

Review

Digital Dichotomy Theory towards Propositional Appraisal of Technology Adoption in Nigeria

Dr. Dike Harcourt Whyte and Vitalis Perpetua Ogechi

¹ Department of Cinematography and Broadcast Studies, Faculty of Communication and Media Studies, Rivers State University, Port Harcourt, Rivers State.

² Department of Cinematography and Broadcast Studies, Faculty of Communication and Media Studies, Rivers State University, Port Harcourt, Rivers State.

Accepted 21 June 2022

The advancement in Information Communication Technology (ICT) brings about the debate regarding the potential of technological innovations for inequities and inequalities. Since the 20th century, when McLuhan argued that technologies help extend human capacity, technologies have been regarded as liberating and empowering. Technologies aided human manipulation of mechanical and electronic processes in the media and communication industries. This study examines the fundamental issue of Digital Dichotomy Theory towards propositional appraisal of technology adoption in Nigeria. The study interrogates how developing countries like Nigeria may, or have been left behind in the journey towards technology adoption because of poor technological infrastructure and systems. The analysis rekindles the global information order to the past, such as technology dominance, information inequality, and asymmetrical and imbalanced information flow. The study equally proposes new ways of addressing some of the challenges of technology adoption in Nigeria. The study used secondary sources to generate data, while Diffusion of Innovation and Push-ICT Theories serve the study goal. A call for the consideration of the digital divide as captured in the Digital Dichotomy Theory (DD-Theory) is proposed for understanding the inherent adoption of technology dynamics in Nigeria. The theory asserts that entities without the same predisposing factors will often significantly vary in adoption time of current experience(s). Within this context, there is a digital dichotomy that affects the adoption of technology, especially in developing countries like Nigeria.

Keywords: Adoption, Dichotomy Theory, Diffusion of Innovation, New media, Push-ICT Theory, and Technology.

Cite This Article As: Dike, H.W., Vitalis, P.O. (2022). Digital Dichotomy Theory towards Propositional Appraisal of Technology Adoption in Nigeria. *Inter. J. Eng. Lit. Cult.* 10(2): 28-35

INTRODUCTION

Societies need information for many purposes in their journey to advancement. Whether it is for building the right physical infrastructure or for enhancing existing social structures, societies require the right kind of knowledge and information. As the central circulatory system carries oxygen to all parts of the body and expels the toxic substances, which could harm the body, the mass media are expected to infuse life-giving information

to society, even the most remote members (Pate, 2021). Access to required information helps dispel impediments on the path to the wellbeing of society, be this ignorance or adherence to discordant beliefs and thoughts. The media are expected to promote harmonious living in society. Technology was meant to enhance media efficiency.

Advancement in Digital Information Communication Technologies (D-ICTs) has heralded the arrival of digital media. However, due to the digital divide across

countries and continents, the gains are uneven across the world. As technology-based media communication imperatives are increasing potent aspects of knowledge-driven societies, there is an urgency to advance theoretical insights on the issue towards gaining a better perspective of technology adoption in Nigeria, especially about the position of the technological-dependent nation. Thus, this study examines Digital Dichotomy Theory towards propositional appraisal of technology adoption in Nigeria. Premised on empirical inferences such as Diffusion of Innovation, and Push-ICT as pre-existing theoretical frames, the study argues that the digital dichotomy may influence the adoption of technology in every society.

Therefore, the call by Nyam (2021) to maximize the impact of technology is such that countries, governments, and other stakeholders as well as communication scholars ought to put all resources and expertise together towards meeting the technological-oriented media communication needs or adoption of any society. Given the digital divide as a consideration, the need to revisit the Digital Dichotomy Theory (DD-Theory) is important as this paper proposed it to be a better way of understanding the inherent technology adoption in Nigeria. This is so because the basic assumption of the theory is that entities without the same predisposing factors will often significantly vary in the adoption time of current experience(s).

Nyam (2021) observed that the whole gamut of media classifications and applications, as well as operations, seem to be dependent on the available communication technologies. Today, digital media and communication had definitively advanced from basic software to ICT. Adjei (2020) also affirms how the development of computers, for example, has increased audiences' spread and in turn made it more difficult to clearly distinguish between 'mass media' and 'non-mass' media. This expression relates to the contemporary influences of the new media upon the old 'traditional media.' The concept of 'new' applies to media technologies that have altered media classifications, with great contempt for the communication characteristics of the traditional media.

Additionally, technology has advanced media communication reality. Notwithstanding, the regulatory framework is needed. The issue of the digital divide has indeed placed an extra burden on media scholars as well as professionals, and communication policymakers in developing countries. For instance, Adjei (2020) mentions how old media, i.e. newspapers, television, and radio had the concept of feeding information based on the ground research for their listeners and viewers' in places such as Ghana, where radio and television stations tailor niche agenda-driven programs of political parties. Within this context, this study is guided by the following objectives: to examine the considerations in technology adoption in Nigeria; to interrogate the challenges that mitigate the

adoption of technology in Nigeria, and to investigate the realities of digital dichotomy amidst technology adoption in Nigeria.

A Brief Historical Antecedent of the Present Technological Age

Since its evolution, humanity has experienced waves of innovation resulting in the advancement of social and institutional development. Fukuyama (2018) describes human growth in five dimensions: Society 1.0, characterized by the coexistence of human beings with the animal kingdom; Society 2.0, the beginning of agriculture and permanent settlements; Society 3.0, the advent of industrialization; Society 4.0, the age of information society, internet and communication technology; and Society 5.0, the age of technological innovations with the use of data, Artificial Intelligence, the internet of things and the robotic era. Through this prism, human society is currently situated in Society 5.0, with the quantum use of data and information shaping decisions and all areas of life.

The evolution of modern society has also been described in terms of Industrial Revolutions. Along that line, Marwala (2020) views human development in four cycles of revolutionary. The first industrial revolution took place in the 18th Century, and resulted in the increased volume and variety of manufactured goods, and improved standards of living, with a shift from an agrarian into industrialized economies. The second industrial revolution sprung from the discovery of electromagnetism, which gave human beings electricity and the mass production of goods. With the development of semi-conductors and materials that conduct electricity, the third industrial revolution ushered in the electronic age. We are presently in the world of convergence of media systems and communication infrastructure, described as the fourth industrial revolution. It is the offshoot of what has previously been described as the information society, network society, or—knowledge society.

However, other commentators extended the trajectory beyond four revolutions. Smihula (2010) suggests that human development is seeing the end of the information revolution as it moves into the 5th industrial revolution. This is an age of human intelligence, self-governing technologies, and the multi-polarity of technology-driven by the convergence of ICT and networks. Thus, the world will yet undergo a post-information revolution that will usher in other waves of innovation. Along the same line, Silva and Di-Serio (2016) argue that the world is on the cusp of a sixth revolution, focusing on sustainability and innovations. The authors contend that the political, economic, and social problems demonstrated by the industrial revolution will lead to a new wave, one based

on the need to achieve sustainability of the ecosystem.

One consequence of the extant digital revolution is the increased use of data and technology. Through sophisticated computer automation and engineering, society today is awash with different data sources and tools, affecting all forms of decision-making based on experience, intuition, and other non-data-driven approaches (Provost & Fawcett, 2013, p. 51). To Mayer-Schonberger and Cukier (2013), data is no longer regarded as a static or stale resource but as a major raw material in business, a vital part of economic input, and a critical tool for creating new economic value. It is also no longer a question of hardheaded statistical packages or dead information available in archives or remote databases.

In the digital age, data is expected to be mined and efficiently utilized for social change and effective decision-making (Provost & Fawcett, 2013, p. 55). The advent of big data and a host of other developments associated with digital technologies have culminated in the emergence of Knowledge Societies (Diamandis & Kotler, 2020).

Pate (2021) corroborated that where technology has been efficiently harnessed for the social, economic, and cultural wellbeing of groups and nations, a knowledge society emerges. Media technologies have always been a concern. Sometimes they were viewed from the wide-angle lens of their facilitation of development communication goals, politics and good governance, the institution of democratic culture equality, and social justice. At other times, innovations in media technologies are viewed more narrowly within particular sectors, such as particular forms of messages, scope, and nature of communication enabled. The goals of health communication and marketing communication are how they affect the desired social behaviors. The concern in simplest terms is whether societies are never simple. As such, further questions are raised beneficial for which strata in society, under what considerations, and to what ends? These are the concerns evident in this paper regarding the adoption of technology in Nigeria.

Most African countries are broadly classified as developing. "As rapidly as technology is developing in the rest of the world, in Africa, things have moved at a slower pace," (Smith, 2009, p. 52). The implication is that the global media imperative may have fundamental influences, but media experiences in developing nations are lagging. In this perspective, the position of the digital dichotomy is clear. The theory offers explanations for the power of media communication landscapes, and experiences between developed (invention-driven media communication environment), and developing countries (adoption-driven media communication environments). This has resulted in varying rates of technology-based digital updates and a 'global village.' Yes, this may be a global village, but the 'globe' has unequal technology

adoption or media communication digits.

It is apparent in the literature that the adoption of technology in journalism and other communication practices brings up long-standing debates regarding the potential of technological innovations for good and evil in society. The paper, therefore, beamed the light on contemporary manifestations of global challenges, though understandably, the Nigerian context features prominently. Still, within the context of the literature, findings are shadowed by unprecedented global occurrences; the world has been bedeviled with a range of these in recent times.

Arguably, since the 20th century, McLuhan argued that technologies help extend human capacity; technology has been regarded as liberating and empowering. Technologies aided human manipulation of mechanical and electronic processes in the media and communication industries. Similarly, social interactions were enhanced – extending audience reach, expanding scopes of coverage, altering the limitations of time and space, and bridging critical information gaps. With these came the potential to shift the balance of power in societies as desirable in democratic societies.

As observed by Pate (2021) by adding the power of computing to mechanical and electronic innovation of the past, as done with technology, far greater is the potential of media for good or ill in 21st-century society. The networked societies are now better connected. Westernized societies are linked with those in the global south, and individuals and media organizations alike are creating content. The resultant gluts of information further intensify the nature of global and social challenges.

Theoretical Framework

This study finds relevance within the tenets of the Diffusion of Innovations and the Push-ICT Theory. These theories provide an understanding of the subject matter. The Diffusion of Innovations and Push-ICT Theories are concerned with how the innovation of a new idea, practice, or object is communicated through suitable channels and how direct and indirect coercion is applied to achieve the desired result over time (Wilson 2021). The idea of adopting a technology that would identify and flag information brings to the fore the usual argument on the genuine concern of technologies, which is a concern of this paper.

Rogers (2003, p. 13) argues that "a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving the desired outcome." Nigeria has already shifted attention to harnessing technology for national development (NIPC, 2020; Ada, 2020). This is a pointer that the official diffusion process is at perhaps the implementation and confirmation stages of technology

adoption in Nigeria.

To speedily realize the diffusion of ICT-based innovations, in this case, the technology, especially in societies where resistance to change is a common phenomenon, there is a need to use the Push-ICT Theory approach. The approach stipulates that in a situation where information communication technologies are considered important or relevant to societal development, the relevant stakeholders (government, non-governmental organizations, or individuals) should deploy such technologies.

Similarly, the Diffusion of Innovation connotes the process that occurs as people adopt a new idea, product, practice, philosophy, and so on. Rogers mapped out this process, stressing that in most cases, an initial few are open to the new idea and adopt its use. As these early innovators 'spread the word' more and more people become open to it, which lead to the development of a critical mass. Over time, the innovative idea or product becomes diffused amongst the population until a saturation point is achieved. Rogers distinguished five categories of adopters of an innovation: innovators, early adopters, early majority, late majority, and laggards. Sometimes, a sixth group is added: non-adopters. The original five categories are illustrated in the bell-shaped curve image, which according to Rogers estimated the percentage of each category, which in fact, is similar to the proportions found in a normal bell curve. Leaning on these theories, Nigeria can adopt technology and accept robotic journalistic practice and other activities using technology.

METHODOLOGY

This study is exploratory, as it utilizes the descriptive research method whereby relevant literature, documents, and records were consulted and analyzed based on the existing literature to interrogate the subject matter. This study is predominantly based on information derived from the qualitative data using secondary sources, such as relevant texts, journals, official publications, historical documents, and the Internet, which served as tangible sources of insight into the analysis. However, the inquiry is strictly limited to data found in scholarly journals, books, the Internet, and libraries, and not anecdotal sources. The method was used to evaluate such findings with other existing literature on the subject. The method help findings in the works available checks the consistency of such findings, and evaluates such findings with other findings.

Findings and Discussion

Considerations in Technology Adoption in Nigeria

The take-away from this study is that technology

adoption in Nigeria needs to shift into a continual learning mode to acquire skills that will be needed for modern digital journalism. Basic computing skills are a good start but are going to be inadequate. Nigerians and journalists alike need additional skills in relevant areas such as data science and analysis, web programming, User Interface Experience (UIX), and usability testing.

Another consideration is journalists should try to compete in the marketplace of knowledge and not be threatened by technology and STEM subjects. I read an "I don't know maths" comment at a recent paper presentation of the UMCAA. Journalists cannot remain just writers and editors. Mass communicators will need every form of skill that the tools will require. It is never too late to learn. Even in retirement, some of these skills will be useful as far as technology is concerned.

Similarly, higher institutions in Nigeria need to transform teaching and learning using analytics in this technological age. There are loads of online training offered free by major universities that one can take advantage of. MIT, Harvard, and other top-ranked universities deliver training through online platforms such as EDX on emerging disciplines such as development, programming, data science critical thinking, problem-solving, strategic social marketing, digital media, Power BI, soft skills leadership and influence, digital product management and managing innovations. These are the skills Nigerians, or journalists will need to survive in the adoption of technology, which may not be available through formal education (Marwala, 2020).

Arguably, we must keep an open mind, embrace innovation, be responsive to changes around us and find a sweet spot for ourselves as professionals. A high level of literacy is needed for the proper adoption of technology in Nigeria. In countries where illiteracy is significantly high, it becomes difficult to adopt technological innovations. We are at the threshold of mind-blowing innovations that will change traditional wisdom. Experts are predicting that we will soon work less and earn more because robots will do more, faster and better, and give us back some time for recreation. All over the world, countries are looking forward to a robotic future, where a four-day weekend is a norm and everyone is paid a Universal Basic Income.

For decision-making, especially at the early stage of the adoption of technology, the country must consider a wide-level multi-stakeholder approach. Private and public companies, students, staff, and employers of labor, among others, should be brought on board before a decision is made on technology adoption. These stakeholders will help to shape the realities and help broaden the scope of reasoning and contents. For students, universities should not prioritize academically strong students alone, as students across all levels of academic performance have something significant to contribute where the atmosphere is friendly for them to

ventilate their ideas.

Interrogating the Challenges that Mitigate the Adoption of Technology in Nigeria

A lot of careful planning has to precede the adoption of technology in Nigeria. First, institutions of learning must sit to consider the cost and be willing to confront the challenges on the way of adopting technology for academic matters. One of the challenges that may confront the adoption of technologies is that they are complex to build and require experts, who are in short supply in Nigeria. As such, there is a need for deliberate effort to train students and staff in Computer Science, Engineering, Physics, or Mathematics programs who may be sent abroad to get the required skills. Such students or staff should be made to show commitment upon return in order not to be lost to other universities through premium wages or other promises. There is an initiative in Kigali, Rwanda referred to as the African Masters of Machine Intelligence (AMMI) launched in 2019 in partnership with Google and Facebook and committed to providing state-of-the-art research exposure to African students within Africa. Universities in Nigeria can leverage this increased capacity.

As Okoroma (2007) puts it, the National Universities Commission (NUC) is one of the agencies of the Federal Ministry of Education empowered by law to maintain minimum academic standards in Nigerian universities and carry out accreditation functions. Discussions on the inclusion of technology in teaching and learning in university processes must begin at this level. International organizations like the United Nations Educational, Scientific and Cultural Organization (UNESCO) must begin to dialogue with the NUC. This is because, when technology is considered for teaching, and assessment of students, the accreditation of universities will be affected, as technology may tamper with the existing templates familiar to the NUC.

Another possible challenge to the adoption of technologies is resistance borne out of the fear that technology may take the jobs that humans do. This challenge has to be properly managed because definitely, the adoption of technology will open up several redundancies in places where manual operations have been solely relied upon. However, this will take time and will not take effect immediately. Rather than resort to laying off workers, a lot can be done to reskill people for value addition in other areas that yearn for human competence.

Another challenge is that of the digital dichotomy, which refers to the digital divide. It is the center of the conceptual frame of this paper. This is hitherto referred to as the 'technological divide.' As technologies have progressed into the digital phase, the divide has

expanded more into a digital dimension-hence the term 'digital divide.' It has been the hallmark of persisting debate between developing nations and the otherwise developed ones. This is a result of global media being a huge empire built on several years of inventions and innovations that have in turn been consistently improved upon. This technology remains dominated by the West (the large information-developed Northern hemisphere).

Therefore, Nyam (2021) is of the view that many countries have at one point or the other lamented that the technical capacity of the Western media has been abused towards information flow disorder against developing nations. This position was largely termed the New World Information and Communication Order (NWICO) debate. In ensuring dynamics, the international media, many of which are based in Europe and North America, as well as modern Asia are believed to have the capacity to influence the media outcomes of developing societies, mainly in Africa and South America.

Within this context, scholars like Ozuru and Ekeanyanwu (2013) remarked how communication at the international level comes with many consequences. Some of these consequences arise because of some imbalances, news manipulations, and sometimes, misrepresentation of some nations and people in the media systems of others. Corroborating this, Ciboh (2005) observed that in 1973, governments of non-aligned nations met and discussed media and information flow issues, suggesting ways to counter the real or perceived imbalance.

Based on the preceding, there is an apparent digital dichotomy. The global digital divide is not denied, except there is a feeling that it is not a very valid point that can devalue the role of digital technology in much of modern existence. The global divide describes the unequal distribution of information, and communication technologies across nations. It has become a description for the information-have, and have-nots, although, many of these positions are complex to understand. In the words of Sayad (2020) argued that within academic circles it is well established that the digital divide encompasses more than physical access to D-ICTs. It is also a function of how D-ICTs are used. It is crucial to develop policies and programs that would bridge the global digital divide through D-ICTs.

For instance, former United Nations Secretary-General, Kofi Annan agrees that the digital divide is a serious issue, Annan's successor, Secretary-General Ban Ki-moon, admits, and leaders of the World Bank think so too. President James Wolfensohn, former World Bank even described the divide as "one of the greatest impediments to development." However, the significance of the digital divide has been challenged on several occasions, like Bill Gates thinking that the digital divide deserves no special attention because it is simply a symptom of economic disparity across nations, and thus

the lack of access to information technologies in developing nations merely reflects the poverty level of those nations. Gates at a conference on the digital divide said “most of the world doesn’t have cars, but we don’t talk about the auto divide.” Steve Jobs, Co-founder of Apple, reiterated the views saying that the so-called “digital divide” is “just a new sticker that people use to cover up a more important word: poverty.”

In whatever point critics look at it, the significance of the digital divide becomes apt when the culture, and media orientation of the audience from a technology-adopting environment fail to key into the original intentions of inventors, as compared to audiences from a technology-inventive environment like the United States. Again, the digital divide becomes a more serious issue when the economic, and political policy, legal framework, and infrastructure of developing technology-adopting nations fail to meet up with international standards, and best media-communication practices.

The essence of digital technology is what prompted the conviction that the world is “truly” global. Yet some scholars are still skeptical that the export of digital technologies has not fully bridged the gap between developed, and developing worlds, because the hitherto less developed third world has not been able to conquer attraction to media contents of the West.

The Realities of Digital Dichotomy amidst Technology Adoption in Nigeria

In the case of the developing world, most of the advanced nations are fast employing legislation towards catching up with the uses, and applications of the new media amidst, or without synergies with the traditional media. Another flashpoint is in the area of investment. Governments and the corporate or civil society in most developing countries are yet to call to question the urgency of digital technology, let alone understand the scientific cost that is involved over time. The advanced world plays hugely as they continue to enjoy and export to the digital developing countries. Satellite technology, for example, which tends to be dependent significantly on digitization, is constantly being maintained and researched by the developed world (BBC, 2015).

Already, the Telecommunication Development Bureau (TDB) of the International Telecommunications Union is advocating for worldwide network relative understanding, and collaboration among policymakers, and regulators. Prefer to call “disruptive” or “destabilizing” technologies. Others in the developed world seem to favor the term “transformative” technologies. Thus, technology is currently being deployed in almost every facet of our most recent civilizations, and modern life context. In this perspective, complex mobile networks such as G5 are heralded along with increased technical and human

operational intricacies. As such, the developing societies would need to catch up in terms of not just computational intelligence, but also perception intelligence, and cognitive intelligence.

Similarly, regarding the digital dichotomies, the adoption of ICT is seriously accelerating. The diffusion rate is rapid but also leaves more gaps and or consequences across societies with varying levels of development. As noted early, theoretical assumptions that enable sensible assumptions about contemporary media communication do exist. However, instances of proportional frame of reference to new media and communication such as Technological Determinism Theory are so far limited to understanding the spread, and influences of technology, and far less about what has, or can hinder or limit the overall benefits of D-ICTs. This is where DD-Theory fits in as a propositional frame of reference toward making improved technology and relevantly improved D-ICTs. Indeed, DD-Theory stands relevant as a new theoretical frame of reference for appraising the increasing global media-communication imperatives (Nyam, 2021).

Besides, the status of technology in development is mainly accelerating and concentrated in developed wealthier nations, such as the United States, China, and European Union. New media realities in developing societies, such as media self-learning, self-controlling, and self-communication stand-alone intelligent system (Sayad, 2020) would demand rapidly improved understanding, or relative media-communication dichotomies across the world be enabled.

Entities without the same predisposing factors will often significantly vary in the adoption time of current experience(s). Adoption is not just due to capacity, but also time lapse-effect in the spread of invention orientation, and practice. This perhaps may be the reason why Ngwainmbi (2020) concluded that a more limited form of globalization might emerge just as there is a tendency for under-developed, and developing societies to over-depend on the so-called “world superpowers” for their protection. In line with the relative conclusion, Ngwainmbi (2020) notes that the operational meaning of “superpower, advanced country”, has to be redefined by scholars, political readers, media practitioners as well as knowledge-driven policymakers.

Within this context, it is imperative to collaborate toward improved global adoption of technology. Aspect such as technological algorithmic innovations are needed at varying levels across nations, and journalism professionals, need to improve towards prevention or limiting hate speech, enhancement of fact-checking mechanisms, and ethical encryption media practices among other merits. Irrespective of the ongoing advancements in network amidst digital dichotomy, such global D-ICTs conscious and cautious collaboration can enable better learning among security operatives, digital

rights literacy, and relative laws, as well as reasonable accountability from social media providers, and users. Nyam (2021) also corroborates that many countries have at one point or the other lamented that the technical capacity of the Western media has been abused towards information flow disorder against developing nations.

Conclusion and Recommendations

This study examines Digital Dichotomy Theory towards propositional appraisal of technology adoption in Nigeria. The study interrogates how developing countries may, or have been left behind in the journey toward building knowledge network societies because of poor technological infrastructure, and systems. Entities without the same predisposing factors will often significantly vary in the adoption time of current experience(s). Adoption is not just due to capacity, but also time lapse-effect in the spread of invention, orientation, and practice. This may be the reason Ngwainmbi concluded "(sociological), a more limited form of globalization might emerge" just as there is a tendency for underdeveloped and developing societies to over depend on (so-called) "...world superpowers" for their protection and adoption of technology.

Considerations like manpower, skills, knowledge of society, resources, and literacy level in the adoption of technology in Nigeria will make it difficult for the world to be called a 'global village' in terms of technology adoption. What makes a village? The world is not truly a "global village" as regards the dictum by McLuhan, and it will be difficult to be because there will always be a digital dichotomy between entities. There exist forms of a digital dichotomy because of the following reasons: the adoption difference(s) in previous technologies; dynamism in cultural, economic, political, and religious systems of entities across the globe; the time and space lapse between invention(s) entities, and adoption entities. Mere resistance to change, change cannot be forced but persuaded.

There is a digital dichotomy that places developing societies on the side of playing catch-up, governments, and citizens must be aware, and active in the ongoing digital technological imperatives. Besides, governments in many nations still hinder, and or censor global, and local information. Technology may be taking undue advantage of such unfortunate dynamism of improved digital communication. The paper concludes that in a global media scenario, developing societies cannot afford to significantly lag. It is good that developing countries with huge human and natural resources should be challenged to be on the technology super highway. This may serve better than otherwise. Also, this is expected to harvest more towards development. However, research,

and training in the country, media professionalism, and computing (programming, hard or software engineering, and internet security, among others) are strongly recommended for maximization of technology adoption, and synergies of media forms. Adoption of technologies depends on excellent software programming and networking.

Scholars, researchers, and professionals in all spectrums of media and information have more work to do, but to whom much is expected, much knowledge is needed. Training and re-training are vital as developing societies grow in the technology and information experience of the 21st century. Universities, Polytechnics, Mono-technics, and other formal institutions of media and communication training and research must as a matter of serious importance, employ computer-based social scientific approaches as some of the considerations in technology adoption in Nigeria.

Equally, education policy-oriented organizations like the Nigerian Universities Commission (NUC) have to note these and factor in a timetable for such a transition. Qualified manpower in training institutions also needs to be addressed. This is because it may be observed that the media's need for technology has drawn more attention to communication studies. Hence, more universities hosting such entities, without commensurate equipment, facility, and manpower, may be doing so and a significant self-disadvantage. Paraphrasing the words of Gbenga, communication is the most dynamic unit in the society, and if the stakeholders in the sector delay a little, it would be out of fashion and not in tune with the realities of the moment. Thus, in developing societies like Nigeria, literacy has to be advanced and seriously sustained for technology adoption.

REFERENCES

- Ada, C. (2020). Pantami commissions Nigeria's first artificial intelligence and robotics centre. <https://techeconomy.Ng/2020/11/pantami-commissions-nigerias-first-artificial-intelligene-and-robotics-centre/>
- Adjei, E. (2020). *The media, artificial intelligence*, Nation States and the future. A paper presented at the 1st virtual 7th Annual Conference of the Association of Communication Scholars & Professionals of Nigeria.
- BBC, (2015, October). How worried is Silicon Valley about safe harbour? BBC news.
- Ciboh, R. (2005). *Global media and culture domination*. Cherry Brooks.
- Diamandis, P. & Kotler, S. (2020). *The future is faster than you think*. Simon & Schuster Paperbacks.
- Fukuyama, M. (2018). Society 5.0: aiming for a new human-centered society, Japan spotlight July/August.
- Gbenga, S. (2015). Using new media to enhance

- communication education practice. In Guardian, Tuesday, 8th September, p. 52.
- Marwala, T. (2020). *Closing the gap*. Johannesburg: Macmillan.
- Mayer-Schonberger, V. & Cukier, K. (2013). *Big data* 1(1), Boston: Mariner Books.
- Ngwainmbi, E. (2020). Mystifying and demystifying shared information on Covid-19 across cyber mediated news networks: A sociological approach to solutions for vulnerable populations. A paper presented at the 1st virtual and 7th Annual Conference of the Association of Communication Scholars & Professionals of Nigeria (ACSPN), in collaboration with UNESCO, IFAD & COMEST. September 2-3.
- NIPC, (2020). Minister commissions artificial intelligence, robotics national centre. <https://nipc.gov.ng/2020/11/14/minister-commissions-artificial-intelligence-robotics-national-centre/>
- Nyam, I. I. (2021). Knowledge societies: artificial intelligence and the media. (ed), Fayoyin, A & Ademosu, I. *Digital dichotomy theory: towards propositional appraisal of artificial intelligence based media-communication imperative*. UNESCO.
- Okoroma, N. S. (2007). The supervisory role of the National Universities Commission and the management of universities in the south-south zone of Nigeria. *Educational Research Quarterly*, 30(4), 34.
- Ozuru, E & Ekeanyanwu, N. (2013). Audience assessment of the influence of social media network on the global news flow controversy. In Wilson, D (ed) *Communication and the news media in Nigeria social engagements, political development and public discourse*. African Council for Communication Education.
- Pate, A. U. (2021). Knowledge societies: artificial intelligence and the media. (ed), Fayoyin, A & Ademosu, I. *Foreword*. UNESCO.
- Provost, F. & Fawcett, T. (2013). Data science and its relationship to big data and data-driven decision making. *Big Data* 1(1), BD 5159. March <http://wenku.baidu.com/view/728c8c76>
- Rogers, E. M. (2003). Using Rogers' theory to interpret instructional computer use by COE faculty. *Journal of Research on Technology in Education*, 39(1), 81-104.
- Sayad, A. (2020). Education for the future, means respond to the present. A paper presented at the 1st virtual and 7th Annual Conference of the Association of Communication Scholars & Professionals of Nigeria (ACSPN), in collaboration with UNESCO, IFAD & COMEST. September 2-3.
- Silva, G. & Di-Serio, L. D. (2016). The sixth wave of innovation: are we ready? *RAI Revista de Administracao e inovacao* 13, 128134.
- Smihula, B. (2010). Waves of technological innovations and the end of the information revolution, *Journal of Economics and International Finance*, 2(4), 58-67.
- Smith, J. A. (2009). *Interpretative phenomenological analysis: theory, method and research*. Sage Publication.
- Wilson, J. (2021). *Knowledge societies: Artificial intelligence and the media*. The fake news phenomenon: can AI technology stem the tide in Nigeria? UNESCO.