DIGITAL SWITCHOVER IN NIGERIA: AN ENGINEERING MODEL FOR TRANSFORMATION IN TODAY'S SOCIETY

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Abstract

Digital switchover from analogue Television transmission to digital technology started in mid-2000 by many countries of the world, with only a few countries meeting the 2015 deadline set by the International Telecommunication Union, ITU, for all broadcasting stations world-wide to go digital. Nigeria is no exception to this digital evolution but was plagued by political and economic factors not until 2016 it was kicked-off in Jos, the Plateau State capital to beat the June 2017 deadline set by the National Broadcasting Commission (NBC). Digital switchover refers to the transition from analogue to digital broadcasting of all networks, including terrestrial, cable, satellite and DSL (digital subscriber lines). Digital technology expunges the ambiguity in analogue tele vision and enables TV stations to broadcast multiple channels with different programming and formats. This study examined the concept of digital switchover as a catalyst to unlocking the economic potential of Nigeria, while laying emphasis on the progress, challenges, and benefits of the analogue-digital switchover in the Nigerian broadcast industry also employing research technique, using books, articles and journals as secondary source of data. This research made use of technological determinism theory to explain how digitalisation and the emergence of new media technologies have influenced the way and manner humans communicate in contemporary time. High quality transmissions, programme content and media convergence to mention but a few are benefits of digital technology. In conclusion, this paper suggests that for there to be seamless analogue to digital switchover, there is a need for Nigerian government to carry all the stake holders (both private and commercial broadcasting services) along. As well as provide support in terms of funding, infrastructure, security and even subsidize some of the materials that will be imported. This paper recommends that agencies concerned should expedite action to making sure that many people are aware of this initiative.

Keynotes: Digitalization, ICT, media, digital switchover, and broadcasting.

Introduction

In June 2016, over one hundred and four countries of the world gathered at the international conference centre in Geneva Switzerland that was organized by International Telecommunication union(ITU), where these countries agreed and signed a convention to migrate television broadcast from analogue to digital with a deadline of June 17, 2015. The ITU agreement granted several African countries, including Nigeria, a further five years until 2020 for the switchover completion. Although, internet and broadband are globally acknowledged to be the foundation for transformation into a knowledge base economy, information and communication technology (ICT) is an important tool of transformation that has the narrative in today's media broadcasting services. Digitalization of broadcasting in Nigeria refers to the process of transitioning from analogue to digital broadcasting technology in the country. This transition aims to improve the quality of television (TV) and radio services, increase the number of available channels, and enhance the overall broadcasting experience for viewers and listeners [1]

The digitalization process in Nigeria was initiated by the national broadcasting commission (NBC). Though, the June 17, 2015, deadline set for the switch off of analogue television was extended to October 2019 due to various challenges. [2] Digital territorial television (DTT) involves the transmission of television signals using digital technology, allowing for better picture, sound quality and potential for possible high-definition(HD) and ultra-high-definition(UHD) broadcasting as compared to analogue broadcasting [3] This is provided by the signal distributors. To receive digital signals on analogue television one needs to acquire set-top boxes (STBs) for converting digital signals into analogue format, enabling older television sets to display digital content. Digital broadcasting offers

increased channel capacity, thereby allowing for more television and radio channels that provides viewers with the range of programming options and content diversity.[4] While spectrum efficiency is guaranteed, digital broadcasting opens up possibilities for interactive services such as electronic program guides(EPGs), video-on- demand(VOD), and interactive advertisements that enhance for viewing experience and provides additional revenue stream for broadcasting. The digital broadcasting in Nigeria has faced some challenges, including constraints, inadequate public awareness, and delays in the distribution of set-top boxes. However, significant progress has been made and many parts of country has transitioned to digital broadcasting. [5]

Television or TV was synonymous with analogue terrestrial television about three decades ego. But with the introduction of new distribution channels like satellite TV as well as cable TV, the demand for adaptors to link the new broadcasting technology to the existing TV and VCR equipment started to grow. According to [6] Nigeria's broadcasting sector is highly dynamic and serves tens of millions of television households in Africa's largest country. He states that economic growth, competition and technological developments are driving rapid change in every value chain. Hence there is a need for modification of the existing frame works in other to sustain a healthy communication network through DSO. Hence, this study sought to analyze the progress, challenges as well the benefits of digital transition over the analog broadcasting in Nigeria.

Digitalization

Digitization is the process of Conversion of analog information in any form: text, photographs, voice, etc. to digital form with suitable electronic devices, such as a scanner or specialized computer chips, so that the information can be processed, stored and transmitted through digital circuits, equipment, and networks. While DSO is the transition from analog to digital broadcasting, it is described as the process of lunching digital terrestrial television(DTT) platform and switching off analogue terrestrial television platform. The Digitag report which states that National administrations in Europe, Africa and parts of Asia agreed to this process at the ratification of the Geneva 2006 Agreement which put in place an all-digital plan for the use of frequencies in the VHF (173 MHz to 230 MHz) and UHF (470 to 862 MHz) bands. This plan, which entered into force on 17 June, 2015, has served as a driving force behind many country's migration from analogue to digital technologies.

Nigeria Digitalization Process

The digital switch over in Nigeria was initiated by late president musa Yaradua in 2008 as part of a global effort to transition from analog to digital broadcasting. Although, the international telecommunication union (ITU) had set a deadline of June 17, 2015 for all countries to complete the change over which Nigeria was not able to meet. The process of digital switch over in Nigeria began in 2008 with the establishment of the digital switchover(DSO) committee by the federal government. The committee was tasked with overseeing the implementation of the switch over and developing a roadmap for the process.

In 2012, the national broadcasting commission (NBC), the regulatory body for broadcasting in Nigeria as well as the Nigeria communications commission were mandated as the lead agencies for the digital switch over to ensure that digital switchover becomes a reality. The NBC, in collaboration with other relevant agencies and stakeholders, including broadcast stations, signal distributors, and equipment manufacturers, worked towards the successful implementation of the digital switch over. Rather than the 2015 deadline, Nigeria government directed media operators to work beyond 2015 by collaborating with the Federal Ministry of Information and Communication.

The pilot phase of the digital switch over commenced in Jos, Plateau state, on April, 30, 2016. The pilot phase served as a testing ground to identify and address challenges before the national rollout. Having failed the 2015 deadline set by the government, a new date of June 17, 2017, was set for the completion of the DSO process, but the government was unable to achieve 95 percent digital access across the country, which is the standard for the digital switch-over (DSO). This process began with two prototype cities in Nigeria namely: Jos and Abuja with the aim of extending it throughout

the remaining six geo- political zones. The pilot phase DSO rollout of 14 June 2016 in Jos plateau state failed because set-top-box (STB) manufacturers were unable to establish local firms to begin operations. With the approval of thirteen set-top box manufacturing company by the Nigerian government, the rollout was completed with the sharing of free STB to residents for the smooth flag off. On April 30, 2016, the Jos DTT began with an initial offer of 15 channels on the ITS Limited Platform. Following a successful lunch of Jos DTT, digital switch-on in Abuja was launched on the Pinnacle Communications Limited network on December 22, 2016, with an initial offer of 30 channels. Sequentially, the NBC has rolled out set-top-box (Free TV) to other states such as Kwara, Osun, Kaduna, Enugu, Lagos, and recently, Kano. As a result, the government claimed that this was done in phases due to the cost of the procedure.

There has been a tremendous improvement in the media business in Nigeria after the lunch of DDT that has necessitated radio stations and TV stations in Nigeria to embrace online or web broadcasting with digital content features like webcast in their programs. Nowadays, public and private radio and TV stations can seamlessly transmit via website and social media.

The media business in Nigeria took a new shape with the introduction of cable television and satellite pay Tv platforms like multichoice, Hi -TV, and the star time which in no doubt has digitalized the system as well as increase the viewing capacity of customers. Even as Star Times championed the deployment of Digital Terrestrial Television(DTT) that was later upgraded to DVB -T2, which is the recent version of technology in Nigeria. The DVB-T2 well help to prepare subscribers on future digitalization processes. The advent of pay Tv has helped to put some kind of liberalization whereby the customer would subscribe to any number of channels to watch per view at a rate of not less than 30 naira. By unbundling of the sector, many local stations like AIT, NTA, Galaxy, Channels to mention a few are now accessible on most Nigerian cable TV platforms. The telecommunication operators are not left out, because giant service providers like Airtel and Globacom have initiated a project to introduce a triplet-play service including high-speed internet TV through smartphones. While Airtel in 2019 launched Airtel TV, a video streaming app that allows its subscribers to access varieties of videos for free if they have internet data and upgraded to a high mobile TV service called “Airtel Xtream” which features movies, web series, and short films for their subscribers. Glo equally introduce Glo Tv in August, 25 2021 streaming platform that operates on mobile phones via app and web for other devices. The platform offers news, sports, music, and cartoon content as it sets to become Nigeria's one-stop entertainment destination. A lot of efforts has been made by Nigerian government as well as stakeholders to in the sector for a smoot transition from analog to digital broadcasting. It is our believe that the new administration would continue from where president Muhamadu Buhari stopped to making sure that Nigeria digital broadcasting is a success.

Review of related works

It is a obvious that many countries of the world had successfully transited from analog to digital broadcasting, some are operating partial digital TV transmission while majority of the countries are grasping to find their rethe me of which Nigeria can be classified in this category. [7] Argued that while the developed world seems to be horse-racing to *broadcasting*, third world countries seem to be slow-spending towards. According to research, digital switch off started from Europe, with Netherlands taken the early lead in 2006 with some other countries like, Sweden and Finland in 2007 according to [8]. About seven countries had already transited to digital switch off. Because, majority of these countries have low penetration of house hold relying on the terrestrial platform for primary television reception, this brings rapid progress achieved in Europe. Apart from the Netherlands, Germany, Luxembourg, Andorra, and Switzerland had completely switched off in 2009. Others include: Germany (2008), Denmark, Norway and USA in2009; Belgium, Croatia, Latvia, Spain (2010) and UK did partial analogue switch-off beginning from 2010. More so, Austria, Canada, Cyprus, France, Israel, Japan and Turkey switched over in 2011; Czech Republic, Italy, Qatar, Saudi Arabia, Jordan, Syria, Lebanon, Portugal, Yemen and some others attained digital switch off in 2012. In 2013, Australia, Bulgaria, Hungary, New Zealand, Poland, Singapore joined the train [9] According to [10] the word digital is “a process or device that operates by processing or transforming data and information that is supplied and stored in the form of a series of binary digits. Digitization is the process of Conversion of analog information in any form: text,

photographs, voice, etc. to digital form with suitable electronic devices, such as a scanner or specialized computer chips, so that the information can be processed, stored and transmitted through digital circuits, equipment, and networks. [11] in his own opinion on digital radio says: Digital radio is the pure digital transmission medium or channel that improves and modifies the sound quality of radio broadcasts, virtually eliminating static, hiss, pops and fades and offers data display capabilities on receivers and opens up opportunity for multicasting: Broadcasting multiple high and better quality channels on each frequency. According to [12] Digital switchover (DSO) is described as the process of launching the DTT platform and switching off analogue terrestrial television platform. The report states that National administrations in Europe, Africa and parts of Asia agreed to this process at the ratification of the Geneva 2006 Agreement which put in place an all-digital plan for the use of frequencies in the VHF (173 MHz to 230 MHz) and UHF (470 to 862 MHz) bands. This plan, which entered into force on 17 June2015, has served as an important impetus for countries to migrate from analogue to digital technologies. A digital television is a TV broadcasting system that can transmit images with 720 to 1080 horizontal lines of resolution as compared with 480 lines of the ordinary (analog) television system. Digital television offers interference-free, CD-quality sound and multiplexing of up to 6 channels under one bandwidth. The biggest gain of digitization which is transparency in the broadcasting sector will increase investments, encourage cleaner and innovative businesses and above all give consumers a choice of a - Ia-carte channels. It is envisaged that Nigeria like India will implement the digitization process in phases the way we implemented cashless policy in geographical or state locations. According to [13] Baseline study (2016) the UK's switch to digital television was the biggest single change to broadcasting for a generation. It delivered more choices for millions of viewers and made way for new services that will confirm its role as one of the global leaders in broadcasting and creative industries. The switch over in the UK started in 2008 and in the end of that year only 0.3 percent of the household switched over. By the end of 2010, 7.1 million homes or 27 percent experienced the DSO and by the end of 2012 the DSO was 100 percent completed and almost all the 26.7 million homes switched from analogue to digital broadcasting. While in Africa, a few countries keyed into the transition process like, Nigeria, Botswana, Kenya and south Africa. South Africa made an incredible advancement into digital transition not only because it was a signatory to international telecommunication union (ITU) Geneva 2006, but because digital transition is a very important in preparation for the 2010 world cup.In October 12, 2022, an Analogue Switch-off (ASO) ceremony was held in the city of Gaborone, republic of Botswana. It was held to commemorate the cessation of analog broadcasting in Botswana as a result of the nationwide spread of digital terrestrial broadcasting made possible through the long-term cooperation of the Japanese government in collaboration with JICA. There are four major types of digital terrestrial broadcasting systems in the world, one of which being the Japanese system of digital system terrestrial broadcasting (ISDB -T). Japan was able to achieve fall transition to digital terrestrial broadcasting in march 2012. A significant feature of the (ISDB-T) is the emergency warning broadcasting system(EWBS) though, the Japanese government spare headed the ISDB-T, it has been adopted by at least 20 countries. Most recently in Botswana , the ministry of internal affairs and communication and JICA have in cooperated to disseminate and promote the ISDB -T. While a lot of countries have deployed digital terrestrial broadcasting, Botswana remains the first country in Africa to achieve a complete transition to this form of broadcasting among those that have adopted the ISDB -T.

Analog switch over(ASO) makes it possible to reuse the frequency that was used for analog tv for other purposes, such as mobile phone services. Just as japan has expanded the use of frequency bandwidth with the speed of 5G services, it is expected that Botswana will utilize the vacant frequencies to facilitate the entry of new services, thereby contributing to the promotion of the country's industry. This change can be attributed to the introduction of new media technologies in television broadcasting occasioned by giant technological advancement.There is no doubt that digital broadcasting will greatly improve communication in the sense that huge spectrum will be available for both ratio and television stations in the country. Not only that, there will be more frequencies and wavelength availability for radio and television stations. Coupled with the fact that television will no longer be limited to receiving signals, but would be able to provide access to internet, perform the task computers as well as telephones.

This is possible because of the quality and clarity of signal and spectrum efficiency associated with digital terrestrial television according to [14]

Method of Technological Determinism Theory

Marshall macluhan theory was proposed in (1962) that media technology shapes how individuals in the society think feel or act, and how the society operates as we move from one technological age to another Griffin [15]. Peop le learn, feel and think the way they do because of the message they receive through the technology available. The theory explains the fact that changes in communication technology produce their societal order. It is a general believe that communication has the power to transform the sensory capacity of individuals even as far as how we live our life. Technological determinism is a reductionist theory that aims to provide a link between technology and nature. It goes to explain whom or what would have controlling power in human affairs. This theory therefore questions the degree or extent to which human thoughts are being influenced by technology.

The term 'technological determinism' was coined by Thorstein Veblen and this theory revolves around the proposition that technology in any given society defines its nature. Even as technology is perceived to be driving force of culture in any society as well as determines people's history according to 'Karl Marx'.Technological progress lead to newer ways of production in our society which invariably influenced the cultural, economical and political aspects of a society, hence changing the society. This statement is explained with the example of how a feudal society that used a hand mill slowly changed into an industrial capitalist society with the introduction of the steam mill.

There are two hypotheses for this theory according to Winner's Hypothesis: One is that the technology of a given society is a fundamental influencer of the various ways in which the society exits. Two is that changes in technology are the primary and most important source that leads to change in the society. So, technology goes a long way to influence the choices we make, as they say '' a changed society can be traced back its technological advancement.''

New media are also new technologies and hence do have a deterministic factor. In the words of Marshall McLuhan 'the medium is the message' meaning that the medium used in communication goes a long way to influencing the mind of the receiver. The introduction of news print, television and internet have shown that technology plays a vital role in our society today. [16]

It is of note that this theory proposes the for a interaction between nature and technology. technology is only a tool in the hands of humans to navigate in the direction of their choice. Before the introduction of new technology, there was analogue technology. Radio in the 1900s used to be propagated through a wired process, but nowadays one does not need be at the radio station or television studio to get information. It is as a result of this quest to eliminate communication gapes and barriers that birthed digital broadcasting. It is highly imperative that Nigeria joins that rest of the world in this digital era that has changed the character, views, opinion as well as cultural behaviour of the people today.

Benefits of Digital Broadcasting in Nigeria

The greatest benefit of the analog switch over is that Digital technology offers increased spectrum efficiency on the terrestrial television platform. For instance, if a given channel is originally slated to broadcast one analogue television service, such channel would carry as much as 22 digital television services depending on technology as well as the quality of service needed. It is believed that with digital terrestrial platforms, the unused frequency spectrum will be allocated to broadcasting stations across the country. Digital dividend will allow for the lunch of mobile telephone services using frequencies in the 700 MHz and 800 MHz (694 to 862 MHZ) bands according to

[12]. Despite the availability of many other television delivery platforms such as cable, satellite and Internet Protocol Television IPTV, digital terrestrial television offers viewers access to local content, where services are for free or at a lower subscription based on the package selection. Though in Europe, America and some parts of Africa and Asia, analogue switch-off has been completed. Most other countries have targets to complete the process between 2015-2020. The contentious issue is that at the end of the day, who gains and who loss in this digital switch over process according to [14] as being identifies bellow:

Regulatory Agency and national interest

The Nigeria Communications Commission NCC and Nigeria Broadcasting Commission are the biggest beneficiaries of the gains emanating from the digital switch over in case of the huge income from the sale of license. While on a national level, the spectrum is going to be freed up as so the digital switch over is completed thereby granting radio and television services access to more frequencies.

Economic diversification: At the successful completion of the digital switch over, the government will be making over 200 billion dollars annually from the scale of frequency spectrum [17] The country will move from a mono-economy into a diversified economy. As it stands, information technology is currently generating huge amount of revenue for the country. The timing population of youths graduating from higher institutions will be engaged in this field.

Broadcasting

Digital broadcasting is cost effective thereby making it a very lucrative industry as one station can carry up four different channels in the same frequency. There is flexibility in the digital programs as compared to its analogue counterparts thereby encouraging healthy competition amongst broadcasting stations. The amount of money spent on maintenance of these infrastructure will be greatly reduce because there will be no more need for bulky equipment coupled with the fact that few individuals are needed for the operation of the digital broadcasting. This a advantage for the privately owned digital broadcasting stations.

Signal Distributors/ Multiple System Operators

Monies coming from carriage fees will take a beating, though it won't vanish entirely as some revenues from placement etc. can be made. The incomes of Multiple System Operators (MSO) could rise with better reporting from the Local Cable Operators (LCOs). It is great for MSOs as they will get fair revenues from customers after having invested in the boxes. Foreign Direct Investment FDI will also flow into the country too since the MSOs can now look for investments.

Advertisement

Media organizations will generate huge income from advertisement, sale of contents. Many outlets will be accessible for them to sell their products and reach a bigger audience. According to [18], the transfer of television from the traditional television set to the mobile device would herald a whole new world of possibilities for marketers seeking to reach clients and prospects, as well as for the whole advertising sector.

Education And Research

As the wave of digital terrestrial broadcasting is sweeping across the entire globe, it is imperative that Nigeria seizes this opportunity advance her rich cultural heritage. This can be achieved by making sure that content creators well rooted in the field of their research. Broadcasting industry should be able to train and empower its content creators to tell stories that reflect national cohesion and foster peace. Children will know their origin even without being told by their parents. Therefore, in-house sourcing of materials; human and otherwise will be prevalent in a fully

digitized Nigerian Broadcasting society. This in-house sourcing of materials are not new in Nigerian broadcasting circle.

What are the challenges of digital switch over in Nigeria?

It will be very difficult for Nigeria to successfully transit to DSO if these following setbacks are not adequately tackled by the government

Infrastructures

For an efficient transmission, the transmitters require a stable power generator because over dependence on generators would attract high cost of program production. the high costs of right of way resulting in the high cost of leasing transmission infrastructure; long delays in the processing of permits; multiple taxation at Federal, State, and Local Government levels and having to deal with multiple regulatory bodies; damage to existing fibre infrastructure as a result of cable theft, road works and other operations; and the lack of reliable, clean grid electricity supply.

Technical requirement

Governments at various levels have a critical role to play in the drive to have pervasive digital switch over infrastructure across the nation. Government no doubt has interest in converting the nation into a digital haven that will be fully networked and ready to be integrated into the new world order of digitally enabled citizens in an environment of e-governance, e-health, e- commerce and e-agriculture among others. Hence there is need for government to invest heavily in fibre optics, satellites etc.

Operators and content creators

The broadcasting authority must ensure constant training and retraining of its staff because of the complexity of the technology involved. It will be difficult for staff to adapt to the new trends in the new media without constant training of staff.

Sensitization:

Government must ensure that the digital switch over campaign is extended to rural dwellers and not only at urban centres. If people at the grass root level are adequately informed, then the deployment and implementation of this technology will be a success.

Funding:

Government is challenged with revenue shortfall of recent which will hamper the digital switch over process in Nigeria. With the dwindling revenue of a country that is mono economy, it will be difficult to acquire all infrastructural equipment needed the digital terrestrial television (DTTV) take off. According to [14] switchover from analogue to digital broadcasting requires huge investment on the equipment and gadgets. The DSO is fund consuming and highly expensive. Funds are required for Public Awareness, Training and man power development, legislative issues, content creation

Conclusion

It is imperative to note that the gains of DSO are so many to be mentioned in the work. That convention of 2006(GE06) in Geneva which set a new pace for the broadcasting services has indeed created stability in dissemination of information in today's society. The digital television not only guarantee quality picture and sound, but multiple channels reception is allowed. Through digital broadcasting, the viewer/audience are made

to select and view any channel of their choice with little or no subscription rate. Nowadays, information is at the finger tip of every individual, unlike the analogue broadcasting services that are cumbersome to manage. The government needs to invest heavily in digital broadcasting. Set top boxes are inadequate to cut across the entire nation, therefore making it difficult to extend DSO to the rural dwellers. This is why the government must be fully involved in this business of digital switchover so as to ensure timely completion as well remain afloat in technological advancement in our today's society.

Recommendation

From the research carried out, the study recommends that the government commit more fund to ensure that digitalization is achieved. Providing technical support, good policy regulation and subsidising set top boxes so it could be affordable by users. The National Communication Commission NCC in collaboration with the National Orientation Agency NOA must extend the awareness campaign to rural areas because as it stands, the level of awareness at the rural areas is not satisfactory for a lot of people do not yet understand the difference between digital television and analogue television. For DSO to be feasible, government must make sure that there is adequate power supply. The broadcasting operators must ensure training and retraining of its staff, because technology is dynamic. The national broadcasting cooperation NBC must be broadcasting stations comply to its regulations and standard to accommodate both local and foreign stations.

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