engineers in Nigeria and should edifice and equip Engineering Profession in Nigeria as every nations measure of success depends on its technological development and its economy.

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