A Review of the Transition Form Analog to Digital Television Broadcasting in Ghana

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Abstract. Ghana is a country of diverse ethnic and linguistic variation among its population of approximately 28 million inhabitants \cite{1}. It has over fifty languages, hundreds of dialects and a cultural heritage that dates back hundreds of years. Information and communication technology (ICT) has been identified as one of the key drivers for accelerated economic expansion and development in Ghana and it is one of the few countries in sub-Saharan Africa that is expected to achieve some, if not all, of the Millennium Development Goals. Aside DStv whose transmission in Ghana was on a digital platform before May 2008, all the other television broadcasting services enjoyed in Ghana has always been distributed in an analogue format \cite{2}. The Republic of Ghana signed the Geneva 2006 (GE06) Agreement, which established the Digital Terrestrial Broadcasting Plan and cessation or stoppage of international protection for analogue broadcasting transmissions. This paper reviews the state of digital television broadcasting, identifies risks and challenges in the transition from the analogue broadcasting regime to the digital broadcasting regime and suggest some recommendations to ensure the success of the migration. Possible regulatory issues concerning band usage, channel assignments, service licensing was also reviewed and described in the publication. It was established through this research that public awareness on what digital transmission was about and what has necessitated a change from analogue to digital content transmission was very low. Also, there was a risk of financial constraint during the transition period and a weak legal framework against social organizations.

Introduction

The quest by countries around the world to save the limited bandwidth that support television services and also to improve the quality of both the sound and image of television broadcasting has led to the introduction of digital television services which uses more efficient compression algorithm to preserve the limited bandwidth used for radio communication whilst keeping the quality of the image and sound of TV programs at excellent condition \cite{3}. Countries across the world are moving their analogue television broadcasting system to digital platform.

At the Regional Radio-Communication Conference held in Geneva 2006 (RRC-06), Europe, Africa, Middle East and the Islamic Republic of Iran agreed (GE06) to complete switchover from analogue to digital television broadcasting by June 2015\cite{4}.

Analogue transmission involves the dissemination of signals which uses ultrahigh frequency (UHF) band, has limited electromagnetic spectrum and as a result, only a very limited number of channels can be transmitted analogically\cite{5}.

Digital transmission is the dissemination of digital signals from a ground based transmitter operating in the UHF or VHF band which is radiated as radio waves and are received using a UHF or VHF antenna \cite{6}. It makes use of the frequency bands III (173-230 MHz) and IV/V (470-862 MHz). In addition mobile television can also make use of part of the L-band (1452-1479.5 MHz \cite{7}.

Digital television transmission is the new wave of broadcasting and the future of television broadcasting \cite{8}. The government of Ghana through its information and communication ministry needs to adopt clear strategies for the transition from analogue to digital television that is supported by all organizations concerned. These strategies should revolve around a combination of one or more of the following premises; date for analogue switch-off, coordination of frequencies with neighbouring countries for digital television during the transition period, licensing process for digital
terrestrial television, agreements regarding termination of analogue television licenses provisions for simulcasting, agreements with consumer equipment manufactures to ensure that a sufficient number of adequate digital receiving equipment is available in time, provisions to enable low income households to buy digital receiving equipment and communication campaigns to inform the public.

The regulatory authority in Ghana, NCA, upon considering international agreements/treaties has opted for the DVB for its Digital Television Broadcasting to fixed services according to the decisions taken at RRC-06[9].

The National Communications Authority envisages two (2) paths for the migration from analogue to digital broadcasting:

• Market driven technological transition which involves the progressive replacement of analogue technology with digital technology by broadcasters; and
• Policy driven transition primarily focused on free-to-air terrestrial broadcasting services that indicates a target date for analogue switch-off [10].

Information Flow and Data Control in Ghana

The Ministry of Communications (MOC) has the sole responsibility of initiating and developing national policies aimed at achieving cost effective information and communications infrastructure and services, for the improvement and promotion of economic competitiveness. In this connection, the Ministry is made up of the various agencies and bodies that assist with the implementation of policies related to operational and regulatory framework. These include:

• National Information Technology Agency (NITA)
• Data Protection Commission(DPC)
• Postal and Courier Services Regulatory Commission(PCSRC)
• Ghana-India Kofi Annan Centre of Excellence in ICT (AITI-KACE):
• Ghana Investment Fund for Electronic Communications (GIFEC)
• Ghana Broadcasting Corporation(GBC)

The National Communications Authority (NCA), an allied agency, is also responsible for licensing and regulating all businesses operating in the communications sub-sector. The National Communications Authority Act and the Electronic Communications and Transactions Act were passed in the spirit of strengthening the capacity of the regulator i.e. the National Communication Authority, since the existence of fair competition depends on the fairness of the regulator. The sector also has various private sector player including telecommunications operators, internet service providers, VSAT data operators, software manufacturers, broadcast institutions, ICT education providers, internet cafés, etc.

The sector has made progress over the past few decades. As one of the first countries to introduce widespread liberalization in basic telecommunications services, in 1994, Ghana took an important step forward in embracing the potential of competitive markets to generate growth and innovation in the sector.

The country’s ICT Industry comprises telecommunications operators, internet service providers, VSAT data operators, software manufacturers, broadcast institutions, ICT education providers, internet cafés, etc. Generally, the Ministry of Communications and the National Communications Authority (NCA) oversee activities in the sector.

The infrastructural base of the sector includes licensed gateway operators, undersea cable connectivity, Private Licensed VSAT Systems, Fixed Wired Line Networks, Wireless Mobile Operators, Public telephones systems, Telecentres, Dedicated Transmission Networks, Public Distribution Networks (cable, TV, DSL, etc), Internet Backbone Connectivity throughout the Country and Public Access Point and Broadcasting Systems. As an initiative to support emerging technologies, the Ministry of Communications is also encouraging and facilitating the establishment of a Science and Technology Parks.

There further exists the Ghana Association of Software and IT Services Companies (GASSCOM), launched in 2007, which is Ghana’s premier trade association for the IT software and services
industry. Member companies are basically engaged in the business of software development, software services, IT-enabled/BPO services and e-commerce. GASSCOM was set up to facilitate business and trade in software and services and be a strong advocate in soliciting government and other public sector support and encourage the advancement of the industry as a key and strategic sector for the growth of the Ghanaian economy in the next millennium. Founding members include some of the most distinguished names in the ICT industry in Ghana: Persol Systems Ltd, IPMC, Exzeed Company Ltd, Somuah Info Systems Ltd, Platinum Technologies Co. Ltd, ACS BPS Ghana Ltd, e.Services Africa Ltd, The Softribe Ltd and H.I.M Solutions Ltd.

**Digital Transmission in Ghana**

The rapid pace with which technology is changing continues to pose a perpetual threat to digital preservation. Although initiatives in digital preservation in Europe, North America, Asia and sporadic attempts in Africa appear to have yielded some level of progress, permanent access to information and longevity of digital records continue to be a problem. Whilst Africa’s contribution to the growth of digital records may be insignificant, it is growing and Ghana cannot be insulated from this threat of digital growth.

Ghana has a long-established publicly-owned and financed broadcaster, Ghana Broadcasting Corporation (GBC) which provides national and regional radio services and a national television service. GBC has played a major role in engendering national identity and national development throughout the country’s late colonial and post-colonial history. However, the potential for community broadcasting, in particular, a sector that can play a crucial role in giving voice to poor and marginalised groups, is far from realised with still only a handful of services on the air.

The national broadcasting service commenced in 1935 as a radio relay service under the name Radio ZOY, later Gold Coast Broadcasting Service. Through telegraphic connections and local relay transmitters it sought to provide a single national radio service covering the whole of Ghana. With independence the national broadcaster was renamed Ghana Broadcasting Corporation (GBC). Television was introduced later by GBC in 1965. Today GBC wholly owns controls and operates three national radio services, ten regional radio services, and the national television channel, GTV.

When the National Communications Authority was established GBC was obliged to relinquish part of its control over the broadcast radio and television spectrum. However, GBC retained control over other frequencies which have been used later for expansion or to assist the establishment of commercial broadcasting services.

Aside DStv whose transmission in Ghana was on a digital platform before May 2008, all the other television broadcasting services enjoyed in Ghana has always been distributed in an analogue format. The analogue transmission regime posed the following challenges: Poor Infrastructure due to co-location of media houses, combined Network management costs for the industry was high, poor reception conditions due to the use of a single directional antenna leading to poor picture and sound quality and even environmental aesthetics were badly affected by the sight of long bamboo poles hoisting antennas.

The Republic of Ghana signed the Geneva 2006 (GE06) Agreement, which established the Digital Terrestrial Broadcasting Plan in the frequency bands 174 – 230 Megahertz (MHz) and 470 – 862 MHz at the International Telecommunications Union’s (ITU) Regional Radio communications Conference and in conformance with the Antalya Declaration of 2006.

The Agreement sets 17 June, 2015, as the deadline for the cessation or stoppage of international protection for analogue broadcasting transmissions. The analogue to digital transition would ensure that Ghana conforms to global standards in Television, rapidly adopt spectrum efficient methods in the management of the scarce RF spectrum and also offer the following benefits to consumers:

- Better picture quality, clear sound, increased number of channels, enhance the quality and experience of TV viewers in Ghana. Additionally, it prevents dumping of obsolete analogue TV equipment into the country and there would be more job opportunities for local digital content development for the youth.
However, some identified risks in the transition from the analogue broadcasting regime to the digital broadcasting includes; Low public awareness which could lead to a slow uptake of the service. According to a research on public awareness by the National Communications Authority (2011), 72% of Ghanaians had no knowledge about what digital television was about, 25.5% had a little knowledge and 2.5% knew a lot about digital television. Also, 9% of Ghanaians knew about the 2014 analogue switch-off, 82% did not know at all and 9% knew about the analogue switch-off but did not know the exact time. Another challenge is uncertainty about funding sources such as funding for consumer incentives and subsidies which could stifle implementation of the project. Finally, the absence of a legal framework to avert any risk of legal suits from civil society organisations and/or pressure groups.

**Recommendations**

The Ministry of Communication through the National Commission for Civic Education should strengthen public awareness on what the digital transmission entails and explain its relevance which has necessitated a transition from analogue content transmission. Short-term financing would be required to meet the initial costs of implementation including work on drafting the new legislation, advice in restructuring of the National Media Commission and works on studies and reviews.

Also, The National Media Commission should be empowered through appropriate legislation to assume its Constitutional mandate as the primary body with responsibility for the regulation of broadcasting.

**References**


