

Assessing Nigeria's Preparedness for Digital Broadcasting: A Study of Select Television Stations in South-South, Nigeria

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DOI: [10.56201/rjmcit.v10.no2.2024.pg18.38](https://doi.org/10.56201/rjmcit.v10.no2.2024.pg18.38)

Abstract

This study assessed Nigeria's preparedness to transit from analogue to digital mainstream broadcasting. This is following the Geneva Convention (16th June, 2006) mandate of the United Nations' International Telecommunication Union (ITU) to transit from analogue to digital broadcasting among member countries to foster the benefits of digital broadcasting and free up spectrum space for other telecommunication purposes. To guide the study, five objectives and five research questions were posed. The study was hinged on the diffusion of innovation theory. It adopted survey design, using interview and questionnaire as instruments for data collection. The population of the study is 31,000,331 with a sample size of 384 obtained using Krejcie and Morgan sampling table. Purposive sampling technique was adopted to interview key management, engineering and programmes staff of the select television stations. Proportionate sampling technique was employed to proportionately allocate the sample to the population of each of the select television station audiences. The data from the questionnaire were presented using tables, a four-point Likert scale and Weighted Mean Score (WMS), while data from interview were presented using explanation building technique. Finding revealed that there was an impressive degree of awareness about digital broadcasting among the audience of the select stations. It showed that there was a strong positive disposition among the audience to purchase digital television, set-top boxes and pay digital television annual access fee for receiving digital television signals. Also, it is found out that the stations acquired a hybrid of digital broadcast equipment and deployed various approaches to training and personnel development for the digital broadcast operations. Among others, the researchers recommended that the government agency and other stakeholders of the Digital switch-over (DSO) process should design and execute a deliberate media campaign to accentuate the audience awareness of DSO and that the stations should brace-up to the evolving

dynamics of digital broadcasting by consistently upgrading their broadcast equipment and operational procedures.

Key words: *Digital broadcasting, Television, Digital Switch-Over,*

Introduction

The advent of digital broadcasting has brought a wave of change in the broadcast industry. All over the world, nations and people in broadcast operations have had to alter their broadcast policy framework and their means of disseminating and receiving broadcasting signals. These changes have come with a number of implications and the experiences differ across nations. Driven by advancement in technology, digital broadcasting has contributed to modern day media operations. The predominant benefit is that the digital transmission enhances limited spectrum use. The compression systems available for digital television broadcasting allow the transmission of several (up to six, depending on the coding and modulation techniques) standard digital television channels of acceptable quality in the radio-frequency spectrum previously used by a single analogue channel (ITU, 2010). Other benefits include improved signal/picture quality, lower energy consumption, flexibility and multiplexing (GSMA, 2014). Most of these benefits have been based on the possibility of relaying all content forms (text, sound, picture and video) in a single digital bit-stream using binary codes of digital technology (Boah-Mensah, 2010).

In the light of these benefits, the International Telecommunication Union (ITU), an agency of the United Nations which regulates Information and Communication Technology (ICT) issues brokered and signed an agreement with member countries to set a target date of 17th June, 2015 for complete migration from analogue to digital broadcast transmission. In a press release after the Geneva Convention held on 16th June, 2006, Pham Nhu Hai of the Radio Communication Bureau of ITU announced the signing of the agreement for the digitisation of broadcasting in Europe, Africa, Middle East and the Islamic Republic of Iran by 2015. Though the digitisation of broadcasting had a decade long migration period, some countries preferred an additional five-year extension for the Very High Frequency (VHF) band (174-230 MHz) according to the press release (ITU, 2006).

Nigeria is one of the countries that preferred an additional five-year extension (Olalere, Oyeyinka, Lateef, Olakunle, Kenneth, Rauf & Nancy, 2013). Nigeria commenced her digitisation migration with a proactive drive, setting an earlier date to complete the migration exercise. The Federal Government through the National Broadcasting Commission (NBC) had set 31st March, 2008 for all Cable Satellite migration and 17th June, 2012 for all terrestrial broadcast migration from analogue to digital transmission (NBC, 2010).

In the course of the migration exercise, the Federal Government had set several target dates for the digital switch-over with little success. The success story started with the cable satellite migration which the NBC confirmed to be operating on digital platform (Bolarinwa, 2008). In an official statement published by the National Broadcasting Commission (NBC), it was confirmed that the

Cable Satellite migration had been realised (Bolarinwa, 2008). During a conference entitled ‘Digitisation and its Implication’ held in Abuja on 3rd June, 2008, the then Director General of NBC, Yomi Bolarinwa noted thus:

I am pleased to inform you that as of today, all the Multichannel Multipoint Distribution Service (MMDS) operators in this country have gone digital. Now it is the turn of the terrestrial broadcasters whose transition will have a more profound effect on the sector and on the public. And that is why we are here to decide how to go about it together (Bolarinwa, 2008).

In a chat with *The Guardian* newspaper, the Director of Corporate Communications for Cable Channels Nigeria Limited (CCNL), Kalada Wilson had reaffirmed the MMDS’ digital migration when he disclosed that, “In the transition from analogue to digital broadcasting, the MMDS re-broadcast operators, who had transited to digital since 2009, and operated under the collective name of Cable Channels Nigeria Limited (CCNL) was licensed to undertake the very familiar business of content aggregation” (Kalada, 2017). However, the realisation of the terrestrial broadcast migration seems to have a slower success rate. Adepetun (2017) examines Nigerian preparedness to meet another target date for digitisation having failed to beat earlier dates of June, 2012 and June, 2015. According to Adepetun (2017):

Nigeria is expected to conclude its migration from analogue to digital broadcasting by June 17, 2017. A process popularly referred to as Digital Switch-Over (DSO), the country had, hitherto, missed two attempts: June 17, 2012 and, principally, June 17, 2015, the date set by the International Telecommunications Union (ITU) for member nations to switch over.... Should Nigeria fail to migrate from analogue to digital broadcasting come June 17, it will be the third time the country’s attempt at migrating is coming to naught after having failed in 2012 and 2015 respectively. Although there have been assurances from the Federal Government that Nigeria will not miss the deadline this time around, which is just a couple of days away, facts on ground, however, indicate the contrary (p. 24).

Although Nigeria missed the 17th June, 2017 target date, some significant milestones were said to have been made. One of such was the switch on of digital broadcasting in Jos Plateau State in June, 2014 and in the FCT Abuja in December, 2016. Further progresses were made in December 2017 as the Federal Government switched-on digital broadcasting in Kwara and Kaduna States.

The Federal Government through the NBC also accomplished digital switch-on in Enugu State on 12th February, 2018 and in Osun State on 23rd February, 2018. In his speech during the official commencement of digital switchover (DSO), in Osogbo, Osun State on Friday, 23rd February, 2018 the Director General of the NBC, Kawu confirmed that the technical processes were being installed in Delta and Gombe States. These would round off the first phase of the regional launches, around the country.

Earlier, the NBC Director General, Is’haq Kawu at a conference on 8th February, 2018 also confirmed that digital transmission would be switched-on in six other states in the next phase of

the migration exercise. Kawu added that this was to demonstrate the Federal Government's commitment to digitisation (Kawu, 2018b).

In spite of these significant progress, there exist enormous concerns among stakeholders about the preparedness of Nigeria to effectively achieve the digital terrestrial transmission. These concerns usually centre on proper funding and the availability of Set-Top-Boxes (STBs). Other concerns include efficient power supply and awareness campaign. Some observers have expressed concerns about an alarming rate of unawareness especially among the audience, on the concept of digital broadcasting and how the migration to digital broadcasting will impact their ability to receive signals (Eze, Orekyeh & Ezeanwu, 2017; Ihechu & Uche, 2012; Chike-Iyo, 2012; Adeyemi, 2017).

Based on the government white paper (the implementation strategy) on the report of the Presidential Advisory Committee on the Transition from Analogue to Digital Broadcasting (PACTADB) in Nigeria, there is a deliberate adoption of a new policy and regulatory framework in the broadcast sector. The white paper endorsed the split in the broadcast functions into broadcast content provision and broadcast signal distribution. It also provided for different licensing structure for the broadcast station (the content providers) and the broadcast signal distributors. By this structure, the broadcast stations are only required to provide digital broadcast contents while the signal distributors would disseminate these contents through a distribution network coverage.

This is the digital migration structure that has been implemented in Plateau, Abuja, Kaduna, Kwara, Enugu and Osun States. The analogue switch-off has become very imperative, not only for the digital-dividends, but also because of the cross-border interference of signals with digital transmission from neighbouring countries. This is very imperative and has necessitated this research in the South-South States especially because of their close border locations. A cross border interference is quite imminent should the broadcast stations in these regions continue analogue terrestrial broadcasting. Although a preliminary observation shows that some stations are already using digital equipment, it is imperative that all stations in this area switch-off analogue transmission to avoid possible cross-border interference.

This study focuses on seven select broadcast stations and their audiences in the South-South region of Nigeria. These include Nigerian Television Authority (NTA) Yenagoa, Independent Television (ITV) Benin City, Edo State; Delta Broadcasting Service (DBS) Warri TV; Akwa Ibom Broadcasting Corporation Television (AKBCTV), Uyo; Cross River Broadcasting Corporation (CRBC) TV, Calabar; Africa Independent Television (AIT) Port Harcourt and WAZOBIA Max Port Harcourt. These stations have been selected based on the claim to have acquired digital equipment.

Statement of the problem

The Nigerian broadcast transition experience has been a mixture of challenges and a few successes. In a number of occasions, target dates have been set and missed for the complete migration to digital broadcasting. An initial target of 17th June, 2012 was missed and subsequent target dates of 17th June, 2015 and 17th June, 2017 were also not realised. Scholars and industry stakeholders have attributed the migration failures to number of factors including insufficient government funding,

non-availability of set-top boxes, digital equipment procurement and personnel training by the broadcast stations. There is also a concern about the broadcast audience awareness of the implications of the digital broadcast migration. They would be required to purchase a new digital television and/or purchase Set-top-Box (STB) to be able to receive and watch digital television programmes. They will also be required to pay a digital access fee for the television programmes.

The preparedness of the broadcast stations and their audience for digital broadcast migration is very cardinal to the realisation of the migration objectives of the International Telecommunication Union (ITU) to establishing a more equitable, just and people-centred Information Society. And to connect the unconnected in underserved and remote communities would require a deliberate commitment from the broadcast stations and their audience to take up the responsibilities of acquiring digital broadcast system to close the digital divide. This is the purpose of this study.

Digital migration in the South-South Nigeria is very cardinal with respect to their close border locations with other countries. The digital broadcast preparedness of the television stations and their audiences will eliminate the risk of cross-border broadcast interference with other countries as analogue broadcast signals would no longer enjoy the protection of the International Telecommunication Union (ITU). There is a huge concern about the preparedness to effect complete migration by the extended target of 17th June, 2020 and it necessitates a study of this kind.

Based on these observations, the problem of this study is stated thus: What is the level of digital broadcast preparedness among select television stations and their audiences in the South-South Nigeria? There is need for an integrated assessment of the television stations and their audiences about their preparedness for digital broadcasting.

Aim and Objectives of the Study

The aim of the study is to assess Nigeria's preparedness for digital broadcasting among select television stations in South-South Nigeria. The objectives of the study are to:

1. examine the degree of awareness of digital broadcasting among audiences of the select stations in South-South, Nigeria;
2. gauge the attitude of the audience in South-South, Nigeria to purchase set-top boxes and pay digital television access fee;
3. measure audience possession of digital television sets in South-South Nigeria;
4. identify the level of procurement and utilisation of digital equipment by the select stations in South-South, Nigeria and
5. evaluate the level of personnel training on digital broadcasting provided by the select stations in South-South Nigeria.

Research Questions

The following questions have been raised to put the research problem in perspective:

1. What is the degree of awareness of digital broadcasting among audiences of select stations in South-South Nigeria?
2. What is the attitude of the audience in South-South Nigeria to purchase set-top boxes and pay annual digital television access fee?
3. To what level do the audiences of the select broadcast stations in South-South Nigeria possess digital television?
4. To what level have the select stations in South-South Nigeria procured digital broadcast equipment?
5. What level of digital broadcasting training have the personnel of the select stations in South-South Nigeria undergone?

Theoretical Framework

Diffusion of Innovation Theory

The diffusion of innovation theory explores the dynamics of how innovations spread in societies. It explores the reason, the pattern and the rate of innovation adoption among a social system. Though the theory has a varied origin and spans across a number of disciplines, it was a Professor of Communication Studies, Everett Rogers, who popularised the theory in his book 'Diffusion of Innovations'. Rogers (1962) argues that ideas and innovations are communicated and shared among a social system through a diffusion process over a period of time.

The following are key elements in diffusion of innovation theory: Innovation, Adopters, Communication channel, Time and Social system. According to Rogers (1983), innovation is any idea, practice, or object that is perceived as new by an individual. Meyer (2004) explains that in most studies, adopters are predominantly individuals, but can also be a group or organisations (businesses, schools, hospitals, etc.), clusters within social networks, or countries. The communication channel is the medium to transfer information from one unit to the other. Communication patterns or capabilities must be established between parties as a minimum for diffusion to occur (Ghoshal & Bartlett, 1988). Time is the period between the idea initiation and when the innovation is adopted. Innovations are not adopted instantaneously. They require a period of time. The social system is the combination of external and internal influences including organisational, governmental and social relationships that influence a potential adopter (Strang & Soule, 1998).

The individuals' innovativeness is aggregated into different adoption categories: the innovators, early adopters, early majority, late majority, and laggards. The innovators are predominantly risk takers. They have a tolerance for risk that enables them to initiate innovations. Since they maintain close contact with scientific sources, they are privy to new ideas and demonstrate the courage to initiate innovations from those ideas which may eventually succeed or fail. Their social status and financial prowess help them cushion the effects of their borne risks (Rogers, 1962). In the context of digital broadcasting, the innovators are the American electronics Engineers who demonstrated the feasibility of digital television signals (Benton, 1994).

The early adopters are more discreet than the innovators. Though they are disposed to accepting new ideas, they usually employ judicious means to evaluate innovations before adoption (Rogers, 1962). They have the highest degree of influence and opinion leadership among the adoption categories. In digital broadcast context, the early adopters are those individuals and countries that adopted the digital broadcast before the United Nations (UN) treaty through the International Telecommunication Union (ITU). In the context of digital broadcast development in Nigeria, StarTimes Nigeria and Go-TV and their early subscribers would be considered as early adopters of digital broadcasting. Tunde (2018) explains that between 2008 when the Presidential Advisory Committee (PAC) report was submitted to government and 2012 when the government white paper was released, two Digital Terrestrial Television (DTT) pay-tv operators already entered the Nigerian market. NTA-Star TV Network also known as StarTimes Nigeria and GOTV an offshoot of Multichoice began an aggressive roll-out of Digital Terrestrial Television infrastructure across the country.

The early majority adopt an innovation significantly later than the early adopters. Rogers (1962) explains that the early majority usually maintain contact with the early adopters and are rarely opinion leaders. Their above-average social status and significant disposable income enables them to adopt innovations. Their adoption makes an innovation sustainable based on their large human capital. In the context of digital broadcasting, the early majority are the member countries that signed the ITU treaty and effected digital broadcast transition as required.

The late majority are predominantly sceptical about innovations. Their suspicion about new ideas usually delays their participation and adoption of innovation. Often, the late majority are people below average social status with little disposable income and a small network of contacts and very little influence. Their scepticism usually arise from their social condition and the small network of contacts they share. In the context of digital broadcasting, the late majority are the countries that adopt digital broadcast after the United Nations ITU deadline.

The laggards have a strong inclination to traditions. They are usually defensive about change, new methods and innovations. The laggards are the last to adopt an innovation partly because of their very limited social network and their disposable income. Though they are usually the oldest among adopters, they wield very little or no influence. They are usually closed and connected only with family and close friends.

The goal of every innovation is to attain self-sustenance which relies so much on human capital (Fisher, 1971). The more people adopt an innovation it reaches a point of critical-mass which is the beginning of innovation sustainability. The adoption follows a process of awareness, interest, evaluation, trial, and adoption (Rogers, 1962). These terms were later changed to knowledge, persuasion, decision, implementation and confirmation (Rogers, 2003).

The diffusion of innovation theory has attained a wide spread application in digital broadcasting that some scholars have advocated a trans-implementation of adoption approaches in other social systems (Onwubiko, 2017; Oguntola, 2017). One cardinal strength of the theory is the application of systematic framework in the stages of adoption process. It illustrates an empirical methodology

from when the knowledge of an innovation is shared leading up to critical evaluation and trial before adoption.

A number of critics have expressed some concerns about the theory (Katz & Hamilton, 1963; Meyers, Sivakumar & Nakata, 1999; Greenhalgh, Robert, Macfarlane, Bate, Kyriakidou & Peacock, 2005). The critics have pointed to a lack of cohesion in the application of the theory across multiple discipline causing stagnation and difficulties to apply the theory to new problems. Referring to the complexities of human networks and the difficulties to quantify diffusion, one of the critics, Damanpour (1996) has argued that it is almost impossible to measure what actually causes adoption of an innovation. Giesler (2012) has argued that in some cases the model of the innovation communication reflects a participatory approach. Robertson, Swan and Newell (1996) argue that in a complex environment where the adopter is receiving information from many sources and is returning feedbacks to the senders, a model of multiple communication flows should be reflected.

Although the critics have made some points that undermine the effectiveness of the theory emphasising on the complexities of human networks and the difficulties to quantify diffusion, digital broadcasting is actually based on digital innovation arising from the limited wave capacity of the analogue format. Digital broadcasting has diffused into our present social system from the few innovators to the early adaptors in the United States and Japan. Digital broadcasting gathered critical mass from the United Nations ITU and the social systems of the member countries.

Applying the theory to the study, the adoption of digital broadcasting starts from the early adopters with StarTimes Nigeria and Go-TV and their early subscribers who started using digital television before the white paper release in Nigeria. African Independent Television and Silverbird TV and their audiences who own digital television before the 17th June 2017 target date are the early majority. NTA and the audience who acquired digital television after the 17th June, 2017 target date are the late majority. As a country, Nigeria is lagging in her ability to effect the transition to digital broadcasting and could be considered a laggard since she is yet to switch over to digital transmission.

Conceptual Review

Digital Broadcasting

Digital broadcasting is the practice of transmitting digital signals rather than analogue signals over radio frequency bands. Because of data compression digital signal allows for spectral efficiency than analogue signal. Not only that, digital broadcasting also allows for more services and higher signal fidelity than was previously possible on the analogue format. Indeed, there has been a wide degree of consensus among scholars about the benefits and advantages of digital broadcasting over the analogue format (Colapinto & Papandrea, 2006; Dhiman, Sood & Malhotra, 2016; Berger, 2012; Suarez-Candel 2007). Njogu (2016) explains that digital broadcasting is transmitted on radio frequencies through terrestrial space like the analogue broadcast, but the significant difference is the use of multiplex transmitters to allow reception of multiple channels on a single frequency range (such as a UHF or VHF channel) known as sub-channels instead of the analogue coding

method which transforms images and sounds into an electric signal in a proportional way to their natural physical characteristics. Okpanachi (2008) explains that “digital transmission medium improves the sound quality, virtually eliminating static, hiss, pops and fades and offers data display capabilities on receivers and opens up opportunity for multicasting: broadcasting multiple high-quality channels on each frequency” (p.4). Jones (2011) describes digital broadcasting as the practice of using digital data rather than analogue wave forms to carry broadcast signals over television channels or assigned radio frequency bands. According to Barron (2010), digital broadcasting is the transmission of text, images, or sound via digital rather than analogue signals. He explains that unlike analogue receivers, digital receivers need not be stationary but can be in motion such as walking, driving in a car or flying in an airplane.

Maduka (2014) observes that digital broadcasting has many advantages over the analogue. Programme presentation would be well improved by the time analogue is over. These are true in terms of clarity and quality of signals and spectrum efficiency. According to Maduka (2014), some stakeholders argue that since technology has opened a world of possibilities for broadcasting, a huge spectrum will be available for radio and television broadcasting in Nigeria. As a result, more frequencies or wavelengths will be available for television stations. It will also afford the industry opportunities for interactive broadcasting as the television sets would now do much more than just receive signals. Mbatha and Lesame (2014) affirms that digital broadcasting has economic efficiency as digital forms of storage, editing and retrieval saves time and labour.

Rawlings (1998) states that digital broadcasting enables six television channels to be broadcast at a time in a spectrum space that only allowed for one station in the analogue broadcast format. Hilbert and Lopez (2011) observe that “Digital links have more efficient band with usage than analog links, which allows a content provider more room to provide services, or to provide a higher-quality signal than had been previously available” (p.5).

Digital Broadcast Development in Nigeria

Development generally refers to growth and improvement. As a general term, it can be applied to different fields. Development usually depicts the stage of a particular phenomenon in a point in time or the progressive dynamics of the particular phenomenon over a period of time. The concept of development can also refer to a new and advanced product or idea relating to a given field (Oxford Dictionary). Admitting the complexity in defining development, Soares (2008) explains that the concept of development covers “a complexity of relationships. Its analysis, therefore, cannot be restricted only to the economic dimension because, as a rule, the question is presented both in the media and a considerable part of specialized literature” (p. 1). In sociological parlance, Rist (2001) defines development as “a constant evolution, based on the belief of human perfectibility and motivated by the incessant search for well-being” (p. 70). Development in digital broadcasting is consistent with the drive for human well-being. In line with the numerous benefits, digital broadcasting has also opened up new opportunities for media development and participatory opportunities for both broadcast operators and their audiences (Colapinto & Papandrea, 2006; Dhiman et al, 2016; Berger, 2012; Suarez-Candel 2007, Mbatha & Lesame, 2014).

In Nigeria, digital broadcast development resulted from the United Nations transnational understanding signed among member-countries for the implementation of all-digital broadcasting and analogue switch-off in the use of frequencies in the VHF (173 MHz to 230 MHz) and UHF (470 to 862 MHz) bands. Nigeria commenced her digital transition process shortly after the ITU Geneva 2006 treaty. President Umaru Yar'Adua inaugurated a presidential advisory committee (PAC) to plan the strategy and framework for digital broadcasting in Nigeria (Ocholi, 2009; Olalere, Oyeyinka, Lateef, Olakunle, Kenneth, Rauf & Nancy, 2013).

Scholars in media and communication have studied and analysed some challenges plaguing the digital broadcast development in Nigeria and the transition objectives of the Federal Government. These challenges usually centre on proper funding and the availability of Set-Top-Boxes (STBs) (Idachaba, 2018; Amana, 2016). Other concerns include efficient power supply and awareness campaign (Eze, Orekyeh & Ezeanwu, 2017; Ihechu & Uche, 2012). Some scholars have also expressed concerns about an alarming rate of unawareness especially among the audience, on the concept of digital broadcasting and how the transition to digital broadcasting will impact their ability to receive broadcast signals (Adeyemi, 2017; Eze, Orekyeh & Ezeanwu, 2017; Ihechu & Uche, 2012).

President Umaru Yar'Adua inaugurated the Presidential Advisory Committee on the Transition from Analogue to Digital Broadcasting (PACTADB) to plan the strategy and framework for digital broadcasting in Nigeria (Ocholi, 2009; Olalere, Oyeyinka, Lateef, Olakunle, Kenneth, Rauf, and Nancy, 2013). The Presidential Advisory Committee on the Transition from Analogue to Digital Broadcasting (PACTADB) submitted their report in 2008 with a road map to complete digital broadcast transition in Nigeria by June, 2012 (Amana, 2014). Amana (2014), however, notes that the recommendations of the presidential advisory committee report could not be implemented till 2012. Okonji (2017) affirms that the report was not made public until 2012 which meant that 2012 deadline was no longer attainable.

The Presidential Advisory Committee's report formed a part of the Federal Government White Paper for the implementation of digital switch-over with the following recommendations:

1. The adoption of a new broadcasting model which involves the splitting of broadcast services into Broadcast Content Provision and Broadcast Signal Distribution; which is essentially different from the regular broadcast operations where the broadcast stations combine programmes production and transmission.
2. Restructuring of the licensing framework in line with the new broadcast model separating the broadcast content provision and broadcast signal distribution
3. Management of digital dividend – the spectrum freed-up by the digital broadcast compression and the fund that will accrue from the spectrum auction to the telecommunications operations.
4. The technical standards that will guide the implementation of the transition exercise including the specifications for the set-top boxes and the local manufacturing requirements.

The Digiteam Nigeria was instituted and charged with the responsibility to drive the implementation of the white paper recommendations for the transition from analogue to digital

broadcasting (Digiteam, 2019). The white paper provided for 60 billion seed funding for Nigeria's DSO, including the cost of infrastructure, subsidy for set-top boxes, provisions for software, personnel training and publicity (Willoughby, Ozigis, Yola, Major, Awosika, Bashar, Bolarinwa, Juwah, Angaye, & Loto, 2011). The paper also made provision for free-to-air digital TV service through the recommended subsidized set-top boxes with a retail price of N1500 (\$7.50). These free digital TV service will have up to 30 channels with news, sports, documentaries and other programmes deliberately suited to promote Nigeria local content.

The activities of the Digiteam was hampered by some challenges related to funding (Idachaba, 2018). Maduka (2014) expresses concern about the political and economic circumstances that have plagued Nigeria in the past and affirms that such antecedents are eroding the confidence of the citizens about the DSO policies of the government.

Amana (2016) notes that the major thing needed for transition is the availability of enough set top boxes. He recounts the scenario of the shortfalls in the number of set-top boxes and how demand far out-weighed the supply capability of the set-top boxes manufacturers in the pilot test of the switch-over in Jos. He notes that funding is certainly a major issue in the digital broadcast transition exercise. Digital switch-over is fund consuming and highly expensive. Funds are required for public awareness, training and manpower development, legislative issues, content creation and e-waste management / disposal (Amana, 2014).

Ebuebu (2014) emphasises that Nigeria cannot achieve digital switch-over without adequate funding. Facilities have to be set up, towers that will transmit over a distance and would probably relay stations for people where the signal is not that strong. Many African countries have sought public-private partnership to drive their digital switch-over objectives. The NTA-Star TV Network also known as StarTimes Nigeria and GOTV an offshoot of Multichoice are cardinal examples of public-private partnership (Tunde, 2018).

Expressing the urgency of the transition exercise, Ohaubunwa (2016) observes the need to set up transmission base stations quickly and get set-top boxes. He stated that as a means of extra - urgency, the government must release funds. He cautioned that if Nigeria did not meet the June 2017 deadline, it would be a disgrace to the country as the safety of the airwaves could not be guaranteed. Analogue transmitters of any country that failed to transit, after June 17, 2015, would no longer enjoy the protection of the International Telecommunication Union (ITU) (Mba, 2015).

Endong (2015) affirms that though progress has been made in the area of regulatory strategic framework, concerted efforts on awareness campaigns are required to sensitize the Nigerian public on the technical and financial implications of digital broadcast transition. Eze, Orekyeh and Ezeanwu (2017) reveal a high level of unawareness among the audience about digital broadcast transition. They emphasize that those who seem to be aware have a little knowledge about the transition exercise because they have received information from sources that did not guarantee detailed explanation of the programme. Hence, they recommend a well-designed sensitization campaigns to educate Nigerians on digital migration, its gains and what an average television consumer is expected to do in order to enjoy qualitative television broadcast (Eze, Orekyeh & Ezeanwu, 2017).

Digital switch over in Nigeria has been fraught with a number of challenges ranging from policy framework to power supply (Ihechu & Uche, 2012). The federal government, on three occasions, set target dates but failed to achieve the digital switch over. In this regard, Adepotun and Mwantok (2018) note that:

Earlier in 2007, while appreciating the vital need to keep up with the rest of the world in the International Telecommunication Union (ITU)-led global digitisation movement, the Federal Government also approved June 17, 2012 as Nigeria's transition date, three years ahead of the ITU mandate. The justification then, according to the National Broadcasting Commission (NBC) was to use the three years (June 17, 2012 to June 17, 2015) to address whatever hiccups arising from the switch-over and perfect the mechanism before the final date. Till date, the country has missed three deadlines – 2012, 2015, and 2017 – and the process has not moved far (p.1).

Reacting to the 2012 failed target date, Balarabe (2013) points to the low ICT penetration rate and asserts that:

A country with a population of over 170 million people can boast of only 28% ICT penetration and this technology has a great impact in its digitization effort. Hence the country has failed to meet the June 17, 2012 switchover to digital television broadcasting deadline it set for itself. These shortcomings pose serious challenge to the country in its bid to digitize television broadcasting (p.4).

To ensure that the right technology is maintained for sending and receiving digital broadcast signals, the federal government through the National Broadcasting Commission (NBC) signed an agreement with In-view Technology (a UK digital company based in Cheshire and with local operations in Nigeria) for the manufacture of National Common Set Top Box System (Jimada, 2015).

Methodology

The survey research design was used in this study. The survey design was adopted as the study seeks to highlight the current conditions and attitude of people that exist in a social setting that cannot be subjected to laboratory experimentation. Cozby (2007) explains that survey helps a researcher to identify the relationships that exist among variables and the ways that attitude and behaviour change over time. It also provides the methodology by which a researcher can ask people questions about themselves. Survey design is adopted in this study as the study seeks to assess the Nigerian digital broadcast preparedness, studying select television stations and their audiences. The survey design therefore enabled the research to identify statistical relationships that exist among the select television stations and their audiences.

The population of this study consist of management, engineering and programmes staff of the select broadcast stations in the South-South region of Nigeria and their audiences. These are Nigerian Television Authority (NTA) Yenagoa, Independent Television (ITV) Benin City, Edo State; Delta Broadcasting Service (DBS) Warri TV, Akwa Ibom Broadcasting Corporation (AKBC) Television, Uyo, Cross River Broadcasting Corporation (CRBC) Calabar, African Independent Television (AIT) Port Harcourt and WAZOBIA Max TV. Port Harcourt. The study surveyed the primary audiences of these stations. These seven (7) stations – with the widest coverage – were carefully chosen (each from the six states) to cover the South-South geographic region. Two stations were selected from Port Harcourt Rivers State.

Special attention was paid to the management staff (especially the Executive Management) on matters concerning strategic decision and direction. This was helpful in extracting important information that pertain to equipment procurement.

Below is the population of the select television stations in the South-South Nigeria and their respective audience. The population of the management, engineering and programmes staff of the select television stations obtained from the office of the administrative department of the select television stations are as follows:

Table 3.1: Population of the Management, Engineering & Programmes Staff of Select TV Stations

Station	Management staff	Technical Staff	Operations Staff	Total	Percentage
NTA Yenagoa	18	25	29	72	21.75%
ITV Benin City	5	5	14	24	7.25%
DBS Warri TV	19	23	27	69	20.85%
AKBC TV Uyo	17	21	27	65	19.64%
CRBC Calabar	19	21	25	65	19.64%
AIT Port Harcourt	6	4	16	26	7.85%
WAZOBIA TV,	3	4	3	10	3.02%
Total	87	103	141	331	100%

Source: Admin Dept.: NTA Yenagoa, ITV; DBS, AKBC, CRBC, AIT PH & WAZOBIA

Table 3.2: Estimated audience of the Television stations

Television station	Estimated audience
NTA Yenagoa	2,500,000
ITV Benin City	3,000,000
DBS Warri TV	5,000,000
AKBC TV Uyo	4,000,000
CRBC Calabar TV	3,500,000
AIT Port Harcourt	5,000,000
WAZOBIA TV, Port Harcourt	8,000,000
Total	31,000,000

Source: Admin. Dept.: NTA Yenagoa, ITV; DBS, AKBC, CRBC, AIT PH & WAZOBIA

Table 3.3: Total Population of the select television stations' key staff and their audience

Television Station	Key Staff	Audience	Total	Percentage
NTA Yenagoa	72	2,500,000	2,500,072	8.1%
ITV Benin City	24	3,000,000	3,000,024	9.7%
DBS Warri TV	69	5,000,000	5,000,069	16.1%
AKBC TV Uyo	65	4,000,000	4,000,065	12.9%
CRBC TV Calabar	65	3,500,000	3,500,065	11.3%
AIT Port Harcourt	26	5,000,000	5,000,026	16.1%
WAZOBIA TV, Port Harcourt	10	8,000,000	8,000,010	25.8%
Total	331	31,000,000	31,000,331	100%

Source: Chike-Iyo, 2019.

The management, engineering and programmes staff of the select television stations and their audience constitute the population for the study. The total population of the study is 31,000,331 as shown in the table above. Using the Krejcie and Morgan (1970) sampling formula, a sample size of 384 was drawn for the study.

The sampling procedure adopted was the proportionate sampling. This was to enable a proportionate allocation of the sample to each of the select television station in accordance to their respective population. The purposive sampling technique was adopted for the interview to survey the key management, engineering and programmes staff of the select television organizations. Using the Krejcie and Morgan (1970) sampling formula, the proportionate sample of the select television stations are as shown below:

Table 3.4: Proportionate Sample Allocation to the Select Television Stations Using the Krejcie and Morgan (1970) Sampling Formula

Total Population	Television Station Population	Total Sample Size	Proportionate Calculation Per Station	Sample Size Per Station
31,000,331	AKBC TV 4,000,065	384	$4,000,065 \times 384 \div 31,000,331$	50
31,000,331	NTA Yenagoa 2,500,072	384	$2,500,072 \times 384 \div 31,000,331$	31
31,000,331	CRBC TV 3,500,065	384	$3,500,065 \times 384 \div 31,000,331$	43
31,000,331	DBS Warri TV 5,000,069	384	$5,000,069 \times 384 \div 31,000,331$	62
31,000,331	ITV Benin City 3,000,024	384	$3,000,024 \times 384 \div 31,000,331$	37
31,000,331	AIT Port Harcourt 5,000,026	384	$5,000,026 \times 384 \div 31,000,331$	62
31,000,331	WAZOBIA TV, Port Harcourt 8,000,010	384	$8,000,010 \times 384 \div 31,000,331$	99
Total Sample Size				384

Using purposive sampling technique, the researcher administered the instrument to the audiences in the street and strategic locations of the cities of the respective stations. Two sets of instruments (the questionnaire and the interview) were used as the instruments of data collection for this study. The questionnaire was administered to the audience of the select television stations. The interview schedule was administered to the management staff of the select television stations.

Major Findings

The following are the findings from the data presented and analyzed.

1. There is an impressive degree of awareness about digital broadcasting among the audience of the select stations.
2. There is a strong positive disposition among the audience to purchase digital television set-top boxes and pay digital television annual access fee for receiving digital television signals. This goes to verify the preparedness on the part of the broadcast audience for digital broadcasting migration in South-south Nigeria.
3. There is an impressive level of digital television possession rate among the audience of the select television stations.
4. The select stations have acquired a hybrid of digital broadcast equipment. This is predominantly affected by the Federal Government policy framework of the separation of content production and signal distribution functions of the digital broadcast operations.
5. The select stations have deployed varying approaches to training and personnel development for the digital broadcast operations. Predominant among these approaches are the use of hand-on, practical, on-the-job training to effect digital broadcast operations techniques and the use of digital equipment. Quite significant is the NTA monthly training approach, using online zoom training and the train-the-trainer sessions with the original equipment manufacturers (OEM).

Recommendations

Based on the findings of this investigation, the study makes the following recommendations:

1. The Digiteam and other stakeholders of the DSO process should design and execute a deliberate media campaign to accentuate the audience awareness of DSO in view of the new private-sector driven approach. A well designed and executed media campaign will enable the private sector model to have a soft landing and will also generate a buy-in from the audience.
2. The Digiteam and other stakeholders of the DSO should take advantage of the prevailing willingness on the part of the audience to purchase set-top boxes and pay digital access fee as social capitals that will help accelerate the DSO process and the adoption of digital broadcasting in Nigeria.
3. The stations should brace up to the evolving dynamics of the digital broadcasting by consistently upgrading their broadcast equipment and operational procedures. Part of the costs saved from running and maintaining their analogue transmitter when the signal distribution function commences should be channeled to continual equipment upgrading, personnel development and procedural improvements. This will enable them to maximise all the benefits of digital broadcasting as well as introduce innovative programmes that leverages on digital broadcasting.
4. There is an intense need to expedite the signal distribution function of the DSO process and the roll-out of set-top boxes. These will not only intensify the DSO process, but will also alleviate the huge responsibility of the stations to continue to maintain and run analogue transmission system. The stations currently have to run dual illumination, which is both expensive and burdensome. The commencement of signal distribution function and

the roll-out of set-top boxes will also release spectrum space for other telecommunication projects and give Nigerians the opportunity to enjoy the numerous benefits of digital broadcasting

5. The general public should take advantage of the private-sector-driven approach of the DSO process and invest in the broadcasting sector in view of the huge market potential of digital broadcasting in Nigeria. Investments in the digital broadcasting value-chain will not only bring huge returns on investment, but will also drive innovation, increase advertising revenue and accentuate talent development in the sector. These will ultimately increase the nation per capital income and gross domestic product (GDP).

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