Re-Evaluating the ICT Utilisation Options in Programme Production by Broadcast Stations in South-Eastern Nigeria

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ABSTRACT

Information and Communication Technology (ICT) has been introduced to virtually all aspects of human endeavour. The developments in the areas of ICT application have become very rapid especially with the need for all broadcast stations to become digitalised. This study investigated the availability, accessibility and influence of ICT tools in programme production; and thus evaluated the options available for programme producers in utilising ICT facilities to facilitate the processes as well as improve contents of the programmes in the broadcast stations in South East Nigeria. Four sets of population – broadcast stations (33); programme producers (271); select audience (infinite), and programme production managers (33) – were studied. A sample of 30% was randomly selected and studied from each population. The study adopted mixed methods research design in a triangulation of survey, observation and content analysis. Finally, the data were descriptively analysed and thematically explained. It was found that both digital and analogue ICT tools were available and that the producers had access to them thereby enabling utilisation. It was also found that ICT tools facilitated programme processing as well as improved the quality elements. It was therefore concluded that available ICT tools were appropriate for facilitating the process of programme production by broadcast stations in South-Eastern Nigeria. It is recommended that all stakeholders should join hands to encourage greater utilisation of ICT in programme production by broadcast stations.
Key words: ICT, broadcast programme, digital tools, utilisation, programme production

1.0   INTRODUCTION

Information and Communication Technology, ICT, has advanced in such a way that it exerts great impact on every field of endeavour around the world. According to Ike (2005), ICT is "a combination of technologies that enhance the process of communication and information dissemination. It has to do with the application of modern technologies in the functioning of communication devices. It is about digitalisation and networking information dissemination and global communication process" (p.106). These technologies enable interactivity among organisations and nations regardless of geographical location. The application of ICT involves the use of computer and other devices like personal digital assistants, telecommunication – telephone, fax, SMS, MMS, etc – and broadcast facilities such as radio and television. Also, networks such as the Internet and satellite distribution are parts of what is known as ICT.

Based on innovative developments in ICT, human activities have been elevated to a high level in the history of society (Mugira, 2007). The innovations have also transformed the way people work in the media and other industries. Therefore, the ownership patterns and production processes, including consumption patterns, have all been affected by the use of these new technologies (Carlsson,2005, p.4)

In essence, the message producers are brought together, while the gap between the producers and the message consumers are reduced. However, ICT has both positive and negative impact. On the one hand, they facilitate information processing, storage and retrieval; while on the other, the presence of ICT can cause unemployment because fewer personnel are required for the manipulation of ICT-based equipment.

The broadcast industry has witnessed several revolutionary changes since the dawn of the new millennium, with digitalisation being the most prominent among these changes. Growing demand for high-quality audio and video content among the audience, keen desire among broadcasters to allow more channels in the same spectrum at lower costs, and stringent government mandates ordering termination of all analogue TV broadcasts, have increased the adoption of digital broadcasting, thereby driving market for ICT based broadcast equipment (Barston, 2012).

Nevertheless, effective programming demands the creation of programmes that will arouse satisfaction in the audience. This is only achieved through quality programmes and 'quality' is harnessed during programme processing. Obviously, any programme that does not contain the basic elements which create audience satisfaction would lack patronage. That is why it became necessary to evaluate how ICT facilities are manipulated to create attractive effects by broadcast stations.

1.1   Problem Statement/Justification

Very soon, all broadcast stations in Nigeria will go digital. The process of digitalisation requires the use of ICT equipment, especially, in programme production. Other areas likely to benefit from this process are programme presentation and signal transmission. The presence of ICT in broadcast programme production is indisputable but the following questions need answers: What types of ICT tools are available in the broadcast stations in South East Nigeria? What is the level of ICT utilisation by the broadcast stations in producing and packaging their programmes? What are the overall perceptions of the audience?

On the basis of these, it became important to investigate the utilitarian values of the available ICT facilities by ascertaining the potency of the ICT tools used in the production of programmes. Consequently, the principal question this study posed was: To what extent do ICT tools to programme production in broadcast stations in South East Nigeria?

1.2   Objectives of the Study

The main objective of this study was to evaluate the ICT utilisation options for programme production by broadcast stations in South-Eastern Nigeria. However, the specific objectives were to:

  i.   ascertain the types of ICT tools available for programme production in the broadcast stations in South Eastern Nigeria;

 ii.   determine the level of access to ICT facilities for programme production in the broadcast stations in South Eastern Nigeria;

iii.   determine audience perception in relation to the impact of ICT on the quality of programmes produced by the broadcast stations in South East Nigeria; and

iv.   identify the constraints to the utilisation of ICT for programme production by broadcast stations in South East Nigeria.

2.0   LITERATURE REVIEW

2.1 Overview of the Concept of ICT

Broadcasting is an aspect of mass communication; and the broadcast messages represent information. Borrowing from the definition of mass communication by Dominick (2009, p.10) that "mass communication refers to the process by which a complex organization with the aid of one or more machines produces and transmits public messages that are directed at large heterogeneous and scattered audiences." there must be the presence of machines which combine together to manifest in the channel for information dissemination. These pieces of communication machines that help in the gathering, processing and dissemination of information are technology-based.

Therefore, these machines and their facilities used for gathering, processing and exchanging information are referred to information and communication technology (ICT). Ibezimako (2006, pp.85-86) sees ICT as "such gadgets as computers, internet, microprocessors, video-phones, facsimiles (fax), teletext, digital broadcast systems, video, discs, optic fibre satellites, microwave relay (transmission) systems, transponders, digital telephones, global system of mobile communication (GSM), among several others." These gadgets are

science and technology based devices which are used in the communication process – creation, processing, storage, retrieval and dissemination of information. Generally, they involve the application of such modern equipment and services that aid the manipulation, management, processing, dissemination and reception information both at the micro and macro levels (Dominick, Messere and Sherman, 2007).

In information processing which includes programme production, ICT includes the software and hardware that are used to facilitate the processes. The hardware consists of the physical devices that make up a computer (often referred to as a computer system). Software is a set of instructions that the hardware executes to carry out specific task (Haag and Cummings, 2008). There have been a lot of talks about convergence of broadcast and information technologies. The convergence is made possible by digital technology which enables the interaction of different types of media to enhance communication efforts (McQuail, 2005). Information and communication technology tools are digital equipments that enhance information processing.

According to Heitman (2010, p.3), hardware and software modules like hard disks, PCs (workstations), computer displays, operating systems, etc, are found in many, if not most products of the broadcast market. Therefore, ICT based production platform means the use of regular ICT products in combination with broadcast specific software – audio and video (Haque 2009).

The handling of content and metadata in an ICT world symbolizes the main difference to the traditional broadcast environment. In the ICT environment, video, audio, data and content are treated like any other type of information (Inayatulah 2008). This information requires data management, which enables and supports all services needed in the broadcast programme production process. Stating the relationship between IT and television production, Heitman (2010, p2) says that IT based television production means

- Video and audio are delivered as data file
- The transportation of these data files is carried out via IT networks
- The production is based on the generation and use of metadata and UMIDs (unique material identifiers).
- The administration of video and audio by means of IT.

2.2   Broadcasting in the Age of ICT

In this age of ICT, broadcasting has become somewhat personalized because of the closeness between the audience and the broadcasters. The new technologies enable the production of programmes that bridge the gap between the producers and their numerous audiences. Mugira (2007, p.6) buttresses the point: "ICT has helped to bring closer communicators and receivers to the extent that feedback is swift." The swift feedback mechanism is more evident in broadcasting because radio and television are *'now'* media. Then, the reduction in feedback time makes broadcasting to be participatory in outlook. Corroborating, Servaes and Malikhao (2005, p.91) argue that participatory communication "necessitates reasoning and moreover trust will help reduce the social distance between communicators and receivers, between teachers and learners, between leaders and followers as well as facilitate a more equitable exchange of ideas."

The above submission draws attention to the fact that ICT makes exchange of ideas easy in broadcasting because the process is people centred. Information and communication technologies have made the programme production easier to manipulate. Nowadays, programme producers can record several programmes on the computer and store them there for use in the future. Also, ICT tools have contributed to making live broadcasts stress-free. Therefore, different broadcast stations produce more live, audience participatory programmes. According to Mirial, (2010, p.2): "Broadcasters have experienced that involving the audience raises retention levels and has become a critical success factor in the competition with other entertainment sources ... and therefore, the number of participation TV shows has been constantly increasing together with formats variety."

In relation to this trend, broadcasting has taken popular and intriguing dimensions – the audience has limitless opportunity to get exposed to breaking news, games and contests and other live events on radio and television. Music programmes have become so much interesting because the DJ records all the music selection on a PC; and he can also make all the presentation with a click. New technologies also make it possible for DJs to engage in voice tracking which allows one DJ to track the voice of about six different programmes at a lower cost (Dominick 2009). In essence, instead of employing six DJs, one is employed to record voice intros and extros thereby saving money for the organization.

Nevertheless, the era of ICT which employs digital technology, has brought several other innovations for the mass media. Consequently, broadcasting adapts to the innovations to make the sector very interesting.

2.3   Roles of ICT Policies in Socio-economic Development

Information and Communication Technology (ICT) tools are prerequisites for developing countries' economic success. The ability of developing countries to thrive in global economy depends on the nations' objectives of ICT policies and their ability for proper implementation of such policies. However, previous studies have shown that most of the developing countries especially Nigeria are yet to embrace fully the application of ICT in socio-economic and political life of the people (Bowery, 1995; Williamson, 1991; Anie, 2007). The major clog in the wheel of progress with regards to the adopting and implementation of ICT policies in Nigeria is the government's indifference towards adequate investment on Information and Communication Technologies. Lee (1993) asserts that the biggest hindrance to ICT service development has been the attitude of the government and the desire to control the population; many only see the huge expense and fail to see the benefits to a developing country from establishing an adequate IT infrastructure.

A good number of workshops, conferences and seminars have been sponsored by the Nigerian government still, there is no significant development. Though, some of the developing countries such as South Africa, Nigeria and Ghana have been making little progress in telematics (the convergence of telecommunications with computer technology) by linking production to industrialization (Anie, 2016).

South nations, such as Malaysia, Indonesia and Singapore have adopted a strategy which aims at industrialization through applications of microelectronics, computer products, services in management, finance, health care, distribution, manufacturing, as well as education. This particular experiment in these nations may be a breakthrough in the developing nations' industrial and high technology policies (Sarka, 2015). The success of these few is already having an impact on the world production patterns, trades and both the social and political environment (Crawford, 2014). "The implementation of ICT policies in the developing countries has reached directly the heartland of the business life of the people" (Anie, 2011). The advent of the new information technologies has opened many doors for socio-economic and political development in many countries. Trevidic (1983, p.83) declares that it certainly "brings to the forefront domestic conflicts within each country, between labour and capital forces and among capital forces themselves (rivalries between national firms for instance), as well as external conflicts between countries and their respective economies."

It must be noted that ICT does not develop in isolation rather it develops in accordance with the industrial environment in existence. If not, the impact of ICT will be inconsequential to the nation's economy. West African nations are far behind the level of industrialization and technological development in this information age due to lack of a well defined ICT policies to guide development plans (Anie, 2015). It sounds ironical to realize the situation in developing countries using the same or even similar policies that have been used in the developed economies yet; there is no improvement and development in the economies of the developing nations.

The areas of communication and broadcasting are covered by the Nigeria's IT Policy under its provision for the application of ICT to Arts, culture and tourism. Hence, it (NITDA, 2000, p. 26) provides, among other things, that ICT shall:

- Facilitate a multi-media virtual gallery
- Contribute to developing low cost broadcast, video and film industry
- Introduce state-of-the art gadgets in the production process

In order to make programmes compete favourably alongside commercial material, level-wise, there is need to ensure that the finished audio and video files are polished with a little mastering-style processing (Geraghty, 2005).

2.4   Programme Production in the Era of ICT

No matter the frequency or channel a broadcast station operates, it must create content. Broadcast contents are the different programmes that feature on radio and television. Broadcast programmes could be news, entertainment, talk, music, documentary, drama, sitcom, reality shows, utility, instructional, etc. The act of putting a programme together to become a single broadcast content is programme production.

Programme production involves the manipulation of talents and technical facilities to create organized broadcast content. It is the manipulation of human and material resources to process information (audio and

video signals) using the communication technologies applicable to broadcasting (Dominick, 2009). Programme production aim at sending specific messages to the audiences using various formats and genres that appeal to segments of the society (Hilliard, 2008). Radio and television stations have programme production units; however some stations may rely on syndication – programming produced specifically for sale (Baran; 2010).

In a broadcast station the "station manager is ultimately responsible for all station activities. The rest of the station is organized into five departments" (Dominick, 2009, p.241). A typical broadcast station has the following departments: sales, engineering, production/programming, news, and administration. Nevertheless, all the departments are involved in one way or the other in the process of producing programmes (Rodman 2006). This is because the business of any broadcast station is producing or securing programmes for audience satisfaction.

Good quality programming is essential to attract the audience. In turn, the audience attracts the advertisements. Even the politicians controlling State broadcasting need an audience in an increasingly competitive world. Addressing the audience, whether as citizen or consumer, is the primary concern of programme production teams; no matter their individual responsibilities (Dominick et al, 2007). 'Quality' in the context of programming does not mean they have to be serious in content all the time, but every programme should be made with the highest possible production values. Each programme department faces the same managerial challenge, namely moulding a team relevant to a professional product (Price, 2009).

 Application of the basic modern communication infrastructure is part of the challenge. Therefore, to produce a programme which meets contemporary demands in terms of quality, the basic elements of ICT are utilised during the production stages. The ICT elements according to Valerie, (2007) include those that facilitate the following production activities (engaged in to create content that showcases messages in any of the forms discussed above):

* Information sourcing, selection, writing and recording
* Working with microphones and cameras.
* Structuring items and programmes
* Video and audio editing
* Creation of required special effects
* Storage and retrieval

2.5   Theoretical Framework

Marshall McLuhan's theory of Technological Determinism propounded in 1962 says that "'the medium is the message' because it is the medium that shapes and controls the scale and form of human association" (McLuhan,1964, p.9). McLuhan sees the media as the extension of man because new technologies lead to new perceptions and attitudes. Therefore, the available media ICT tools will determine how broadcast programmes are processed and eventually perceived.

Fidler (1997) defines mediamorphosis as the transformation of communication media, usually brought about by interdependence competitive environment, social needs, political pressures and technological innovations. Technological convergence is the tendency for different technological systems to evolve towards performing similar tasks. Convergence refers to previously separate technologies such as voice (and telephony features), data (and productivity applications), and video that now share resources and interact with each other synergistically

3.0   METHODOLOGY

This study adopted a triangulation of survey and observation designs to study three sets of population (broadcast stations: N = 33; programme producers: N = 271;.programme managers: N = 33; audience: N = infinite). The descriptive survey helped to determine the availability of ICT tools while the analytical helped to determine the relationship between ICT and programme production. Therefore, copies of questionnaire were administered to a sample (30%) of the producers, while a sample (30%) of the managers were interviewed. Also, copies of the questionnaire were administered to a sample of the audience to determine the perceptions and expectations in relation to programmes produced.

Further, the observation research design was considered appropriate because it created the possibility of experiencing real situations. Therefore, the study adopted overt participant observation to determine the

availability of ICT tools as well as the attitudes of the producers. This further helped to establish the relationship between the tools and programme production. Overt observation enabled the observers to ask questions about activities that required clarifications. Field notes were taken for interpretive reading because they are concerned with description and explanation rather than with measurement and quantification (Wimmer and Dominick; 2000).

However, the sequential data analysis technique was employed. The technique provided the opportunity to first analyse the data from the quantitative methods. Later, the qualitative data were analysed thematically to back up findings from the quantitative methods.

4.0   RESULTS/DISCUSSIONS
RQ$_1$:   What are the types of ICT tools available for programme production in the broadcast stations in South Eastern Nigeria?

The first research question raised the issues of availability of ICT tools; and the suitability of the types of available ICT tools for modern broadcast programme production. The analysis of the data showed 78% availability of ICT tools in programme production and the result showed that there was adequate presence of ICT equipment in the broadcast stations in South East Nigeria. The availability rate could be attributed to the current trend in the world of communication where information and communication technology is playing the major role.   Also, the transition from analogue to digital broadcasting in Nigeria has spurred the acquisition of ICT equipment to enhance programme production. Basically, the stations made efforts to provide the tools that would enhance the production processes.

The availability of the tools was further affirmed through observation of the production sessions where it was found that the basic ICT facilities that enhanced programme production were present (67% hardware and 63% software). This was further supported by the directors of programmes who submitted, through interview, that their organisations engaged in regular acquisition of ICT tools to beef up the ones they have.

Therefore, it has to be submitted that regular acquisition ensured the availability of ICT tools for programme production so that they enhanced production of programmes in the digital age. If the tools are not available in any broadcast station, that station will be left behind because computer-based ICT tools have caused revolution in the production and post-production environments (Lindnar, 2016).

However, up-to-date rating of the available ICT was slightly above half and would be considered not adequate for a sector that is speedily being revolutionalised by ICT. The regular demand of ICT tools for updates could have contributed to this result. The up-dating of the ICT tools involves huge amounts of money most of the time. Ironically, this study revealed that finance or poor funding is the major constraint to ICT utilization. Finance deals with acquisition of up-to-date facilities which in turn enriches their availability and usage. The result could also be attributed to the lack of adequate Internet facilities in the stations, as observed by this study and as recorded by previous studies (Akin 2012).

Nevertheless, this result is not bad because 55% represents an above average status which would imply that the presence of state-of-the-art ICT tools in the broadcast stations is encouraging owing to economic drawbacks in the country; which had adversely affected every sector. However, some owners create conducive atmosphere to enable adequate availability of ICT tools. Majority of the participants in the interview sessions affirmed this view. For example:

> At least you know that the station is in the form of transition. You'll recall that NBC has given deadline that eeh... that eeh... all stations - radio and TV – should be digitalised. The process in place... If you go to the news studio, you will see a machine that is called tapeless, with that machine you can send edited news story or packaged programme, instead of physically taking it to Abuja, you now electronically send the signals to Abuja. As far as I'm concerned, that is the beginning of the process. There are many other machines that assist in production in this manner (Mr. C)

On the other hand, some state governments do not favour the use of up-to-date ICT tools. For example:

We have difficulty changing from one government to another. Some have sluggish movement. When this man came, eeh, eeh, (Governor B), they made enough noise of providing digital equipment, it was only this system (low capacity work station) that they provided for a broadcasting house like this (Mr. H).

Taking the two submissions into consideration, the programme producers are aware of the up-to-date facilities but certain foreseen constraints work against the availability and eventual usage. Therefore, they make use of the available tools to produce programme. That was why observation revealed the presence and combination of analogue and digital tools. Surprisingly, this condition did not deter the applicability of the available ICT tools to the demands of programme production. This explains the situation in the production arena where, for example, an analogue video camera, video cassette recorder (VCR) or an audio cassette recorder (ACR) is connected to the computer via a video capture card or audio capture (sound) card. The capture cards convert analogue signals to digital signals. The system in which the two sets of signals are combined is what we refer to as *analogital* production process as shown in figure 1.

Thereafter, the personal computer, (PC) with DVD drive is used to process the signals to the required standard with the aid of appropriate software for any action sought. Without the DVD drive, the computer cannot accept the digital signal. Also to link the analogue device to the capture card and to the computer, standard video (S-video) and standard audio (S-audio) cables are used. These cables provide sharper images and greater overall quality. These findings are supported by Shelly and Vermaat (2010, p.233) that- "many people own analogue video tapes that require additional hardware to convert the analogue signals to a digital format before the video can be manipulated on a personal computer."

Based on the findings, the first research question would be answered thus: *There are suitable ICT tools available for programme production in broadcast stations in South East Nigeria.* Suitability here entails that the tools adequately aided the production of programmes in a highly competitive sector. And this submission emanated from the availability of ICT tools that enhanced compatibility of analogue and digital signals; since the country has not fully digitalised.

Further, it is in corroboration with the basic concepts of Non-linear editing (Zettl 2006) or production which allows the capturing of video and audio data into hard disc, video server or other digital storage devices. Therefore, the findings show that whether in *analogital* or digital production process, the available ICT tools ensured that the original source files were not lost in the process (Haag and Cummings, 2008). They also allowed flexible production activities as well as random access and easy content organisation (Hilliard, 2008).

Furthermore, in relation to the theoretical frameworks; the finding supported the position of the theory of technological determinism in the sense that the available media technology determines how information is processed. The ascertained available ICT tools gave birth to *analogital* process in programme production so as to meet up with the expectation of the digital age. This was because new media change the ways people communicate (DeFleur, 2010); and because the ways they are used to determine their values (Hanson and Maxcy, 1996).

Since the available technology determines the extent to which processes are facilitated, (Anaeto et al, 2008), the availability of suitable ICT tools as found in this study determined how they facilitated programme production. The *analogital* process was a product of the available media technology (analogue and digital) which was spurred by sense of experience (McQuail, 2010) in that content must be according to the expectation of the present generation. Nevertheless, the financial constraints could be aligned with Karl Marx's economic determinism and affected to some extent the availability of state-of-the-art equipment in its entirety.

The findings further strengthened the postulations of the theory of mediamorphosis which emphasises on convergence (McQuail 2005). The types of available ICT tools necessitated a union between the old and new technologies and that is why *analogital* production has taken the stage until when broadcasting will be totally digitalised. Finally in relation, to media equation theory, the interaction with the tools by the producers was established; because availability reduces Reeves and Nass' (1996) "interpersonal distance" between equipment and producers.

RQ₂: To what extent do producers have access ICT facilities for programme production in the broadcast stations in South Eastern Nigeria?

The earlier finding established that ICT facilities were available for programme production in the stations studied. It therefore raised the question of access and the conditions of access to the available tools by the producers. The data in table 1 showed that the level of access to the available ICT tools stood at 75%; and thus implied that the producers relatively had access to the ICT tools.

Further table 1 contains the rate at which conditions of access affected the actual access; the producers had 82% free access to available ICT facilities. In that regard, majority of programme producers (52%) required no approval to access the available ICT tools.   Half of that figure only obtained verbal approval for access to the tools. Only 11% of the producers required written approval to access the facilities. Nevertheless, the 75% access rating and 82% free access rating established that the   producers had free access to available ICT tools. This result could have arisen from the ICT-compliance drive by every sector of human endeavour. Thus, all the broadcast stations wanted their producers to be capable; in terms of ICT applications as well as maintenance. That explained the reason for absence of undue restrictions as regards access to ICT facilities as against the regularly noticed bureaucratic restrictions in most organisations in the country. The recorded verbal and written approval could be regarded as minor restrictions that did not adversely affect the rate of access to the facilities. To buttress this view, majority of the participants in interview submitted that restriction was minimal so as to give equal opportunity to all the producers because of limited space in most cases; as well as to safeguard the facilities from being recklessly damaged if is not monitored. However, the limited space amounted to attending to different production needs according to priority based on schedule of programmes. This forestalled producers' use of the equipment for more period of time than necessary; thus guaranteeing equal participation in ICT utilisation.

The observational inquiry also showed that even when approvals were required, they were mere routines as the head of unit promptly approved any request. Usually in such cases, a producer intending to use the facilities wrote to the head of the production unit, who only certified that the producer was billed for production by looking at the programme schedule. On confirmation, approval was granted.

The minimal restriction also ensured that a producer was held accountable for the facility at any given time. This notwithstanding, restriction was minimal because high restriction standards will scare the producers and thus, become detrimental to ICT use by any broadcast station that placed such standards.

In order to be abreast of the innovations in ICT environment, producers engaged in self-development efforts and that enabled them acquire personal ICT tools that they often took to work. By so doing they did not have to rely for the tools belonging to the organisation before they produced their programmes. This particular attitude increased the access level to ICT tools because they were almost parts of the producers themselves. This view corroborates the view of one of the participants in interview. Thus;

> And I can say this... eeh... our producers have lent us the support we need in the area of ICT. Most of them come to work with their personal laptops, flash drives and discs. What I see makes me bold to say that they are dedicated. And ... eeh, eeh, I know they spend their personal money to upgrade the things... But I'm impressed that at least they have tools to rely on (MR.E).

The above submission is a pointer to one of the reasons of the free access finding. Also, it showed that free access helps to ginger the producers' adaptability which in the long run ensured optimal usage for positive effects. In a situation where the producers did not have access to ICT tools, the availability would be utterly useless. It was access that made availability relevant and would in turn enhance useful manipulation of the production processes.

Regular access to ICT equipment helped ICT to deliver significant dividends for development (Akingbulu, 2012) and that is why Owuamalam (2005) submits that the performance environment should be well understood. This could be achieved by keeping abreast of ICT facilities that enhanced productivity.

In consideration of the discussions surrounding access, the second research question would be answered by saying that: *There was high level of free access to ICT facilities for programme production in broadcast stations in South East Nigeria.* The finding became possible because of the contributory efforts of producers, organizations, policy makers and the Internet towards optimal use ICT equipment. This incorporates the Nigerian ICT policy that the country becomes an ICT capable country in Africa and key player in information society (NITDA, 2000).

RQ₃: **What is the audience perception in relation to the impact of ICT on the quality of programmes produced by the broadcast stations in South East Nigeria?**

The complex nature of the quality issue led to the finding about the producers' impressions about audience perceptions of the quality of their programmes. Table 2 showed that the producers believed that audience perceptions were 68% favourable to the quality of their programmes.

This rating is not too excellent. This could be attributed to the fact that signal quality was usually lost during transmission. Also, for the fact that the digital signals were converted to analogue component before transmission, because the receivers at home are not digital, the rating was envisaged.

However, the perception rating satisfied the good quality rating prescribed by ITU; and also met the EBU standard that "programmes seen by the consumers at home must be a minimum of grade 4 for quality" (EBU, 2011, p.15). Grade 3 would be acceptable if there are reasons for technical exception while grades 1 and 2 are not acceptable. This result fell between grades 3 and 4.

This finding was in tandem with the finding from the interview sessions where majority of the participants submitted that audience perceptions were favourable in relation to the quality of their programmes. For example:

> *Enormous, enormous, if you listen to our programmes, you will notice that people call from distance places. People call from Lagos, from Abuja, in fact all over the country to show us that they appreciate what we do here and that gives us encouragement* (Mr B).

The quality of the programmes enhanced the appreciation of content by the audience. The entire process was facilitated by ICT tools which were used to manipulate the different quality elements for overall aesthetic boosting of the programmes. That was why the programme managers agreed that ICT contributed highly to the quality of their programmes. For example:

> *I have worked with them so I know what I'm talking about. With the tools available, the qualities will definitely be affected. At least you can see what the editors are doing in the studio, and you can also see the programme output* (Mr I).

The above submission further emphasised that the quality of programmes were good and acceptable in relation to universal quality standards. However, comparatively, the quality of the programmes produced here would not adequately compete with the programmes emanating from some Western stations like CNN, BBC, etc. The reason is that those stations have state-of-the-art ICT tools for programme production and transmission. These tools include satellite-based facilities such as camera, microphone, etc. Nevertheless, the programmes here have good standings and with time will be able to measure favourably with others in the world. Based on the findings surrounding the quality issue, the third research question would have to be answered thus: *The audience perceived the pragrammes produced by broadcast stations in South East Nigeria as having good quality.* And this was possible because the types of ICT tools available in the broadcast stations improved the quality of the programmes produced.

These findings showed that the utilisation of ICT positively contributed to quality enhancement. A programme was said to have quality when the elements were well manipulated to bring out the uniqueness in the programme. This implied that ICT tools brought out the quality that made the programmes stand up to what a programme should be in a digital age. In other words ICT brought out the ingredients for aesthetic evaluation, which determined the programme-*ness* of the programmes (Akpan and Etuk, 1990).

It therefore meant that all the components of broadcast programme production (light, colour, sound, space, movement, time, and effects) were synergistically manipulated to enhance content. The harmonisation of the different effects made the programmes beautiful in the eyes and ears of the audience. The audience would definitely appreciate the contents of these programmes because they expect well-packaged programmes in this computer age unlike the days everything was manually operated and the media content was solely determined by broadcasters.

In essence, the findings upheld Nigeria Broadcasting Code that broadcast stations should be ready to adapt to scientific and technology changes with emphasis on the quality of broadcast news and programmes

(NBC, 2010). That is to say that the stations in South East Nigeria are gradually embracing ICT utilisation for quality assurance.

RQ₄: **What are the constraints to the utilisation of ICT for programme production by broadcast stations in South East Nigeria?**

This research question raised the issues of technical and structural impediments to the use of ICT in programme production as well as the negative impacts of the use of ICT on the stations. It was found that technically, inadequate power supply was the major hindrance to the use of ICT in programme production. The finding was not surprising because lack of electricity or its epileptic supply have been the bane of development in Nigeria for decades. Therefore, it made the broadcast stations to work under conditions of unreliable power supply. Then the application of ICT was threatened because the epileptic nature of the power supply here did not guarantee continuity in the programme production processes.

Further, the off and on pattern of power supply damaged some of the computer-based tools. That could be why maintenance was seen as the second major problem of ICT utilisation. Because these tools are expertise-oriented, the damage recorded through power distortions were difficult to be rectified. This submission was confirmed in an interview, when one of the programme managers spoke in relation to constraints of ICT usage.

> *Constraints yes, constraint in the sense that we are in Nigeria. Our engineers, I make bold to say it, our engineers are not thoroughly trained as to manage the equipment. If there is any problem now, if you don't call the manufacturers there will be problems* (Mr. D).

The above comment suggested why lack of skilled manpower was also a setback to ICT utilisation. It has to be understood here that the manpower in question included the technical engineers and not producers because maintenance and repairs were not parts of the duties of programme producers. Moreover, inadequate facilities militated against ICT utilisation in programme production. This finding could be linked to the earlier finding that the stations lacked state-of-the-art ICT facilities. That was why observations showed that the programmes produced, though had quality, could not comfortably compete with the ones from the Western countries. Other constraints are corruption of files by virus attack and weather conditions.

Further, some structural conditions militated against the use of ICT in programme production. The major structural problem of ICT use was finance. Basically speaking, finance is the determinant of any process or activity. Then, having noted the technical problems, it presupposes that finance would be required to tackle most of the technical issues. That explains why financial constraint was as high as 30%. Moreover the exorbitant licence and renewal fees do not favour the stations in term of ICT acquisition because they were poised to maximise profit so as to fulfill all regulatory obligations relating to finance. This attitude hampered investment in ICT for programme production and overall broadcast operation.

These notwithstanding, the financial setback could be attributed to high cost of acquiring ICT tools which are manufactured by the developed countries. Every ICT tool requires finance for acquisition, maintenance and sustenance. Finance affected the use of ICT facilities by individuals and organisations. That was why the Nigeria ICT Policy made provision for the development of made in Nigeria software to earn foreign exchange; develop ICT engineers, and scientists; and provide career opportunities (NITDA, 2000).

Meanwhile, ignorance was recorded as another major structural problem. The reason for this result could be attributed to the inability of some station managers to come to terms with the realities of the digital age. This referred to the out-of-order pattern the state governments appointed station managers without recourse to their professional affinity. At the end, the establishments were politicised because the managers and some of their aides were ignorant of ICT applications in broadcast productions.

This finding was linked to the finding that management actions did not encourage the use of ICT. Since most of the staff in management positions represented the interest of government, government seriously interfered with their decision making processes. This did not favour ICT utilisation because of bureaucratic bottlenecks. It was also linked to the devastative policies by governments which accounted for 9% constraint. It was worthy to note therefore, that government related actions that hampered the use of ICT in programme production amounted to 49%. This result would have been affected by the fact that the majority of broadcast stations in South East Nigeria are owned by government.

Another reason why government policy would affect ICT utilisation could be likened to procrastination of policies. For example, the digitalisation deadline was originally fixed for June 12, 2012. Later it was shifted to the end of 2012 before the final and then, January 2015 (Ahie, 2014; Ogbu, 2015). Presently (June, 2017), no one is sure of the switchover date for Nigeria. In this regard, the participants in the interview submitted that government was sluggish in the digitalisation process.

Despite the constraints to the utilisation of ICT in programme production, the study further revealed that the management of the broadcast stations came up with policies and initiatives as well as pursued such policies under a 72% pace to enhance the utilization of ICT in programme production. Corroborating, the interview participants submitted that their organisations made efforts to improve on the use of ICT by periodically assessing the producers so as to know their deficiencies. This led to constant training on the use of ICT and maintenance. All the efforts of the organisations were geared towards surmounting the problems of ICT utilisation for programme production.

Based on the issues discussed the sixth research question would have to be answered by submitting that: *Technical and structural problems militated against the use of ICT in programme production by broadcast stations in South East Nigeria; but the major constraints were finance/maintenance, inadequate power supply and ignorance of some management personnel.*

These finding corresponded with previous studies about the problems of ICT application in developing countries. Thus, the constraints as recorded would hamper the realisation of Aldhmoura and Shannak's (2009) competitive advantage. That was why the authors submitted that financial situations affected investment in ICT in Jordan. They also found that Jordan wholly depended on foreign ICT which delayed ICT diffusion. In that light, financial and other constraints affected the use of ICT facilities in programme production, although not to the extent of impeding it.

Bringing the findings to bear on the theoretical frameworks the technological determinism theory has a link with economic determinism (McQuail, 2005). Finance and government policies determined how the available media were used and to some extent, how the technologies affected the messages that emanated from them. That was why Baran (2010) submits that technology's influence is dependent on the amount of value the users accord it.

In relation to mediamophosis, the constraining factors affected the types of technologies that converged as well as their nature of convergence. Therefore, the limiting factors were responsible for the insufficiency of state-of-the-art ICT tools. And the result was the convergence of analogue and digital facilities in most cases which made the programmes produced here not to be able to compete favourably with programme from the West, where programmes are produced and transmitted in a complete digital convergence.

5.O   CONCLUSION

Media organisations are injecting several ICT facilities to enhance activities. One of such areas that benefitted from ICT presence is programme production in broadcasting organisations. Moreover, the digitalisation process initiated by ITU for all broadcast stations in the world made the infusion of ICT equipment imperative. To this end, the broadcast stations in Nigeria are billed to fully transit to digital operation soonest. Therefore, the acquisition and application of ICT-based broadcast facilities is on the rise with its attendant training of broadcasting personnel. Also, ICT innovations increased the competition among stations in the industry because every station would want to be the first in terms of information dissemination and projection of qualitative content.

However, the use of ICT in programme production is dependent on several factors including availability, access, and attitude of users. Prior to this study, this researcher could not readily ascertain the ICT utilization options in programme production by the broadcast stations in South East Nigeria. That uncertainty led to the setting of some objectives. After investigations, the objectives were achieved because the results doused the vagueness about the issues surrounding ICT facilities and their usage. It was therefore, established that:

(i)   Although there was a combination of analogue and digital equipment, the   types of ICT tools available for programme production in the broadcast stations were suitable. Thus computer-based ICT facilities ensured compatibility of the different equipment.

(ii)   There was high level of access to the available ICT tools by producers for programme production purposes.

(iii)   ICT tools enhanced the organisation and packaging of programme content by enhancing input, editing, storage, retrieval and streaming because the tools enabled easy access to files; reduced the duration of productions, minimised the cost of production and accommodated simultaneous multiple production, and eventually improve the quality of programmes.

(iv)   Several factors militated against the optimal use of ICT in programme production; including technical factors such as power supply and maintenance; and structural factors such as finance and bureaucratic bottlenecks.

In a situation where programme producers in broadcast stations have adequate access to suitable ICT equipment; they would use the tools to enhance production processes and resultant output. Therefore, the approaches to modern production indicate that the type of media technology determines the impact on the message created. This is because there are opportunities for different aspects of the media to metamorphose in a combination that eases the process. At the end, the producers will be able to interact with the media and their offerings in a way that will make the media items take the place of humans.

In fact, the contribution of ICT to programme production is enormous just as it is important to any other sector that evokes human activities. Therefore, the establishment of ICT's availability with attendant issues led to the conclusion that: *with adequate access to suitable ICT tools, broadcast programme producers use the tools to enhance production activities and to improve the quality of the programmes.*

6.0   RECOMMENDATIONS

Generally, convergence between the mass media and ICT has an effect on the media environment. All of the actors involved are concerned by rapid transformations. Therefore, the issues raised by the findings of this study necessitated the following recommendations.

1.   The government, in its role as guarantor of public service and well-being of its people put in place specific national and regional strategies dedicated to the recognition of new technologies in broadcasting and the media in general, involving all stakeholders as well as reduce taxes on computing equipment to encourage their acquisition by radio and television stations;

2.   Similarly, with the rapid evolution of technologies, regular updating of skills is indispensable. A great deal of effort needs to be deployed to improve staff skills in radio and television stations.

3   NBC should constantly monitor the quality outputs of the broadcast stations following the ITU Quality Rating. By so doing every station will comply with quality standard by acquiring up-to-date ICT facilities that will improve the quality of their programmes.

4   Nevertheless, issues of power supply are recurring decimal in Nigerian political and economic policies. Government should endeavour to tackle the issue of power supply once and for all.

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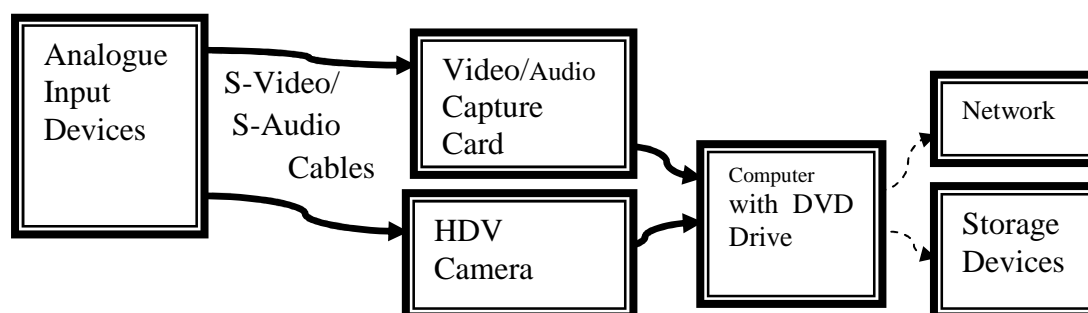
Table 1: Level of Access to Available ICT Equipment

Rating	Score (s)	Frequency (f)	Percentage (p)	Sf	Sp
Very high	5	29	33	145	165
High	4	25	28	100	112
Moderate	3	23	26	69	78
Low	2	7	8	14	16
Very Low	1	4	5	4	5
Total	N = 5	88	100	332	376

Rating = **75%;** Average Score = **3.8**

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Table 2: Producers' Impressions about Audience Perceptions of the Quality of Programmes

Rating	Score (s)	Frequency(f)	Percentage (p)	Sf	Sp
Highly Favourable	5	25	28	125	140
Favourable	4	26	30	104	120
Neutral	3	10	11	30	33
Unfavourable	2	16	18	32	36
Highly Unfavourable	1	11	13	11	13
Total	N = 5	88	100	302	342

Rating = **68%;** Average Score =**3.4**