

Digital Terrestrial Television Migration Challenges – A Case Study of Zambia

Bright Nkaka^{1,*}, Brian Mukumbwa²

¹Civil and Environmental Engineering Department, Lusaka, Zambia

²Civil and Environmental Engineering Department, University of Zambia, Lusaka, Zambia

Abstract All countries in the world have been compelled by the International Telecommunications Union (ITU) to migrate analogue terrestrial television systems to digital terrestrial television. The old analogue television transmission signals eventually shall be switched off. Zambia therefore, needs to upgrade the television transmission system and that viewers would be required to acquire decoders in order to continue viewing television on analogue television sets or acquire new television sets with embedded digital tuners. This necessitated the Zambian government to come up with interventions in the form of policies to manage the transition process from analogue to digital terrestrial television. The main objective of the study was to identify the key challenges and recommend response plans to overcome the identified challenges that have hindered the success of the digital migration project in Zambia. To explore the challenges that have affected the deployment of digital terrestrial television in Zambia, interviews, review of digital migration policy and questionnaire survey methods were used to collect data from a selection of television broadcasters and regulators. The research found that; (a) only 0.34 percent of about 1.8m households had acquired decoders required for viewing free to air digital terrestrial television in Zambia, (b) government had not done adequate sensitisation prior to taking the decision to separate content service provisioning and signal distribution, eight of the ten respondent agreed to this, (c) there was lack of sensitisation to raise public awareness about digital migration.

Keywords Digital Terrestrial Television, Decoder, Zambia

1. Introduction

Digital Broadcasting Migration is a process by which television broadcasting services offered on analogue networks are transferred to digital based networks over a specific period. The main purpose of the migration process is to ensure that all analogue services are replicated on the digital networks with the aim to switch-off the analogue services at a specific point in time.

The 2006 Conference by International Telecommunication Organization (ITU)-Regional Radio Communication Conference (RRC-06), resolved that all broadcasting institutions in the world should migrate from Analogue mode of Terrestrial Transmission to Digital Mode of Terrestrial Television Broadcasting by 17th June 2015. The directive is emanating from the inherent advantages that Digital Mode of Terrestrial Television broadcasting provides. Significant of which is the efficiency in the utilisation of the scarce and limited frequency spectrum which is used for transmitting different telecommunication

services.

Digital Terrestrial Television (DTT) migration is an intricate issue, bound up in technical, social and economical issues. For any change in technology, there has to be consideration for challenges of failure. Identifying, monitoring and mitigating the challenges are therefore necessary whenever there is huge change in technology of such magnitude as the migration from analogue terrestrial television to digital terrestrial television.

2. Aim and Research Questions

The main objective of the study was to identify the challenges that have hindered the success of the Digital Terrestrial Television project in Zambia and recommend action plan. The following objectives were set to achieve the specific objective of the study:

- (a) Identify challenges have derailed the shift from analogue television to digital television broadcasting in Zambia;
- (b) Come up with plans and controls to overcome the identified challenges;
- (c) Identify broadcasting industry concerns and regulatory hurdles taking into account international trends and local needs.

* Corresponding author:

bnkaka2004@gmail.com (Bright Nkaka)

Published online at <http://journal.sapub.org/ijnc>

Copyright © 2016 Scientific & Academic Publishing. All Rights Reserved

To achieve the stated aim, the following research questions were answered:

- (a) What are the types of challenges that can affect the successful roll of digital terrestrial television in Zambia?
- (b) What are the local broadcasting industry regulatory hurdles compared to international trends?
- (c) What are the recommendations that can address the challenges of digital terrestrial television migration in Zambia?

3. Literature Review

This section of the research presents the basics of management of projects, digital migration progress in Africa and status of television broadcasting in Zambia.

Any deployment of new technology such as the digital terrestrial television migration faces the condition of uncertainty. According to Chapman and Ward (2003) the scope of uncertainty in any project is considerable and most project management activities are concerned with managing uncertainty from the earliest of Project Life Cycle (PLC).

3.1. Review of Progress on Digital Terrestrial Television in Africa

In his study, Ihechu (2012) observed that despite the benefits associated with digital broadcasting, there are several factors that pose challenges to the process. However, Balancing Act Africa report (2014) stated that the slow pace of the digital migration in Africa can be seen as dark cloud hanging over the African television market. The Balancing Act found that as of June 2014, only 9 countries in Africa had officially launched national digital terrestrial television (DTT). Namibia started rolling out DTT in October, 2013 and Cameroon in 2014. Only two, Tanzania and Mauritius countries completed Analogue Switch off (ASO). The report further stated that 2.5 million homes have access to DTT bouquets which represents 2.5 percent the total number of TV households in Africa. The difference between 2.5 million and 100 million DTT households is very wide gap to close. This represents a lot of sales of DTT set top boxes and a digitally enabled television sets to be done.

Digital migration is complex issue, bound up in technical, social and economic issues. Kerron Edmunson, (2011) found that a policy in this regard must necessarily address industry concerns and regulatory hurdles; and take account of international trends and local needs.

Most people with television sets worldwide do not have digital receivers in their television sets, even if other components are digital, for example, digital recording and storage of programmes. This means that an intermediate device, namely the set top box, is usually needed to receive the DTT signal and convert it for analogue display. Berger (2010) found that there are major policy questions that audiences acquire this equipment, so that they are not left

bereft of TV at the point when the analogue signal is switched off.

According to Census and Housing of population (2010), Zambia had 2,513,768 households and that there were more households in rural than urban areas at 1,495,861 and 1,017,907 respectively.

The Zambia Media Consumption 2014 Study (2014) found that 70 percent households own colour television sets which translates to about 1.8m households with television sets in Zambia.

3.2. Status of Broadcasting in Zambia

According to the Digital Migration Policy (2010) the Government of the Republic of Zambia liberalised the airwaves early 1990s; broadcasting services were a sole monopoly of the Government. Since then, a number of television broadcaster emerged from one Zambia National Broadcasting Corporation (ZNBC) Television to eleven. The eleven television broadcasters included ZNBC, Multichoice Zambia Limited, Mobi Television, Muvi television, CBC, Prime Television, Chipata Television, Revelation TV North-Western Television, MyTV and Trinity Broadcasting Network TBN. Multichoice Zambia Limited provides both satellite subscription television and Digital Terrestrial Television.

The private broadcasters setup their own infrastructure and sites alongside the infrastructure owned by ZNBC to host their transmission systems. As at the end of 2012, ZNBC had 67 transmitters, Muvi TV had 3, TBN had 3, and the rest had one transmitter each.

Under the digital terrestrial transmission, the plan for Zambia was to have 95 digital transmitters across the country in order to effectively cover the whole country. The DTT roll out was designed to be implemented in three (3) phases because of the big number of sites required to cover the country (Digital Migration Policy, 2010). Phase I covers the installation of transmitters along the line of rail, from Chililabombwe to Livingstone, phase II was to provide digital transmitters in the provincial centres, as well as studio facilities for ZNBC Lusaka, Kitwe and Livingstone. Phase III was targeted at installation of digital transmitters at remote sites across the country after the line of rail and provincial centres would have been completed.

Phase I DTT tender was advertised in January, 2014 and was awarded to Star Software Technology Company Ltd of China on 10th July, 2014 at a contract value of US \$ 9,554,124.49 for supply, delivery, installation and commissioning of the DTT solution along the line of rail. The project was implementation and completed on 10th June, 2015. Figure 1 shows locations of analogue and digital terrestrial transmission sites in Zambia.

Digital migration programme for Zambia include upgrading of production studios for the national broadcaster, setting up uplink station for signal distribution to remote broadcasting sites and replacement of all the 67 analogue transmitters across the country. To implement this project, huge financial resources are required. Appendix II shows

analogue transmission sites that would be replaced with digital transmission network.

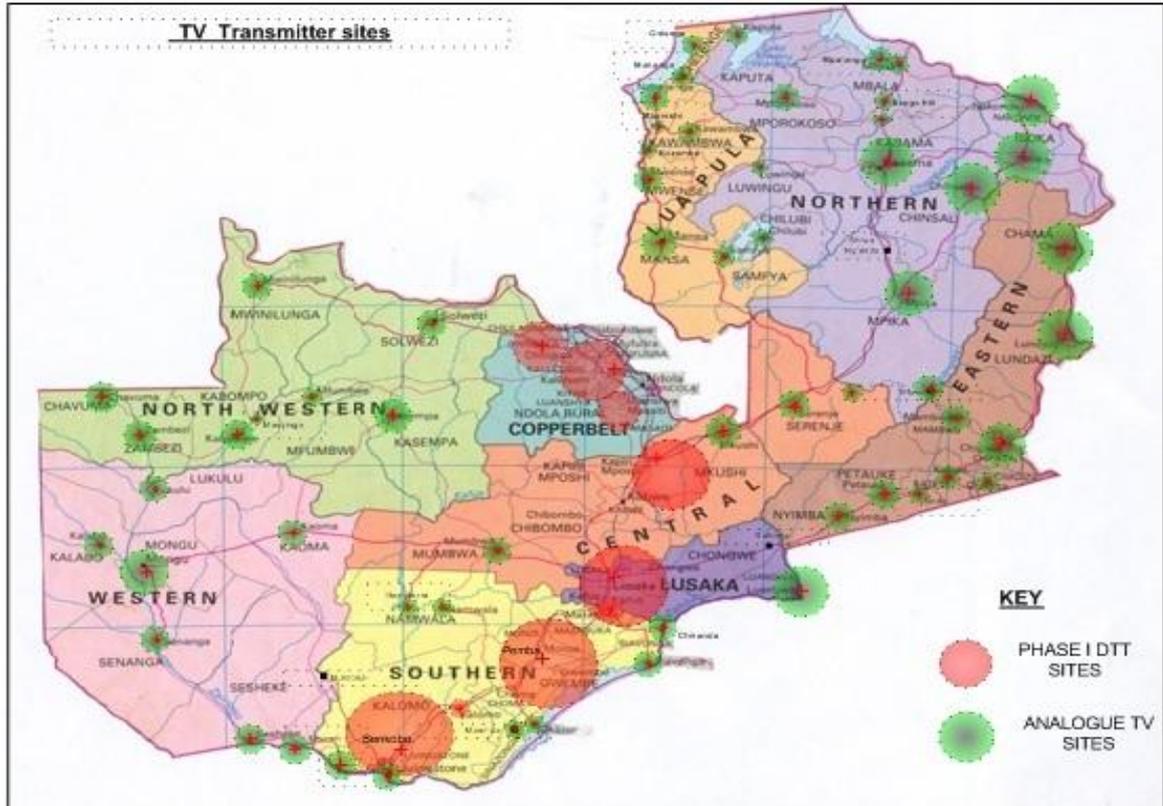


Figure 1. Current Analogue and Digital Terrestrial Television Transmitters in Zambia. Source: Zambia National Broadcasting Corporation

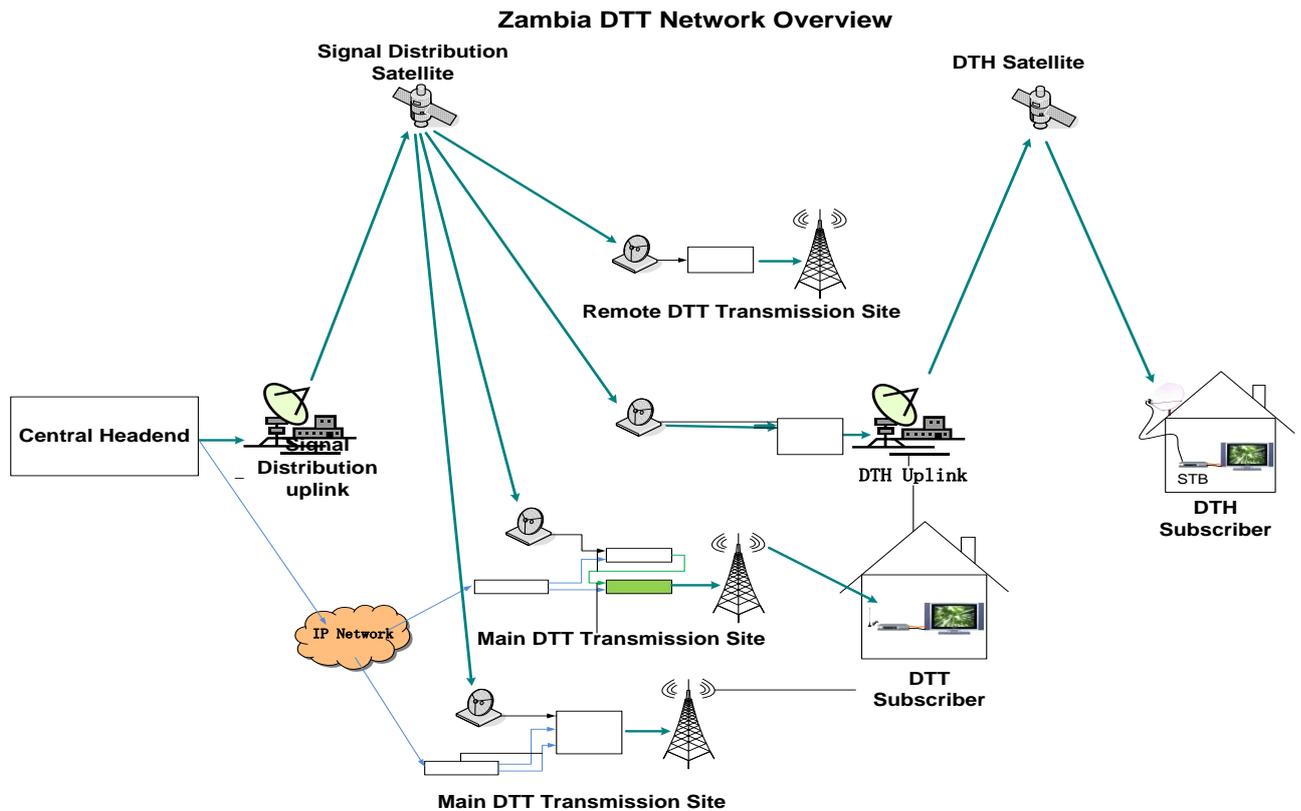


Figure 2. Zambia Digital Television Network Overview. Source: Zambia National Broadcasting Corporation

The digital migration technical solution for Zambia involves a combination of both satellite Direct To Home (DTH) and terrestrial broadcasting. Signal distribution to remote rebroadcasting stations would be achieved through the use of Zamtel fibre as the primary means and satellite C band as backup in case of fault on the fibre network. Figure 2 depicts the planned overview of the digital television network for Zambia.

4. Research Methodology

Research strategy was qualitative. Tewksbury (2009) stated that quantitative research requires that one either study the counts of events, people, things or that numeric label are created for meaningful events, experiences and actions. Quantitative methods entail the collection of numeric data; hence the results will often be presented in numbers. Usually, the data is collected by use of a questionnaire

The data used in qualitative research come from a range of collection methods of which the most common form of qualitative research tool was an interview with individuals, observations of people, places and actions and/or interactions (Tewksbury, 2009).

The research strategy used for this study was qualitative. This study of motivation to work was results from questionnaire with respondents from Independent Broadcasting Authority (IBA), MOBI, MOVI, Trinity Broadcasting Network (TBN), ZNBC, Chipata Television, Northwestern Television and Prime Television.

The research was aimed at identifying, analyzing and provide plan to the challenges that have affected the success of Digital Terrestrial Television migration in Zambia. The main sources of information were from Independent Broadcasting Authority (IBA), MOBI, MOVI, Trinity Broadcasting Network, ZNBC, Chipata Television, Northwestern Television and Prime Television.

The other data sources comprised published textbooks, digital migration journals, policy document on digital migration, and academic journals, articles and reports on digital migration.

The strength and benefit of using the qualitative method in this case was the unique chance of accessing the many different sources of valuable data on digital migration.

5. Results and Discussion

5.1. Discussion

The methodology included identification of stakeholders and through interviews, survey questionnaire, and review of digital migration policy and project implementation schedule, identification of the challenges.

5.1.1. What are the Types of Challenges that can Affect the Successful Roll out of Digital Terrestrial Television in Zambia?

The challenges were identified from data collected from survey questionnaire that targeted all analogue terrestrial broadcasters in Lusaka.

(a) Identification of challenges from Survey questionnaire.

From the responses from survey questionnaire, the following challenges were identified:

- i. lack of collaboration with stakeholders prior to taking the decision to separate content service provisioning and signal distribution as stated by eight of the ten respondents from television broadcaster in Zambia;
- ii. Set Top Boxes not readily available on the market despite the digital transmitter having been installed along the line of rail from Chingola to Livingstone. Only 10,000 Set Top Boxes (STBs) were sold out at the time of the research out of the required 1.8m households in Zambia representing about 0.34 percent of households able to watch digital terrestrial television; and
- iii. Only Multichoice Zambia Limited was registered with Zambia Information and Communication Technology Authority (ZICTA) to sale Set Top Boxes in Zambia.

(b) Identification of challenges from the review of digital migration policy

In order to respond to the changing broadcasting environment, the government of the republic of Zambia came up with a Digital Migration Policy that set the guideline of migrating Zambia's broadcasting sector from analogue to digital terrestrial broadcasting.

The study of the digital migration policy reviewed the following:

- i. Delayed review of the broadcasting environment to reflect new realities of digital broadcasting in tandem with the policy, that is, to separate content service provisioning and signal distribution;
- ii. Further evaluation of the digital migration policy reviewed that the switch on date of 31st September, 2014 for Phase I along the line of rail, Phase II provincial centre 31st December, 2014 and Phase III remote sites 30th April, 2015 were not adhered to.

The consequence of the country's failure to meet the ITU deadline of 17th June, 2015 means that Zambia risk not having claim for protection from any frequency assignments in conformity with the agreement with the neighbouring countries.

(c) Identification of challenges through interview with stakeholder.

The study sought to establish through interviews with television broadcasters and regulators from Lusaka, Zambia. Below are the identified challenges from the interviews:

- i. No funds set aside for raising public awareness on digital migration in Zambia; and
- ii. No consultant engaged for the management of the implementation of phase I digital migration project.

5.1.2. What are the Local Broadcasting Industry Hurdles Compared to International Trends?

The new global trends in digital terrestrial television broadcasting are that broadcasters are being unbundled into content service provisioning and signal distribution. No television broadcasters are allowed to own network and at same time perform content service provisioning.

To regulate the broadcasting sector, Parliament passed the Independent Broadcasting Authority (IBA) Act No. 17 of 2002, which provides for the registration of broadcasting stations and regulations of their content.

The broadcasting licenses are issued under the IBA Act while the frequency licenses are issued by ZICTA under the Information and Communication Technologies (ICT) Act No. 15 of 2009.

From the review of the policy on digital migration, the major, hurdle of the television broadcasting industry in Zambia was the delayed review of the broadcasting environment to reflect new realities of digital broadcasting in tandem with the policy, for example:

- review the operations of ZNBC as a public broadcaster in line with the new business model in the digital environment;
- ensure that regulators develop and implement tariff and universal access guidelines before switching off analogue terrestrial television and;
- facilitate the establishment of a public signal distributor and promote through competitive mechanisms, the establishment of private signal distributors.

5.1.3. What are the Recommendations that can Address the Challenges of Digital Terrestrial Television Migration in Zambia?

On account of the findings of this study, the following recommendations have been made:

- i. government must engage stakeholders to explain the benefits of separate content service provisioning and signal distribution;
- ii. engage a consultant to oversee the implementation of phase II and III covering provincial and rural districts of Zambia to ensuring that contractor(s) meet the agreed deadlines, ensure that the work schedules for the various contractors are in tandem with the overall implementation plan of the digital migration project and provide quality assurance and management system for the whole project;
- iii. review the operations of ZNBC as a public broadcaster in line with the new business model in the digital environment.
- iv. review the operations of ZNBC as a public broadcaster in line with the new business model in the digital environment;
- v. facilitate the establishment of a public signal distributor;
- vi. government to ensure that all analogue transmitters on the border areas are migrated to digital to avoid

- interference with neighbouring countries; and
- vii. government to ensure that more companies are given licences to sale Set Top Boxes.

5.2. Results and Proposed Mitigation Plan

From the research methodology that included survey questionnaire, review of the digital migration policy and interviews with stakeholders, table 1 shows the challenges identified and proposed action plan.

Table 1. Challenges Identified and Proposed Action Plan

Item	Identified Challenges	Proposed Action Plan
1	No consultant engaged for the management of the implementation of phase I digital migration project.	Engaged consultant to oversee the implementation of phase II and III covering provincial and rural districts of Zambia.
2	Delayed review of the broadcasting environment to reflect new realities of digital broadcasting in tandem with the policy.	Unbundle the ZNBC to create two companies, content service provider and signal distributor in line with the policy on digital migration.
3	Failure to meet the ITU deadline of 17th June, 2015. No claim for protection from any frequency assignments in conformity with the agreement with the neighbouring countries.	Government to ensure that all analogue transmitters on the border areas are migrated to digital to avoid transmission interference with neighbouring countries.
4	Set Top Boxes not readily available on the market despite the digital transmitter having been installed along the line of rail from Chingola to Livingstone. Only Multichoice Zambia Limited currently registered to sale Set Top Boxes in Zambia.	Government to ensure that more companies are given licences to sale Set Top Boxes to avoid negative effect on pricing for consumers.

6. Conclusions

The aim of the research was achieved as the challenges that can hinder the success of digital terrestrial television Zambia were identified and action plan to resolve challenges proposed.

In this study, mitigation plans were more general and involved less concrete actions because of lack of information and limited technological and new digital migration regulations background.

On account of the findings of this study, the following recommendations were made:

- i. government must engage stakeholders to explain the benefits of separate content service provisioning and signal distribution;
- ii. engage a consultant to oversee the implementation of

- phase II and III covering provincial and rural districts of Zambia to ensuring that contractor(s) meet the agreed deadlines, ensure that the work schedules for the various contractors are in tandem with the overall implementation plan of the digital migration project and provide quality assurance and management system for the whole project;
- iii. review the operations of ZNBC as a public broadcaster in line with the new business model in the digital environment;
 - iv. review the operations of ZNBC as a public broadcaster in line with the new business model in the digital environment;
 - v. facilitate the establishment of a public signal distributor;
 - vi. government to ensure that all analogue transmitters on the border areas are migrated to digital to avoid the risk of transmission interference with neighbouring countries; and
 - vii. government to ensure that more companies are given licences to sale Set Top Boxes to avoid the risk of monopoly by Multichoice Zambia Limited which could have a negative effect on pricing for consumers.

ACKNOWLEDGEMENTS

A very special thank you to my supervisor Dr. Brian Mukumbwa who has been giving sound advice. I also acknowledge television broadcasters and regulators who provided the needed information to complete this research whom I cannot mention because of confidentiality issues.

REFERENCES

- [1] Balancing Act (2014). DTT: Analogue to digital migration – Strategic choices and current development. [Online].
- [2] Available: <http://www.balancingact-africa.com/reports/dtt-analogue-to-digi>.
- [3] G. Berger. (2010) Challenges and Perspective of Digital Migration for Africa Media: The Panos Institute West Africa. [Online]. Available:
- [4] <http://guyberger.ru.ac.za/fulltext/Digitalmigration.pdf>
- [5] I.P. Ihechu. The Challenges of digitisation of broadcasting in Nigeria: Department of Mass Communication, Abia State University. [Online]. Available:
- [6] <http://iiste.org/Journals/index.php/NMMC/article/viewFile/3114/3155>.
- [7] Kerron Edmunson. (2011). ICT Lawyers. [Online]. Available: <http://www.kerronedmunson.co.za/resources/dtt-article-ke-oc-2011.pdf>
- [8] Chapman, C and Ward, S (2003). Project Risk Management: Processes, Techniques and Insights. 2nd Edition. John Wiley & Sons, Ltd.
- [9] R. Tewksbury. (2009) Qualitative Versus quantitative Methods: Understanding why Qualitative methods are Superior for Criminology and Criminal Justice. Journal of Theoretical and Philosophical Criminology, Vol 1. P. 13
- [10] Republic of Zambia. Central Statistics Office, 2010 Census of Population and Housing. 2010: National Analytical Report. Vol. 11.
- [11] Republic of Zambia. Ministry of Information and Broadcasting Services, Digital Migration Policy. 2014.
- [12] International Telecommunication Union. Regional Radiocommunication Conference. 2006.
- [13] Ipsos MediaCT (2014). Zambia Media Consumption 2014 Study. Lusaka. Zambia.