

South Africa Goes Digital: Possible Obstacles to the Adoption of Digital Television

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Abstract

This study examined possible obstacles to the adoption of digital television in South Africa. A qualitative approach was followed by conducting in-depth interviews with key informants. The data was analysed using open coding, where dominant themes from the discussions were identified and discussed in detail. The findings show that there are a few challenges in migrating from analogue to digital television in South Africa. However, it is important to note that the challenges indicated are key to the success of broadcasting digital migration. South Africans will need set top boxes which convert the analogue signal into a digital signal. The study established that government will subsidise economically challenged TV-owning households to gain access to set top boxes for digital signal reception and access to digital broadcasting services. It is true that for the digital migration process in South Africa to be successful, it is necessary to have a clear government policy and implementation plan. It is also critical that all the relevant stakeholders cooperate in working together with government.

Keywords: *broadcasting digital migration, convergence, information and communication technology, digital television, digital terrestrial television, South Africa*

1. Introduction and Background

There is no denying that technology is growing at an astronomical pace, so much so that it is almost as if science fiction is being translated into reality, leaving very little time for adoption of these innovations. The world is said to be in a new information age, and South Africa too is embracing digital television. Mass communication has always required technology to broaden its reach and expand its influence. It is important to note that from primitive to modern societies, the story of mass communication has been that of change wrought by improvements in technology (Mbatha, Ocholla & Le Roux, 2011; Mbatha, 2012). For instance, the development of print was a key turning point by producing information or communication meant for mass audiences. But all incremental progress that followed technological advancement whether in printing, telecommunications, wireless communication, photography or broadcasting was an additional boost to the reach and effectiveness of mass communication (Cortada, 2006; Brand, 2011). The frontrunners in the race to make the transition to digital broadcasting are now facing a range of issues including, "Who runs the signal carrier?" "How will those who cannot afford a decoder pay for it?" "How unrealistic are deadlines and what about the absence of any public campaign to explain the process?" (Zettl, 2011; Balancing Act, 2011). The politicians seem afraid of a process that could affect their citizens' ability to watch television and are seeking to control the discussion about what's going to happen (Balancing Act, 2011). It is worth noting that making the transition to digital broadcasting was never going to be easy for any African country. Although the agreement to go digital was signed at an ITU meeting in 2006, most countries seem to be determined to avoid doing anything until the last minute (Balancing Act, 2011). During 2006 the International Telecommunication Union (ITU) held a regional radio-communication conference and at this conference a treaty dealing with among others digital migration of bands III, IV and V was concluded and South Africa became a signatory to the treaty. The conference resolved that all countries in Europe, Africa and the Middle East, as well as the Islamic Republic of Iran, migrate from analogue to digital broadcasting services by June 2015 (Balancing Act, 2011).

2. Aim and Research Questions

The study set out to identify anticipated challenges to the adoption of digital television in South Africa. To achieve the stated aim, the following research questions were answered:

- What was the purpose of government introducing digital television?
- How will digital television improve service delivery in South Africa?
- What technology and/or equipment does one need to access digital television?
- What are the challenges facing South Africans with regard to digital migration?
- What recommendations can be proposed to address the challenges?

3. Literature Review

It is true that the world has gone digital. Haggard and Mclachlan (2008) describe digital television as an advanced broadcasting technology that has transformed the viewer's television-viewing experience. Ardizzon and Ferrari (2010) and Brand (2011) note that the purpose of digital terrestrial television, similar to digital versus analogue in other platforms such as cable, satellite and telecoms, is characterised by reduced use of spectrum and more capacity than analogue, a better-quality picture, and lower operating costs for broadcast and transmission after the initial upgrade costs. Haggard and Mclachlan (2008) are of the view that digital technologies are changing the way services are delivered, leading to a blurring of the boundaries between types of services and the means of delivery, and eroding the traditional distinctions between text, audio and video. Likewise, the Digital Migration Working Group Report (2006:8) reports that this process of change is often referred to as convergence, alluding to the convergence between the previously separate sectors of print media, data, telecommunications and broadcasting. The Digital Migration Working Group Report (2006:10) defines broadcasting digital migration (BDM) as the practice of using advanced compression techniques to encode and transmit audio, video and image signals resulting in more efficient bandwidth usage. This allows content providers room to provide more services or a higher-quality signal than has previously been available. BDM can also simply be described as the process of converting the broadcast of television and radio signals from analogue to digital technology.

3.1 *Obstacles to the implementation of digital television*

In his study, Idoko (2010) observes that many countries of the world have recognised the huge benefit that digital broadcasting offers and are making great strides in the shift from analogue broadcasting to digital broadcasting. However, Kombol (2008:9) vehemently argues that as much as digital broadcasting sounds plausible, many developing countries will continue to use analogue broadcasting. The list below provides some of the obstacles to the implementation of digital television in developing countries.

3.1.1 *Lack of skills*

Like other African countries, South Africa lacks personnel who have information and communication technology (ICT) skills. South African Communications Minister, Pule (2010:2), has recognised this lack of skills and has committed her government, with the assistance of the private sector, to work toward bridging the ICT skills gap in the next few years. Pule (2010) states that South Africa's greatest challenge is to "narrow the gap between the haves and have-nots, the skilled and the unskilled, as well as bridge new gaps, particularly those created by the digital age". In addition to empowering citizens with digital skills, including digital broadcasting skills, Pule's government and the Ministry of Communications also adopted and implemented the development of an e-skills policy, which aims at teaching young people e-skills to improve their chances of being employed in the ICT sector. The fact that South Africa has a "major e-skills shortage is beyond doubt (with the communications industry alone requiring 70,000 people in 2010)" (Wesso 2010). What is also inherently evident is that public-private partnership (PPP) attempts at ICT skills development in the past have not been adequate enough, hence the Ministry's initiative, in 2009, to embark on a laborious e-skills and digital broadcasting training programme. Idoko (2010) is of the view that one of the factors that prevents a shift to digital broadcasting in Africa is the lack of trained personnel. He believes that in developing countries where there is manpower that is already trained to handle analogue broadcast equipment, it will be impossible to lay these staff off or train them again to handle digital broadcasting.

3.1.2 Poverty

Governments in developing countries have other pressing issues to address. As a result, digital broadcasting is the least of the priorities for these governments. In many developing countries, the governments are battling to feed hungry children and also to combat diseases such as malaria that claim hundreds of lives each year. To governments in these countries, the battle to stay alive and healthy is yet to be won, and thus digital broadcasting is way at the bottom of the list of priorities. Idoko (2010) is of the view that one of the factors that militates against the transition to digital broadcasting in developing countries is poverty. The digital transition is indeed very expensive. It is true that poverty among the citizens of developing countries ensures that they are unable to afford television sets that efficiently receive digital broadcast signals.

3.1.3 Lack of awareness

Awareness about digital broadcasting is very low in developing countries (Idoko, 2010). This level of awareness is not only low among the general public but also among media professionals in these countries. On the one hand, Kombol (2008) is of the opinion that another general disadvantage of HDTV is largely transitional. He believes that the technology is there, but it is not yet very widespread. It is not as widespread as it was with the analogue TV technology which many people used to use and has been around for decades. Kombol (2008) concurs with Idoko (2010) that the developing nations in particular lack proper awareness about digital broadcasting.

3.1.4 Corruption

Most governments in developing countries lack the knowledge base to improve their societies (Idoko, 2010). In these developing countries, corruption is the order of the day, and thus government spending on vital projects such as telecommunications is ignored. Government officials in many developing countries do not think about uplifting communities; rather they are constantly embarking on self-enriching schemes. In these countries not a day passes without people reading about how a top government official has enriched himself or herself (Kombol, 2008; Idoko, 2010).

3.1.5 Lack of commitment

In his study, Kombol (2008) states that there is a lack of commitment on the part of government in developing countries to ensure this transition from analogue to digital. The private sectors in these countries cannot do it alone. Government has to back up and direct the efforts of the private sector (Kombol, 2008; Idoko, 2010).

3.2 Theoretical framework

The Diffusion of Innovations Theory was adopted for this study. This theory clearly postulates that development and application of technology can resolve all human physical problems with the diffusion of communication. The essence of this theory is to communicate to members of the public a discovery or an idea based on research. Daramola (2003:65) defines diffusion as the process by which new ideas are communicated to members of a social group. In essence, innovation means ideas or inventions that are to be diffused to members of a social system. The relevance of this theory rose to the fact that DTV transition in television broadcasting in South Africa is a new idea which should be embraced by all South Africans.

McQuail (2005:102) and Mbatha (2009) are of the view that any history of communication technologies testifies to the accelerated pace of innovation and of material potential as an outcome, and some theorists are inclined to identify distinct phases. Rogers (1986), for instance, locates turning points at the invention of writing, the beginning of printing in the fifteenth century, the mid-nineteenth century start to the telecommunication era, and the age of interactive communication beginning in 1946 with the invention of the mainframe computer. The Diffusion of Innovations Theory postulates that communication is used to transfer technological innovations from development agencies to their clients so as to create an appetite for change through raising a climate for modernisation among members of the public. Also of note is that technology according to this theory is a message and an answer to all human physical needs. Since technological innovations can imbibe development through the diffusion of the messages they carry, there is no doubt that digital broadcasting is the answer to all broadcast problems associated with analogue.

4. Research Methodology

A survey research design was used to conduct this study. A qualitative approach was adopted by conducting in-depth interviews in order to engage and encapsulate the different viewpoints of the target population. The target population, which consisted of a total of 27 members of a South African broadcasting digital migration task team, was selected using purposive sampling. The interviews provided the respondents with an opportunity to share and reflect on their experiences with regard to the BDM process. The data was analysed using open coding, where dominant themes from the discussions were identified and discussed in detail. The study sought to generate a rich body of findings from a smaller number of respondents rather than less detailed information from a larger group. While the study's findings may not be representative or generalisable, they indicate areas for further exploration and contribute to the development of strategies that can be implemented to ensure that digital migration is a success in South Africa.

In terms of ethical considerations, informed consent was obtained from each participant in the study in order to ensure that they understood what they were doing and verified their willingness to participate. The respondents were assured of their rights, including the right of consent, protection from disclosure of information, and respect for their privacy. All the research participants voluntarily participated and were not forced to take part in the study. With regard to protection from harm, the researchers ensured that the participants were not at any risk and would not be exposed to embarrassment, unusual stress or any demeaning treatment. Anonymity and confidentiality were promised and maintained. The information they provided was not made available to anyone else who was not directly involved in the study and could not be traced back to the participants. In terms of professional standards, the researchers ensured that the results were gathered in a professional manner without misrepresenting anyone and/or intentionally misleading the respondents about the nature of the study. The researchers ensured that all the findings were presented honestly without fabricating any data to support any particular finding. The researchers also adhered to the institutional guidelines on conducting research.

5. Findings and Discussions

The findings are discussed under the following headings: demographics of the respondents, the purpose of South Africa migrating to digital television, service delivery through digital television, technology one needs to access digital television, challenges faced or which South Africans could face with regard to digital migration, and recommendations for addressing the challenges.

5.1 Demographic characteristics of the respondents

The findings indicate that the sample was racially biased, with 19 (70%) being indigenous Africans, and eight (30%) being white. The study was female-dominant with a significant number (65%) being females; 35% were males. All the respondents were from the Department of Communications in Pretoria, City of Tshwane, South Africa.

5.2 What is the purpose of government introducing digital television?

The study sought to establish the main reasons for the South African government migrating to digital television. The list below summarises the responses obtained during interviews.

- *'The key benefit of Government to introduce digital broadcasting technology is that they use scarce national radio frequency spectrum far more efficiently than analogue technology.'*
- *'As the world is moving towards digital migration it will improve our picture and sound quality, much better than we are currently receiving through analogue technology.'*
- *'DTT will improve the communications between the government and the entire citizens of South Africa by having more informative services.'*
- *'Prior to 1990, South African television has been broadcast by way of analogue technology. In 2006, the International Telecommunication Union (ITU) held a regional radio-communication conference wherein a treaty dealing with, among others, digital migration of bands III, IV and V was concluded and South Africa became a signatory to the treaty. The conference resolved that all countries in Europe, Africa and the Middle East, as well as the Islamic Republic of Iran, should migrate from analogue to digital broadcasting services by June 2015.'*

- *'The challenge with analogue is that it uses too much bandwidth on the spectrum which will prevent more channels to be added as the spectrum will be full.'*
- *'Digital broadcasting uses less bandwidth which will allow broadcasters to add more channels and reserve the rest of the bandwidth for future use, e.g. the same frequency used to broadcast one (1) SABC channel with analogue can be used to broadcast more than 10 channels (standard definition) using digital technology.'*

It is clear from the findings above that there are quite a number of reasons for South Africa to migrate from analogue to digital television. It is important to note that digital broadcasting is the direction the world is headed in. Thus the Government Gazette of the Republic of South Africa No. 31408 (2012) states that digital TV offers so much more than just better picture and sound quality. South Africa's acclaimed plan (called the Broadcasting Digital Migration Policy) to go digital aims to enhance the lives of South Africans. The main aim is to bridge the so-called 'digital divide' (the gap between people with effective access to digital and information technology, and those with very limited access or none at all). According to the Government Gazette of the Republic of South Africa No. 31408 (2012), this will redress the unequal acquisition of skills needed to make the best use of this technology to improve one's knowledge and quality of life.

It should be pointed out that digital broadcasting has a key role to play in the socioeconomic and cultural development of South Africa. It is of fundamental importance in the emerging information society and knowledge economy, in which access to information and knowledge is regarded as a prerequisite to economic and societal development. The adoption of BDM deliberately takes advantage of the opportunity provided by the process of migrating from analogue to digital broadcasting to accelerate the achievement of the country's socioeconomic development goals in general and the Millennium Development Goals (MDGs) in particular. In South Africa, digital broadcasting will play a key role in building an inclusive development-oriented information society in accordance with and toward meeting South Africa's commitments with respect to the World Summit on the Information Society (Government Gazette of the Republic of South Africa No. 31408, 2012). Mbatha and Ocholla (2011) argue that the country's information society vision is to establish South Africa as an advanced information society in which information and communication technology tools and information are key drivers of economic and societal development.

5.3 DTT and improved service delivery

Much has been said about the benefits of adopting digital television. Hence one of the objectives of the study was to establish how digital television will improve service delivery in South Africa. The following are responses emanating from the interviews.

- *'Given the particular South African context, Set Top Boxes (STBs) will accommodate and facilitate special features which enabled access to e-government services for all citizens.'*
- *'Digital broadcasting will enable the provision of services in a multiplicity of languages.'*
- *'DTV will provide increased access by people with disabilities.'*
- *'Citizens will be able understand all the services offered by government as they will be presented to them in the language of their choice.'*
- *'If there is an announcement that government wants to make to the public, this can be done via the digital television.'*

The findings above show that DTV will be most effective in disseminating government information to South Africans in the language of their choice. This surely will improve many people's lives and the way some people view current government processes. Many researchers have written extensively on how government can use DTV to improve service delivery (Fischer, 2004; Ardizzon & Ferrari, 2010; Zettl, 2011; Brand, 2011). The findings above concur with the Government Gazette of the Republic of South Africa No. 31408 (2012) which is supported by Brand (2011) by stating that DTV can be effective in the delivery of government information, education, health and SMME programmes. Likewise, Ardizzon and Ferrari (2010) share similar sentiments by noting that digital broadcasting facilitates the delivery of e-government services, the opportunity for developing new skills and the creation of new jobs and new investment opportunities. Similarly, Kruger and Guerrero (2002), supported by Digital Dzonga (2012), report that digital broadcasting also provides opportunities for investment and job creation. In this way broadcasting digital migration can contribute directly to achieving the objectives of the New Growth Path.

5.4 Technology one requires to access digital television

The key informants of the study were required to comment on the technology that one will require to access digital

television. The findings are presented below.

- *'The nicest thing about BDM is that viewers will not have to buy new televisions in order to access the DTT channels. However, they will have to purchase digital terrestrial television STBs in order to receive the signal and some viewers may require new TV antennas.'*
- *'The STB is a plug-and-play device which is relatively easy to connect using the supplied manual. Assistance from professional installers may be sought if needed.'*
- *'After digital migration is complete, the spare spectrum can be reused for other services of national interest, e.g. the reserved spectrum might be utilised by mobile operators.'*

It is clear from the findings above that in terms of technology, South African citizens will not require much technology in order to access DTT: only STBs will be required. South Africans wishing to continue receiving terrestrial television broadcasts after analogue broadcasts are switched off — which should happen by mid-2015 to meet a deadline imposed by the International Telecommunication Union — will have to purchase a set-top box (*Mail & Guardian*, 2012).

5.5 Challenges to broadcasting digital migration

Respondents were required to provide responses to the question, "What are the challenges faced or that South Africans could face with regard to digital migration?" The analysis made from all the postulations below shows that, for every good thing to come by, there are also numerous challenges to bedevil the development. The following are the findings arrived at in this analysis.

- *'In order for households to continue to receive television services on their current analogue TV sets after the analogue signal is switched off, STBs, which convert the digital signal into analogue signal, are required.'*
- *'The total TV-owning households in South Africa are estimated at 11.5 million, of which approximately 72 percent rely exclusively on Free-To-Air broadcasting services. Interestingly, of these 11.5 million TV households, about 5 million are poor households who would find it very difficult to afford STBs.'*

The findings above show that there are very few challenges for migrating from analogue to digital television in South Africa. However, it is important to note that the challenges indicated above are key to the success of digital television in South Africa. Daramola (2003) in his book on mass communication cautions that digitalisation even in the developed economies came to fruition with so many challenges. Some of these challenges have been surmounted while some are yet to be surmounted. Bassey (2009) highlighted four major challenges African broadcasters will meet in the journey to digital conversion to include promotion of digital television, upgrades, new licenses and multi-channel availability. Bassey went further to state that one of the reasons for low diffusion of digital technology is that most countries in Africa, if not all of them, lack knowledge about the technology.

5.6 Recommendations for addressing the DTT challenges

The respondents were required to provide recommendations that could address the challenges for implementing digital television in South Africa. The responses are summarised below.

- *'With regard to STBs, government will subsidise poor TV-owning households in gaining access to STBs to enable reception of digital signals and access to digital broadcasting services.'*
- *'It is important to note that the move by South Africa to migrate to DTT is based on international obligations for broadcasting digital migration. Forming part of this migration, Government would provide ownership support as an incentive of up to 70% to approximately 5 million of the poorest TV-owning households. These households will have to raise the other 30% on their own. This support will be based on the anti-poverty strategy and its conditionalities. Funding for this support will be sourced from the Universal Service and Access Fund (USAF).'*
- *'Areas that may be deemed difficult or uneconomical to reach will be covered by DTH (Direct To Home) satellite using the DVB-S2 (Digital Video Broadcast- Satellite).'*
- *'In supporting the South African bid to host the Square Kilometer Array (SKA) government will also subsidise affected communities using satellite technology. The government will also consider extending the incentive scheme to households that can only experience Free-To-Air digital services via DTH platforms to ensure close to 100% coverage.'*

6. Conclusions

The aim of this study was to identify obstacles to the adoption of digital television in South Africa. This research was based on the Diffusion of Innovations Theory. The findings depict that despite the overwhelming benefits of digital broadcasting, South Africans are bound to face some challenges resulting from their income levels. It is worth mentioning that innovations come with challenges which must be surmounted to achieve success. The study established that one of the challenges that South Africans could face with regard to digital migration is lack of funds to buy STBs. It is true that the migration from analogue to digital technologies can be a challenging one for a continent as large as Africa. However, shared best practices from digital-ready countries can help alleviate some of the challenges faced during the migration.

The ushering in of digitisation in the broadcasting industry has clearly demonstrated that analogue has no place in the broadcast industry. It is therefore recommended that since the challenges that are likely to affect digital migration in South Africa have already been discovered and spelled out, care must be taken to ensure that adequate preparation is done to overcome those challenges before the deadline for transition from analogue to digital. It would be prudent if government could join forces with other stockholders toward the realisation of the digital migration in South Africa. There is no doubt that digital broadcasting is a solution to analogue problems; thus it is vital for all South Africans to start embracing this innovation so that it comes to fruition. As promised by the government, South African citizens should be subsidised with STBs to ensure that the transition from analogue to digital is less daunting. It should also be noted that concrete efforts should be made to bring every segment of the African society into digital television policy.

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