



INFRASTRUCTURAL FAILURE IN NIGERIA: TVET PERSPECTIVE

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Abstract

The poor performance of public utility services in Nigeria has been a subject of considerable discussion. Nigeria is faced with the challenge of sustenance and maintenance of inadequate engineering infrastructure due to years of under investment and poor maintenance culture. The paper gives an overview of status of nation's engineering infrastructure, the causes of its deterioration and effects on the socioeconomic, industrial development, and private sector development. The need to recognize critical engineering infrastructure, interdependencies, and vulnerability to cascade failures is emphasized. The paper explores best practices in the developed and transition economies to guide in proffering pragmatic solution to the backwardness of the engineering infrastructure. The paper calls for paradigm shift from general lamentation which has become the lexicon of poor level engineering infrastructure service to action. Continue consolidation on public private partnership, declaration of state of emergency, fight against corruption, good governance, establishment of National Infrastructures Commission, best practices emulation and engineers' involvement in politics are recommended as a way forward.

Key words: Engineering, Infrastructure, Service, Deterioration, Economy, Failure

Introduction

The poor performance of public utility services in Nigeria has been a subject of considerable discussion that needs urgent attention in other to nip this ugly occurrence of our infrastructural failure as a nation (Ariyo and Jerome, 2004). The inadequacy and continued deterioration of Nigeria's infrastructure pose acute challenges to Nigeria's leadership in Africa. It is of utmost importance to government, business, and the public at large that the flow of services provided by the nation's infrastructure continues unimpeded in the face of a broad range of natural and manmade hazards (Little, 2007). The Nigeria has acutely aware of the importance of civil infrastructures and their criticality to the nation's economy and quality of life (Baker, 2007). The consequences of infrastructure failure can range from benign to catastrophic. The geographical location favors Nigeria from exposure to catastrophic failure from natural hazards such as tsunamis, earthquakes, landslides, hurricanes, etc. However, the nation is grasping the benign consequences of the gradual deterioration of infrastructure. The manifestation is the deepening poverty, reduced production, reduced life expectancy, eroding patriotism, corruption, and public discontent.

TVET programs in Nigeria are offered at certificate, diploma, and degree levels by various institutions under seven ministries, and state and private skills development centers (Aziz et al., 2020). TVET is the key driver in achieving a fully developed and high-income nation by producing k-workers for the labor market. Therefore, the Nigeria government has consistently provided support for TVET especially in setting up specialized skills training entities such as the Industrial Training Institute, National Youth Skills Institute, National Skills Institute, Vocational College, and private skills training institutions.

According to UNESCO-ILO's recommendation, Technical and Vocational Education and Training (TVET) is used as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (UNESCO and ILO 2001) In addition to technical knowledge and aptitude, TVET is also concerned with softer skills like communication, negotiation and teamwork. It is dispensed in public and private educational establishments or other forms of formal or informal instructor aimed at granting all segments of the society access to lifelong resources.



Statement of the Problem

Nigeria is going through a depressed economy despite the introduction of Technical and Vocational Education and Training since 1995 with improvements at different periods since then. The study decided to look into the infrastructural failure in Nigeria, the Technical and Vocational Education and Training perspective.

Aim and Objectives of the Study

The study was carried out to:

- i. Look into the concept, mission and purpose of Technical and Vocational Education and Training (TVET)
- ii. Look into the implementations of Technical and Vocational Education and Training TVET in Nigeria today
- iii. Investigate into the infrastructure failure.
- iv. Make recommendations based on findings.

Concept, Mission and Purpose of Technical and Vocational Education and Training (TVET)

The mission of Technical and Vocational Education and Training can be regarded as the hob with definite activities that are to be carried out judiciously. Some of the missions of TVET are:

- Provision of trained manpower in applied science, technology and business particularly at craft, advanced craft and technical levels.
- Provision of technical knowledge and vocational skills necessary for agricultural, commercial, industrial and economic development
- To groom people who can apply scientific knowledge to the improvement and solutions of environmental problems for the use and convenience of man.
- To give training and impart necessary skills to individuals for self-reliance economically.
- To enable graduates secure employment or set up their own businesses and become self-employed and able to employ others.
- To foster rapid national development.
- Production of sufficient trained manpower in technology and science.

The TVET principal objective is to train youths and adults alike, preparing them for the ever changing labour market. With technical revolutions and innovations in science and technology, labour market has evolved significantly new challenges that must be met in order to match the education proposed with vocational demands. In that regard, several countries are in the process of reforming their educational system with a view to train youths to meet national, regional and international market needs. (UNESCO, UNEVOC 2006). Today, the global economy offers new opportunities and presents the continent with challenges that it cannot ignore. Therefore, Africa must break this vicious cycle if it is to take its rightful place, given its enormous potentials and multi-dimensional field. TVET is a complex and multi-dimensional field that is of paramount importance in developing competitive economies and better societies. Vocational Education is concerned to specifically prepare students for working life. It is also said to be closely related to but not identical to with the concept of training (or vocational training), which tends to focus on leading specific skills required workplaces. It is dispensed at the technical colleges, which are equivalent to the Senior Secondary education but designed to enable the individual to acquire practical and technical skills, basic and scientific knowledge and attitude required as craftsmen and technicians at sub-professional level.

Implementations of Technical and Vocational Education and Training TVET in Nigeria today

The present administration in Nigeria is orchestrating a policy of placing TVET and why higher institutions of learning (Universities, Polytechnics, Colleges of Education, Monotechnics and Colleges of Health Technology), Technical Colleges, Innovation Enterprise Institutions (IEIs) and Vocational Enterprise Institutions (VEIs) were approved to train youths to acquire skills at June 2012.

National Board for Technical Education established in 1977 was created specifically to handle all aspects of Technical and Vocational Education under the supervision of Federal Ministry of Education. The Board supervises and regulates through an accreditation process, programmes offered by the institutions. Technical and Vocational



Education and Training (TVET) is the form of education that advocates development of the head (knowledge), training of the hand (dexterity) and enriching the heart (consciousness and painstaking) i.e the 3 Hs. Africans have also found a way of practicing result oriented education which was a need that arose from the colonial era. Education is a process of training designed to give knowledge, develop skills and abilities that could lead to the development of mental alertness and right attitude to life, education can only be adequate when it gives knowledge; develop skills and abilities that could lead to the development of mental alertness and the right attitude to life. Education is an agent of human development, social mobility and national transformation. It is a universal concept that differs from society to society (Okoye and Etwelle 2014). TVET was resolved based on the realization of the fact that skills and attitude required for job performance in work place is not being achieved. TVET is a term coined to mean 'education planned to provide necessary skills and other formal/informal training needed during employment and entrepreneurial practices. Various terms and names had been used by various educationists, authors and researchers to describe what is now called TVET. Such names as Apprenticeship Training (AT), Technical and Vocational Education (TVE), Occupational Education (OE), Vocational Education and Training (VET), Professional and Vocational Education (PVE), Career Technical Education (CTE), Workforce Education (WE), Workplace Education (WE) e.t.c. These terms were used by specific geographical areas and at specific times in our tertiary institutions. Colleges, Polytechnics and Universities are tertiary institutions established to provide standardized minimum guide curriculum for Technical and Vocational Education and Training (TVET). The mission is to promote the production of skilled/semi-skilled technical and professional manpower, to revitalize, and sustain the national economy. (Bolarinwa 2015). UNESCO - UNEVOC outlined TVET Strategy for 2016 - 2021 with three key priorities areas namely:

- Fostering youth employment and entrepreneurship
- Promoting equity and gender equality, and
- Facilitating transition to bring economies and sustainable societies (UNESCO, 2016).

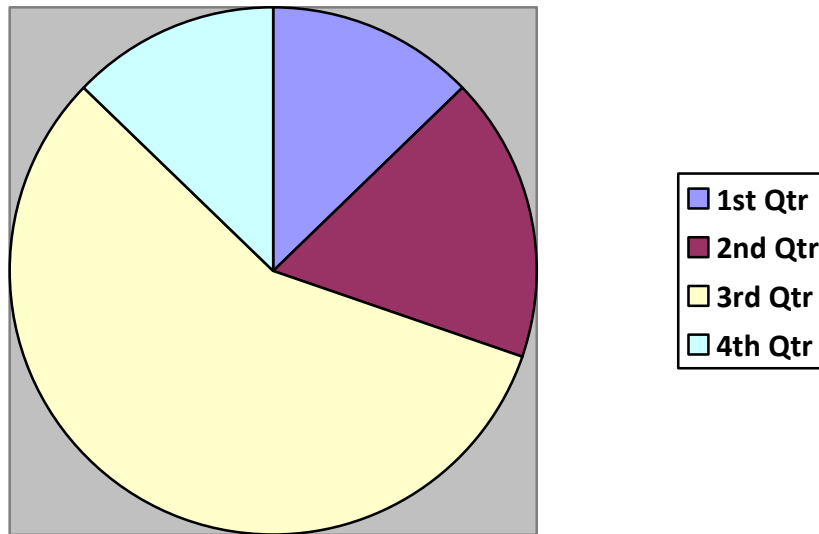
In line with UNESCO Strategy for TVET, skills training and development of Vocational and Technical Education programmes of Nigerian Higher Institutions through their skills acquisition programmes, offers a veritable root for fostering youth employment and entrepreneurial skills.

Investigate into Infrastructure failure in Nigeria

An assessment

The foregoing gives credence to understanding infrastructure as a cornerstone to the citizenry overall well-being. It is the prerequisite requirement for all other virtual infrastructures which support quality of life such as healthcare, science, education, insurance, recreation etc. It also chronicles the attention and the commitment of the governments of the developed economies place not only on sustaining infrastructure but include focusing on the vulnerabilities of infrastructure to cascade failures from natural hazards and terrorism. Nigeria is faced with the challenges of sustaining and maintaining inadequate infrastructure (Adenikinju, 2005). Government ownership and operation of public utilities does not have to result in inefficient operation and low level of service, but it has always been. Consequently, the relevance of private sector involvement in infrastructure for sustainable service has been significantly noted in the last decade.

Many years of underinvestment and poor maintenance have left Nigeria with a significant infrastructure deficit that is holding back her development and economic growth. The government realized the needs to make massive investments beyond their means to close the yawning infrastructure gap. In 2008, the government disclosed through Minister of State for Finance (Mr Remi Babalola) that Nigeria requires about \$100 Billion (N11.70trillion) to address only four infrastructure areas considered critical: Power-US\$18–20Billion; Rail -US\$10Billion; Roads - US\$14billion; and Oil and Gas -US\$60Billion (world bank, 2002). In addition, Lagos State alone according to the Governor needs: - US\$2billion for expansion and modernization of its water supply network in the next 20years; and US\$715M for road networks' in the next 5years amongst many others (Ahmad et al., 2019). Infrastructure has been identified as the key constraint to private sector development. The poor state of electricity supply imposed huge costs on the business sector. A large percentage of the firms and most respondents ranked power and voltage fluctuations as major infrastructure problem in Nigeria (Adenikinju, 2005). A severity index in matrix order (SIMO) model was applied to empirically rank the severity of causative factors. The study found the following factors as critical to the causes of infrastructure and service delivery failures in order of severity: corruption, misallocation of investments, inadequate maintenance, lack of transparency and accountability, insufficient funding for infrastructures, lack of supportive institutions, inconsistent political, social, & economic policies, and the lack of suitable technical & managerial skill (Omorie et al., 2006).



UNESCO (2021).Power-US\$18–20Billion; Rail -US\$10Billion; Roads - US\$14billion; and Oil and Gas - US\$60Billion

Challenges of TVET in Nigeria

Nigerian TVET is faced with many challenges. Most of these challenges are also that of general education. Egwu (2009) opined that the following challenges are bottlenecks facing Nigerian Educational System especially TVET:

- i. Inadequate and obsolete infrastructure and equipment such as poorly equipped TVET workshops, libraries and classrooms.
- ii. Inadequate collaboration between tertiary institutions.
- iii. Unstable academic calendar.
- iv. Staff shortages across board.
- v. Unattractive Conditions of Service for teachers
- vi. Weak Support Structure for Students' Industrial Work Experience Scheme (SIWES)
- vii. Brain Drain or human capital flight.
- viii. High incidence of cultism, examination malpractices and other social/academic vices.
- ix. Inadequate capacity in the institution for internal/peer quality assessment.

Odu (2011) stated that some of the challenges are related to Human Capital Development which includes:

- i. Inadequate funding
- ii. Poor workshop organization.

UNESCO (2012) reported that Nigerian TVET is faced with many challenges. The image of TVET as education of the last resort despite the efforts of the government to change it, still prevails. Another issue is the lack of efficient educational monitoring and evaluation procedures. Poor funding is also a great challenge preventing TVET system from coherent development. Teachers in Nigerian TVET are underestimated and there is a great lack of incentives provided for them. Another challenge is rapid technological growth that is hard to keep up with, which results in irrelevance of the curricula taught in TVET programmes. We can conclude here that TVET in Nigeria is facing a lot of challenges ranging from stakeholders and general public's view of the programme, poor infrastructure, finance and resources, inadequate resources especially human resources, inability to meet up with daily advancement of



technology etc. Bolarinwa (2015). Observed that emerging challenges now are more than ever before, Nigerian economy requires competent workforce with relevant psychomotor, cognitive and affective domains.

Remedial measures

Alfaro et al., (1997) cites some fundamental reasons which are highly applicable to Nigeria general infrastructure poor level of service delivery. The most relevant is the lack of a residual claimant or senior managers whose income is strongly performance-determined. This also means there is no one with a strong incentive to vigorously resist political plunder of the utility, through patronage employment, appeasement pricing, or corrupt procurement and billing practices. The government dual roles as a provider and regulator compounded infrastructure problem and the poor service delivery. Subsequently, the FG embarked on various reforms since 1999 towards a good governance and creation of enabling environment for provision of services in line with emerging global trends. The efforts culminated in the passage of the Infrastructure Concessions Regulatory Commission Act 2005 with a mandate to develop guidelines, policies, and procurement processes for Public Private Partnership (Ibrahim and Musa-Haddary, 2010). The core principle of any PPP is the allocation of risk to the party best able to manage it at least cost. The aim is to optimize rather than maximize risk transfer to ensure that best value is achieved. Following the passage of the ICRC Act in 2005 and its inauguration in 2008, a national policy statement was developed which identifies the key objectives of PPP comprising economic, social, and environmental. It also sets out the various frameworks for the effective implementation of PPP which include, if necessary, review the legal and regulatory framework created under the following existing legislations:

- The Privatization and Commercialization Act 1999; (Hukka and Katko, 2003)
- The Infrastructure Concession Regulatory Commission (Establishment) Act 2005; (Hukka and Katko, 2003)
- The Fiscal Responsibility Act 2007; (Hukka and Katko, 2003)
- The Public Procurement Act 2007; and
- Other relevant legislation.

The Way Forward

General lamentation has unfortunately become the lexicon of poor service delivery from the nation infrastructures by even the policy makers, high government officials, and the helpless citizenry. Alarming cost estimates are reported at various levels of government, nongovernmental organization, and international financial institutions as required closing the gap in infrastructure deficit. It is time to move from intimidating figures and lamentation to a pragmatic action as enumerated thus:

Implementation of public private partnership (PPP)

The Nigerian populace already adopted various coping mechanism in response to poor service from public utility. As such averting expenditures are incurred for example on standby generator, fuel, boreholes, and table water etc. It is not surprising that several studies (Sule and Okeola, 2010; Madhoo, 2007; World Bank, 2002) reported that the citizenry are willing to pay for improved services. The role of the government is to ensure that services are provided and not necessary to provide services. It is imperative to involve private sector in infrastructure development and service delivery to exploit this willingly-to-pay (WTP). Enormous consideration on externality issues, non-excludability of some services and the suggestions by Rivera, (1996), Ibrahim and Musa-Haddary, (2010) and so on, are required in PPP implementation. The reality today despite recorded failures of some PPP projects, it offers one of the greatest potentials of resolving infrastructural inadequacies in many societies and meeting internationally accepted development goals (Omagbitse, 2010).

National infrastructure commission (NIC)

The executive organ of Nigeria government should sponsor a bill to establish NIC which will replace ICRC and retain all the roles and responsibilities therein with some amendment listed as followed:

- Commission membership to be appointed by the President and Senate
- Member would be required to have experience in one or more of the following fields; economics, public administration, civil engineering, public investment financing, construction and related design professionals.
- Commission is to develop a study of all matters relating to the state of infrastructure in the country.



- Commissions would be required to develop recommendations on various approaches for improving and maintaining infrastructure.

Good governance

Lack of good governance principles had a devastating effect on Nigeria infrastructure. Good governance is participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law (Hukka and Katko, 2003). The provision of basic services from infrastructure is a “people affair”. It requires peoples of all sphere of life interaction. Such interactions are basically governed by politics, for instance the politics of resource control, revenue allocation, and establishment of priorities, interaction between institutions and the involvement of those directly affected. It is therefore politically naive according to Abram (2001), to avoid the politicization of service provision. What is important is to raise the political profile of the infrastructure issue and increase pressure on politicians to be accountable for good governance.

Corruption

The endemic of corruption is known though the empirical evidence is lacking to generalize the magnitude of the problem. Experts around the world have been suggesting various ways to battle the endemic of corruption. These include viewing corruption within the context of governance, information and transparency, creation of incentives and rewards, public disclosure, law enforcement among others. The Federal government has intensified battle against corruption through the establishment of independent corrupt practices and other related offences commission (ICPC) and economic and financial crimes commission (EFCC). The two organs have since been investigating and trying high profile corrupt cases. The government can take giant step by making corruption a capital offence. The suggestion concurs with late activist; Gani Fawehimi’s called for a stick and sharpest sword measures in combating corruption. A dedicated tribunal and trial duration limits (inclusive of appeals) should be established for this purpose.

The Nigerian Institution of Civil Engineers (NICE) leadership

Public utility infrastructures are largely the purview of civil engineering. It therefore poses a big challenge on NICE leadership with cooperation of the Nigerian Society of Engineers. The “best practices” that the NICE is urged to emulate is in the involvement of American Society of Civil Engineer (ASCE) in public policy and the formulation of legislation that support improvement on the United States infrastructure through the following approaches. Congressional fellows program: The ASCE congressional fellows program has made it possible for the civil engineering community to have a voice on Capitol Hill. The program started in 1996. It offers ASCE members an opportunity to work for one year on the staff of a congressional committee or for a US Senator or House member. ASCE has sponsored over 10 congressional fellows that have gained valuable insights into how congress works while making members of the congress and their staffs aware of the interests and perspectives of civil engineers (Ahmed and Elias, 2019).

Conclusion

TVET is a crucial platform for acquisition of skills and knowledge for employment and sustainable livelihood. It provides the needed employable knowledge, skills and attitude necessary for effective performance in workplace as employees, employers and entrepreneurs. It is a programme that has suffered a lot of misunderstanding, poor implementation and abuse. The way forward to sustainable infrastructure and efficient level of service delivery are suggested. This includes consolidation on PPP, declaration of state of emergency on infrastructure, emulation of best practices among other.

Recommendations

To achieve basic aim and objectives of TVET in Nigeria as well as the prospects challenges and achievements of this programme so far. I hereby make the following recommendations:

- TVET should be encouraged through a more consistent and higher funding.
- International collaboration may be encouraged to enhance a more efficient and effective TVET.
- Government, stakeholders and the public needs to acknowledge and encourage locally produced items and ensure that all documents and documentations needed to make such products accessible, attractive and desirable to the consumers should be simplified.



- Governments at all levels should ensure that energy needed for production, training and practice are available always.
- Infrastructures like road, availability of raw materials etc should be worked upon.
- TVET should be standardized to make it fir for use globally.
- A healthy and stable economy should be worked on for survival of TVET
- Lastly, the public should be educated to enhance change in their opinion.

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