

Technical Education and Local Content Development: A Panacea for Bridging Global Digital Divide

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Abstract— The global digital divide is a concept linked not only to the issue of access to the internet, but also to the issue of content, platform development and usage benefit. The polarization of Information and Communications Technology's knowledge, design and production access between the developed countries and developing economies has resulted into a 'digital diametrical world'; one producing technology and the other consuming what it cannot produce. Again, The lack of cognitive skills and design access has turned Africa into a dumping ground for these new technologies while equally turning Africa's best brains to repairers rather than creators of new age technologies. This paper employs analytical research method to explain the concept of Local Content Development in Nigeria's fledgling telecommunications sector and examines the implications of non-availability of cognitive skills and know-how in the ICT sector, on national development.

Index Terms— Global Digital Divide, Technical Education, Local Content Development, ICT and Nigeria

I. INTRODUCTION

The concept of global digital divide is a phenomenon linked not only to the issue of access to the internet, but also to the issues of content and platform development, and usage benefit. The emerging issue of digital divide concerns the unequal access to digital content, infrastructure and usage of new technologies. The issue of global inequality is connected to the topic of the digital divide because technology is one aspect of material wealth, and wealth production is now based on technology and knowledge. When we talk about technological divide, Africa is of particular importance because it is the most marginalized and excluded region of the world [1]. The polarization of Information and Communications Technology knowledge, design and production access between the developed countries and developing economies, has resulted into a 'digital diametrical world'; one producing technology and the other consuming what it cannot produce.

Again, the various neoliberal policies of Western financial institutions and agencies have not only failed to emphasize the functional importance of indigenous technologies and know-how; their operations and business strategies in Nigeria and other Sub-Saharan African countries also de-emphasize local content development as a gateway to national development. Thus,

developing economies are only enjoying the social benefits of the knowledge-based economy, while the main economic benefits and wealth goes to those who own and control the code of production. The lack of cognitive skills has turned Africa into a dumping ground for these new technologies and equally turned Africa's best brains to repairers rather than creators of new age technologies.

Worldwide, technical education has been an integral part of national development strategies in many societies, because of its impact on productivity and economic development. Development is the ability of a man to conquer his environment and utilize it to his advantage [2]. This technical-based-developmental approach involves the development of tools, skills and the mobilisation of required resources for development purpose [3]. Despite the contribution of technical education to national development, Nigerian leaders have not given this aspect of education the attention it deserves [4]. In other words, technical education is the academic and vocational preparation of students for jobs involving applied science and modern technology. It emphasizes the understanding and practical application of basic principles of science and mathematics, rather than the attainment of proficiency in manual skills that is properly the concern of vocational education [5].

The deficiency in technical education explains why Africa has taken the back seat in the industrial world that is driven by technical know-how. The consequent effect is a technologically polarized world. This diametrical and technologically divided world brings up the fundamental question of Africa's benefit in the balance of trade, and its place in the global configuration of knowledge-based economy, particularly, from the emergence of internet infrastructure and the fledgling new media.

In response to this digital divide, Nigerian government has carried out several efforts to change this by drafting a framework and guidelines for Nigerian content information technology. The Nigerian Communications Commission (NCC) has also embarked on the distribution of ICT textbooks to some selected Universities across the six geo political zones in Nigeria. However, research shows that the digital divide is more than just an access or distribution of text books. There are at least three factors at play; information accessibility, information utilization and information receptiveness [6].

Bridging the issue of digital divide goes beyond the provision of laptops and ICT textbooks, individuals also need to know how to make use of the information and communication tools.

This paper examines global digital divide, the Nigerian IT local content development framework, the emergence of a new class, policy disjuncture and how Nigeria can orchestrate a paradigm shift from digital divide to digital dividends

II. GLOBAL DIGITAL DIVIDE

The concept of global divide is a multidimensional issue. Central to the concept is the issue of disparity between nations or group of people in term of access to the internet, computers, phones, skills and other information infrastructures. Global digital divide is “an inequality of access to the Internet [7]. Access to the internet is a requisite for overcoming inequality in a society which dominant functions and social groups are increasingly organized around the Internet “[7]”. Jan Van Dijk, an important theorist of the network society defines the digital divide as ‘the gap between those who do and do not have access to computers and the internet [9]. Again, global digital divide be seen as the strikingly differential extent, to which rich and poor countries are enjoying the benefits of information technology, and as the unequal distribution of computers, internet connections, fax machines and so on between countries [10]. Since the global digital disparity borders on access to information technology and the internet, Van Dijk and Hacker summarize this access into four. These are;

The lack of ‘mental access’; refers to lack of elementary digital experience

The lack of ‘material access’; meaning a lack of possession of computers and network connections

The lack of ‘skill access’; meaning lack of digital skills

The lack of ‘usage access’ means lack of meaningful usage opportunities [11].

More telling is the definition of digital divide put forward by Fuchs & Horak ,digital divide refers to unequal patterns of material access to, usage capabilities of, benefit from computer-based information and communication technologies that are caused by certain stratification processes that produce classes of winners and losers of the information society, and participation in institutions governing ICT and society, as in “[1]”.

The avalanche of statistical evidence on global digital divide shows that there is a positive correlation between access to the internet and ICT infrastructure and national development, and vice-versa. Although Africa makes up 14.1% of the world population but only 16% of all Internet users live in Africa. About 77% of the people in the developed world use the internet while only 31% of the people in developing countries are using the internet “[6]”. One plausible explanation for poor internet penetration in Africa is poverty. Research has shown that there is positive correlation between internet usage and income level. More telling fact is that “as income rises so

does internet usage, strongly suggesting that digital divide stems from poverty and prevents people from obtaining or otherwise using newer technologies.

Again, available statistical evidences show that almost all Africa countries with very low internet penetration are among the least developed countries in the world in terms of health, education, and income. This indicates that there seems to be a connection between global social gaps and the global digital divide.

In terms of access, currently, Nigeria has 25,000 base stations, microwave radios covering 169,000km and 35,000 km of fibre optic cables. This is significantly less than the infrastructure stock of other comparable countries, even in the emerging markets. South Africa, for example, has four times as many base stations as the Africa’s largest economy by GDP does and 12 times more base stations per million people. India has 20 times more km of fibre optic cables and 7 times more per square kilometer [12].

III. EMERGENCE OF NEW CLASS IN A DIGITALLY DIVIDED WORLD

The emergence of information technology is altering all existing configurations. The knowledge of this new age technology is also redefining social class formation. About two hundred years ago, the industrial revolution centralized workforce and philosophers of that era, notably Karl Marx, observed that the mode of production and wealth creation produced two distinct classes; the haves and the have-nots, those who own the means of production and those who only have their manpower for sale. The information revolution and the global adoption of ICT is redefining not only social relations but equally transforming economic relations and changing class formations. In post industrial era, the basis of class formation centers on ICT infrastructure. Wealth, its possession and distribution is based on access to, and knowledge of ICT infrastructure.

In addition to the ‘haves’ and ‘have nots,’ new class distinctions will be created between the “theres” and there not’. Some people will have jobs that require them to be there-somewhere-while others will be able to work mostly from their homes, without having to be anywhere [13]. While the industrial age is associated with physical ability and manpower, the same cannot be said of the information age. The information age is associated with cognitive skills and ICT related knowledge.

While Peppers and Roger highlighted two classes, “there” and “there not”, Van Dijk, argues that there is tripartite class structure in the network society “[8]”. These classes are; (1) The Information Elite, (2) The Participating Majority and (3) The Disconnected and Excluded.

The Information Elite consists of people with high level of education and income, the best jobs and societal positions, and a nearly 100% access to ICT

The Participating Majority which contains a large part of the middle class and the working class who do not have access to computers and the internet, but also

possess fewer digital skills and use fewer and less diverse ICT applications.

The Disconnected and Excluded are those who are largely excluded from participating in several fields of society and have no access to computers and the Internet.

Applying the class model to the global level means that most African countries and people living in Africa are part of the class of the disconnected and excluded "[8]".

The class of the Disconnected and Excluded identified by Van Dijk is poor in and deprived of economic, political, and cultural capital; and lacks benefits from, as well as material access and usage capacities to the technological capital that shapes accumulation processes in global network capitalism "[8]".

IV. GLOBAL DIGITAL DIVIDE AND POLICY DISJUNCTURE

Achieving sustainable development is a function of effective policy. Unfortunately, the guiding developmental policy and framework adopted by Nigeria in that last fifteen years has not been able to solve the problem of global digital divide. For instance, the millennium development goals (MDGs) that serve as developmental framework for more than a decade pay little attention to the development of local technologies. The MDG-8 and the 18th target, only aim at making the benefits of ICT available in developing economies. It states that 'in cooperation with the private sector, 'make available the benefits of new technologies', especially information and communications technology' (www.mdgs.gov.ng).

And to measure this goal, the indicators are (1) Telephone lines and cellular subscribers per 100 population; (2) Personal computers in use per 100 population and internet users per 100 populations. While these are undoubtedly good indicators of development, MDGs did not encourage developing nations to be initiators, creators, and producers of these technologies, but encouraged them to enjoy the "benefits of these technologies" thereby furthering their ICT dependency on the West and worsening the already precarious global digital divide. The goal of making the benefits of internet and ICTs available to Nigeria has not only strengthened its economic dependency, it has actually created commercial capitalism in Nigeria. It has turned Nigeria into a dumping ground for fairly and poorly produced electronic gadgets such as phones, laptop computers, tablets and others with billions of dollars expended on internet subscriptions and internet infrastructure.

V. NIGERIA IT LOCAL CONTENT DEVELOPMENT

The essence of the Nigeria's IT Local Content was formulated to create potential opportunities that local companies are expected to take advantage of. The strategic goal of the policy are; To achieve a thriving ICT industry capable of contributing to national development; To lay the foundations for thriving ICT industry that can compete globally and to support technology transfer,

indigenous participation and the survival of local players in the sector [13]. Over the last ten years, Nigeria's telecommunications sector has witnessed an unprecedented growth. The mobile telecommunications technology in Nigeria has seen an increase in teledensity from 0.73% in 2001 to about 100.59 % in 2015, with a total of 140.82million active lines. The growth in the number of homes with computers and internet access, while still extremely low, has almost doubled between 2003 & 2010 and the number of personal computers (pcs) shipped into Nigeria has quadrupled, as in "[13]".

While the country appears to be in a step with technological advancements and global innovation, and there are exceedingly high levels of ICT consumerism, the Nigerian IT landscape is plagued by a paradoxical economic deficit and a negative balance of trade as the economic value generated locally with the imported technologies used by Nigerians is far below optimal. This is evidenced by the non-existence of technology exports and very low level of patronage of locally produced ICT products, including hardware and software as in "[13]".

While there is an unprecedented influx of foreign companies to provide the basic telecommunication needs of Nigerians, the expected contribution of the industry to GDP, local participation, technological transfer and innovation still remains worrisome. Some of the foreign companies that are operating in Nigeria engage local staff mainly to aid market entry and to drive local sales while other crucial activities that can aid local skills development take place outside the shores of Nigeria. Again, the developmental framework adopted by Nigeria to develop the telecoms sector, centers around foreign companies, foreign skills, foreign investments and neoliberal policies that give no room for infant industry protection.

The nature of production and wealth creation in the telecommunication sector and post industrial society no longer favour the 'technological-transfer thesis. The nature of production is changing from "mode" of production to "code of production [14]. Those who own and control these codes (internet, ICT) control the global capitalist economy. The global economy is a game of unequal players and hence, there are losers and gainers; exploiters and the exploited. Losers in this sense are nations that consume technologies they cannot produce because the few jobs that are available in the twenty-first century knowledge-driven economy are ICT-based and the developed countries and multinational organisations that own and control this knowledge are not ready to share this technology with anyone. Technology transfer in the telecommunications sector seems fallacious and the dependable way to make the sector work is to create local technology through concerted efforts and investments in technical education.

VI. FROM DIGITAL DIVIDE TO DIGITAL DIVIDENDS

To harness the potential in the information age, Government at all levels must ensure huge investments in technical education, in order to bridge the knowledge gap in ICT design and skills acquisition. The focus of

Nigeria's technical education should be redirected from repairing readymade machines and technology to producers of technology. Increase access to the internet through huge investment in broadband and ICT facilities. In order to bridge the knowledge gap in ICT and know-how; government must embrace "technical-based-developmental approach."

Bridging global digital divide should not just be reduced to the issue of access; policy should also focus on how to empower Nigerians to be creators of modern technologies and not just users and repairers. Again, the central focus of national policy on ICT should be redirected from merely "enjoying" the benefits of ICT to wealth and job creation. Government should also create ICT platforms and favourable conditions for the engagement of local technicality and capability; provide financial support to initiators of local technology, local app developers and content developers. In order to bridge global inequality, concerted efforts should be directed toward ICT training in all levels of education in Nigeria, free ICT skills acquisition centers in local communities. Government should provide legislations that favours the consumption and usage of locally made ICT products. This paradigm shift will ensure a sustainable movement from global digital divide to digital dividends

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