IMPACT OF TECHNOLOGICAL ADVANCEMENT IN THE SOCIETY IN NIGERIA

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Abstract

Today, innovations in information technology are having wide-ranging effects across numerous domains of society and policy makers are acting on issues involving economic productivity, intellectual property rights, privacy protection and affordability of access to information. The most significant outcomes of the progress of information technology is electronic commerce over the internet, a new way of conducting business. Already, it affects such large sectors as communications, finance and retail trade and has expanded to areas such as education and health services. Firms can outsource their manufacturing to other nations and rely on telecommunications to keep marketing, R&D and his distribution teams close contact with the manufacturing groups. The technology enables various types of work and employment to be decoupled from one another. The paper will focus on the impacts of information technology and electronic commerce on business models, commerce, market structure, workplace, labour market, education. Changes associated with rapid technological advances in industry have made continual upgrading of professional skills and economic necessity.

Keywords: Innovations, Intellectual Property Rights, Privacy Protection, Access to Information.

DOI: 10.31039/jgss.v2i8.10
1. Introduction

By late 60s and early 70s, when computers started appearing in government organizations, some public officials and commentators predicts that information technology would bring a revolution to public sector management. All indications are that technological progress and use of information technology will continue at a rapid pace. Today, innovations in information technology are having wide-ranging effects across numerous domains of society and policy makers are acting on issues involving economic productivity, intellectual property rights, privacy protection, and affordability of and access to information. Choices made now will have long-lasting consequences, and attention must be paid to their social and economic impacts. Already, it affects such large sectors as communications, finance and retail trade and might expand to areas such as education and health services.

In order to fast track the implementation of e-technology in public as well as private sector in Nigeria, the Federal Executive Council (FEC) approved a National Information Technology Policy in March, 2001 and began the implementation with the formation of the National Information Technology Department Agency (NITDA) in April, 2001 and recognized the private sector as the driving engine behind the IT sector. While NITDA has established the platform for ICT development, significant Government to Government (G2G) awareness and set up a basis for e-government initiatives in Nigeria, the government also adopted a private-public partnership of a tripartite joint venture registered as National E-Government Strategies Limited (NeGST), Comprising government (5%), consortium of banks (15%) and a strategic partner (80%). The joint venture has a mandate “to create a practical strategy and a single architecture to guide the evolution of digital government solutions with consistent standards, operating platforms and applications across agencies and government systems (UN, 2008: 124)”. Hence, in 2007, the enabling Act- the National Information Technology Department Act- was enacted by the National Assembly with an Agency established along with the Act, which was empowered to “plan, develop and promote the use of information technology in Nigeria” (Olatokun and Adebayo, 2012)

With the enabling act, various government agencies embarked on the implementation of ICTs in their operations. However, in 2011, the Federal Government created a new ministry called the Ministry of Communications Technology which was saddled with the mandate of Streamling ICT development and Progress in line with the nations plan for e-governance (Omerie and Omeie, 2014). There is no doubt the e-governance has become an integral part
of modern day government. Governments around the world are introducing e-government as a means of reducing costs, improving services for citizens and increasing effectiveness and efficiency at national, regional and Local Levels of the public sectors.

E-governance holds great promise to improve teaching and learning in addition to shaping workforce opportunities. Some of the uses of e-governance in Universities administration are: usage of electronic media by students to apply for admissions; usage of computers for students registration/enrolment; availability of timetable/class schedule in electronic form; usage of computers for maintenance of attendance of students; communication of academic details of students to their parents or guardians through e-media; usage of e-media for notifications; usage of computers for recruitment and work allotment for staff; automation of attendance and leave for management staff members sage of electronic media for performance appraisal communication with staff using e-media; e-circulars from the institution regarding official matters; usage of e-media for scheduling/allocation of halls for examinations; dissemination of information in the institution through e-kiosks; usage of e-media for the processing and display of results of students and fees payments electronically. ICT is used to implement a campus wide network for connecting the university to the world, develop and maintain a dynamic website, portal and online learning management systems for the university, providing access to the internet servers management and maintenance, and E-mail Operations and Maintenance of network infrastructure, and access to IT.

We will focus on the impacts of information technology and electronic commerce on business models, commerce, market structure, workplace, labour market, health, education and society as a whole.

2. Theoretical Framework

An academic discuss of this nature will be weak and deficient without appropriate theoretical foundation upon which to build. This paper will therefore be hinged on the economic approach of development theories. The concept of economy aims at explaining the power tandem in technology situations.

Professor W. W Rostow’s Theory is historical to the process of economical developments. He distinguishes five stages of growth namely:

1. The traditional Society
2. The pre-conditions for take-off
3. The take-off
4. The drive to maturity and
5. The age of high mass-consumption.

The Traditional Society

A traditional society has been defined “as one whose structure is developed within Limited production functions based on pre-Newtonian Science technology and a pre-Newton attitude towards the physical world” (Rostow 1960). The society is therefore Unscientific with the people engaged in subsistence agriculture.

The pre-condition for Take-off:

The period is characterized by the change in the attitude of the people towards development. It starts with a general awakening for learning and skepticism in place of faith and Authority (po.cit). Other features of this stage include the acceptance of the idea of economic progress, broadened educational opportunities, the emergence of manufacturing industries, build-up in the social overhead capital, technological revolution in agriculture and the expansion of imports.

The Take-off Stage

Rostow defines the take-off as an industrial revolution, tied directly to radical changes in the methods of production, having their decisive consequence over a relatively short period of time.

The feature of the take-off stage is,

An increase in the ratio of saving and investment to national income from 5% to 10%.

The Drive to Maturity

The features of this stage are: (1) The application of modern technology to the bulk of resources. (2) New production techniques adopted. (3) New leading sectors are created. (4) Rate of net investment is well high over 10 percent of national income. And the economy is able to withstand unexpected shocks. (5) Workers become skilled. (6) People prefer to live in urban areas rather than rural (High Urbanization). (7) Workers organize themselves. (8) Wages
rise and social security. (9) The emergence of efficient managers. (10) The miracles of industrialization and wants something new leading to a further change.

**The Age of High Mass-Consumption**

These stages are:

1) Migration to sub-urban areas  
2) The extensive use of the automobile,  
3) The extensive use of consumers’ goods and household gadgets

**Criticism of Stages of Economic Growth**

“Rostow’s The stages of Economic Growth are the most widely circulated and highly commented piece of economic Literature in recent years. Economists are doubting the authenticity of the division of economic history into five ‘stages of growth as presented by Rostow.

Professor Habakkuk in his review of Rostow’s stages wrote that “the work is essentially an essay in classification which contains some ideas on how one stage proceeds to the next, but they do not cohere into anything which could reasonably be signified as a theory of production”.

**Discussions on the “Stages”**

Traditional Society and Essential for Development:

Nations such as the United States, Canada, New Zealand and Australia were born free of traditional societies and they derived the pre-conditions from Britain, a country already advanced. So it is not essential for growth that a country must pass through the first stage.

1) Pre-condition may not precede the Take-off:

It is not necessary that they must precede the take-off. For example, there is no reason to believe that an agricultural revolution and accumulation of social overhead capital in transport must take place before the take-off.
Overlapping in the stages

Social overhead capital in transport, especially in railways, has been one of the leading sectors in the take-off, Rostow himself tells us. It shows that there is considerable overlapping in different stages.

Criticism of The take-off:
According to Habakkuk, “In his aeronautical concept of growth he (Rostow) ignored the bump downs and crash landings”.

Further, ‘the analysis of the take-off neglects the effect of historical heritage, time of entry into the process of modern economic growth, degree of backwardness, and other relevant factors on the on the characteristics of the early phases of modern economic growth in the different countries.

The growth Rate of Investment is Arbitrary. The rise in the rate of productive investment to over 10% percent of natural income is arbitrary. According to A.A.K Das Gupta, “What is the sanctity about his particular percentage, except that with 10% percent annual saving one may expect an economy to acquire ‘a higher trend of per capital income unless the capital-output ratio and the rate of population growth are abnormally high. A demarcation along this line is surely arbitrary.” There is no historical data to justify a sharp increase in the saving-income ratio at the beginning of industrialization.

2) Then stage of drive to Maturity Puzzling and Misleading.
As observed by Kuznets, “no growth is purely self-sustaining or self-limiting. The characterization of one stage of growth as self-sustained and of others, by implication, as lacking that property requires substantive evidence and analysis not provided by Rostow.”

3) The stage of High Mass Consumption not Chronological:
The age of high mass consumption is so defined that certain countries like Australia and Canada have entered this stage before even reaching maturity. According to one critic, “the period of mass-consumption is nothing else but minus its ideological overtone”.

As Das gupta has observed, “The term lacks precision and yet it is suggestive and can be given interpretation for an understanding of the process of economic development of an underdeveloped country. It is indeed the vagueness of the term that gives it strength for one to put an interpretation upon it to suit the conditions of the economy in which one is interested”.

Finger and Pecoud, (2003) gives different opinion on the concept of Technological Advancement, He opined that technological advancement covers online business of the
government, how information technology and mobile internet are utilized and executed in line with policies and programmes of government. The above definition captured the position of this study that deals with online business of the government but emphases should be placed on its application and benefits.

Schivester (2009), Ayo (2014; 76-77) sees technological advancement as “the application of ICT to transform the efficiency, effectiveness, transparency and accountability of exchange of information and transaction with the objective providing a SMARRT Government.

Although, the above definition sees technological advancement as a process of exchange of information and transaction with the objective of providing a SMARRT Government, but the efficiency, effectiveness and transparency of its application depends on the available resource. The acronym SMARRT refers to Simple, Moral, Accountable, Responsive, Responsible and Transparent government”.

According to UNESCO (2007), Technological advancement is “the public sector’s use of information and communication technologies with the aim of improving technology and service delivery. Encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective.

According to Suleiman (2006), “the basic assumption of the theory is that, for a society to survive and maintain its going concern, a certain degree of order and stability is required”. To achieve this order and stability the theory maintained that every social system must perform its role. Thus Haralambos and Heald (2003) opined that “the social system has certain basic needs which must be met if it is to survive. Those needs are known as functional prerequisites. The function of any part of the society is its contribution to the maintenance of the society”.

3. Main Discussions on Technological Advancement

Business models, Commerce and Market Structure

In many industries, the geographic distribution of work is changing. For instance, some software firms have found that they can overcome the tight local market for software engineers by sending projects to China, India and other nations where the wages are much lower. Firms can outsource their manufacturing of other nations and rely on telecommunications to keep marketing, R&D, and distribution terms in close contact with the manufacturing groups. Thus, technology can enable a finer division of labour among countries, which in turn affects the relative demand for various skills in each nation. Firms have greater freedom to locate their economic activities, creating greater competition among regions in infrastructure, labour,
capital and other resource markets. The information technologies have facilitated the evolution of enhanced and mail order retailing in which goods can be ordered quickly by using telephones or computer networks and then dispatched by suppliers through integrated transport companies that rely extensively on computers and communication technologies to control their operations. Non-physical goods, such as software, can be shipped electronically, eliminating the entire transport channel.

The impact of information technology on the firms cost structure can be best illustrated on the electronic commerce. Although setting up and maintaining an e-commerce website might be expensive, it is certainly less expensive to maintain such a store front than a physical one because it is always open, can be accessed by millions around the globe, and has few variable costs, so that it can scale up to meet the demand. Moreover, the electronic interface allows e-commerce merchants to check that an order, receipt and invoice match. Through e-commerce, firms are able to move much of their customer support online so that customers can access databases or manual directly. E-commerce shops require for fewer, high skilled, employees. Although, electronic commerce causes disintermediation of some intermediaries, it creates greater dependency on others and also some entirely new intermediary functions. Among the intermediary services that could add costs to e-commerce transactions are advertising, secure online payment and delivery. New techniques are being developed to protect the use of credit cards in e-commerce transactions, but the need for greater security and user verification leads to increased costs. The open and global nature of e-commerce is likely to increase market size and change market structure, both in terms of the number and size of players and the way in which players compete on international markets. The internet is helping to enlarge existing markets by cutting through many of the distribution and marketing barriers that can prevent firms from gaining access to foreign markets. It also encourages companies to develop innovative ways of advertising, delivering and supporting their product and services. While e-commerce on the internet offers the potential for global markets, certain factors, such as language, transport costs, local reputation, as well as differences in the cost and ease of access to networks, attenuate this potential to a greater or lesser extent.

Workplace and Labour Market

Workers find that they can do most of their at home rather than in a centralized workplace, the demand for homes in climatically and physically attractive regions would increase. The consequences of such a shift in employment from suburbs to more remote areas would be
profound. Property values would rise in the favoured destinations and fall in the suburbs. Since most telecommuters would be among the better educated and higher paid, the demand in these areas for high-income and high-status services like gourmet restaurants and clothing boutiques would increase. Also there would be an expansion of services of all types creating and expanding job opportunities for the local population. Reducing the fixed cost of employment, widespread telecommuting should make it easier for individuals to work on flexible schedules, to work part time, to share jobs, or to hold two or more jobs simultaneously. This increased flexibility might also reduce job stress and increase job satisfaction.

A question that is more difficult to be answered is about the impacts that computers and communications might have on employment. The response to this argument is that even if computer and communications lead to the elimination of some workers, other jobs will be created, particularly for computer professionals and that growth in output will increase overall employment.

Many industries are affected by electronic commerce. Industries, indirectly affected, are those related to information and communication technology (the infrastructure that enables e-commerce), content-related industries/entertainment, software), transactions-related industries (financial sector, advertising, travel, transport). E-commerce enlarges the market and has a positive effect on jobs. The convergence of media, telecommunication and computing technologies is creating a new integrated supply chain for the production and delivery of multimedia and information content. E-commerce is certainly driving the demand for IT professionals but it also requires.

IT expertise to be coupled with strong business application skills, thereby generating demand for a flexible, multi-skilled workforce. The skills required for e-commerce might accelerate the up skilling trend in many countries by requiring high-skilled computer scientists to replace low-skilled information clerks, cashiers and market salespersons.

Education

Evidence and experience has shown that rapid growth in the field of education has made governance in academic sector a complex task; the 21st century has witnessed tremendous advancements in technology which has led to far-reaching developments in the administrative system. Cost-effective technology combined with the flexibility in learning and administrative activities is essential to enhance efficiency. Computers can be used extensively for educational
administration. There are some areas where computers can be used for effective educational administration include; General Administration, exchange of information, Pay Roll and Financial Accounting, Administration of Student Data, Inventory Management, Personnel Records Maintenance, e-library system. Advances in information technology will affect the craft of teaching by complementing rather than eliminating traditional classroom instruction. The effective instructor acts in a mixture of roles. In one role the instructor is a supplier of services to the students, who might be regarded as its customers, the effective instructor occupies a role as a supervisor of students and plays a role in motivating, encouraging, evaluating and developing students. For the majority of students, the presence of a live instructor will continue to be far more effective than a computer assisted counterpart in facilitating positive educational outcomes. The greatest potential for new information technology lies in improving the productivity of time spent outside the classroom. Making solutions to problem sets and assigned reading materials available on the internet offers a lot of convenience. E-mail vastly simplifies communication between students and faculty, also students who may be engaged in group projects. Texts can be combined with audio/video and students can interact in real time via e-mail, and discussion groups. Such technical improvements coincide with a general demand for retaining and up skilling those who due to work and family demands cannot attend traditional courses. Distance learning via the internet is likely to complement existing schools for children and university students but it could have more of a substitution effect for continuing education programmes. For some degree programmes, high prestige institutions could use their reputation to attract students who would otherwise attend a local facility. Owning to the internet’s ease of access and convenience for distance learning, overall demand “for such programme will probably expand, leading to growth in this segment of e-commerce.

High level skills are vital in a technology-based and knowledge-intensive economy.

The goal of lifelong learning can only be accomplished by reinforcing and adapting existing system of learning, both in public and private sectors. The demand for education and training concerns the full range of modern technology. Online training via the internet ranges from accessing self-study courses to complete electronic classrooms. These computer-based training programmes provide flexibility in skills acquisition and are more affordable and relevant than more traditional seminars and courses.
Health

Medical technologies: in-vitro, fertilization and test-tube babies are no longer strange things. A new technique known as “egg transfer has been developed which involves taking sperm from the perspective father and placing it in the uterus of a woman who agreed to donate an egg. After fertilization, the embryo is flushed from the Donor’s womb through plastic tubes and they are transferred to the uterus of the woman who will carry the foetus thereby giving new hope to the infertile.

Plastic surgery and transplant of organs are no longer mysteries. Plastic surgeries are commonly used in permanently implanted organs including heart, fallopian tube. An artificial heart for prolonged period has been designed and tested. Transplanting vital organs from one person to another is a major breakthrough in medical technology. Technological advancements in the hospital set up which has led to social changes are:

1. Communication between the wards such as for patient referrals from one ward to another. During one interview, a baby was brought to the emergency room for admission. The physician was able to facilitate the admission in the neonatal ward via mobile phone.
2. Reaching physicians; not present in the hospitals might be reached through their mobile phone if there is an emergency.
3. Consultation; when physicians need a second opinion they contact their colleagues for consultation via the mobile phone.
4. Health centre professionals, use their mobile phone to get materials or equipment into a particular ward or room.


Public Sector Reforms

Service Delivery (SERVICOM)

The existence and functioning of a nation and its government is predicated on the need for orderly human interaction and the provision of a systematic mode of delivery for a wide array of services, ranging from purely governance services to the provision of a variety of social services. Laws, regulations and practices evolve to provide definite guides for human and governmental conduct.
El-Rufai (2013) summarizes public service delivery as the degree of an organization and/or employee performance, output and productivity in the discharge of their responsibilities within the available time, money and other resources, towards the achievement of overall goals of public institution. The spate of service delivery is determined by the performance of employees in achieving organizational goals and satisfying the public.

Okafor, Fatile and Ejalonibu (2014:49) sees public service delivery as “the result of the intentions, decision of government and government institutions and the actions undertaken and decision made by people employed in government institution”. They posit that it is “the provision of public goods or social (education, health), economic (grants) or infrastructural (water, electricity) services to those who need (or demand) them? Supporting the arguments above, Ohemeng (2010) views public service delivery from the light of its key features as “doing more with less, empowering citizens, enhancing transparency and holding public servants accountable”.

The state provides a social framework that aims at satisfying the social wants; claim, demands and expectations involved in the existence of a civilized society, by giving effect to, as much as possible, with the least sacrifice, a generally acceptable ordering of human conduct.

Democratic societies create a number of rights for citizens, and in return, certain basic duties and responsibilities are expected from citizens to the state. In such societies, government is mainly funded by citizen taxes and in return the demand accountability and a transparent administration of state resources. This background provides the rational of high quality service expectation by the citizens, and the rendering of some and continuous attempts to improve service delivery on the part of Government.

b. Code of Conduct Bureau: This is up to establish a high standard of morality in the conduct of government business through the enforcement of the code of conduct for public officers.

Today, Nigerians are in agreement that we need to rid ourselves of the cankerworm called corruption, and concretize ourselves towards acceptable behavior. The depth of decay which corruption has brought to our National life is so frightening and disturbing that most Nigerians, be it beneficiaries, or victims of corruption, are tired of this phenomenon. The weight of corruption on our National Psyches is so heavy that we are beginning to crack under it. The relief usually is that, when one gets to such a breaking point, the options are either to throw off the weight, or get swallowed up in the debris.
Cap. C15, LFN 2004 gives the Bureau the mandate to “establish and maintain a high Standard of morality in the conduct of Government business and to ensure that the actions and behaviour of public officers confirm to the highest standards of public morality and accountability. To implement this mandate, section 3, part 1 of the Third Schedule of the 1999 constitution of the Federal Republic of Nigeria gives it the power to

i. Receive declarations by public officers made under paragraph 11 of part 1 of the fifth schedule of the 1999 constitution;

ii. Examine the declaration in accordance with the requirements of the code of conduct or any law;

iii. Retain custody of such declarations and make them available for inspection by any citizen of Nigeria on such terms and conditions as the National Assembly may prescribe;

iv. Ensure compliance with and, where appropriate enforce the provisions of the code of conduct or any law relating thereto;

v. Receive complaints about non-compliance with or breach of the provisions of the code of conduct or any law in relation thereto’ investigate the complaint and, where appropriate, refer such matters to the code of conduct Tribunal;

vi. Appoint, promote, dismiss and exercise disciplinary control over the staff of the code of conduct Bureau in accordance with the provisions of an act of the National Assembly enacted on that behalf;

vii. Carry out such other functions as may be conferred up it by the National Assembly.

Privatization and Liberalization

Bureau of Public Enterprises (BPE) is the secretariat of the National Council on Privatization (NCP) and is charged with the overall responsibility of implementing the policies and decision of the council. The function of the Bureau as provided for in the Act includes:

i. Implementing the council’s policy on privatization and commercialization;

ii. Preparing public enterprises approved by the council for privatization and commercialization;

iii. Advising council on further public enterprises that may be privatized or commercialized

iv. Advising Council on Capital restructuring needs of the public enterprises to be privatized;

v. Ensuring the update of accounts of all commercialized enterprises for financial discipline;
vi. Making recommendations to the council on the appointment of consultants, adviser, investment bankers, issuing houses stock brokers, solicitors, trustees, accountants and other professionals required for the purpose of either privatization or commercialization.

vii. Ensuring the success of the privatization and commercialization exercise through effective past transactional performance monitoring and evaluation.

viii. Providing secretarial support to the council and carrying out such other duties and responsibilities as may be assigned to it from time to time by the council and its respective committees.

Transparency and Anti-Corruption

a. The independent corrupt practice and other related offences (ICPC) is the apex body saddled by law with the responsibility to fight corruption and other related offences in Nigeria. It was set up and empowered by the corrupt practices and other related offences act 2000 ICPC was inaugurated on the 29th of September 2000 with a chairman and 12 members. Section 3(14) of the act ensures the independence of the commission as not being subject to the direction or control of any person or authority.

Nigeria has been stigmatized by the international community as the second most corrupt country in the world. For three consecutive years; 2000, 2001 and 2002, it has maintained that unenviable position. The rating came up as a consequence of several failed attempt in the past to wipe out corruption or reduce it to a tolerable level in polity.

For the Jaji Declaration in 1977 by Olusegun Obasanjo; the Ethical Revolution of Shagari in 1981 – 1983; War against Indiscipline by Buhari in 1984; National Orientation Movement by Babangida in 1986; Mass Mobilization for Social Justice by Babangida in 1987; War against Indiscipline and Corruption in 1996 by Sani Abacha; to the Anti-Corruption Act 2000 again by President Olusegun Obasanjo; this is the first time in the series of several efforts to fight corruption that the attempt has the force of the law with severe sanctions.

b. Economic and Financial Crimes Commission (EFCC)

The preponderance of Economic and Financial Crimes like Advance Free Fraud (419), money laundering etc has had severe negative consequences on Nigeria, including Decreased Foreign Direct Investments in the country and tainting of Nigeria’s national image. The menace of these crimes and the recognition of the magnitude and gravity of the situation led to the establishment of the Economic and Financial Crimes Commission (EFCC). The commission has high-level
support from the presidency, the legislature and key security and law enforcement agencies in Nigeria. The legal instrument backing the commission is the EFCC Establishment Act 2002.

5. Conclusion and Recommendations

Technological advancement revolution has impacted positively numerous economic and social changes on the modern society and requires serious social science investigation in order to manage its risks and dangers. The advent of information and communication technology has helped policy makers in Nigeria to evaluate real situation of technology design and came out with relevant policies to embrace social change. Efforts are also made to show some policy reforms that have taken place in Nigeria over the years as a result of technological advancement.

This study is suggesting that for ICT to flourish all stakeholders such as the Federal, States, the Local Government and the organized private sector and Labour should be more involved, so as to make its accessibility more to the majority of the citizenry for them to participate in policy formulation as to fully be in line with current social change.

Some scholars the borrowing of some of the guiding principles adopted in private business organizations which include:

Accountability and transparency, efficiency and effectiveness; reduction of public sector (cost) expenditure; improvement in resource use through labour discipline; flexibility in decision making; competition in the public sector through decentralization and emphasis on result and not procedure (Pollitt and Bouckaert, 2004:91).

Summarily, all hands must therefore be on deck to achieve tremendous success not only in technological advancement but also in the implementation and sustenance of the efficacies of these policies and reforms.
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