

I. МОДЕЛИ МОДЕРНИЗАЦИИ РОССИИ И ВОЗМОЖНОСТИ ИХ РЕАЛИЗАЦИИ В СРЕДНЕСРОЧНОЙ ПЕРСПЕКТИВЕ

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KNOWLEDGE ECONOMY, TECHNOLOGY AND ALLEVIATION OF HUMAN CONDITIONS: HOW APPLICATION OF MOBILE COMMUNICATION TECHNOLOGIES CREATES VIRTUAL KNOWLEDGE TOGETHERNESS AMONG NATIONS

Introduction. Traditional classification suggests that science can be either pure or applied. Pure deals with engagement with science for the sake of acquiring knowledge about the nature of objects and phenomena, why and how objects and phenomena came to possess their inherent nature. Applied is science for the purpose of using knowledge to improve ways or methods of doing things or to improve the quality of life in general. This second category plays itself out in invention and application of technology. Technology predates science in that people have always invented tools and other objects as well as ways and methods of doing things in order to improve life without any systematic observation or study. Systemization of observation and critical examination of phenomena among other things is what science brings, and that has led to a rapid and accelerated development of the process of knowledge application to produce new technologies.

Technology has often been a major driving force behind development in all areas of life, from healthcare, commerce, education to politics, sports and entertainment. It is difficult to imagine the sphere of life where technology is not making the difference be-

tween success and failure, and sometimes between good or happy life and misery or hardship.

Much of the progress recorded in media technology has been attributed to the twentieth century (Briggs, 2009). Television recorded a great breakthrough in the 1960s and the computer later in the century became almost indispensable in mass media operations from news gathering and processing to dissemination and archiving or storage. The computer's entrance into mainstream mass media process followed the invention of the integrated circuit, which made it possible to put thousands and then millions of transistors on a single chip. This advancement in electronics, made equally in the 1960s, paved the way for computers to advance on many other grounds. They became faster and smaller, with more memory for processing and storage among other features, as they continuously and rapidly change from one generation to another. More importantly, they became more and more adaptable to personal use as they were produced for the mass market with the individual's personal computing needs well provided for in terms of hardware and software while businesses and corporate users and governments were not left out. Emerging almost on a daily basis are new means of sending and receiving information in a manner that makes space and time barriers almost non-existent.

Some have seen this situation as a major catalyst for the phenomenon known as globalization, since advances in information and communication technologies and transportation served as the major preconditions for the emergence of a converging global economy, culture and politics. Also, this social condition led to the emergence of a new kind of society referred to as the information society, to emphasize the way information and communication technologies have impacted on human life from the home to the workplace, school, healthcare systems, communities, organizations and government. Also, the concept of *risk society* has been used to explain how the human condition has become highly dependent on the application of technologies, thereby turning the modern world into an experimenting society, where while providing more efficient ways of solving problems, these technologies also subject life to greater level of hazard in the event of an accident. This has however

not stopped society from continuous engagement with science and technology in its quest for progressive transformation.

In order to foster an even quicker transformation of itself from a post-industrial to an information society, for instance, the European Union embarked on implementation of policies aimed at creating an open and competitive digital economy, promote research into ICT and their application in order to improve social inclusion, quality of public service and standard of living. Some of the legislative provisions aimed at backing this up include the EU Data Protection Directive (1995), Privacy of Electronic Communication directive (2002) and the EU Cybercrime Convention (2004). The UN through its agencies has also created various platforms for the development of information and communication technologies through stakeholder forums such as the World Summit on Information Society (WSIS) into which countries are keying to participate in the governance of information technology applications in various areas of life. An example is the Internet Governance Forum of various countries, including Nigeria (through the Nigerian Internet Governance Forum, NIGF), where stakeholders in the ICT industry often meet to chart the course of development of ICT application in their countries and the world at large.

The sustaining role that information as a product now plays in our society makes it an information society, since it is generally agreed that information society is where the creation, distribution, diffusion, use, integration, and manipulation of information is a significant economic, political, social and cultural activity. The primary role of information in society made it imperative that knowledge be created in enormous quantity and with great intensity. As a result, economically advanced countries thrive on their ability to treat information as a material for creating knowledge.

Knowledge Economy and Citizens. Knowledge has always played an important role in economies, be they agricultural, industrial or service economy. However, the rate of incorporation of knowledge and information into the economy today is so enormous that it is causing serious structural and qualitative changes in the way the economy is operated. This knowledge intensity in economic activities has in turn resulted in a profound change in what serves as the basis for competitive advantage (Houghton and Sheehan, 2000).

Success is no longer about the capacity to produce alone but also about the capacity to generate knowledge and distribute it. Houghton and Sheehan (2000) have indentified some of the characteristic features of the knowledge economy that make it significantly different from the industrial economy. These characteristics include:

- *Existence of a transforming information revolution powered by information technology (IT), which, for developing countries, is considered a key component for addressing 21st century challenges.*
- *Existence of flexible organizations with people of multiple rather than highly specialized skills that turn out high quality customized products at great speed.*
- *Knowledge, skill and learning playing a central role through the use of ICT in activities aimed at increasing organizations' capacity to codify knowledge.*
- *Reliance on innovation and knowledge networks in enhancing the process of creation, diffusion and use of knowledge.*
- *Existence of learning organizations and knowledge systems that continues to search for collaborations with firms, organizations and governments in order to spread the cost and risk of innovation.*
- *Operation of companies on both the local and global market due to the pervasiveness of global production and competition.*
- *Discarding of the traditional explanation of comparative advantage as a trade strategy borne out of consideration of a nation's or region's location since comparative advantage is now determined by a firm's objectives rather than its location.*
- *Clustering in the knowledge economy in the form of creation of technology-based alliances by firms.*
- *The non-perishable nature of the economics of knowledge, whereby knowledge does not perish in consumption like physical goods but allows for multiplication of returns through diffusion.*
- *The existence of systems of creation, production and distribution that do not support the commonly held notion that a knowledge economy is a services-based economy but rather an economy revolving round a complex chain of industries that create, produce*

and distribute goods, all of which receive value as inputs from information and knowledge.

These characteristics clearly mark out the elements that interplay to create the dynamics of a knowledge economy. Although the task of determining how well an economy is performing in terms of compliance or readiness to become a knowledge economy is the task of economists, it is pertinent to ask the question of whether or not the basic preconditions for a society to become a knowledge economy, which hinge on the proliferation of information and communication technology, is sufficiently evident in the developing nations as to pave the way for their real transformation into a knowledge economy or their perception as knowledge economies in their current state.

This question or problem cannot be adequately addressed without revisiting the notion of globalization, under which the world is more or less construed as a single entity, due to the interconnectedness of production, culture, communication and technology. Globalization as a phenomenon suggests a continuing spread of economic interconnection that is accompanied by deep-seated political changes wherein poorer or periphery countries have become even more dependent on activities in the rich or "central" economies such as the USA (Smith and Doyle, 2002, Ferraro, 1996). This undesirable dependence on activities in the center by the periphery should be seen as a major point in the critique of a totalistic approach in the explanation of the role of ICT in improving or making life in the tri-continent similar to that in the technologically advanced countries. The reality is that economic and technological progress in the central economies has not been replicated in the periphery. While the divide continues to exist, it is taking a subtle form, by which it may not readily be observed because of the increasingly complex social and economic relations between nations under conditions of globalization. The convergence of national social, cultural and economic activities under globalization is a reality, and the pattern of interactions between developed nations and the tri-continent continues to give credence to some of the conclusions of dependency theory that there are dominant and dependent states, and that external forces are of singular importance to economic activities within the dependent states.

The complexity of the dependency relationship has been addressed in studies on global problems, of which three major groups have been identified. The first are those relating to the nature of relationship between human communities, the second are those relating to humans' coexistence with nature, and, the third are those concerning the relationship between the individual and society (Oni, 2001). Belonging to the first group of problems is the dichotomy or divide between rich and poor nations and between the "north and south" etc. A fall-out of this differentiation is the issue of digital divide, which signifies the problematic technological inequality experienced by the tri-continent in terms of the level and quality of access their citizens have to information technology. To put it differently, the question could be asked that how much of economically, socially and culturally meaningful information and communication technologies (ICT) are made available to people in the periphery regions of the world, and consequently how significantly are these technologies improving lives?

Annan (2003) cited in Prasad (2008) has pointed out that the digital divide is actually a divide in several forms, ranging from divide in infrastructure to language divide, commercial divide and gender divide. It follows that the divide permeates several aspects of life; it is inconspicuous in certain aspects while being obvious in others. This perhaps explains why available infrastructural amenities in many tri-continent countries may suggest to the dwellers that they are neck-a-neck with dwellers of the developed world, whereas this infrastructure is bringing to their reach only a minute portion of what is actually available to make life much better. Essentially, these various manifestations of the divide stem from the fact that most of the information and communication technologies have their origins in the West or the so called developed countries and therefore are not readily available to or easily affordable for populations in the tri-continent.

Domestication of Technologies. The issue of availability and affordability is often a pertinent one in discussions on national development. If the ultimate goal of an information society is to gain competitive advantage on the global arena through the creative use of information technology and ultimately transform itself into a knowledge economy, then owners of patent rights to information

technologies and solutions have the leverage to be in the lead, while others will only follow. This thinking, for instance, is implicit in a 1991 report of the US Congress Office of Technological Assessment (OTA), which claimed that US miniaturization technologies were the best in the world. The report showed the kind of importance attached to performance assessment by governments of nations that are visible leaders in the information technology industry as they track research and development in the sphere. This is in realization of the fact that in the knowledge economy - where wealth is created through the commodification or economic exploitation of understanding or know-how - only the fully digital citizens will have the full capability to participate.

This idea is premised on the concept of domestication as espoused in the domestication theory, according to which technology is first integrated into people's everyday life and practices, causing the users and their environment to adapt to its use, while the adaptation flows back to the industry to initiate innovations that shape the next generation of technologies. This is an indication of the important role that users play in the creation of technologies. The backward flow that leads to the creation of new technologies may not be hindered in societies with adequate infrastructure and human capacity for innovation, but the reverse will be the case where capacity is lacking. In essence, domestication is about taming the technology through the processes of *appropriation* (by bringing it to the home), *incorporation* (by spatially locating it somewhere in the home), *objectification* (by scheduling it in routines and time structures) and *conversion* (by making it part of identity and how we present ourselves to others) (Haddon, 2011). These processes seem to take place across board, both in developed and developing economic and social systems, but they do not result in the creation of new technologies in the latter because the technology did not originate from the latter in the first instance.

A gathering of experts in the field of geo-spatial studies and research from all over the world in April 2012 under the aegis of the United Nations Committee of Experts on Global Geospatial Information Management (UNCE-GGIM) attempted to make predictions on what should be expected in this area over the next 5-10 years. Geospatial studies involve capturing and using satellite images of

ground targets for decision making purposes. One of their many predictions was that in ten years time, there will be a clear dividing line between winning and losing nations. Winning or losing will depend upon whether the appropriate legal and policy frameworks have been developed that enable a location-enabled society to flourish (Meier, 2012). Predictions on who wins or loses may not be difficult to make in view of the current digital divide.

The digital divide phenomenon, arguably, calls to question some of the general assumptions of the theory of development, most importantly the assumption that equal level of development could be reached if the developed nations aid and encourage the developing ones to adopt the processes that have been instrumental to the former's development. This is more so since the question has often been asked about how technology can be transferred from one nation to another. Since technology is capital intensive, a lot of financial and intellectual investment, backed with a strong political will to achieve breakthroughs is required. Countries that have achieved a lot in terms of technology have very often been the ones with a well coordinated fusion between the academic and research centers, the industry and policy driven government actions. There is therefore a demarcation between technology creators and technology users. This demarcation is however blurred by the trending and pervasive commercialization of technologies (especially telecoms technology) which has catalyzed the migration of those technologies to developing countries through a rapid and ongoing proliferation process, such that it now appears as if the technologies are indigenous. A recent BBC policy briefing reported that Mobile phone use tripled in the developing world between 2005 and 2010, with the fastest growth in Africa, according to the International Telecommunications Union (BBC Media Action, 2012).

While there is a clear understanding that innovative technologies come mostly from the advanced knowledge economies, the *blurring* of boundaries between original technology/equipment manufacturer countries and user countries is reflected in the widespread and somewhat unhindered application of the commercialized technologies in all countries. This has allowed for the application of innovative technologies, especially emerging mobile telecommunication technologies, in providing solutions to humanitarian problems

and in organizing and carrying out protests against repressive regimes.

Some of the innovative applications of telecommunications technology in these areas include:

- The use of SMS in conflict prevention (e.g. the PeaceText project, which involves the use of mobile messaging to market peace in strategic ways).

- Crisis mapping and disaster preparedness, mitigation and resilience

- Social computing such as the use of Natural Language Processing and Machine Language to generate situational awareness during crises, using tweets (Tweeter messages) sent in emergencies and other crisis situations.

- Crowdsourcing crisis response by making use of mobile phones and associated technologies to locate participants, victims or observers of emergency or crisis situations as well as rescue and response services

- Using Big Data sources (such as Tweeter) that flow through the Internet to create and convey real-time information that decision makers need in order to respond quickly and decisively to disaster or other emergencies.

- Using ICT to organize new types of protests, which have no clear leader, are decentralized, can bypass some legal restrictions and create new challenges for the authorities (e.g. the Big White Circle Action in Moscow, Russia)

- Alternative election monitoring systems (e.g. Map of Violations, a crowd-sourcing platform used in the March 2012 elections in Russia)

Conclusion. The literature on liberation technologies and disaster management has suggested that telecommunication technologies' application in humanitarian efforts are deployed mostly in developing countries that still encounter major humanitarian and political challenges. Other prominent places of their deployment are emerging democracies and nations going through political transformation. Most of the mobile telecommunication technologies that are deployed in creating high resilience in disaster response are developed in countries where they are hardly put to use. Hence the tech-

nologies tend to come in handy and mostly visibly saving the day in developing nations. In other instances where mobile technologies are making waves in terms of public embrace and adoption, they only create a “virtual”, false or near-real oneness or uniformity of knowledge, making the users look like they are not different from the makers, whereas the maker nations only make available the technology to the user nations only out of the necessity to pursue their quest for commercial gains. This situation calls for deeper reflection, theorization and proposition of lasting solution, especially in developing countries, which need to understand that commercial interests are the reasons why useful technologies find their ways to their domains.

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