

Digital Migration and the Battle of Terrestrial Titans in Kenya: Issues and Prospects

Michael M Ndongye¹, Dr. Josephine Khaemba², Dr. Phylis Bartoo³

^{1, 2, 3} Department of Literature, Languages and Linguistics, Egerton University, Kenya

Abstract-The journey to migrate from analogue to digital broadcasting in Kenya faced numerous challenges, some because the stakeholders grossly misunderstood the process and others born of politicization of the process for self interests and gains on the side of the terrestrial titans such as the media regulatory authorities and the media houses. Digitization of broadcasting is a process initiated by the United Nations agency, the international telecommunications union (ITUs) through the council resolution 1185 on digital terrestrial migration. The deadline for all member signatories was set to be June 17, 2015 and Kenya is a signatory to this agreement. During the process of migration, Kenya battled with the logistics of migration. It was clear that the public, the government and the media were not prepared for the process due to lack of information regarding its significance, its origin and its impact in the terrestrial space. Even after digitization of broadcasting in Kenya, there is still a need to investigate what next after digitization. This paper traces the history of digital migration process, the challenges of migrating to digital broadcasting in Kenya, the benefits of digitization of broadcasting, and its implications to the media industry and the Kenyan populace. The analysis and prospects in this article could be of benefit to media scholars and researchers, media houses and the media regulatory bodies in understanding where we are coming from, where we are and where we are going after digitization of broadcasting.

Key Terms: Digital Migration, Digital Broadcasting, Analogue Broadcasting

1. INTRODUCTION

Technology has become the leading determinant of success and advancement of major industries and broadcasting industry is a beneficiary. One of the technologies expected to have the greatest impact on the broadcasting. During the process in Kenya, the government did not adequately inform the citizens enough on where and how the process began, the difference between digital and analogue regimes, the challenges of digital migration, the benefits of digital broadcasting, the ways of accessing digital content after migration, the implications of digital migration on different sectors and how it will impact on media industry.

Different technologies have converged to empower broadcasting and the impact of technology in the transmission and reception of audio and audio-visual signals is enormous. For example, Obiageli [1] intimated that the

information and communication technologies such as cell phones, computers, cameras, and satellites have made notable global contribution in terrestrial broadcasting. Like many other countries, it was not easy for Kenya to abandon the analogue regime installed in the 1940s. The analogue regime signal-switch has greatly influenced the entire media industry and terrestrial world. The digital broadcasting process has faced myriad challenges in developed and developing countries as they go through a tunnel of challenges in trying to migrate to digital broadcasting. Kenya media industry is dominated by private media, controlling over 90% of the audience leaving the rest to public media.

Digitization of telecommunication signals involves three phases; production, transmission and reception of broadcast digital code messages. The digital codes are compressed and as Obiageli [2] argues, the “an average digital transmitter can transmit between 5 and 8 channels or programmes simultaneously”. According to Okon [3], digital migration faces challenges because it greatly affects broadcasting value chain of content production, transmission, and reception among the committed countries. With digital migration, analogue television sets are unable to receive broadcast signals unless they are supported by set top boxes.

In Kenya, broadcast digitization was set to take place on 31 December 2013 but it did not take off due to some challenges cited by three media houses the Nation Media Group, The standard group and the royal media services. The three media houses cited unpreparedness and demanded for extension of migration time. They also claimed the tender to regulate and sell content was awarded to a company (Pang, which owns a media house *StarTimes*) with a rival media house [4]. The media houses fervently challenged the decision by the Communications Association of Kenya to grant licence to Chinese owned Pan African Network Group and a subsidiary of the Kenya Broadcasting Channel; Signet.

Linus Kaikai, the managing editor at the nation media groups put it clearly that:

Indeed, we fault you [CAK] and the government on what has happened in this digital frequency distribution exercise. Sixty-three percent to Pang, a company from China, in a country [Kenya] that has the highest media investments in Africa? You can't explain this with a clear conscience.

They also argued that there were no enough set boxes to enable Kenyans people to access content from digital

platforms, which were contravening the citizen's constitutional right to unlimited information access. The media houses challenged the regulator to grant them a digital broadcast licence given that they control over 90 per cent of viewership and they had invested heavily in the industry. The court later ruled that the migration be rescheduled to February 28 2014, but still it was not successful. It was pushed to July 2014 and since the government and the media houses did not reach a consensus, the migration did not take place.

This dispute was resolved after the October 2014 court ruling in which the communications authority granted the three media houses a single licence for the distribution of their own digital signals [5]. With the license, the three top media houses had to acquire and distribute their own set-top boxes. The Communications Authority of Kenya granted the three media houses a single license to form a coalition of union to be allowed to broadcast their own digital signals. They were given a month to roll out their transmission infrastructure ahead of December 31, 2015. The migration deadline was too close and due to extensive preparations required, the media houses requested for more time considering that their rivals such as Pan African Network Group (Pang), which is affiliated to *StarTimes* and Signet took over three years to install their network infrastructure. Farida Karoney the chief operating officer at Royal Media Group argued for extension of the deadline thus:

We want to be able to carry our own content, through our own set top boxes and through our own infrastructure. Which means we need to invest in set top boxes, have them manufactured, airlifted to Kenya and distributed. We also need to invest in transmitters. Honestly, unless we do a miracle, it is not possible within 30 days.

By February 2015, the government was still insisting that the country would beat the ITU's deadline. The cabinet secretary Fred Matiang'i argued, "I have no doubt at all that we will indeed beat the June 17, 2015 deadline. I have no any reason why we should not". The three media houses, therefore, went back to court to seek deadline extended by four months to end of May 2015. The court declined their request on 14 February, and the communications commission of Kenya dismantled the analogue infrastructure at Limuru setting the whole nation in darkness given that the only television channels that Kenyans could watch over the few digital platforms are KBC and K24, which shared a total of 5% of the audience.

Critics of digital migration process in Kenya claimed that the stakeholders mismanaged the process making it to be misunderstood by many Kenyans. As Kenyans experiment with a process that they were ill prepared for, there is a need to study the digital broadcasting in Kenya for issues, benefits and prospects given that unlike many other countries, the media industry climate in Kenya is unique. This review

paper, therefore, answers the following pertinent questions regarding digital migration in Kenya:

- i. Where did it all begin?
- ii. What is the difference between digital and analogue regimes in broadcasting?
- iii. What are the challenges of digital migration in Kenya?
- iv. What are the benefits of digital broadcasting in Kenya?
- v. After digitization, how do people access content?
- vi. What are the implications of digital migration (which sectors are affected and how?)

2. HISTORY OF DIGITAL BROADCASTING

The need to migrate from analogue to digital broadcasting was initiated in 2006 when the United Nation Agency which regulates international telecommunication and communication practice; the International Telecommunication Union (ITU) through its council resolution 1185 on digital terrestrial broadcasting commissioned the process [6]. During the regional radio communication conference (RRC-6) 101 nations in Europe, Africa and Middle East signed a treaty committing them to make a transition from analogue to digital broadcasting [7]. The ITU agreement is that all member signatories migrate their broadcasting to digital by June 17, 2015. The process is mainly aimed at improving the quality of content such as sound and images at multiple folds compared to that of analogue [8]. The ITU's decision is binding to all UN signatories and when it was commissioned, migration to digital broadcasting was never expected to be a controversial issue. Many nations including Kenya were member signatories to this resolution and this made it obligatory to have migrated by the 2015 deadline.

From 2006, the whole world has engaged in the process of migrating from analogue to digital broadcasting with many countries setting their own deadlines before ITU's global switchover deadline [9]. Tsebee [10] has analysed that for example, the United States set the deadline for transition to be February 2009; Nigeria set theirs to be June 17, 2012; Finland February 2008; the Netherlands December, 11, 2006; United kingdom, December 2012, and Japan July, 24 2011. He notes that the United Kingdom took seven years of educating masses and was the first country in the world to migrate to Digital Television Transmission. Since then, many other countries have followed suit, keeping in mind that the migration is not optional and after June 17, 2015, countries in Europe will no longer need to protect the analogue services of neighboring countries.

Digitization of broadcasting was a challenge, especially in developing countries, because of limited infrastructure. There are issues raised by all countries in relation to switching from analogue to digital including regulation, market potential, content distribution, and strategies for

successful migration. These issues depend on the unique demographics of each country. For example, Kenya presents a unique ownership situation where the private media controls over 90 percent of the local audience, which gives the government a challenging task to execute the directive without negotiating with them. Scholars [11] [12] [13] agree that even before the UTI decision, most media houses were relying on digital codes for their analogue broadcasting. This has been possible given the rise of digital technologies and the need for traditional and new media convergence. For example in Kenya, KBC and K24 television broadcasts had been relying on digital codes; only that they were converting the digital codes to analogue and thus enabling viewers to access their content through analogue receivers.

According to Fairweather [14], there are possibilities of analogue signal disruption among countries, institutions and companies because after June 17, the ITU “will no longer intervene to protect analogue signals from disruption”. In case of one institution or country, which has migrated to digital, interferes with another one’s television channels to an extent of making it nonfunctional, there is no action that the harmed country of institution can do but to digitize their broadcasting. Therefore a neighbor who has digitized broadcasting can deliberately frustrate the efforts of a neighbor depending on analogue regime without recourse.

3. DIGITAL AND ANALOGUE REGIMES

The ITU’s objective of digital broadcasting is to offer broadcasts in a terrestrial signal with many times higher resolution than cable broadcasts. Digital broadcasts present audio-visual clarity that is never achievable through analogue broadcasting [15]. Tsebee [16] also supports this fact and argues that digital Transmission ensures high quality resolution pictures and sounds than analogue transmission. Okon [17] has analyzed that digital transmission offers unprecedented clarity of sound and images unlike analogue transmission, which is prone to interference.

The media regulatory bodies in most countries with analogue transmission are forced to leave space between channels and limit the number of channels in order to ensure the highest quality possible is achieved [18][19]. With analogue broadcasting, the quality of content production, transmission and reception decreases with increasing number of channels. Moreover, digital Transmission offers more channels through digital multiplexing, digital sub channels and simulcast programming from same broadcasts [20]. This is unlike the Analogue transmission in which more channels decrease the bandwidth leading to low picture quality as a result of compressors artifacts and non proportional anamorphic widescreen digital scaling.

Ajani [21] argues that analogue regime is characterized by static and dizzying noise on television content. Okon [22]

avers that digital Transmission does not ghost television images, noise from weak signals that degrade image and sound. With digital transmission, more stations can occupy the same frequencies without interference as opposed to analogue. All analogue formats were standardized between 1940s and 1950s and they have had to be adapted to current innovations ever since [23]. For example, television broadcasting initially offered black and white (monochrome) images with monophonic sound. These formats are modified to broadcast colour with stereo sound (SAP).

Moreover, the analogue regime has no capacity to broadcast a mixed content of images, clips and sound until additional protocols are incorporated [24]. On the other hand, digital broadcast uses available bandwidth and can integrate other digital services unlike the analogue technology. In addition, the digital broadcasting has greater area coverage due to degraded signal that can hold utility for an extreme user unlike the analogue regime. In the observation of Hyough [25], digital Transmission provides new video and data services such as subscription television programming, computer software distribution, data transmission, teletext, interactive services, audio signals and so forth. Kabir [26] has prided that Digital Transmission delivers profitability scalability and innovation in content delivery. Therefore, the Digital Terrestrial Transmission yields 67% more payload at equivalent coverage and return cost that analogue technology.

4. CHALLENGES OF DIGITAL MIGRATION IN KENYA

Digital migration has faced many challenges and because it is not optional, most countries have had to be seen struggling to achieve its goals. Digital migration comes with challenges ranging from lack of proper awareness creation to deadline issues and unexpected outcomes [27]. Tsebee [28] has observed that countries that have successfully digitized their broadcasting have reportedly spent colossal amounts of money in creating awareness among the citizens. For example, the United Kingdom took seven years of educating masses and was the first country in the world to migrate to digital transmission. Tsebee [29] adds that adequate funding and good communication strategies are required to achieve a smooth transition.

The deadline posed as a challenge due to unpreparedness of media houses, media regulators, and the governments. The Kenyan leading media houses cited that the deadline was so close for them. The three media houses argued that the installation of digital infrastructure was too expensive to be dismantled and replaced. This was not specific to Kenya; Okon [30] supports that a few countries in the world beat their set deadlines. There are also the financial challenges that face both the media houses and the governments. For example in Kenya, the government had limited resources to carry out protracted sensitization campaign.

In addition to these is the fact that most Kenyans may not afford set top boxes which are free to air given that the level of unemployment and therefore poverty is very high. The argument was if something was not done to salvage the poor after digitization, media houses would lose their audience and their business alike. Studies [31] [32] have pointed out common challenges such as technological gaps, unprepared government, corruption and gross mishandling of the digitization process.

In Kenya, its uniqueness has presented specific challenges that are not new to its social, political and economic environment. The first of these is the prospects of corruption. This emanated from the question of tendering and unexplained reasons as to why foreign companies especially from China were awarded digitization tenders and the government so much protected them. The three media houses demanded a share in the content distribution and the way the case has been handled was said to be evident of some interest of trading with Chinese companies and the will to discredit local investors. As a result, the process has been slowed and Kenyans suffered blackout amidst the tag of war.

Another obstacle that has faced digitization in Kenya is the fact that Kenyan media is largely private and thus, the government has little force in the industry. The three media houses, the nation media, the standard group and the royal media group control over 90 percent of the audience and thus it becomes difficult for the state to make decisions that are not in accord with their interest.

Moreover, the fact that the media, under the analogue regime has relied on foreign content poses a challenge as to how they will source their content once they digitize. As a result, foreign media distribute much of the content in Kenya because none of them has ever broadcast internationally. Therefore, the media industry is yet to come into terms with the revolution that will come with digitization and required adequate preparation to ensure they have a content that can compete internationally.

The government policies on migration were an obstacle in digital migration. The policy on migration was not friendly to private media houses because of politics and misinformation. This was complicated by the prospects of some corruption and lack of transparency in the tendering process. Regardless of the above challenges, Kenya has no option but to migrate to digital broadcasting before the set ITU's deadline. **This is because failure to switch to digital platform comes with "economic limit because of the vast revenue opportunities associated with digital broadcasting"** [33]. However, comparing digital and analogue regimes, there is a lot to admire from the digital transmission.

5. WHAT ARE THE BENEFITS OF DIGITAL TRANSMISSION

Digital broadcasting promises many benefits to the media houses, the audience, the government and other stakeholders [34]. Digital migration comes as a must force inspired by the limitations of the analogue regime.

According to Fairweather [35], digital migration is a global initiative that enormously affects our terrestrial environment like never before. He analogizes this from a highway experience thus:

Think of that air as a kind of highway for radio signals. It has a fixed number of lanes or "**frequencies**". **Analogue signals** are like huge, old-fashioned trucks. They take up a lot of room and are very noisy and inefficient. Nothing else can use a **lane when they're in it**. **Digital signals, on the other hand**, are like electric sports cars made by Tesla. A dozen of them can fit in the same lane that the old analogue signal used, and they are quiet and efficient. This means that we can have dozens more **digital channels in the same "space"** as the old analogue channels, and they will look and sound a lot better too. (p.1)

Some of the benefits so far visible are briefly elucidated below.

5.1 High Picture and Sound Quality

Digitization of broadcasting comes with high picture and sound quality [36]. The vision of the international telecommunications union is a world broadcasting approach that offers sharper; brighter picture and improved sound with less interference. Digital Transmission offers these benefits and more benefits are to come once the process is adopted.

5.2 Unlimited Choice

Every television viewer envisions unlimited choices of the channels given that the audience has become dynamic and has different preferences of content. Digital Transmission offers such freedom because digital signals take up much less bandwidth and therefore more channels can be broadcast simultaneously without interference [37]. The Kenya policy on Digital Migration establishes that there is a need to have more free-to-air channels for the diverse Kenyan population including the youth, women and farmers among others. This is also envisioned in the Kenya ICT policy that enumerates the benefits that ICT can have on the society members especially in providing them with their preferred products.

5.3 Unlimited Access

The constitution of Kenya establishes that unlimited access to information is a right to every citizen. This is the reason there is urgency to ensure set top boxes are available for Kenyans to access content through their analogue receivers. The Set Top Boxes are compatible with devices such as a cell

phone, memory card or internet modem thus providing viewers with access to more services and information through convergence.

5.4 More Audience Gratification

Unlike the analogue regime where audiences were, only limited to the standard definition television, digital regime enables the audience to enjoy High definition television, which provides extra gratification. High Definition Television is the premium version of digital television, which offers high picture and sound quality. The Digital Transmission guarantees double vertical and horizontal resolution compared to the traditional analog signal.

5.5 Electronic Program Guides

The set top boxes used in the conversion of digital signal are fitted with electronic program guides for digital television broadcasting. The viewers navigate channels using the guides. There are more advanced guides that offer the viewers options of, for instance, setting reminders for program viewing and searching programmes by genre among others.

5.6 Proper Frequencies Deployment

Digital broadcasting makes it easier for the media regulators because the signals are not limited. Digital signals can carry many channels without affecting the quality of the content transmission and reception. This ability for multi-channeling is unique to digital transmission and offers media houses and media regulators better utilization of frequencies. For example, in Kenya, the communications commission of Kenya (CCK) will be in a position to put unused frequencies in different uses.

6. HOW IS DIGITAL CONTENT ACCESSED?

There are three ways that one can access digital content once the switch over is effected. The first way is through acquiring a TV set which has inbuilt digital tuners or receivers. The second way is by subscribing to a cable or satellite service provider that can convert their digital signal to analogue so that analogue receivers can continue displaying digital content. The third solution is for the viewers to purchase converters such as set-top-boxes. Set top boxes are electronic decoders that are plug into analogue receivers and converts digital signal to analogue signals making the analogue receivers to display the digitally broadcast content.

In essence, Set top boxes do not offer quality reception and content regardless of them being cheap and therefore, they

may not be the best option given the goal of UTI resolution was to deliver quality and high-resolution content to viewers. It will also be impossible to have satellites in near future that can offer subscriptions to convert digital content to analogue. The only lasting solution, though expensive, is to acquire TV receivers with inbuilt digital tuners. Since unlimited information access is a constitutional right for every citizen in Kenya, the best solution will be for the government to collaborate with stakeholders to subsidize the television receivers to make them affordable for the citizens because the government has the obligation to protect such constitutional right and enjoy every citizen enjoys them without limitations.

7. THE IMPLICATIONS OF DIGITIZATION IN KENYA

Kenya was able to beat the June 17, 2015 digital migration deadline despite the delays caused by disputes over distribution licenses, set-top boxes and awareness. Since broadcasting is now digitized, what is next? The whole media industry, the audience and all stakeholders in Kenya therefore, like in many other parts of the world awaits unprecedented transformation. Digital broadcasting will have many implications in the media industry.

The Kenyan media has been fighting with the communications authority to fulfill the requirement of broadcasting over 40% of the local content. However, the local media has always managed to produce less than 40 percent and much more foreign content. With digital switch, our media will have no other option than to produce more local content because foreign content will be accessible by everyone and therefore, no need for a link or intermediaries. For example, you will not need a local television channel to link you to super sport to watch sports. You will be able to access it anytime, anywhere and as much time as you want provided you have digital receivers or a decoder.

Digitization is a chance for the rich countries to create dynastic media that dominates local media houses and businesses. This way, any media that will not be able to form a coalition with the giant media houses to sell news and or specialize, will close down. Digitization will therefore see the media houses that are used to traditional way of production close down or adopt business models that conform to the new regime ideals. Many televisions are therefore expected to specialize. Most likely, the three big private media houses (the nation media group, the standard group and the royal media services) are likely to monopolize news content broadcasting because they have the highest number of audience. This will mean most televisions will concentrate on particular content and of different genres for their survival. There is likely to be televisions for particular products such as documentaries, children content, youth content, movies, sports, cultural documentaries, and faith based media for televangelism.

Halkano Wario, a lecturer in the department of philosophy, history and religion at Egerton University predicts that faith-based media will be the first to be seen flooding the terrestrial space because their content is highly demanded and religion is quickly courting the media, a paradigm shift so glaring in the contemporary situation. Every big church and leading ministries will be able to establish their own media for televangelism purposes instead of paying expensively for airtimes from the mainstream media. This prediction came true by April 2015; Kenya had witnessed a number of religious based media such as *Sayare TV*, *Aviation TV*, *hope TV*, *HCK TV* and the latest entrant the Ministry for the Body of Christ International (MBCI) among many others. MBCI TV and Radio came with a promising force blending both Christian content and other content such as news, entertainment and even offering African movies and soap operas with themes beneficial to religious audience.

Specialization comes with a challenge of disintegration of the society into identifiable groups of varying interests. The audience will breakdown into interests and demographics such as religion, age, regions, languages, tribal and ethnic affiliations, political interests, cultures and class. This way, people will not have a common culture anymore. Technology will present myriad cultures and worlds dictated by people at their interest levels. The audience in Kenya will be fragmented based on the more profound demographics of ethnicity, tribe, political affiliations, economic status and regions. The three media houses will no longer control over 90 percent of the audience and it will be difficult to estimate the audience for a particular television channel. It will only be possible to estimate the audience per specific shows and that is the reason the content quality will matter and should be able to compete among the many high quality proliferation of both local and international content.

There is going to be a proliferation of televisions broadcasting in different local languages as in radio, and already the signs for this are clear. With the availability of signals, everyone will be able to buy a license for television broadcasting. Less than five months to the deadline, the digital platform found some television channels such as *3Stone TV* and *NjataTV* (both broadcasting in Kikuyu language), *Lolwe TV* (Broadcasting in *Dholuo*) among others gent into the terrestrial world. More are expected to be seen coming up to broadcast in local languages.

The advertiser will also take this direction because they will direct their promotional energy where their target audience is concentrated.

Digitization comes with opportunities to create more content, establish business and redirect and change production value chain in the media industry. It will be an opportunity for states to display their culture and their uniqueness. In this case, only unique and content of universal significance in appeal will survive international markets. Most regional cultures are likely to disintegrate and

some new cultures pop up to dominate the world. For example, the already established queer culture of the youth will develop albeit among some set of population. The only challenge will be the content. The challenge will be for the local media houses and producers to produce a content that can compete in the international market. a content that will persuade the audience to tune to the local channel away from that international channel, not because of a local content but for a content that is better than that elsewhere. Given the technological gap and poverty of some countries, this will be a challenge.

Digitization is likely to come with extensive convergence. This is to be witnessed through the companies dealing with digital converters such as set top boxes and televisions. In order to have the edge at the market, such gadgets are going to be diversified. For example, expect to have decoders incorporated with other functions such as such as radio, video players, modem, Wi-Fi, internet routers and so on. This trend means any company planning to gain an edge in the market must think of convergence in their design. Convergence could also mean telecom operators shifting to offering broadcasting services. Media companies on the other hand are likely to expand their services to incorporate for example voice services, internet services and many more as need may be established by the consumers.

8. CONCLUSION

In modern times, technology is a phenomenon whose speed is worth keeping with. Digital broadcasting is such technology that has become a necessary evil for the media industry. Having been initiated by UN agency for the regulation of telecommunications and the deadline set and signed by member states, it is a must process. Comparing analogue and digital regimes, it is clear that the broadcasting industry is moving to a 'promised land' where content quality is long overdue. However, the migration process has come with challenges to the government, media industry and the citizens. In Kenya, where media industry is largely private and the government highly susceptible to corruption, the process involved a battle between the government media regulators and the giant media houses. Much of this battle was largely extended because the stakeholders did not understand the process, where it came from and what it meant for the Kenyan citizenry. It has been made clear in this paper the many benefits of digitization, and the implications which include the blessings that came with digitization of broadcasting now that Kenya succeeded in its digitization process.

REFERENCES

- [1] Obiageli, P., Digitization of Broadcasting in Nigeria: Issues and Prospects. In G. B. Okon and O. P. Ohiagu (Eds.). *ICT, Communication and Society: Trends and Issues*. Port Harcourt, Nigeria: Accuracy Prints. 2014, pp. 74 – 94
- [2] Obiageli, 2014.
- [3] Okon, G., The 2015 Digitization Deadline for Television Broadcasting and Awareness Support Initiative by the Nigerian Press: A Normative Review. In G. B. Okon and O. P. Ohiagu (Eds.). *ICT, Communication and Society: Trends and Issues*. Port Harcourt, Nigeria: Accuracy Prints. 2014, pp. 208 – 224
- [4] Olingo, A., Burundi only EAC Partner State Unlikely to Meet 2015 Digital Migration Deadline. *The East Africa*. 2014. Retrieved from <http://www.theeastafrican.co.ke/news/Burundi-only-EAC-state-not-to-meet-digital-migration-deadline/-/2558/2475216/-/nhphmxz/-/index.html>
- [5]. Matinde, V., Kenyan Broadcasters Bemoan Digital Migration Deadline. 2014. Retrieved from <http://www.itwebafrica.com/ict-and-governance/256-kenya/233860-kenyan-broadcasters-bemoan-digital-migration-deadline#sthash.mrn691Lu.dpuf>
- [6] Obiageli, 2014.
- [7] Berger, G., Challenges and Prospective of Digital Migration for Africa Media. Dakar: Panos institute of West Africa. 2010. Print
- [8] Oladeinde, A., Digital Broadcasting Million Nigerians may not be able to Watch Television from June 2015. *The Sun*, 2013. p 7. Retrieved from <http://sunnewsonline.com/new/?p=39588>
- [9] Obiageli, 2014
- [10] Tsebee, A. K., Digital Broadcast Migration: Challenges and Prospects for Developing Nigeria. In G. B. Okon and O. P. Ohiagu (Eds.). *ICT, Communication and Society: Trends and Issues*. Port Harcourt, Nigeria: Accuracy Prints. 2014. pp. 163 – 182