

People's Expectations in a Technology Driven Society

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Introduction

- ▶ **People's expectation in a technology-driven society is the utilization of technology for national development.**
- ▶ There are divergent views on what constitutes development:
 - ▶ Some schools of thought believe that development is indicated by the construction of massive physical structures
 - ▶ Some view it from the perspective of an increase in socio-economic activities.
 - ▶ Some measure development in monetary terms
- ▶ Development is closely tied to infrastructure, whereas physical structures facilitate the production of goods and services, without themselves being part of the production process. These include roads, airports, ports, utility production and distributive systems, water and sewage systems, communication networks, and energy networks.
- ▶ No nation can develop without science and technology
- ▶ A nation that lacks the necessary science and technology know-how, will have to depend on other developed nations for the well-being and existence of its people

Introduction

Technology is the utilization of the forces of nature for the benefit of humankind.

Technology enables humankind to see further, hear more effectively, travel faster over greater distances, etc. Science and technology are required for sustainable growth, social development, and industrialization of nations.

For example Brazil, an emerging economy has a population of 214 million and generates 181,532 MW (source: Wikipedia) of electricity, whereas, Nigeria with a similar population is only able to generate available capacity of 6,056 MW (source: NERC) of electricity.

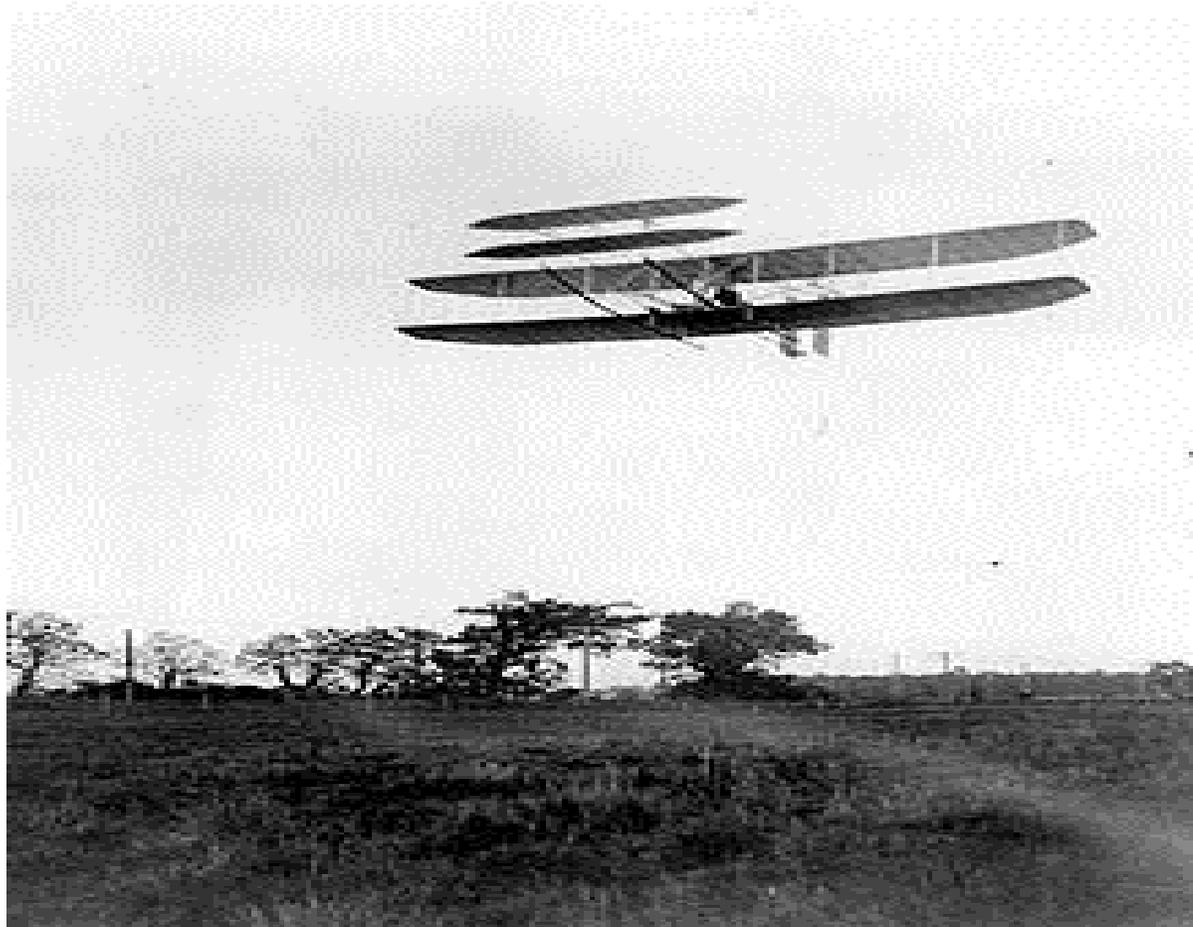
Gaps in Nigeria's National Development

- ▶ Declining standard of education
- ▶ Unemployment
- ▶ Insecurity: crime, militancy, insurgency
- ▶ Power: inadequate power supply for homes and industries
- ▶ Financial inclusion: low rural financial inclusion and adoption of banking services
- ▶ Health services: unavailability of high-quality health services in rural areas

Role of Citizens in National development

- ▶ Citizens are the best assets for National Development.
- ▶ Citizens will voluntarily participate in national development activities once they are empowered
- ▶ Citizens will voluntarily and effectively contribute to national development when Government creates an enabling environment

HUMBLE BEGINNING - Aerodynamics in action



THE WRIGHT BROTHERS-inventors of aeroplane



Processes that can impact National Development

- ▶ Orientation
- ▶ Technology Education
- ▶ Sustainable Technology Policies

Orientation

Technology gaps can be filled with citizens' participation. This can be achieved with re-orientation

- ▶ Drive for innovation and problem solving
- ▶ Encouraging and Valuing Intellectual property e.g. inventions, patents, written works
 - ▶ According to the World Intellectual Property Organization (WIPO 2007), there were 882,715 patent applications from China, 5,220,327 from the USA, and only 699 from Nigeria between 1985-2006
- ▶ Increased emphasis on information technology education
 - ▶ Provision of scholarships for technology-based courses
 - ▶ Rewards and Recognition
- ▶ Awards and competitions e.g. software development

Technology Education

- ▶ Education is accepted as a human right and, as such, should receive priority in the allocation of national resources.
- ▶ Strengthening Primary and Secondary technology education to build a strong foundation
- ▶ For Nigeria to achieve the much-needed national development, there must be a total transformation of all aspects of national life. Qualitative education is the bedrock of every development
- ▶ Focusing on innovation, skill acquisition, and problem-solving rather than academic qualifications only

Catch Them Young - Venus and Serena Williams



REAPING THE FRUITS OF THEIR LABOURS



Sustainable policies that can be adopted

- ▶ Developed nations in the West set aside about 10 percent of their countries' GDP for the development of science and technology. Asian countries such as South Korea have followed suit and set aside over 10 percent of their GDP for science and technology development.
- ▶ National Science, Technology and Innovation Policy
- ▶ Harmonized National ICT Policy
- ▶ Adoption of technology in Government processes
 - ▶ E-payment
 - ▶ E-Government
- ▶ Adoption of Open Source software to reduce technology costs and increase automation
 - ▶ German city of Munich adopted SUSE Linux in March 2003
 - ▶ Finland's public services will stop using proprietary software and will adopt Open Source solutions 2019
 - ▶ In 2009, United States White House moved its servers to Linux and Drupal for content management

Sustainable policies that can be adopted

- ▶ Automation of Government Budget and Financial Systems to increase efficiency, accuracy and transparency in public finances
 - ▶ GIFMIS
 - ▶ DMO
- ▶ Automation of tax administration systems to increase revenue and make taxation pivot of national development
 - ▶ Taxpro Max
- ▶ Adoption of workflow and Business Process Management Systems for process automation and paperless offices
- ▶ Adoption of Integrated Human Resource Management Systems/ERP
 - ▶ IPPIS

Sustainable policies that can be adopted

- ▶ Optimization of processes
- ▶ Automation of processes
- ▶ Using technology proactively not reactively
- ▶ Long term not short term planning

Key uses and applications of technology that can help to bridge national development gaps and make life easier for the Citizens

- ▶ Broadband Internet
- ▶ Data Analytics and Business Intelligence
- ▶ Mobile Applications, IoT, Augmented Reality (AR)
- ▶ Computer-Aided Agriculture/E-Agriculture
- ▶ Computer-Aided Manufacturing/3-D Printing
- ▶ E-Health/Telemedicine
- ▶ E-Learning and E-libraries
- ▶ Harmonized Identity Management System

Broadband Connectivity

High speed Internet access

- ▶ Fixed :VSAT, Fibre-optic cables, Radio
- ▶ Mobile :GPRS, EDGE , 3G, 4G LTE
- ▶ Some relevant applications that are facilitated by broadband connectivity
 - ▶ Internet content delivery: websites, streaming video, streaming audio, RSS feeds
 - ▶ E-commerce: Jumia.com, Konga.com
 - ▶ Payment gateways :WebPay, Paystack, Flutterwave etc.
 - ▶ E-banking, m-Banking
 - ▶ Micro blogging :Twitter
 - ▶ Social Networks : Facebook, Google+
 - ▶ Online Crowdsourcing: the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers
 - ▶ Online Crowdfunding :the process of funding projects by a multitude of people contributing a small amount in order to attain a certain monetary goal eg. www.kickstarter.com

Data Analytics

- ▶ National development requires proper planning. Proper planning requires information. Data analytics enable the proper extraction of useful information to aid decision-making and planning.
- ▶ Data analysis is the method of cleaning, extracting, transforming, and modeling data with the objective of discovering useful information
- ▶ Data integration may be a precursor to data analysis, and data analysis is closely linked to data visualization and data dissemination.
- ▶ Data mining is the procedure that focuses on modeling and knowledge discovery for predictive rather than purely descriptive purposes.
- ▶ Business intelligence covers data analysis that relies heavily on aggregation, that specializes in the extraction of business information from the raw data. this enables hidden patterns and trends to be seen and more accurate forecasting.
- ▶ There are several ICT tools that enable data processing and extraction of business intelligence to aid planning for National Development e.g. UN DevInfo

Mobile Applications

- ▶ The privatization of the telecoms industry has brought about an exponential increase in the number of telephone lines. Nigeria presently has over 206m GSM lines across all service providers as of June 2022. This provides an enabling technology platform to aid national development.
- ▶ mLearning: use of mobile phones for e-learning
- ▶ mCommerce: use of mobile phones for commerce
- ▶ mPayments: use of mobile phones for payments
- ▶ mBanking: use of mobile phones for banking
- ▶ mAgriculture: use of mobile phones in agriculture for information, farm input distribution such as fertilizer distribution

Computer Aided Agriculture

- ▶ E-Agriculture is an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. More specifically, e-Agriculture involves the conceptualization, design, development, evaluation, and application of innovative ways to use information and communication technologies (IT) in the rural domain, with a primary focus on agriculture. E-Agriculture is a relatively new term and we fully expect its scope to change and evolve as our understanding of the area grows.
- ▶ E-Agriculture is one of the action lines identified in the declaration and plan of action of the World Summit on the Information Society (WSIS). The "Tunis Agenda for the Information Society," published on 18 November 2005 and emphasizes the leading facilitating roles that UN agencies need to play in the implementation of the Geneva Plan of Action.
- ▶ All stakeholders of the agriculture industry need information and knowledge about agriculture phases to manage them efficiently. Any system applied for getting information and knowledge for making decisions in any industry should deliver accurate, complete, concise information in time or on time Record text, drawings, photographs, audio, video, process descriptions, and other information in digital formats,

Computer Aided Agriculture

- ▶ In agriculture, the use of the Global Positioning System (GPS) provides benefits in geo-fencing, map-making and surveying. In Kenya, for example, the solution to prevent an elephant bull from wandering into farms and destroying precious crops was to tag the elephant with a device that sends a text message when it crosses a geo-fence. Using the technology of SMS and GPS, the elephant can roam freely and the authorities are alerted whenever it is near the farm.
- ▶ Geographic information systems, or GIS, are extensively used in agriculture, especially in precision farming. The land is mapped digitally, and pertinent geodetic data such as topography and contours are combined with other statistical data for easier analysis of the soil. GIS is used in decision making such as what to plant and where to plant using historical data and sampling.
- ▶ The Veterinary Department of Malaysia's Ministry of Agriculture introduced a livestock-tracking program in 2009 to track the estimated 80,000 cattle all across the country. Each cattle is tagged with the use of Radio Frequency Identification (RFID) technology for easier identification, providing access to relevant data such as bearer's location, name of the breeder, origin of livestock, sex, and dates of movement. This program is the first of its kind in Asia and is expected to increase the competitiveness of the Malaysian livestock industry in international markets by satisfying the regulatory requirements of importing countries like the United States, Europe, and the Middle East. Tracking by RFID will also help producers meet the dietary standards of the halal market. The program will also provide improvements in controlling disease outbreaks in livestock.

E-Learning

- ▶ E-learning can be defined as learning conducted via electronic media, typically on the Internet.
- ▶ E-learning refers to the use of electronic media and information and communication technologies (ICT) in education. E-learning is broadly inclusive of all forms of educational technology in learning and teaching. E-learning is inclusive of and is broadly synonymous with multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) (which are also called learning platforms), m-learning, and digital educational collaboration. These alternative names emphasize a particular aspect, component or delivery method.
- ▶ E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning. Information and communication systems, whether free-standing or based on either local networks or the Internet in networked learning, underly many e-learning processes.
- ▶ E-learning can occur in or out of the classroom. It can be self-paced, asynchronous learning, or may be instructor-led, synchronous learning. E-learning is suited to distance learning and flexible learning, but it can also be used in conjunction with face-to-face teaching, in which case the term blended learning is commonly used.

E-Health and Telemedicine

- ▶ E-Health is a relatively new term in health care practice and one of the most rapidly growing areas in health and ICT today. The term encompasses a range of services that involve health care and information technology supported by electronic processes and communication. It involves the use of information and communication technology (ICT) to improve patient care.
- ▶ E-Health occurs in two forms which include synchronous or 'real-time communications and asynchronous or 'store and forwards' communications.
- ▶ Synchronous E-Health requires a communication link between two or more parties that allows a real-time interaction to occur. Synchronous telemedicine may use video-conferencing equipment with the attachment of peripheral devices which aid in interactive examinations. For instance, a tele-stethoscope (stethoscope) allows the consulting physician in a remote location to listen to the patient's heartbeat and lungs, a tele-ophthalmoscope (eOphthalmoscope) and tele-otoscope (eOtoscope) allow a remote physician to examine a patient's eyes and ears respectively.

Asynchronous E-Health involves the acquisition and transmission of patients' medical data such as radiological studies, laboratory results, and biomonitors information to a physician at a convenient time for assessment offline. A digital image is taken using a digital camera ('stored') and then sent ('forwarded') to another location. Asynchronous E-Health doesn't require the parties to be present at the same time.

- ▶ Telemedicine involves the use of medical information transferred from one site to another through electronic communications to improve patients' health care including diagnosis and treatment. Telemedicine may be as simple as two medical professionals discussing a case over the telephone, or as advanced as using video teleconferencing systems.

Identity Management System

- ▶ Identity management system is key to National development. Without it, the verification that a person is who he/she claims to be is very difficult.
- ▶ The lack of Harmonized Identity Management System impacts
 - ▶ Tax administration - the inability of tax authorities to prevent multiple registrations
 - ▶ Security - multiple crimes committed in several locations by a single individual without them being linked to a single identity
 - ▶ Housing - higher cost to Primary Mortgage Institutions to verify identities of mortgage applicants
 - ▶ Banking - higher cost to banks to verify identities of loan applicants
 - ▶ Elections - higher cost to electoral authority to prevent multiple voter registrations
- ▶ Nigeria is currently implementing its Identity Management System through the National Identity Management Commission (NIMC) and biometric data capture of all citizens.

Conclusion

- ▶ People's expectation in a technology-driven society is the utilization of technology for national development.
- ▶ National Development is critical to Nigeria's growth
- ▶ It is imperative to put the right technology policies and regulatory framework in place
- ▶ Entrepreneurs and innovators will naturally spring up when a conducive environment and value systems are created
- ▶ No nation will voluntarily transfer their technologies
- ▶ Education/Capacity Building is of utmost importance because human beings are our most important resources
- ▶ Conventional and unconventional innovators must be encouraged and empowered
- ▶ Technology can be utilized to bridge identified gaps in National development, with citizens' participation and sustainable technology policies

Thank you
Questions

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