An Assessment of the Levels of Access to Digital Terrestrial Television (DTT) among Low-Income TV owning Households in Kalingalinga Township in Lusaka

By

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A Report submitted to the University of Zambia in partial fulfilment of the Requirements of the Degree of Master of Communication for Development

The University of Zambia

Declaration

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Abstract

This study was conducted to assess the levels of access to digital terrestrial television (DTT) among low-income television owning households that rely on terrestrial platform for television access in Kalingalinga Township in Lusaka, Zambia.

The digital transition in broadcasting is a global requirement involving the switch from analogue to digital broadcasting signals and a number of countries have completed this transition.Even though the International Telecommunications Union, a United Nations global telecommunications body, set 17 June, 2015 as the deadline for digital migration, yet the Zambian government only managed to implement a simulcast along the line of rail from Chililabombwe to Livingstoneduring the period of this study.

The reason for migrating from analogue to digital TV was necessitated by the fact that analogue requires a lot of bandwidth frequency to transmit one channel. Instead digital broadcasting offers better utilisation of frequencies, better picture quality and clear sound. Looking at these advantages, migration from analogue to digital broadcasting is inevitable.

In order to get digital transmissions, citizens would either have to buy a set top box or a digital television. A set-top-box is a decoder that enables the digital signal to be viewed on an analogue television set.Currently digitally integrated TV sets are costly (which can be upwards of US$300 at the lower end) and out of the reach for many. Hence, one of the critical success factors identified by the European Union was the "low cost and widely available" set top boxes.

The objectives of the study were: to find out the level of awareness on digital migration; to investigate whether the set top boxes were readily available; to find out if the set top boxes were affordable among low-income TV owning households and to establish the intervention measures which have been put in place by the Zambian government to enable accessibility to set top boxes among low-income TV owning households.

Descriptive and exploratory research designs were used to conduct this study. In order to achieve the research objectives, both quantitative and qualitative research methods were used and both primary and secondary data collection methods were used in carrying out this research. The population interviewed was classified into three target groups according to the method of data collection used: Target group one: questionnairesadministered to 100 respondents of Zone 10 in Kalingalinga Township; Target group two: In-depth interviews to 4 people; Target group three: 10 Focus Group Discussions (FGD). Sampling methods were multi-staged: purposive, and systematic to select households.

Data was analyzed using descriptive statistics; this was presented in form of tables - cross tabulations, frequencies and percentages.

The study found that most respondents (80%) were aware of the migration from analogue to digital terrestrial television and also knew the benefits that digital technology has over analogue technology. Their source of information was mostly television. Despite most respondents being aware about digital migration and its benefits, none of the respondents had bought a set top box and only 30% of the respondents understood what a set top box was. Half of the respondents felt that the cost (K200) of set top boxes was high-priced and 50% of the respondents wanted government to provide a payment plan. However, a policy maker

from the Ministry of Information and Broadcasting Services stated that government had not put any payment plan in place to help low-income households to afford set top boxes.

In essence, this research concludes that low-income television owning households who rely on terrestrial platform for television accessmight not afford to buy set top boxes at K200 without government offering an alternative solution and this might lead to low uptake of digital terrestrial television (DTT).

The researcher recommended that sincedigital migration has been forced on people and majority of the households who most need the benefits of DTT cannot afford to pay for set top boxes, it is important that government through TopStar, introduces a “pay slow system”, so that even low-income households might afford STBs. Furthermore, TopStar, the official distributor of STBs, is not found in rural areas there is need to expand and go to rural areas where they can be accessed or bring private retailers on board to get involved in selling STBs.

Dedication

This work is dedicated to my Heavenly Father for making this undertaking achievable.

This work is also dedicated to the following people: My late father and mother Clement Ilinanga and Annie AkapelwaIlinanga for pushing me in the right direction academically and my daughter,Thaibonge, for her unlimited support. Your sacrifices were not in vain.

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First and foremost I would like to give thanks to Our Father who Art in Heaven for His guidance and for the gift of life, and for according me the intelligence and wisdom to be able to successfully complete this piece of work.

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This piece of work would not have been anything to look at without the people in Kalingalinga on whom I had carried out my research. I owe them un accountable gratitude. My other thanks go to my family for rendering me moral support during the time I was pursuing this programme and especially those I stay with who had to endure a number of things.

May the Almighty God richly bless you all.

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List of Abbreviations

ASO	Analogue Switch Off
BBC	British Broadcasting Corporation
CSO	Central Statistical Office
DSTV	Digital Satellite Television
DTT	Digital Terrestrial Television
DTV	Digital Television
DVD	Digital Video Disc
EPG	Electronic Programme Guide
FCC	Federal Communications Commission
FGD	Focus Group Discussion
FTA	Free-To-Air
HDTV	High Definition Television
IBA	Independent Broadcasting Authority
IDTV	Integrated Digital Television
ITU	International Telecommunication Union
LCMS	Living Condition Monitoring Survey
MIBS	Ministry of Information and Broadcasting Services
NGOs	Non Governmental Organisations
NTSC	National Television System Committee
PAL	Phase Alternating Line
RRC-04/06	Regional Radio Communications of 2004 and 2006
RTL	Rhodesia Television Limited
SECAM	Sequential Couleur Avec Memoire
SDTV	Standard Digital Television
SPSS	Statistical Packages for Social Sciences Software
STB	Set Top Box
TCRA	Tanzania Communications Regulatory Authority
TV	Television
UHF	Ultra High Frequency
USA	United States of America
VHF	Very High Frequency

VCR	Video Cassette Recorders
ZAMPOST	Zambia Postal Offices
ZBS	Zambia Broadcasting Service
ZICTA	Zambia Information and Communication Technology Authority
ZNBC	Zambia National Broadcasting Corporation

INTRODUCTION

Analogue television around the world has been in the process of shutting down since the late 2000s. According to Mishkind (2009, p. 2), experiments on High Definition Television started in the late 1940s but the first digital broadcasts were transmitted on November 1, 1998. The transmission saw about 42 TV stations around the United States air live digital signals of the launch of the space shuttle discovery (Hanson 2005, p. 242; Encarta 2008, p. 1).

The reason for migrating from analogue to digital TV was necessitated by the fact that analogue requires a lot of bandwidth frequency to transmit one channel. Instead digital broadcasting offers better utilisation of frequencies, better picture quality and clear sound. Looking at these advantages, migration from analogue to digital broadcasting is inevitable.

In order to enable the world to move into the digital age,in 2004 and 2006, theInternational Telecommunication Union (ITU), a United Nations global telecommunicationsbody, held two conferences dubbed the Regional Radio Communications (RRC -04 and RRC- 06) whose purpose was to develop a digital terrestrial broadcasting plan. During the last of these conferences (RRC-06) held in Geneva, Switzerland, an agreement (GE06) was reached which set June 2015 as the date for the switch over from analogue to digital. By this date, all countries party to this agreement (101 countries in Europe, Africa and the Middle East) had obliged to switch from analogue to digital broadcasting technology (ITU 2012, p. 11).

Zambia, like other members of ITU, became a signatory to a treaty with a resolution that all countries around the world were to migrate from analogue to digital services within six years from the conference. Following this ratification, ZNBC complied with the ultimatum and began the simulcast on the 17th June, 2015 along the line of rail from Chililabombwe to Livingstone as phase one of the transition process (ZNBC News, June 17, 2015).

Television broadcasting of signals has no borders, and this has to be coordinated to ensure that there is no interference when some countries switchover to digital broadcasting. Such

standardisation also ensures affordability of technology such as set-top-boxes and digital broadcasting equipment and sets.

A set-top-box is a decoder that enables the digital signal to be viewed on an analogue television (TV) set (MIBS 2012, p. 7).

In Zambia, TopStar a company formed out of a joint venture between ZNBC and StarTimes a Chinese company was selling the set-top-boxes at a cost of K200 to enable low-income TV owning households to have access to digital terrestrial television (DTT).

The aimof this study was to assess the levels of accessto DTT among low-income TV owning households that rely on terrestrial platform for television access in Lusaka, Zambia. The study used both qualitative and quantitative methods in gathering the data. Face-to-face personal interviews were conducted with 100 respondents in Kalingalinga Township, 4 members of the steering committee on digital migration were interviewed and 10 Focus Group Discussions (FGDs) were conducted with the residents of Kalingalinga Township.

This report is divided into seven chapters.Chapter one gives a background to the development of television and transition from analogue to digital television. Chapter two reviews the literature on digital migration from countries that have transitioned to digital television. Chapter three delves into the research methodology used. Chapter four outlines the main theories guiding the study and how they relate to the research and defines the main concepts according to the way in which they are used during the course of the study. Chapter five is a presentation of research findings. Interpretation and discussion of research findings and their significance to the study's purpose and objectives is covered in chapter six. Chapter seven deals with the conclusion and recommendations for the study.

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1. Introduction to the chapter

This chapter introduces the reader to the background information concerning analogue terrestrial television and what necessitated the world to move to the digital terrestrial television. In treating this issue, the chapter looked at the history of Zambia National Broadcasting Corporation (ZNBC) television, Kalingalinga Township as the focus of the study, the Statement of the problem, Rationale, Objectives of the study and Research questions.

1.2. Background Information

All broadcast television (TV) systems preceding digital transmission of digital television(DTV) used analogue signals (Gupta 2006, p. 62). An analogue signal is a continuous signal which represents physical measurements, denoted by sine waves and uses continuous range of values to represent information (MIBS 2012, p. 6). Analogue television is the original television technology that uses analogue signals to transmit video and audio (MIBS 2012, p. 6). Furthermore, terrestrial television is a type of television broadcasting in which the television signal is transmitted by radio waves from the terrestrial (earth based) transmitter of a television station to a television receiver having an antenna (MIBS 2012, p. 6). In other words, terrestrial television is a term which refers to modes of television broadcasting which do not involve satellite transmission. Analogue terrestrial television has been in existence since the 1940s. The fundamental principles for television were first described in the 1800s (Wu et al., 2006, pp. 8-21). In 1884 Paul Nipkow obtained a patent on an opto-mechanical method of transmitting images: the Nipkow disk, a rotating disk which had 24 small holes along a spiral line. This allowed scanning the image line by line (Wu et al., 2006, pp. 8-21).

The first practical TV transmissions were performed by John Logie Baird in 1926 (30 lines/frame, 5 frames/s) (Wu et al., 2006, pp. 8-21). Baird too used an opto-mechanical method.

The first electronic image tube was invented by Vladimir Zworykin, who also invented the first TV camera tube, the "iconoscope" (Wu et al., 2006, pp. 8-21). British Broadcasting Corporation (BBC) started the first regular TV broadcasts in England in 1936 (405 lines/frame, 25 frames/s). The system was in use until 1986 (Wu et al., 2006, pp. 8-21). The Second World War (WWII)temporarily disturbed TV development, but after the war many other countries started TV broadcasts. France used an 819 line system for many years, but most European countries did choose a 625 line system. In the USA, a 525 line system was, and still is, used (Wu et al., 2006, pp. 8-21).

The very first experimental colour TV broadcasts were performed in 1928 by Baird in England and H.E. Ives in the USA. The USA was first in starting regular colour TV broadcasts in 1953. Japan was second, starting in 1960 using the American National Television System Committee (NTSC) TV broadcast system. In 1965 Europe failed to agree on one colour TV broadcast system: France went for Sequential Couleur Avec Memoire (SECAM), Eastern Europe decided on "a variety of SECAM", while most of the remainder of Europe decided to use Phase Alternating Line (PAL). England and Germany started regular colour TV broadcasts in 1967. By 1970 regular colour TV broadcasts had started in most European countries (Wu et al., 2006, pp. 8-21).

In other words then, the early generations of television were mostly based on electromechanical systems, where the TV screen had a small motor with a spinning disc and a neon lamp (Wu et al., 2006, pp. 8-21). In Europe, several developments occurred in the first half of the 20thcentury, whereby the year 1950 most broadcasters were using an all-electronic system. At the same time, in the United States, several mechanical and electronic systems were developed and by 1942 the Federal Communications Commission (FCC) adopted the recommendation of the National Television System Committee (NTSC) (Udelson 1982, pp. 28-38).

Analogue television around the world has been in the process of shutting down since the late 2000s. According to Mishkind (2009, p. 2), experiments on High Definition Television started in the late 1940s but the first digital broadcasts were transmitted on November 1, 1998. The transmission saw about 42 TV stations around the United States air live digital signals of the launch of the space shuttle discovery (Hanson 2005, p. 242; Encarta 2008, p. 1).

The reason for migrating from analogue to digital TV was necessitated by the fact that analogue requires a lot of bandwidth frequency to transmit one channel. According to Armstrong and Collins (2004, p. 3), "digital systems encode (and decode) signals in a manner whereby inputs, whether sound or video, are converted into (and from) a single stream of zeros (0) and ones (1), or "ons" and "offs," in the electrical current". Since digital signals require less power to transmit, therefore, digital transmission allows approximately six – to – ten digital channels to be squeezed into any single spectrum which normally accommodate one analogue channel (Cave 2002, p. 162). The freed up frequency can also be used for a variety of communication functions including the provision of broadband function and other additional functions (MIBS 2014, p. 1).

There are several advantages linked with digital broadcasting which includes and not limited to the following:

- **Better utilisation of frequencies**: A digital signal carries much more data than an analogue signal. Therefore, more than one channel of television programmes can be broadcast at the same time. This is known as multi-channeling. This efficient utilisation of channels reduces the number of frequencies required for the broadcasting sector (MIBS 2014, p.3).
- **Better picture quality**: Digital Television Broadcasting offers sharper; brighter picture, and reduced interference. Viewers will also enjoy improved sound quality (Balancing Act 2011, p.1).
- **More access**: The Set Top Box (STB) receives the digital signal and also has the capability to interface with devices such as a cell phone, memory card or internet modem. This provides viewers with access to many more services and information (ITU 2012, p.10).
- **Better viewing pleasure:** With analogue you are only able to have standard definition television. With Digital Broadcasting, High Definition Television is possible. High Definition Television (HDTV) is the premium version of digital television, offering picture and sound quality which is much better than today's analogue television. This means that the benefits of HDTV are particularly noticeable on larger screen sets and when using projection equipment. HDTV is in widescreen format and provides cinema-quality viewing with Dolby surround sound (ITU 2014, p.7).

- **Outstanding services for the elderly and disabled:** Enjoy subtitled caption broadcasting. Captioning is a service that displays comments and dialogue as text at the bottom of the screen. In the case of terrestrial analogue TV broadcasts, a special adaptor was required, but with digital TV, captioning is offered as a standard function. Captioning is even available for some live broadcasts (Balance Act 2011, p.1).

- **Audio descriptions for the visually impaired:** Audio description of the plots in dramas and other programmes are available for visually impaired users (Armstrong and Collins 2010, p. 15).
- **Adjustable speaking speed:** Some new digital TVs have an audio speed adjustment function that allows you to slow down the speed of an announcer's voice. It is very useful for the elderlyand partially deaf people (Ocholi 2009, p.3).
- **Participate in quizzes and questionnaires:** You can participate in interactive programmes by connecting your digital TV to the network via a phone line or Internet connection. Then, you can use your remote control to join in user participation programmes, such as quiz games or request programmes (Flew 2003, p. 19).

- **Electronic Programme Guides (EPGs)**: Electronic Programme Guides (EPGs) are a feature of digital television broadcasting that comes fitted in the Set Top Box. An Electronic Programme Guide (EPGs) can be used by viewers to navigate between channels, identify the currently screening programme and the next programme ('now and next') on each channel. More sophisticated EPGs can be used to set reminders for programme viewing, provide a short synopsis of the content of programmes, identify programming in advance for several days, search for programmes by genre, and provide access to some enhancements among others (Crinon et al., 2006, pp. 102-118).

In order to enable the world to move into the digital age,in 2004 and 2006, theInternational Telecommunication Union (ITU), a United Nations global telecommunicationsbody, held two conferences dubbed the Regional Radio Communications (RRC -04 and RRC- 06) whose purpose was to develop a digital terrestrial broadcasting plan. During the last of these conferences (RRC-06) held in Geneva, Switzerland, an agreement (GE06) was reached which set June 2015 as the date for the switch over from analogue to digital. By this date, all

countries party to this agreement (101 countries in Europe, Africa and the Middle East) had obliged to switch from analogue to digital broadcasting technology (ITU 2012, p. 11).

Zambia, like other members of ITU, became a signatory to a treaty with a resolution that all countries around the world were to migrate from analogue to digital services within six years from the conference. Following this ratification, ZNBC complied with the ultimatum and began the simulcast on the 17th June, 2015 along the line of rail from Chililabombwe to Livingstone as phase one of the transition process (ZNBC News, June 17, 2015).

Television broadcasting of signals has no borders, and this has to be coordinated to ensure that there is no interference when some countries switchover to digital broadcasting. Such standardisation also ensures affordability of technology such as set top boxes and digital broadcasting equipment and sets.

A set-top-box is a decoder that enables the digital signal to be viewed on an analogue television (TV) set (MIBS 2012, p. 7). Currently digitally integrated TV sets are costly and out of the reach for manywhich can be upwards of US$300 at the lower end (Balancing Act 2011, p. 1). In order to ensure that the migration to digital terrestrial television (DTT) is successful, the free-to-air DTT set top box should be a basic affordable set top box. In this regard, Zambia National Broadcasting Corporation (ZNBC), a public broadcaster, responsible for signal distribution and rolling out the digital network infrastructure on behalf of broadcasters, was selling the set-top-boxes via Zambia Postal Offices (ZAMPOST) at a cost of K130 and the antenna at K80 which came to a total of K210 to enable low-income TV owning households to have access to DTT (ZNBC News, June 17, 2015).

Critical success factors identified by the European Union were the "low cost and widely available" set top boxes and audience awareness (Rosenberg 2013, p. 1). In the USA the government set aside $990 million to help viewers purchase digital set top boxes and also engaged in massive awareness campaigns. In Australia the Government established a household assistance scheme which provided eligible households with a set top box and full installation at no extra cost. In countries such as Sweden and Germany financial aid was given through social services in which set top boxes were distributed to low income families who relied on the terrestrial platform for television access (Mackay 2007, pp. 34-38).

According to Central Statistical Office (CSO 2015, p. 77), income is used as a measure of welfare because the consumption of goods and services is dependent on the sum of income available to a household at any given time. Average monthly income for high, medium and low communities ranged from K6, 882, K2, 587 and K746 respectively (CSO 2015, p. 80). Low-income households are households who earn low wages. In low-income communities, approximately 45 percent of household expenditures are spent on food and 12 percent on housing and household income for almost 70 percent of households is less than US$40 per month (World Bank 2002, p. 4).

1.3. History of Zambia National Broadcasting Corporation (ZNBC) Television

According to the Zambia National Broadcasting Corporation Strategic Plan (2015, pp. 10-11), the first television station in Zambia was set up in 1961 in Kitwe by Tiny Rowland's London Rhodesia Mining Company (Lonrho) and was known as Rhodesia Television Limited(RTL). The television station was privately owned. When Zambia became independent in 1964, the government entered into a partnership with the owners of the television station and changed its name from Rhodesia Television Limited to Zambia Television Limited and the government appointed one person to sit on its board (ZNBC Strategic Plan 2015, p. 11).

In 1965, the Zambia Television Limited launched an experimental service in Lusaka operating from the Zambia Broadcasting Service premises (ZNBC Strategic Plan 2015, p. 11). In 1967, the government took over full ownership of the Kitwe studios under Zambia Broadcasting Service (ZBS) (ZNBC Strategic Plan 2015, p. 11). Colour transmission was launched in 1977, using modified monochrome or black and white studio equipment and transmitters (ZNBC Strategic Plan 2015, p. 11).

In 1987, through an Act of Parliament, ZBS became the current Zambia National Broadcasting Corporation (ZNBC) on 1st April, 1988.This led to it being fully commercialised. Government funding became minimal. ZNBC had to sustain its operations through its commercial service (ZNBC Strategic Plan 2015, p. 11).

Following the digital migration process from analogue to digital television broadcasting, ZNBC was part of the National Task Force Committee on digital migration and was given a

role of a signal distributor responsible for rolling out the digital network infrastructure on behalf of broadcasters (MIBS 2014, p. 6).

1.4. Kalingalinga Township in Lusaka

Zambia is a landlocked country, located in south-central Africa with a population of about 13 million (CSO 2010, p. 4). Zambia is divided into ten provinces. Its capital and largest city is Lusaka, which is also a province. Lusaka has a population of almost 2.2 million (CSO 2010, p. 4).

Kalingalinga is a low-income, high-density settlement east of Lusaka, in Zambia. As of 2010, it comprised of 39,139 residents and 8,356 households (CSO 2010, p. 44). It was one of Lusaka's earliest squatter settlements.According to a report by the United Nations Human Settlements Programme, by 1991 the urban upgrading of Kalingalinga "enabled 4400 low-income squatter households to obtain improved houses, services and security of tenure" (Frayne et al., 2013, p. 135).

The target populations for the study were low-income households who rely on the terrestrial platform for television access residing in Kalingalinga Township in Lusaka. According to Living Condition Monitoring Survey (LCMS) (2010, p. 143) by Central Statistical Office (CSO), low-income earning households constitute 67 percent.

Kalingalinga was purposively sampled due to high poverty levels in the area. Data was collected through personal interviews using a structured questionnaire due to high illiteracy levels in the area.

1.5. Statement of the Problem

Access to information is a basic human right. Television, as a broadcast medium, is a cornerstone of modern democracy and cultural diversity, enhances people's identity and capacity to live together and therefore contributes to social cohesion. In the digital era, with an unprecedented proliferation of sources of communication, most people still rely mainly on television broadcasting in order to be informed (European Journal of Communication 2011, p. 4).

In order to promote better utilisation of television broadcast, it has been found worthy to migrate from analogue to digital television broadcast. As mentioned on pages three (3) and

four (4), there are several advantages for migrating to digital television such as Better utilisation of frequencies;Better picture quality;More access to channels**;** Better viewing pleasure; Outstanding services for the elderly and disabled; Audio descriptions for the visually impaired; Adjustable speaking speed; Participation in quizzes and questionnaires and Electronic Programme Guides (EPGs).

Looking at these advantages, migration from analogue to digital terrestrial television (DTT) is inevitable. The challenge for African Governments and Zambia in particular was that the digital transition contains a number of potential negatives and the biggest hurdle was the cost of set-top boxes to receive digital TV signals. In order to get digital transmissions, citizens would either have to buy a set-top box or a digital television.Currently digitally integrated TV sets are costly (which can be upwards of US$300 at the lower end) and out of the reach for many(Balancing Act 2011, p. 1). One of the critical success factors identified by the European Union was the "low cost and widely available" set top boxes (Rosenberg 2013, p. 1).

Tanzania migrated to digital terrestrial television broadcasting in some cities in 2013. After migration, a research was conducted by the Tanzania Communications Regulatory Authority (TCRA). The study revealed that from the 2,400 surveyed households, 50% of Tanzanian TV owners could not access DTT services because they claimed that decoders were not available, felt that decoder prices were high, experienced poor signal reception, indicated that their TVs were out of order (not compatible with decoders) and did not have electricity (TCRA 2013, p. 26).

It appears that there has not been a study similar to the one done in Tanzania to ascertain how these problems have affected Zambia. Hence, the need to assess the levels of accessibility to digital terrestrial television among low-income TV owning households in Kalingalinga township that rely on terrestrial platform for television access in Lusaka, Zambia before a complete switch-off process of analogue terrestrial television.

1.6. Rationale

The social and developmental relevance of this study cannot be overlooked. This study would greatly contribute to the body of knowledge on the underlying factors that might hinder access to DTT among low income TV owning households in Lusaka, Zambia.

Television (TV) is probably the most cost-effective audio-visual platform for informing, educating and entertaining people all over the globe (Wu et al 2006, pp. 8-21). Digitisation improves the quality of the broadcast, more channels are made available to audiences, and it also leads to enrichment of audience experience in terms of content. It is important for households to have access to DTT as access to information is imperative in a democratic dispensation.

Therefore, this research would serve as a challenge to the relevant authorities of how to make it possible for all TV owning households to find ways and means for low-income TV owning households to have access to the digital terrestrial television as access to information is not only imperative but also vital in a democratic dispensation.

1.7. Objectives of the Study

1.7.1. General Research Objective

The main aim of the study was to assess the levels of accessibility to digital terrestrial television (DTT) among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia.

1.7.2. Specific Research Objectives

- To find out the level of awareness on digital migration among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia;
- To investigate whether the set top boxes were readily available among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia;
- To find out if the set top boxes were affordable among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia, and;
- To establish the intervention measures which have been put in place by the Zambian government to enable accessibility to set top boxes among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia.

1.8. Research Questions

1.8.1. General Research Question

What are the levels of accessibility to digital terrestrial television (DTT) among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia?

1.8.2. Specific Research Questions

- What is the level of awareness on the issue of digital migration among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia?
- Are the set top boxes readily available among low-income TV-owning households in Kalingalinga Township in Lusaka, Zambia?
- How affordable are the set top boxes among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia?
- What intervention measures has the Zambian government put in place to enable easy accessibility of set top boxes among low-income TV owning households in Kalingalinga Township in Lusaka, Zambia?

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction to the Chapter

Digital Broadcasting Migration is a process in which broadcasting services offered on the traditional analogue technology are replaced with digital based networks over a specific period. This chapter looked at the review of empirical literature for the countries that have migrated to Digital Terrestrial Television(DTT) such as Tanzania, the USA and Australia.

2.2. Access to Digital Terrestrial Television in the United States of America (USA)

The criterion from the USA legislation of 1997 was that analogue signal will only be switched-off if more than 85 percent of the population had access to Digital Television (DTV) (FCC2007, p. 24). According to Kwerel and Levy (2002, p. 32), "only about 3.3 percent of the USA television households as of the end of 2004 either had an integrated TV receiver or a set-top box capable of receiving digital TV signals and converting them to analogue." Parades (2002, p. 6) also indicates that the USA migration was delayed on several occasions because the consumers did not see the incentive of migrating to digital TV. The consumer uptake was also very slow due to lack of information about the real benefits of digital TV to consumers. In one of the surveys conducted in the USA – 83 percent of the respondents were somewhat not aware about the digital migration (GAO 2005, p. 5).

In addition, the price of digital TV sets was five times higher than that of analogue (Parades 2002, p. 6). Some low income households in the USA were still consuming analogue broadcast because they were too poor to afford equipment for migration (Armstrong and Collins 2010, p. 5). So in a bid to bridge the divide, the legislation undertook to subsidise poor households toward the cost of purchasing the set-top boxes.The USA government set aside $990 million to help viewers purchase digital set top boxes and also engaged in massive audience campaigns (Kwerel and Levy 2006, p. 34). Parades (2002, p. 7) also indicates that the other causes of delays could be attributed to the failure by manufacturers to incorporate digital turners in analogue TV sets, the lack of high definition programming, and the refusal by operators to carry both digital and analogue signal simultaneously. As a result, the switch

off date for analogue was postponed from 31 December, 2006 to 17 February, 2009. The USA only managed to switch-over its analogue terrestrial signal to digital by 12 June, 2009.

2.3. Access to Digital Terrestrial Television in Australia

Australian television was dominated by Free-To-Air (FTA) terrestrial broadcasting with 7.6 million TV households and a population of about 20.2 million (Commonwealth of Australia 2006a, p. 6).Australia adopted digital TV (DTV) on January 1, 2001 but the deadline to discontinue the analogue signal had been postponed twice from January 1, 2005 to December 31, 2008and adopted a new target to begin switch-off in the period 2010-2012. This was as a result of low consumer take-up of digital TV (DCITA 2006, p. 20).

By 31 December 2005, only 15.5 percent of Australian households surveyed had the capacity for Free -to-air digital TV reception or adopted the technology (Commonwealth of Australia 2006a, p. 15). In 2005, a total of about 600,000 digital TV sets and set top boxes were sold in Australia. In contrast, the number of new analogue TV sets, Video Cassette Recorders (VCRs) and Digital Video Disc (DVD) recorders sold during the same period totalled at close to 2 million (Tanner 2006, p. 8). In other words, the end users appeared to be unconcerned about the DTV roll over set out for January 1, 2008 at the time and kept on purchasing the old technology in 2005, without bothering with the new technology of DTV.

Faced with high prices for digital television sets, particularly high definition sets, and set-top-boxes, consumers were reluctant to adopt the new technology. The Australian Government established a household assistance scheme which provided eligible households with a set-top-box and full installation at no extra cost (Mackay 2007, pp. 34-38). Australia only managed to switch-over its analogue terrestrial signal to digital by December 2013.

2.4. Access to Digital Terrestrial Television in Germany

In Germany, as in Australia and the USA, terrestrial television broadcasting is a niche market. Since most German households subscribed to cable or satellite, the switch off of the analogue terrestrial signal affected only 3 million households (out of a total of 34 million TV

households) who relied on the terrestrial platform for television access (Mackay 2007, pp. 34-38).

Berlin was the first jurisdiction to switch off the analogue terrestrial signal, in August 2003 (Wagner and Grünwald 2003, p. 10).

The switchover process was accompanied by an information and advertising campaign, at a costof less than €1.2 million. According to press reports, a competitive market for set-top-boxes(STBs) swiftlydeveloped, with retail prices starting at around €100 (Mackay 2007, pp. 34-38).

In order not to exclude low-income families from access to television, the government paid forSTBs for some 6,000 families that were eligible for welfare benefits and were not subscribed toeither cable or satellite digital networks. A budget of €1 million was set aside for this subsidy (Mackay 2007, pp. 34-38). On 25 November, 2008, Germany completed the transition from analogue to digital terrestrial television transmission. About 90 percent of the population could receive DTT, on the DVB-T standard (Digital Video Broadcasting–Terrestrial) (Germany Country Report 2011, p. 6).

2.5. Access to Digital Terrestrial Television in Namibia

Digital Terrestrial Television in Namibia was launched on 13 October, 2013, and a complete Analogue Switch-Off (ASO) took place later on 31st December, 2015.In the same year it was launched, a survey was conducted to assess the economic impact on households. The study revealed that 42 percent of households with TV already receive free-to-air TV digitally via Digital Satellite Television (DSTV) and may not be interested in a set-top box that receives digital terrestrial TV (DTT), the remaining challenge was to safeguard that the poor that currently can afford to watch analogue TV were not cut-off (Stork &Kanyangela 2013, p. 11). The willingness and ability to pay for a set-top box among households with analogue TV was very low. The Namibian government planned to subsidise set-top boxes and the most effective way was to link the subsidy of the set-top boxes to TV licences. Households would receive with the renewal of the TV licence a free set-top box or the right to purchase a subsidised one.This approach was more targeted than selling subsidised set-top boxes

generally, avoiding that subsidised set-top boxes were being sold in neighbouring countries (Stork &Kanyangela 2013, p. 13).

2.6. Access to Digital Terrestrial Television in Tanzania

Tanzania was the first country in mainland sub-Saharan Africa to commence the switch-off of its analogue terrestrial television signals.On 31st December, 2012, Tanzania switched off its analogue signal and migrated to the digital terrestrial television. Regardless of being the first to "go digital", Tanzanians had been critical that the migration process took place prematurely (Rosenberg 2013, p. 2). Arange of Non GovernmentalOrganisations (NGOs) and broadcasters had called for the reinstatement of analogue terrestrial television, to give people more time to purchase set top boxes (Rosenberg 2013, p. 2). By the end of December 2012, 50 percent of Tanzanian TV owners could not access TV services because they did not have set top boxes (TCRA 2013, p. 26). Tanzanian consumers had received insufficient information about the new digital technology and about financial assistance in cases when they could not afford set top boxes (Rosenberg 2013, p. 2). In April 2013 the Tanzanian government agreed to temporarily halt the second phase of migration from analogue to digital television broadcasting to assess the impact of the first phase on the public (Rosenberg 2013, p. 2).

The supply chain and cost of set-top boxes had posed problems for Tanzania and many other African countries. The initial average cost of a set-top box was from around USD 50 to USD 75, and 57 percent of Tanzanians surveyed by the Tanzania Communications Regulatory Authority stated that they felt the price was high (TCRA 2013, p. 27). Government indicated that it would develop a scheme to help low-income viewers. The government had nonetheless contributed to lowering the cost of set-top boxes by exempting them from value-added tax and import duty (TCRA 2013, p. 27).Tanzania only managed to switch-overits analogue terrestrial signal to digital by April 2015 ahead of the deadline of 17th June, 2015.

2.7. Access to Digital Terrestrial Television by some other African countries

According to the report by Fin 24 (2015) as of June 17, 2015, Tanzania, Mozambique and Malawi were the only African countries to have confirmed to the ITU that they had completed their switchover projects, joining Western Europe, the USA and Australia in achieving digital migration success.

Other African countries where the ITU said the digital migration process was ongoing included Algeria, Angola, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Gambia, Guinea, Kenya, Lesotho, Madagascar, Mali, Niger, Nigeria, Senegal, Seychelles, South Sudan, Sudan, Uganda, Zambia and Zimbabwe (www.fin24.com accessed on 17/09/2016).

2.8.Conclusion to the Chapter

Reviews of the Tanzanian digital switchover project have emphasized the necessity for widespread promotion and viewer awareness of the availability of digital terrestrial television as a free-to-air platform, and for strong government leadership and timely decision-making. Analogue switch-off should not occur before a sufficient number of households have acquired the set top boxes and migrate to DTT for fear that masses of people might be cut off from receiving existing analogue television services.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1.Introduction to the Chapter

Research methodology is the systematic, theoretical analysis of the procedures applied to a field of study (Kothari 2004, p. 31). Methodology involves procedures of describing, explaining and predicting phenomena so as to solve a problem; it is the 'how'; the process, or techniques of conducting research. A Methodology does not set out to provide solutions but offers the theoretical underpinning for understanding which procedure, set of procedures can be applied to a specific case.Research methodology encompasses concepts such as research designs, target population, sample size and sampling procedure, data collection instruments and data analysis procedure.

This chapter discusses the methods that were used for the collection and analysis of data to answer the secondary and primary questions of research in the study. It gives an explanation of the research design, sampling techniques and methods used in data collection; and description of how data collected from the research was analysed.

3.2.Research Design

Research design is a model or an action plan upon which the entire study is built; dictates the manner in which a study is conducted and provides the road map of a study in terms of the sample, data collection instruments and analysis procedure (Creswell 2003, p. 79). In other words, a research design is a plan, a roadmap and blueprint strategy of investigation conceived so as to obtain answers to research questions; it is the heart of any study (Kothari 2004, p. 31).

Descriptive and exploratory research designs were used to conduct this study. Descriptive research was devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation while exploratory research was used to gain an understanding of underlying reasons, opinions, and motivations.

3.3.Research Methods

In order to achieve the research objectives, both quantitative and qualitative research methods were used in carrying out this research.

Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. It is used to quantify attitudes, opinions, behaviours, and other defined variables and generalise results from a larger sample population (Creswell 2003, p. 79).

Holloway and Wheeler (2002, p. 30) refer to qualitative research as "a form of social enquiry thatfocuses on the way people interpret and make sense of their experience and the world in which they live". Researchers use the qualitative approach to explore the behaviour, perspectives, experiences and feelings of people and emphasise the understanding of these elements.Qualitative Research is primarily exploratory research.

3.4.Data Collection Methods

In conducting the research, both primary and secondary data collection methods were used.

3.4.1. Primary Data Collection

The primary data are original and relevant to the topic of the research study so that the degree of accuracy is very high. Moreover, primary data is current and it can better give a realistic view to the researcher about the topic under consideration (Sekaran&Bougie 2010, p. 181). Both qualitative and quantitative methods were used to collect primary data.

3.4.1.1. Qualitative Methods

(i) In-Depth Interviews

Six (6) In-depth interviews using a semi-structured interview guide were conducted with key informants at MIBS (2) and ZNBC (4). This was in an effort to get a clear picture of what the organisations were doing about the low levels of accessibility to DTT among low income TV owning households.

According to Ritchie & Lewis (2003, p. 36) individual in-depth interviews provide an opportunity for detailed investigation and an in-depth understanding of the research topic in particular on how these key Informants perceive the issue under investigation. This method is understood as a form of conversation. Most researchers note that the primary strength of interviewing as a method is its "capacity to range over multiple perspectives on a given topic". The in-depth format thus permitted the researcher to explore fully all the factors that underpinned participants' answers: reasons, feelings, opinions and beliefs (Ritchie & Lewis 2003, p.141). It is a "vehicle for bringing out or extracting detailed information from the interviewee or informants' life world".

(ii) Focus Group Discussions

A semi-structured interview guide was used for conducting Focus Group Discussions (FGDs) to interview the third target group. Ten (10) meetings were conducted comprising six (6) homogeneous groups of participants in Kalingalinga Township. The FGDs gave the researcher an idea of how much people knew about digital migration and hence, assessed the awareness levels. FGDs furthermore provided crosschecks that verified the correctness of information sought from other methods.

3.4.1.2. Quantitative Method

(i) Structured Interviews

An interview method using a structured questionnaire or face-to-face personal interviews using a structured questionnaire was used. An interview method using a questionnaire gives an opportunity to probe and there is instant feedback. Also the researcher needed to explain the importance of the study to the respondents due to high illiteracy levels in the area.

3.4.2. Secondary Data Collection

Secondary data was gathered from published books, journals and computer data bases, magazines, news papers and many other sources of information that have been documented on the digital migration from analogue terrestrial television to digital terrestrial television.

The main advantages of secondary data are that it is faster to access and one finds the gaps. It provides a way to access the work of the scholars and gives a frame of mind to the researcher in which direction he/she should go for the specific research (Sekaran&Bougie 2010, p. 184).

3.5. Study Site/Population

The study was conducted in Kalingalinga Township, a low cost area in Munali Constituency in Lusaka, Zambia.The population of interest for the study comprised the head of the household male or female aged 15 years and above. According to Central Statistical Office (CSO) census of 2010, there are 8,356 households and a population of 39,139 of which 20,194 are females and 18,945 are males.

3.6. Sample Size and Sampling Techniques

The population interviewed was classified into three target groups according to the method of data collection used: Target group one- questionnaires, Target group two-In-depth interviews and Target group three-focus group discussions (FGDs). Sampling methods were multi-staged: purposive, and systematic to select households.

3.6.1. Target Group One

The Target group one were low-income TV owning households who rely on terrestrial platform for television access in Lusaka, Zambia. Lusaka was purposively sampled due to high levels of TV ownership. According to ZAMPS (2014, p. 39), over 70 percent of households in Lusaka own TV sets.

Kalingalinga Township was purposively sampled because there are generally high poverty levels in the area, easy access and also appears to be friendlier to students.Financially challenged TV owning households would be the most affected once analogue terrestrial television is switched off since it appears that they cannot afford the digital pay television.

Kalingalinga Township is divided into zones and Zone 10 was purposively sampled because it has marked roads (named roads) and house numbers. According to the Neighbourhood Health Committee (2010) of Kalingalinga Township, there are 571 households in zone 10.

Systematic sampling was used to pick 100 households which was the expected number to be surveyed. Roscoe (1975, p. 161) proposes a rule of thumb for determining a sample size and posits that a sample size of 30 - 500 is appropriate for most academic researches.Systematic samples also have an advantage of spreading across a very wide area.

The formula for calculating the interval that was used in systematic sampling is as follows:

$K = N/n$ where K is a constant/interval, N is the population and n is the sample size.

$K = 571/100$

$K = 5.71 \sim 6.$

The first household was randomly picked then every 6^{th} household was picked. One person (head of household or bread winner) was interviewed from each household. Head of households were in a better position to know when they would buy a set-top-box and whether they are affordable and available.

3.6.2.Target Group Two

The second target group was for key informants from two key stakeholders, namely: Ministry of information and Broadcasting Services (MIBS) and ZNBC. Purposive sampling was employed to select four (4) key informants from ZNBC and two (2) from MIBS. The personnel selected were part of the steering committee of the Taskforce for Digital Migration and were in a position to provide accurate information needed to know what the organisations were doing to address the issue of accessibility to Digital Terrestrial Television (DTT) among low income TV owning households.

3.6.3. Target Group Three

For the sake of data triangulation, Ten (10) Focus Group Discussions (FGDs) were conducted. The target population for the FGDs were residents of Kalingalinga Township. Purposive sampling was employed to select the participants and this enabled the researcher to avoid people that took part in the quantitative survey. Each FGD consisted of not less than six (6) participants of which five FGDs were for females and five for males.

3.7. Data Analysis

The Data that was collected using questionnaires was first checked for uniformity, consistency and accuracy. The raw data was then subjected to coding for fast and efficient processing of data. In the process of data entry, coded questionnaires were entered into the computer using the excel package of the Microsoft Office. The data was then exported to Statistical Packages for Social Sciences Software (SPSS) version 16. Data was subsequently analyzed using descriptive statistics; this has been presented in form of tables - cross tabulations, frequencies and percentages whilst excel was used to design charts.

3.8. Ethical Considerations

In terms of ethical considerations, prior 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, respect for their privacy and the right to refuse responding to the questions in the questionnaire at any stage when they wanted to do so. Anonymity and confidentiality was promised and maintained. The information they provided will not be made available to anyone else who is not directly involved in the study and could not be traced back to the participants. The researcher also adhered to the institutional guidelines on conducting research.

3.9. Limitations of the Study

- Researcher spent a lot of time educating respondents: The awareness of the Digital Migration Process among the respondents was high but they did not understand the use of the set-top-boxes hence, the researcher had to brief them on why they needed to buy the set-top-boxes.
- Very difficult to classify income levels (people do not tell the truth about how much they earn per month).
- Household based surveys are difficult to conduct due to human complexity (may not be willing to talk to you).
- Household based surveys are laborious moving from one household to another.

3.10.Conclusion to the Chapter

Kalingalinga Township was purposively sampled as the area of study. 100 households were systematically sampled and 100 respondents were interviewed using a structured questionnaire. For the sake of data triangulation, in-depth interviews and Focus Group Discussions were also conducted.

CHAPTER FOUR

CONCEPTUAL AND THEORETICAL FRAMEWORK

4.1.Introduction to the Chapter

This chapter looked at the conceptual as well as the theoretical framework. Concepts that are relevant to the field of study have been defined including the way they have been applied in this study. These are digital, television, analogue television, digital terrestrial television, digital migration, set-top-box and low-income households. Under the theoretical framework, the Diffusion of Innovation theory was adopted and the support theory was theTechnological acceptance Model, a theory based on the information systems.

4.2. Conceptual and Operational definitions

4.2.1. Digital

The word, digital means "a process or device that operates by processing information that is supplied and stored in the form of a series of binary digits" (Robinson, 2004, p. 373). According to Okpanachi (2008, p. 4) " digital radio is the pure digital transmission medium that improves the sound quality of radio broadcasts, virtually eliminating static, hiss, pops and fades and offers data display capabilities on receivers and opens up opportunity for multicasting: broadcasting multiple high-quality channels on each frequency". In the same vein, digitisation of video signals, according to Baran (2010, p. 227), "reduces their sizes, therefore, more information can be carried over phone wires and stored". According to Hanson (2005, p. 241) ,"just as sound recording has moved to digital formats with CDs and MP3 files, so is television in the process of going from analogue technology to the computerised digital technology".

There are two distinct digital formats. The first one is the High-Definition Television (HDTV) which is in a wide screen format and features an ultra clear high resolution picture with superior sound. The second digital format is the Standard Digital Television (SDTV), which will make it possible to broadcast up to six channels on the same frequency space that now carries only one channel.

The above submissions represent the attributes of the digital concepts. They also form opinion for the advantageous need of the process of digitisation. That is to say that the digital technology is paramount in today's broadcasting. That is why Dominick (2009, p. 233) says "the traditional broadcast television industry is in a state of change". Also Dominick (2009, p. 157) states that "hoping to capitalise on the public's increasing awareness of high-definition television (HDTV), the radio industry is introducing HD radio, a digital service that generally improves the signal quality of terrestrial radio stations." HD radio has the ability to enhance FM station to produce sound as good as CD. It can also make AM station sounds as good as current FM station. And the signals are static free. The notion here is that digital signals in broadcasting are superb, that they can be compressed to make one single radio station to broadcast more than one programme at a time.

Talking about Television, digital television (DTV) offers many advantages. The pictures are clearer with better sound quality. It also enhances the "rectangle-ness" of the screen (16:9 aspect ratios) unlike the traditional TV which is square (4:3 aspect ratios). Furthermore, the possibility of transmitting on a super-resolution hi-def TV is enhanced by digitisation of TV signals.

Observers have it that the difference between traditional analogue broadcasting and digital broadcasting resembles the disparity existing between AM and FM signal qualities. These outstanding qualities of digital broadcasting prompted the world through its regulator, the ITU, to make moves towards digitising all broadcast services in the world. A pact was reached; and Zambia was, and still is, part of the deal to digitise (ITU 2012, P. 11).

To receive the digital terrestrial signal, one requires a digital television set or a set-top-box (STB).In order to ensure that the migration to digital terrestrial television (DTT) is successful, the free-to-air DTT set top box should be a basic, affordable and available set top box as the digital TV sets are currently costly and out of the reach for many which can be upwards of US$300 at the lower end (Balancing Act 2011, p. 1).

The term digital is used in the study as it has been stated.

4.2.2. Television

Television (often abbreviated as TV) is a widely used telecommunication system for broadcasting and receiving moving pictures and sound over a distance. The term may also be used to refer specifically to a television set, programming or television transmission. Television is certainly one of the most influential forces of the 21stcentury, the television set has become a common household communications device in homes and institutions, as a source of entertainment, sports, information, commercials and news.Since the 1970s, video recordings on VCR tapes and later, digital playback systems such as DVDs, have enabled the television to be used to view recorded movies and other programmes (Wu et al., 2006, pp. 8-21).

In this study, television was understood to mean mass media as the source of information for digital migration.

4.2.3. Analogue Television

Analogue television is the original television technology that uses analogue signals to transmit video and audio. Analogue television requires a large amount of bandwidth to transmit the pictures and sound information(MIBS 2012, p. 6).

The bigger the bandwidth, the more channels can be carried in that bandwidth just like the bigger the road, the more traffic it can absolve. The current method, analogue, uses a lot of bandwidth and yet limits the amount of signal that can get through it at any one time.

Digital signals, on the other hand, require much less bandwidth-up to 8 or 9 times as much digital information can be carried in the same bandwidth.

In this study, the term Analogue Television was used as it had been defined.

4.2.4. Digital Migration

Digital migration is a process of change from analogue to digital broadcasting. The main reason for the world's migration to digital is to release valuable spectrum which can be used for other services. Spectrum is scarce; therefore, more efficient use of the spectrum is necessary if more terrestrial telecommunications and broadcasting services are to be made available.

Digital migration usually occurs in a phased transition process. For some time (usually a few years) after digital transmissions commence, existing television services are broadcast in both analogue and digital format. This period is known as the "dual illumination period". Once a sufficient number of people have migrated to DTT, the analogue transmissions cease, and only the digital transmissions continue (so called "analogue switch-off") (MIBS 2012, p. 4).

This term is used in the study as it has been stated.

4.2.5. Digital Terrestrial Television

Digital broadcasting is the conversion of sound, video and text into digital data and subsequent transmission of the digitised data over television channels or assigned radio frequency bands for reception by the public. Sound, video and text are processed electronically and converted into digital format. This format is then transmitted and reconverted by appropriate receivers or set-top boxes into sound, text and video for display on TV set.

Terrestrial television uses a network of transmission towers to relay the signal across the country. Each transmission tower has a specific area of coverage, and it is the network of coverage that provides television signals across the country. The broadcast signal is sent to the various towers and if you are within the area covered by a tower, then you will be able to receive the broadcast services via a terrestrial aerial which is usually placed on your roof or on your television set (depending on how strong the signal that you are receiving is)

(MIBS 2012, p. 2).
In this study, the term digital terrestrial television was used as it had been defined.

4.2.6. Set-top-box

A set top box receives the digital TV signal captured over the air by the aerial and converts the digital signal into a format that can be understood and displayed by an analogue TV. The TV must have audio and video inputs (A/V), or alternatively RF input so that a set-top-box can be plugged into the TV.

Analogue television sets cannot display digital transmissions on their screens without being connected to a set-top box converter.

Current digitally integrated TV sets are costly and out of the reach for many.The secret to universal access to DTT lies in the Set Top Box.

Ensuring that set-top boxes are available and affordable are also key factors in making sure that low-income households are able to access the new services (MIBS 2012, pp. 7-8).

In this study, the term set-top-box was used as it had been defined.

4.2.7. Low-income households

According to Central Statistical Office (CSO 2015, p. 77), income is used as a measure of welfare because the consumption of goods and services is dependent on the sum of income available to a household at any given time. Average monthly income for high, medium and low communities ranged from K6, 882, K2, 587 and K746 respectively (CSO 2015, p. 80). Low-income households are households who earn low wages. In low-income communities, approximately 45 percent of household expenditures are spent on food and 12 percent on housing and household income for almost 70 percent of households is less than US$40 per month (World Bank 2002, p. 4).

This term is used in the study as it has been stated.

4.3. Theoretical Framework

The following were the two main theories that applied to the research: Diffusion of Innovation theory and the Technological Acceptance theory.

4.3.1. Diffusion of Innovation Theory

According to Rogers (2003, p. 5), diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system. The origins of the diffusion of innovation theory are varied and span multiple innovations that seek to explain how, why and at what rate new ideas and technology spread through cultures. Diffusion of an innovation occurs through a five-step process. This process is a type of decision-making. It occurs through a series of communication channels over a period of time among the members of a similar social system. Ryan and Gross first indicated the identification of adoption as a process in 1943 (Rogers 1962, p. 79).

Rogers categorises the five stages (steps) as: awareness, interest, evaluation, trial, and adoption. An individual might reject an innovation at any time during or after the adoption process. In later editions of the Diffusion of Innovation, Rogers changes the terminology of the five stages to: knowledge, persuasion, decision, implementation, and confirmation. However the descriptions of the categories have remained similar throughout the editions.

Definition Knowledge: In this stage, the individual is first exposed to an innovation but lacks information about the innovation. During this stage of the process the individual has not been inspired to find more information about the innovation (Rogers 2003, p. 82).

Persuasion: In this stage, the individual is interested in the innovation and actively seeks information and detail about the innovation (Rogers 2003, p. 82).

Decision: In this stage the individual takes the concept of the change and weighs the advantages and disadvantages of using the innovation and decides whether to adopt or reject the innovation. Due to the individualistic nature of this stage, Rogers notes that it is the most difficult stage to acquire empirical evidence (Rogers 2003, p. 83).

Implementation: In this stage the individual employs the innovation to a varying degree depending on the situation. During this stage the individual determines the usefulness of the innovation and may search for further information about it (Rogers 2003, p. 83).

Confirmation:although the name of this stage may be misleading, in this stage the individual finalises his/her decision to continue using the innovation and may use the innovation to its fullest potential. Rogers (2003, pp. 210-238) states that for an innovation to be adopted, it should have a relative advantage. This means the degree to which the innovation is perceived as better than the idea it supersedes. Relative advantage refers to the extent to which the innovation is more productive, efficient, costs less, or improves in some other manner upon existing practices.

According to Rogers (2003, p. 22), adoption of innovations is dependent on the innovativeness of an individual. He defined "Innovativeness as the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system".

There are five categories of adopters which Rogers (2003, p. 22) defined as "the classifications of members of a social system on the basis of innovativeness". This classification includes innovators, early adopters, early majority, late majority,and laggards. In each adopter category, individuals are similar in terms of their innovativeness.

Innovators: For Rogers (2003, p. 248), innovators were willing to experience new ideas. Thus, they should be prepared to cope withunprofitable and unsuccessful innovations, and a certain level of uncertainty about the innovation. Also, Rogersadded that innovators are the gatekeepers bringing the innovation in from outside of the system. They may not berespected by other members of the social system because of their venturesomeness and close relationshipsoutside the social system. Their venturesomeness requires innovators to have complex technical knowledge.

Early Adopters: Compared to innovators, early adopters are more limited with the boundaries of the social system. Rogers (2003, pp. 248-249)argued that since early adopters are more likely to hold leadership roles in the social system, other memberscome to them to get advice or information about the innovation. In fact, "leaders play a central role at virtuallyevery stage of the innovation process, from initiation to implementation, particularly in deploying the resourcesthat carry innovation forward" (Light, 1998, p. 19). Thus, as role models, early adopters' attitudes towardinnovations are more important. Their subjective evaluations about the innovation reach other members of thesocial system through the

interpersonal networks. Early adopters' leadership in adopting the innovationdecreases uncertainty about the innovation in the diffusion process. Finally, "early adopters put their stamp ofapproval on a new idea by adopting it" (Rogers, 2003, p. 283).

Early Majority: Rogers (2003, p. 249) claimed that although the early majority have a good interaction with other members of the socialsystem, they do not have the leadership role that early adopters have. However, their interpersonal networks arestill important in the innovation-diffusion process. The early majority adopts the innovationjust before the other half of their peers adopts it. As Rogers stated, they are deliberate in adopting an innovationand they are neither the first nor the last to adopt it. Thus, their innovation decision usually takes more time thanit takes innovators and early adopters.

Late Majority: Similar to the early majority, the late majority includes one-third of all members of the social system who waituntil most of their peers adopt the innovation. Although they are skeptical about the innovation and its outcomes,economic necessity and peer pressure may lead them to the adoption of the innovation. To reduce the uncertaintyof the innovation, interpersonal networks of close peers should persuade the late majority to adopt it. Their relatively scarce resources mean that almost all of the uncertaintyabout a new idea must be removed before the late majority feelthat it is safe to adopt (Rogers, 2003, pp. 249-250).

Laggards: As Rogers (2003, p. 250) states, laggards have the traditional view and they are more skeptical about innovations andchange agents than the late majority. As the most localised group of the social system, their interpersonalnetworks mainly consist of other members of the social system from the same category. Moreover, they do nothave a leadership role. Because of the limited resources and the lack of awareness-knowledge of innovations,they first want to make sure that an innovation works before they adopt. Thus, laggards tend to decide afterlooking at whether the innovation is successfully adopted by other members of the social system in the past. Dueto all these characteristics, laggards' innovation-decision period is relatively long.

In addition to these five categories of adopters, Rogers (2003, p. 251) further described his five categories of adopters intwo main groups: earlier adopters and later adopters. Earlier adopters consist of innovators, early adopters, andearly majority, while late majority and

laggards comprise later adopters. Rogers identifies the differencesbetween these two groups in terms of socioeconomic status, personality variables, and communication behaviours,which usually are positively related to innovativeness. For instance, "the individuals or other units in a systemwho most need the benefits of a new idea (the less educated, less wealthy, and the like) are generally the last to adopt an innovation" (Rogers 2003, p. 295). For Rogers, there was no significant difference between the ages ofearlier adopters and later adopters.

In this research, the theory was particularly relevant because it was based on the idea that the acceptance of an innovation (a new product, new service, new idea or new practice) is spread by communication (mass media, salespeople or informal conversations) to members of a social system (a target market) over a period of time.Forinstance, ZNBC spread the messages about the new innovation so that the public was aware about digital migration and its requirements. This could be termed as diffusion of innovation depicted in the theory.

4.3.2. Technological Acceptance Theory

Technological acceptance Model is a theory based on the information systems. It models how the users go through a stage of accepting and using technology. The model itself suggests that when a user or a person is presented with an idea of a new technology there are various factors that influence the decision making of how and when it will be used (Davis 1989, p. 345).

Davis (1986, p. 24) suggests that users' motivation can be explained by three factors: Perceived Ease of Use, Perceived Usefulness, and Attitude toward using the system. He hypothesised that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: perceived usefulness and perceived ease of use, with perceived ease of use having a direct influence on perceived usefulness.

According to Fred Davis, perceived usefulness is the degree to which an individual believes in using a particular system and how it should lead into the enhancement of their job performance. As for perceived ease-of-use, the person believes in using a particular mode of system which would be free from the effort itself.

In this research, the theory was relevant because the study had shown that the people in Kalinglinga Township were learning to accept the idea of digital migration since households do not have much of a choice as of now.Though, it does pose a question as to whether households are actually accepting the digital migration or is it something being forced on them by the government.The date for the switch off has already past and ZNBC only managed to implement simulcast along the line of rail and the rest of the country is still receiving analogue terrestrial television signal.

4.4.Conclusion to the Chapter

The chapter looked at the conceptual framework and the concept "digital" was discussed. Digital means "a process or device that operates by processing information that is supplied and stored in the form of a series of binary digits. The Diffusion of Innovation Theory was adopted as the main theoretical framework for this study. The theory explains how new ideas move from one community to another through communication. As for the Technological Acceptance model, the theory explainsthat when a user or a person is presented with an idea of a new technology, there are various factors that influence the decision making of how and when it will be used.

CHAPTER FIVE

FINDINGS OF THE RESEARCH

5.1. Introduction to the Chapter

This chapter presents the findings of this study. The findings were derived from 100 questionnaires, four (4) in-depth interviews and ten (10) Focus Group Discussions using quantitative and qualitative methods respectively. The findings have been presented in form of tables and charts using SPSS and Excel.

5.2. Quantitative Survey

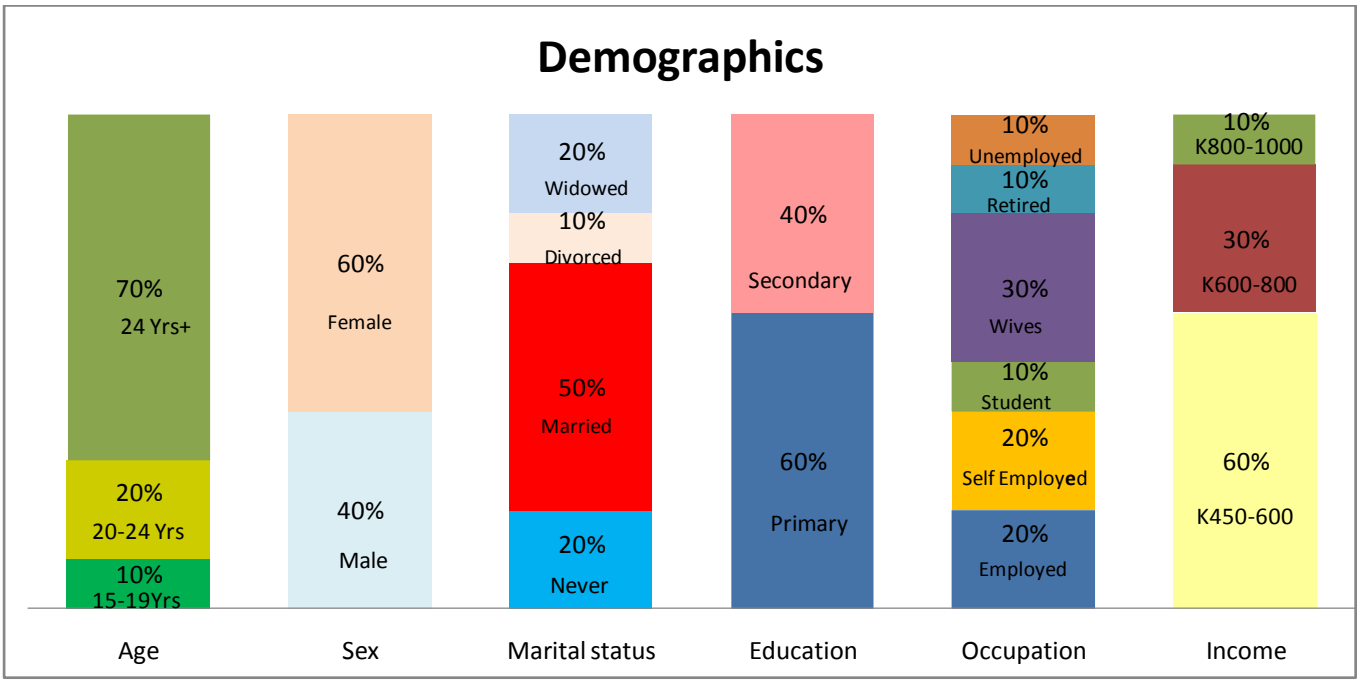
The sample size for the study was 100. 100 persons from 100 households in Kalingalinga Township took part in the study giving a response rate of 100 percent. Heads of households (husband or wife) were personally interviewed using a structured questionnaire.

5.2.1. Demographic characteristics of the sample (n=100)

Table 1: Demographics

Variable	Frequency	Percentage
1. Age group		
15-19	10	10
20-24	20	20
>24	70	70
Total	100	100
2. Sex		
Female	60	60
Male	40	40
Total	100	100
3.Marital status		
Never married	20	20
Married	50	50
Divorced	10	10
Widowed	20	20
Total	100	100
4.Education		
Primary school	60	60
Secondary school	40	40
Total	100	100
5. Occupation status		
Employed	20	20
Self employed	20	20
Student	10	10
Housewife/homemaker	30	30
Retired	10	10
Unemployed	10	10
Total	100	100
6. Income per month		
K450-K600	60	60
K600-K800	30	30
K800-1000	10	10
Total	100	100

Figure 1: Demographics



Most of the respondents (70%) were aged 24 and above. 20% were in the age bracket of 20-24years and 10% in the age bracket of 15-19 years as shown in the chart above.

60% of the respondents were female and 40% were male as shown in the chart above.

In terms of marital status, 50% of the respondents were married while 20% were not married, 20% were widowed and 10% were divorced as shown in the chart above.

60% of the respondents claimed they had attained primary school of education and 40% claimed they had attained secondary school of education as shown in the chart above.

In terms of occupational status, 20% of the respondents were employed, 20% self employed, 10% were students, 30% housewives, 10% were retired and 10% of the respondents were unemployed as shown in the chart above.

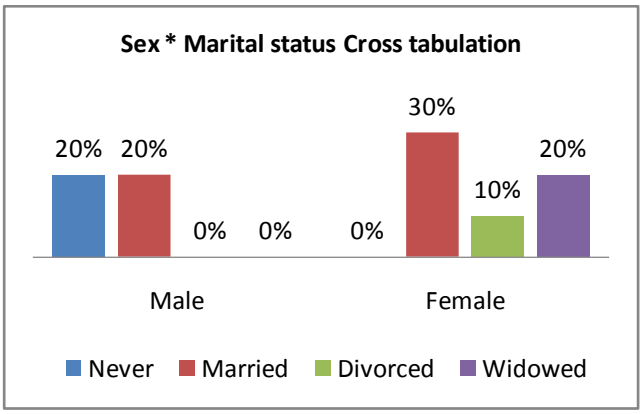
60% of the respondents claimed they earned an income per month falling in the income bracket of K450-K600. 30% had their income fall between K600-K800 and 10% between K800-K1000 as shown in the chart above.

Further analysis of sex in relation to marital status

Table 2: Sex * Marital status Cross tabulation

Count						
		Marital status				
		Never married	Married	Divorced	Widowed	Total
Sex	Female	0	30	10	20	60
	Male	20	20	0	0	40
Total		20	50	10	20	100

Figure 2: Sex * Marital status Cross tabulation



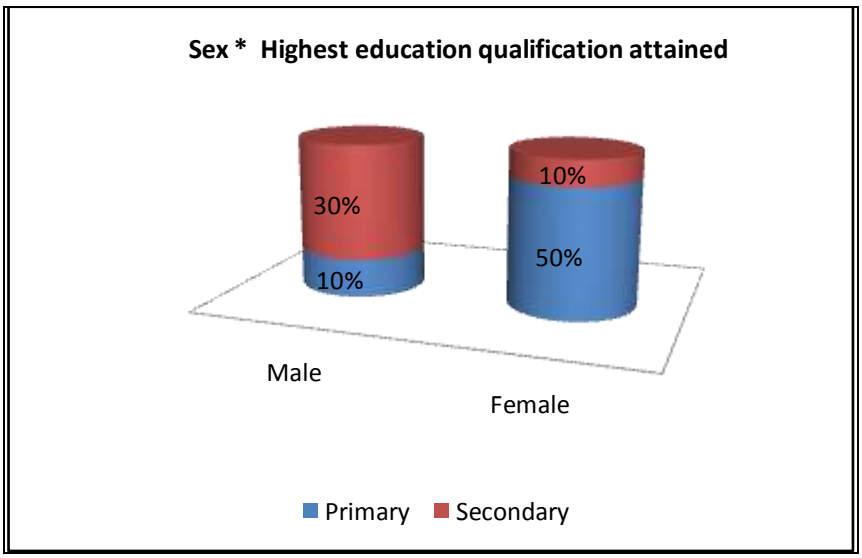
When sex was cross tabulated with marital status, 20% of the respondents that were never married before were all males while all females in the study were either married (30%), divorced (10%) or widowed (20%). 20% of males respondents were married and none of the male respondents was neither divorced nor widowed as shown in the chart above.

Further analysis of sex in relation to education qualification attained

Table 3: Sex * Highest education qualification attained Cross tabulation

		Highest education qualification attained		
		Primary School	Secondary School	Total
Sex	Female	50	10	60
	Male	10	30	40
Total		60	40	100

Figure 3: Sex * Highest education qualification attained



When sex was cross tabulated with highest education qualification attained, 30% of the male respondents claimed to have attained secondary school education while 10% of males claimed to have attained primary school education. As for female respondents, 50% claimed to have attained primary school education while 10% claimed to have attained secondary school education as shown in the chart above.

5.2.2. Awareness levels on digital migration among low-income TV owning households (n = 100)

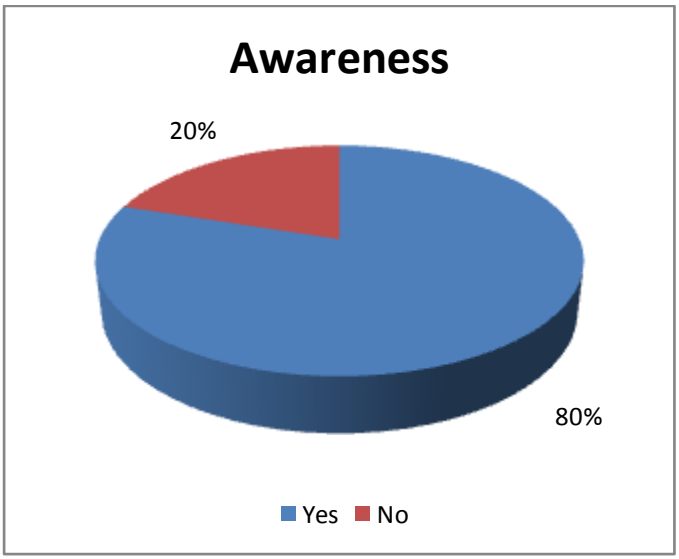
This section intended to establish the levels of awareness and understanding of digital migration among low-income television owning households who rely on terrestrial platform for television access. The questions addressed were as follows:

(i) Are you aware about digital migration?

Table 4: Awareness about digital migration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	80.0	80.0	80.0
	No	20	20.0	20.0	100.0
	Total	100	100.0	100.0	

Figure 4: Aware about digital migration



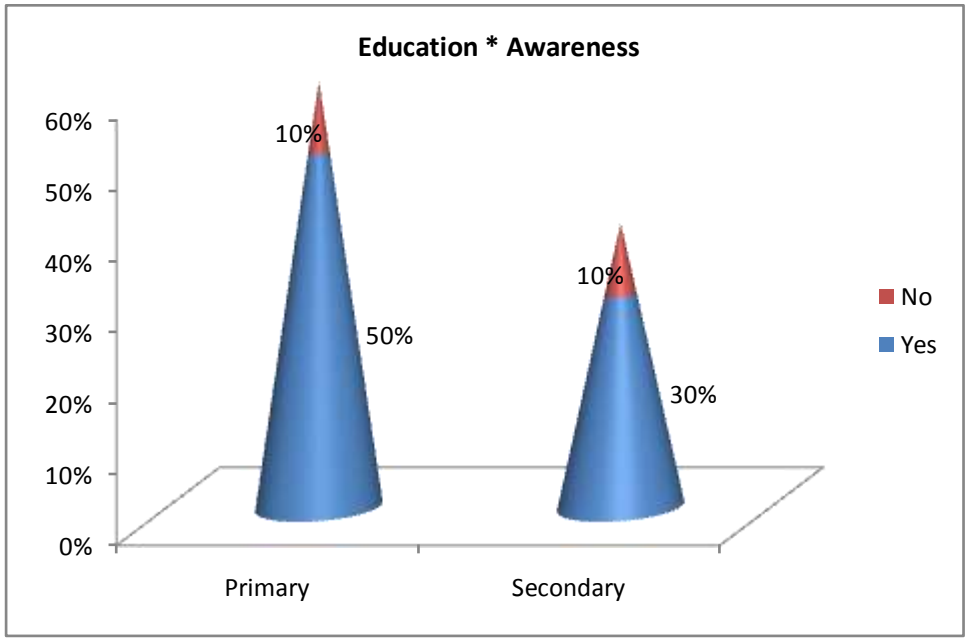
When the respondents were asked whether they were aware of the digital migration, 80% stated that they were aware while 20% said that they were not aware as shown in the chart above.

Further analysis on awareness of digital migration in relation to education

Table 5: Highest education qualification attained * Are you aware of digital migration Cross tabulation

Count				
		Are you aware about digital migration		
		Yes	No	Total
Highest education qualification attained	Primary School	50	10	60
	Secondary School	30	10	40
Total		80	20	100

Figure 5: Highest education qualification attained * Are you aware of digital migration



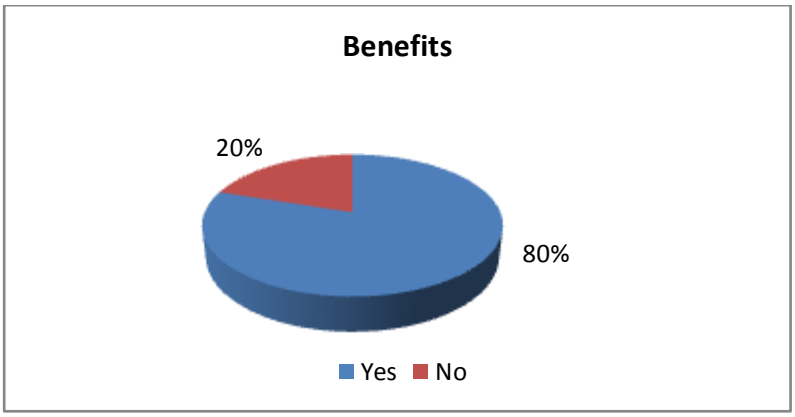
When education was cross tabulated with awareness, 50% of the respondents with primary education declared that they were aware of the digital migration while 10% of respondents with primary education stated that they were not aware. 30% of the respondents with secondary education were aware of the digital migration while 10% of respondents who attained secondary school of education were not aware as shown in the chart above.

(ii) Would you say digital migration is beneficial?

Table 6: Digital migration is beneficial

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	80.0	80.0	80.0
	No	20	20.0	20.0	100.0
	Total	100	100.0	100.0	

Figure 6: Would you say digital migration is beneficial



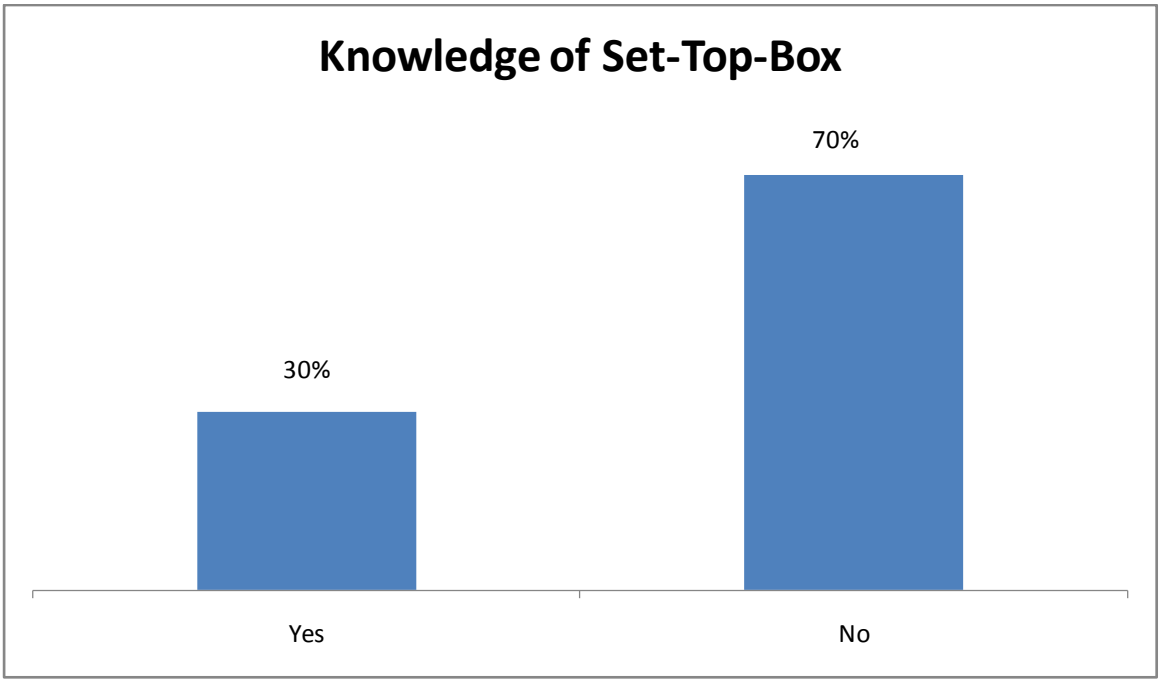
When the respondents were questioned whether digital migration was beneficial, 80% said that it was beneficial while 20% did not know as shown in the chart above.

(iii) Do you understand what set top boxes are?

Table 7: Do you understand what set top boxes are

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	30.0	30.0	30.0
	No	70	70.0	70.0	100.0
	Total	100	100.0	100.0	

Figure 7: Do you understand what set top boxes are



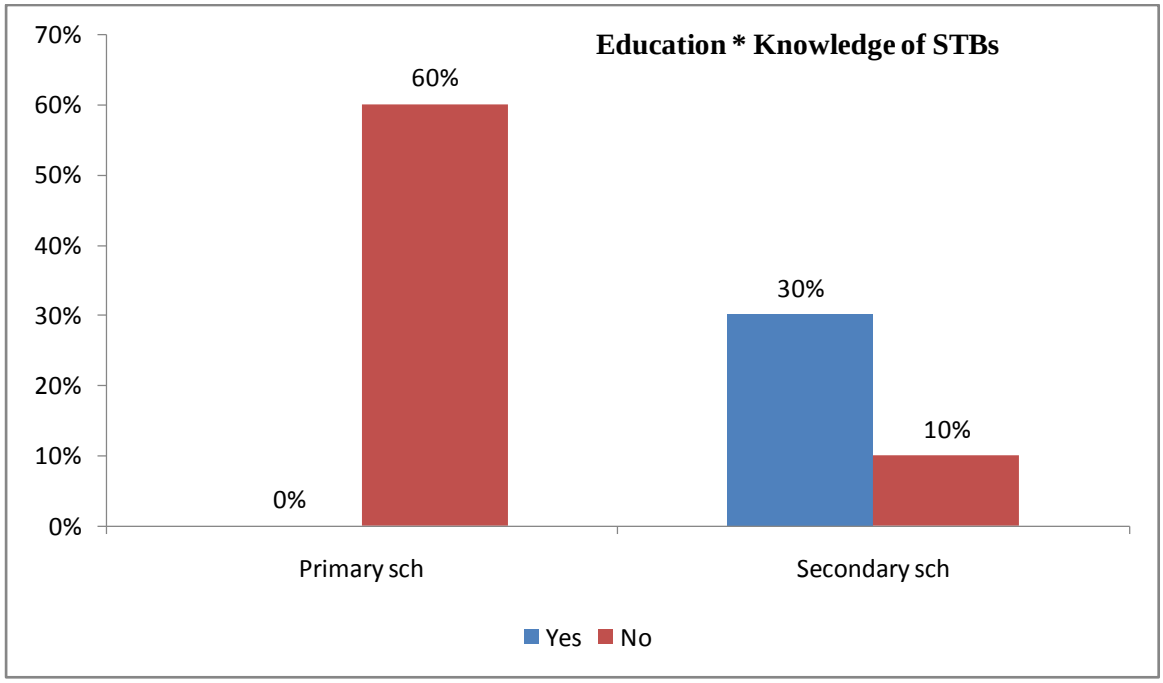
When the respondents were asked whether they understood what a set-top-box was, 30% claimed they understood while 70% did not understand as shown in the chart above.

Further analysis of knowledge of STBs in relation to education

Table 8: Highest education qualification attained * Do you understand what set top boxes are

		Cross tabulation		
Count		Do you understand what set top boxes are		
		Yes	No	Total
Highest education qualification attained	Primary School	0	60	60
	Secondary School	30	10	40
Total		30	70	100

Figure 8: Highest education qualification attained * Do you understand what set top boxes are



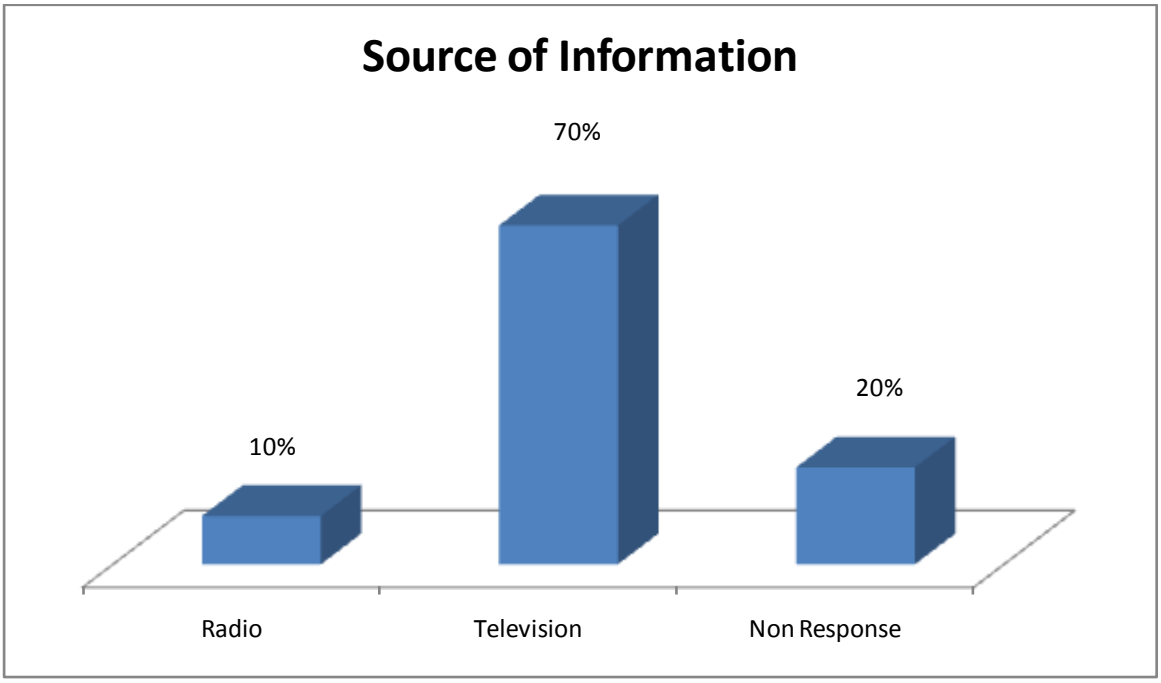
When education was cross tabulated with the understanding of what a set-top-box is, 30% of the respondents who attained secondary education had knowledge of what a set-top-box was while 10% with secondary education did not know what a set-top-box was. None of the respondents (60%) who attained primary education knew what a set-top-box was as shown in the chart above.

(iv) What was your source of information about the STBs?

Table 9: What was your source of information about the STBs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Radio	10	10.0	12.5	12.5
	Television	70	70.0	87.5	100.0
	Total	80	80.0	100.0	
Non	Response	20	20.0		
Total		100	100.0		

Figure 9: What was your source of information about the STBs



When the respondents were questioned about their source of information about STBs for digital migration, 70% said they heard about digital migration from the television, 10% from the radio and 20% was a non response as shown in the chart above.

5.2.3. Availability of set-top-boxes (STBs) among low-income TV owning households(n= 100)

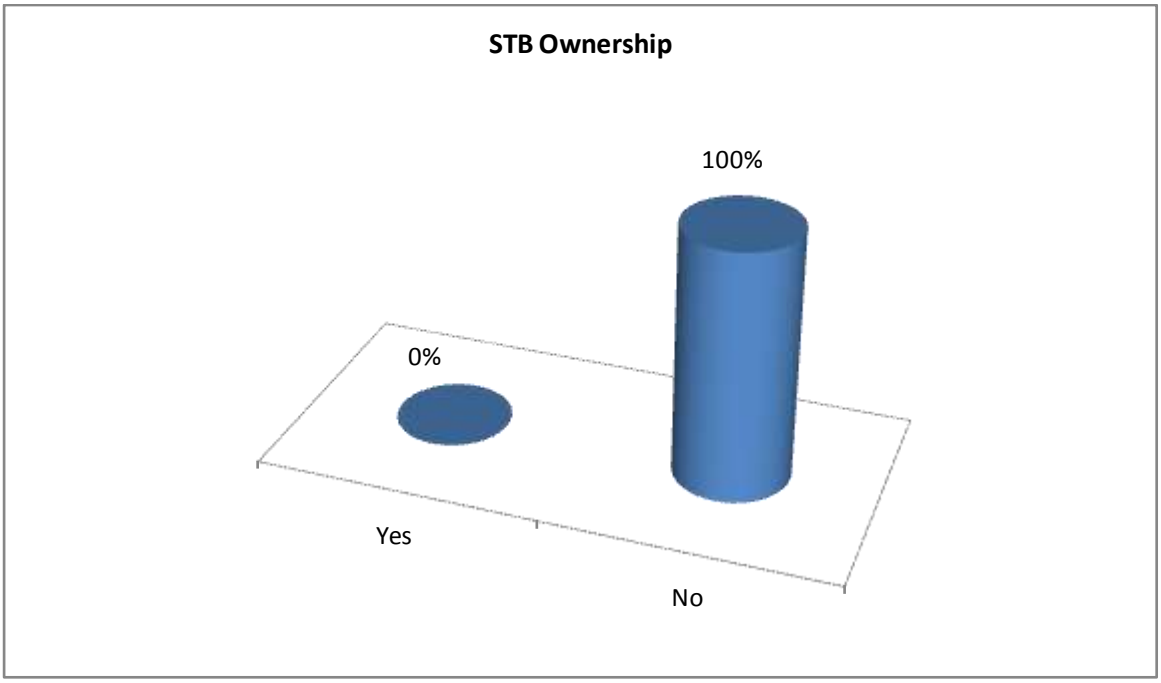
Respondents were asked the following questions to investigate whether the set-top-boxes were available?

(i) Do you have a decoder/STB?

Table 10: Do you have a decoder/STB

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	100	100.0	100.0	100.0

Figure 10: Do you have a decoder/STB



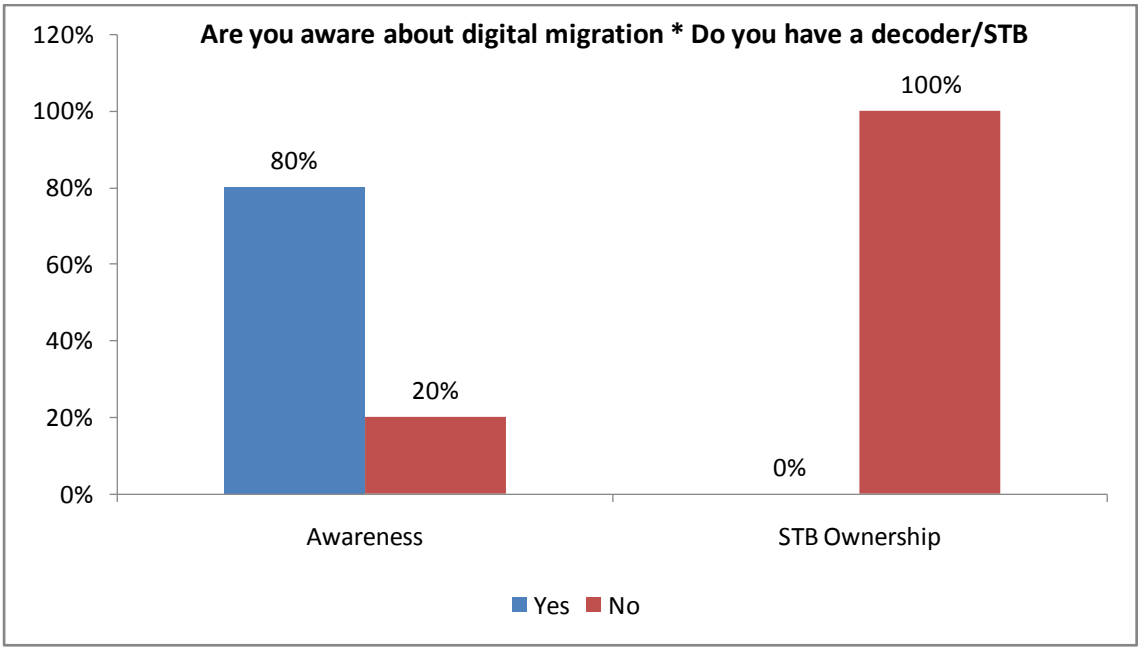
None of the respondents (100%) had a set-top-box as shown in the chart above.

Further analysis of STB ownership in relation to awareness of digital migration

Table 11: Are you aware about digital migration * Do you have a decoder/STB Cross tabulation

		Cross tabulation	
Count		Do you have a decoder/STB	
		No	Total
Are you aware about digital migration	Yes	80	80
	No	20	20
Total		100	100

Figure 11: Are you aware about digital migration * Do you have a decoder/STB



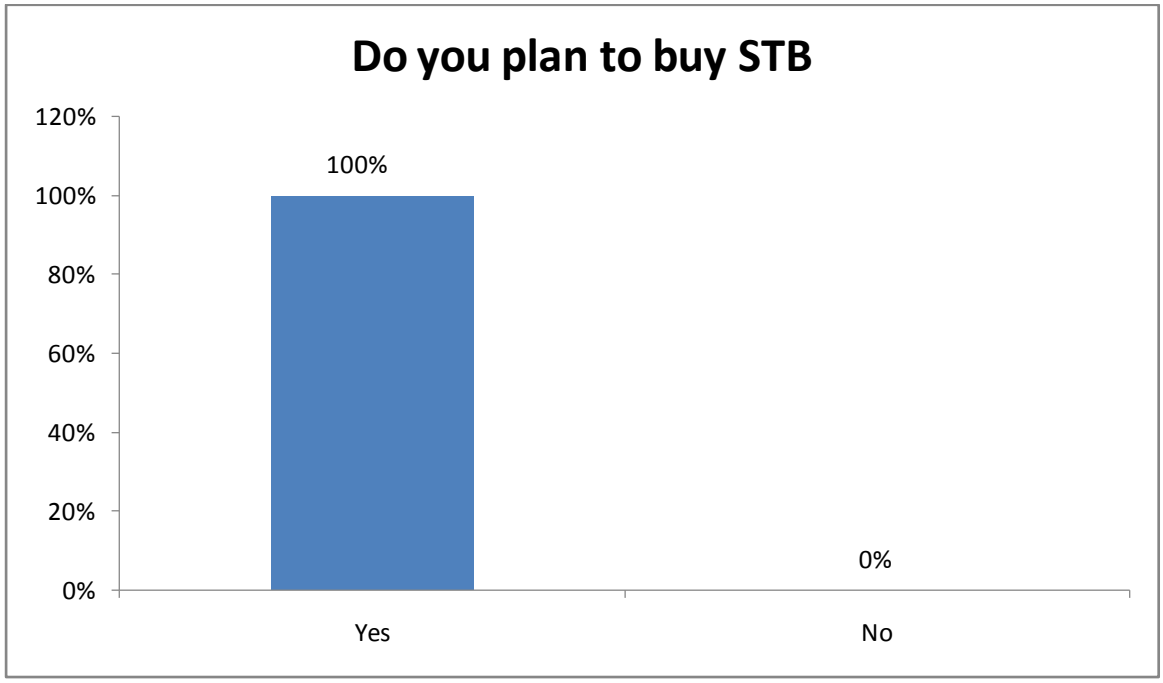
When awareness was cross tabulated with ownership of set-top-box, none of the respondents (80%) who were aware about digital migration had a set-top-box as shown in the chart above.

(ii) If no do you plan to buy a decoder/STB or a digital TV?

Table 12: If no do you plan to buy a decoder/STB or a digital TV

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	100	100.0	100.0	100.0

Figure 12: If no do you plan to buy a decoder/STB or a digital TV



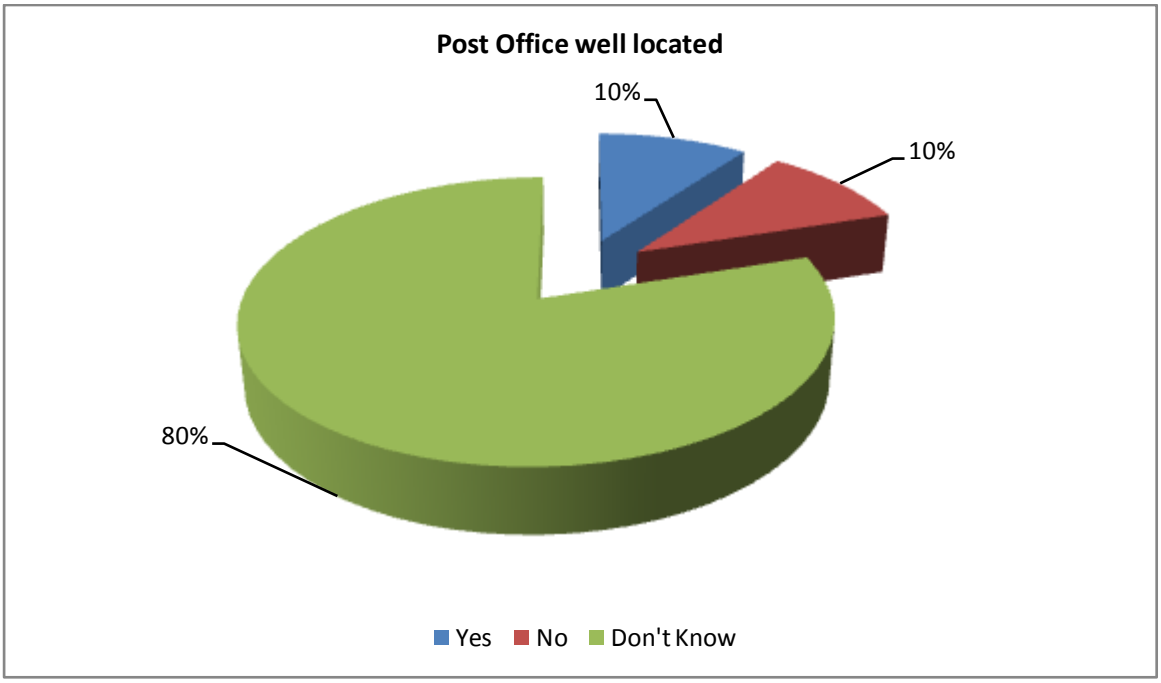
When the respondents were asked whether they planned to buy set-top-boxes, all of them (100%) declared they considered to buy set-top-boxes as shown in the chart above.

(iii)Do you think the post office is well located for the sale of STBs?

Table 13: Do you think the post office is well located for the sale of STBs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	10.0	10.0	10.0
	No	10	10.0	10.0	20.0
	Don't know	80	80.0	80.0	100.0
	Total	100	100.0	100.0	

Figure 13: Do you think the post office is well located for the sale of STBs



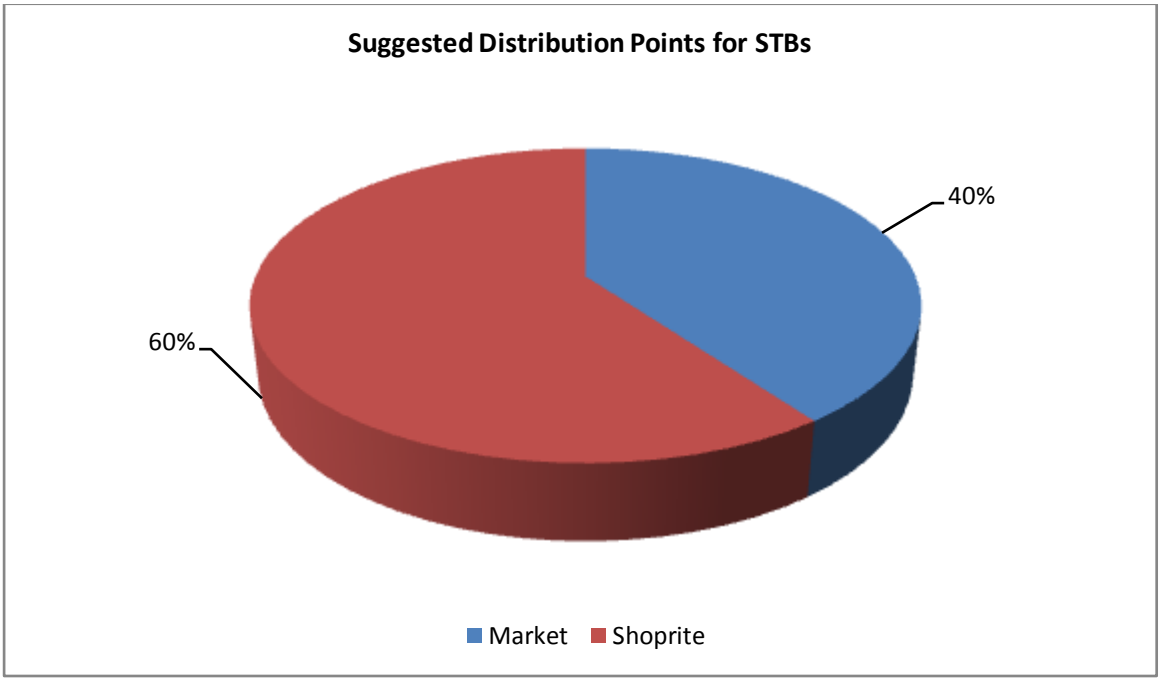
In the first phase of digital migration, the set-top-boxes were sold at postal offices along the line of rail. When the respondents were questioned whether the postal office was well located for the sale of set-top-boxes, 10% said yes and another 10% said no while 80% didn't know as shown in the chart above.

(iv)What would you suggest is the best distribution point for STBs?

Table 14: What would you suggest is the best distribution point for STBs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Market	40	40.0	40.0	40.0
	Shoprite	60	60.0	60.0	100.0
	Total	100	100.0	100.0	

Figure 14: What would you suggest is the best distribution point for STBs



When the respondents were asked to suggest the distribution points for set-top-boxes, 60% suggested markets while 40% proposed Shoprite as shown in the chart above.

5.2.4. Affordability of STBs among low-income TV owning households (n= 100)

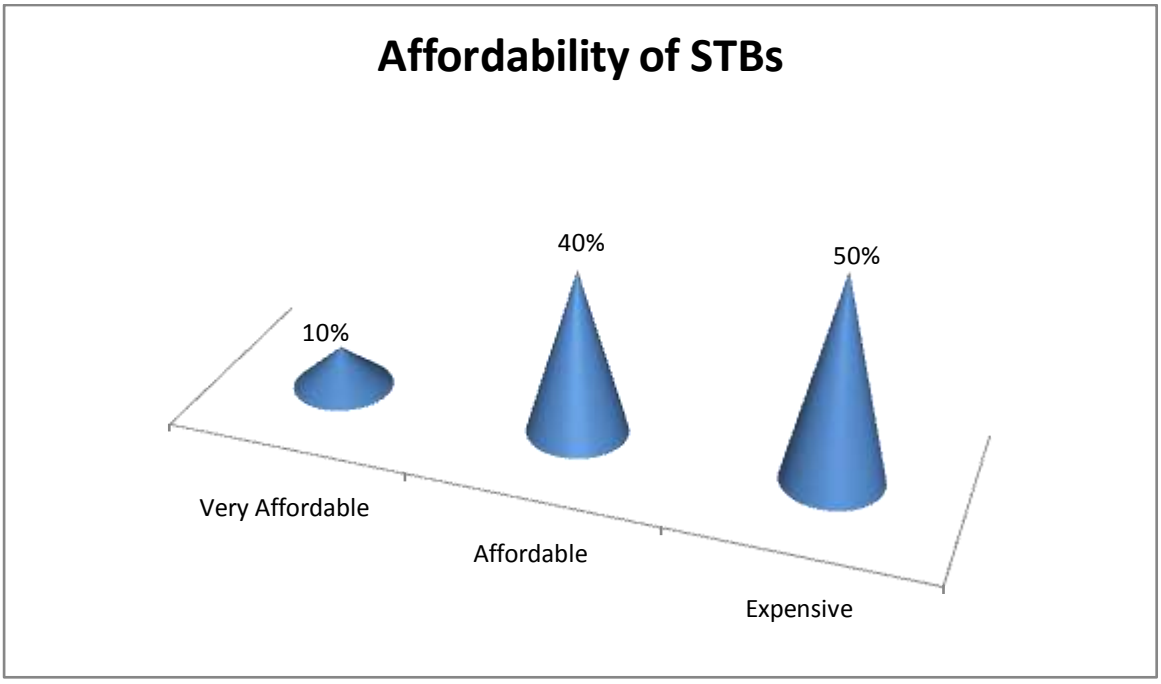
Respondents were asked the questions below to find out if the set-top-boxes were affordable.

(i) Would you say the price of the STB is affordable for you?

Table 15: Would you say the price of the STB is affordable for you

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very affordable	10	10.0	10.0	10.0
	Affordable	40	40.0	40.0	50.0
	Expensive	50	50.0	50.0	100.0
	Total	100	100.0	100.0	

Figure 15: Would you say the price of the STB is affordable for you



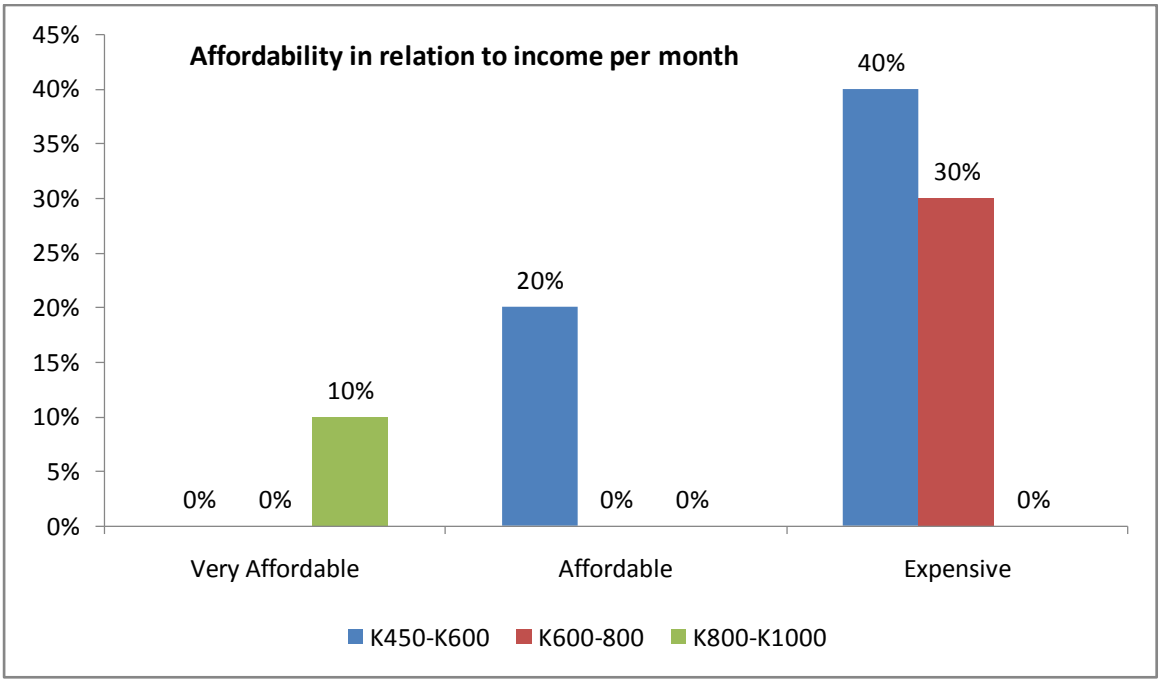
When the respondents were questioned how they felt about the price of buying set-to-box, 50% stated they were expensive, 40% said they were affordable and 10% declared they were very affordable as shown in the chart above.

Further analysis of affordability in relation with income per month

Table 16: Would you say the price of the STB is affordable for you * Income per month Cross tabulation

		Cross tabulation			
Count		Income per month			
		K450-600	K600-k800	K800-1000	Total
Would you say the price of the STB is affordable for you	Very affordable	0	0	10	10
	Affordable	20	0	0	20
	Expensive	40	30	0	70
Total		60	30	10	100

Figure 16: Would you say the price of the STB is affordable for you * Income per month Cross tabulation



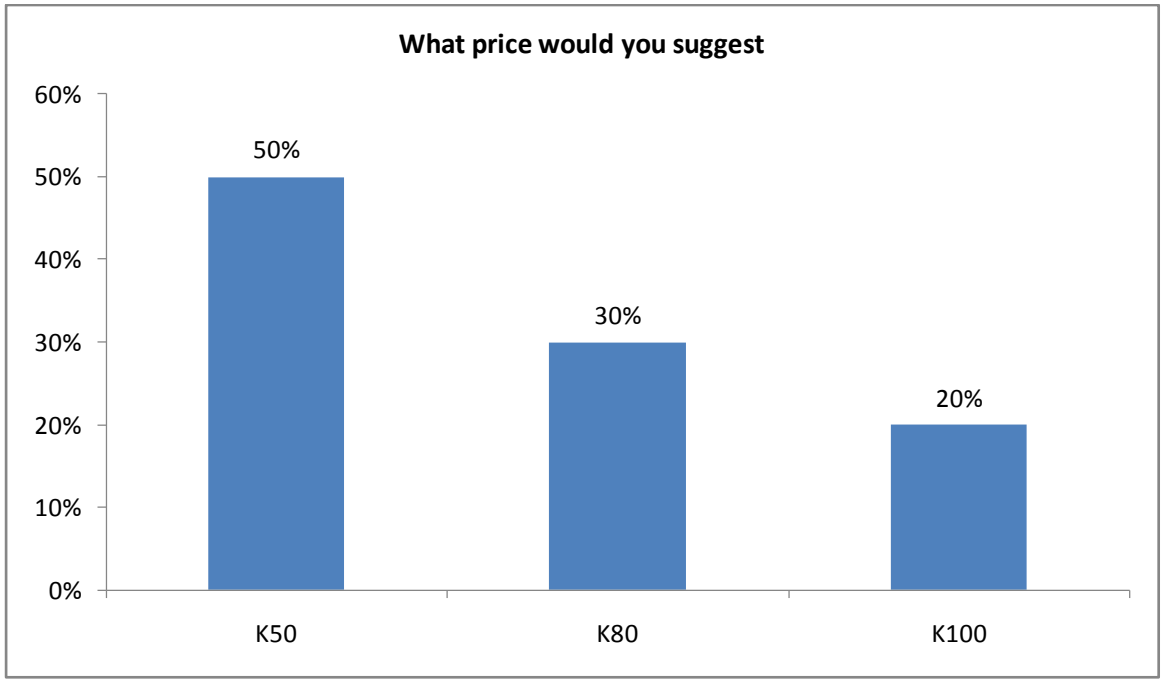
When affordability of set-to-box was cross tabulated with income per month, respondents whose income per month was in the income bracket of K450-K600 and K600-K800 (40% and 30%) said set-top-boxes were expensive. Those that said set-top-boxes were affordable (20%) had their income per month fall in the income bracket of K450-K600. Respondents, whose income per month was falling in the income bracket of K800-K1000, stated that set-top-boxes were very affordable as shown in the chart above.

(ii) If not affordable, what price would you suggest?

Table 17: If not affordable, what price would you suggest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid					
	K50	50	50.0	50.0	50.0
	K80	30	30.0	30.0	80.0
	K100	20	20.0	20.0	100.0
	Total	100	100.0	100.0	

Figure 17: If not affordable, what price would you suggest



When the respondents were asked to suggest the price of buying set-top-boxes, 50% wished for K50, 30% proposed K80 and 20% put forward K100 as shown in the chart above.

5.2.5. Intervention measures by the Zambian government to enable access to STBs among low-income TV owning households (n= 100)

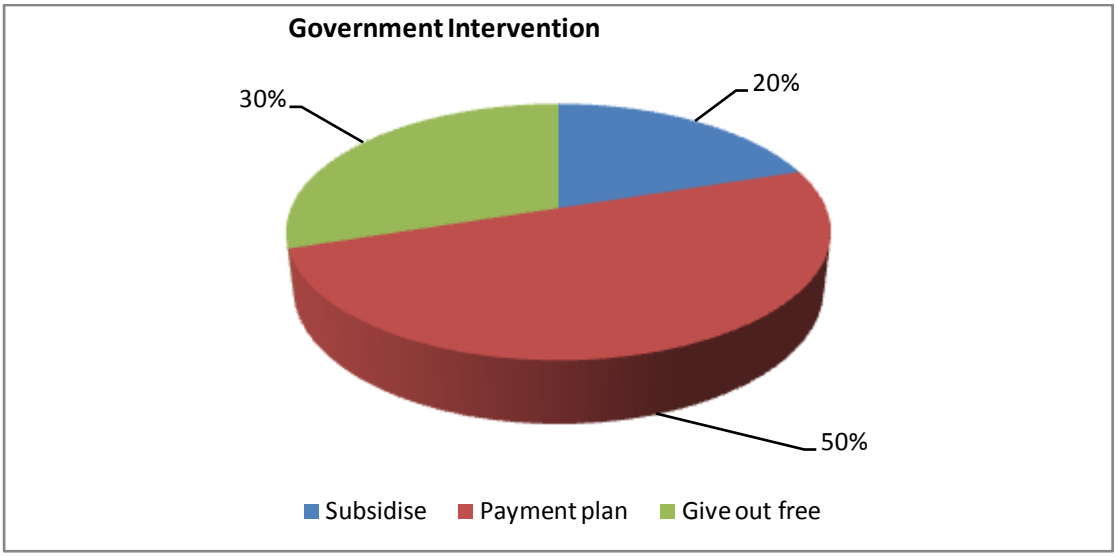
Further the respondents were asked about how the government should help them to have access to set-top-boxes.

(i) What should the govt do to those that can't afford STBs?

Table 18: What should the govt do to those that can't afford STBs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Subsidise the STBs	20	20.0	20.0	20.0
	Provide a payment plan	50	50.0	50.0	70.0
	Give out free to vulnerable households	30	30.0	30.0	100.0
	Total	100	100.0	100.0	

Figure 18: What should the govt do to those that can't afford STBs



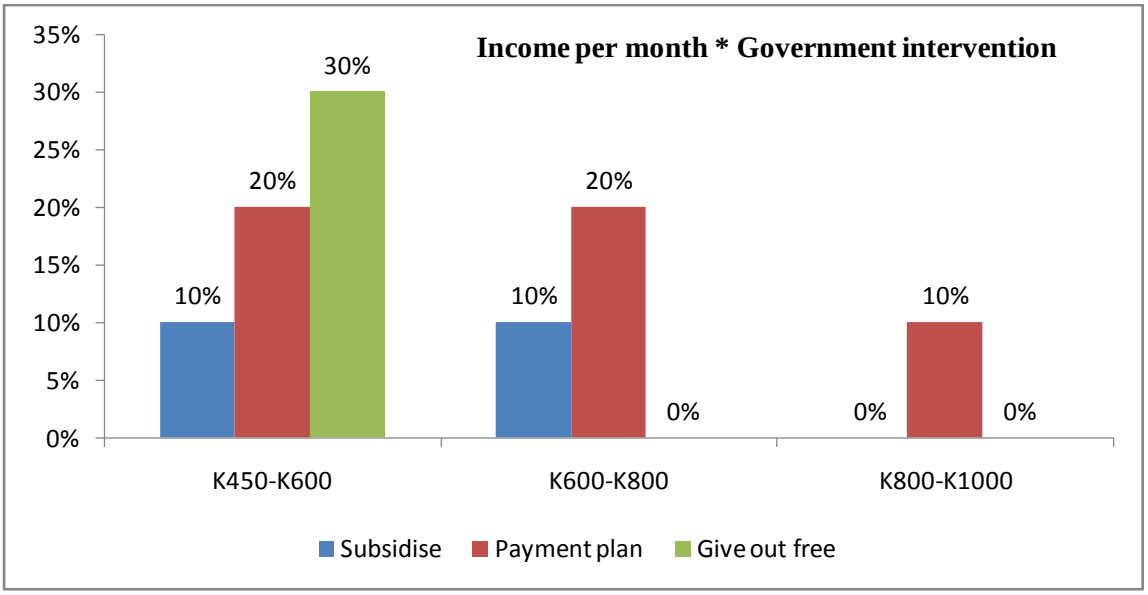
Whenthe respondents were asked about what the government should do to help those that cannot afford to have access to set-top-boxes, 50% said that the government should provide a payment plan, 30% of the respondents wanted the government to give out set-top-boxes free of charge and 20% stated that government should further subsidise the price of buying set-top-box as shown in the chart above.

Further analysis of government intervention in relation to income per month

Table 19: Income per month * What should the govt do to those that can't afford STBs Cross tabulation

		Cross tabulation			
Count		What should the govt do to those that can't afford STBs			
		Subsidise the STBs	Provide a payment plan	Give out free to vulnerable households	Total
Income per month	K450-K600	10	20	30	60
	K600-K800	10	20	0	30
	K800-K1000	0	10	0	10
Total		20	50	30	100

Figure 19: Income per month * what should the govt do to those that can't afford STBs Cross tabulation



When income per month was cross tabulated with government intervention, respondents whose income per month was in the income bracket of K450-K600, 30% wanted government to give out set-top-boxes for free, 20% proposed a payment plan and 10% wished for government to further subsidise the price of set-top-boxes. Those who earned an income per month between K600-K800, 20% wanted a payment plan and 10% wanted government to give out set-top-boxes free. As for those whose income per month was between K800-K1000, they proposed a payment plan.

5.3. Qualitative Research

5.3.1. Findings on the Zambian Situation on Digital Terrestrial Television (DTT)

5.3.1.1. Coverage of DTT in the Country

The current terrestrial television broadcasting services are based on analogue technology with the exception of towns along the line of rail from Chililabombwe to Livingstone who are on dual broadcast illumination period receiving both analogue and digital terrestrial television signal also known as simulcast.

Following the ratification of ITU that 101 countries in Europe, Africa and the Middle East should switch from analogue to digital broadcasting technology by 17th June, 2015, Zambia

National Broadcasting Corporation (ZNBC) complied with the ultimatum and began the simulcast on the 17th June, 2015 along the line of rail from Chililabombwe to Livingstone as phase one of the transition processes(ZNBC News, June, 2015).

5.3.1.2. Regulator of DTT

A National Task Force on Digital Migration was set-up by the Zambian government to make recommendations and generally oversee the national digital migration process. The operations of the Task Force were being managed by a National Steering Committee which was composed of the Ministry of Information and Broadcasting Services, Communications Authority and Zambia National Broadcasting Corporation (Ministry of Information and Broadcasting Services (MIBS) 2014, p. 9).The Ministry of Information and Broadcasting Services was responsible for developing the policy for broadcasting digital migration. It was also responsible for ensuring that funding were available for the implementation of the digital migration process. Zambia Information and Communications Technology Authority (ZICTA), the regulator responsible for regulating the telecommunications and broadcasting sectors was responsible for the frequency planning and allocations, and may issue licences for digital services. New digital services cannot be launched without a licence or authorisation from ZICTA. Zambia National Broadcasting Corporation (ZNBC) was responsible for rolling out the digital network infrastructure on behalf of broadcasters. Other signal distributors may be licensed dependent on market forces using an open and transparent method (MIBS 2012, p. 10).

5.3.1.3. Deadline for Digital Migration

The digital migration process had been divided into three phases and the Taskforce had set 31st September, 2014 as the deadline for switch on to digital broadcasting television along the line of rail as phase one of the transition process from analogue to digital television. Switch on to digital television for phase two had been set on 31st December, 2014 covering provincial centres and phase three had been set to switch on to digital television on 30th April, 2015 covering the remote sites of the country (MIBS 2014, pp. 10-11). This was in order to meet the International Telecommunications Union's (ITU) deadline of 17th June 2015, when all countries in Africa and Europe (Region 1) were expected to have migrated to digital

terrestrial broadcasting. But ZNBC only managed to implement a simulcast along the line of rail on 17th June, 2015.

Even if the 2015 peg was not fully realised, the country must not be left behind when the whole world must have switched over to digital system. It would amount to Zambia being turned into a dumping ground for obsolete analogue equipment.Zambiastill has a chance of rolling out the digital transition process to the rest of the country by taking advantage ofan additional five year extension for somecountries in the Very High Frequency (VHF) band till 17th June, 2020 (Aihe2008, p.2).

5.3.1.4. Price for STB

Currently digitally integrated TV sets are costly and out of the reach for manywhich can be upwards of US$300 at the lower end (Balancing Act 2011, p. 1). In order to ensure that the migration to digital terrestrial television (DTT) is successful, the free-to-air DTT set top box should be a basic affordable set top box. In this regard, in the first phase of digital migration Zambia National Broadcasting Corporation (ZNBC), a public broadcaster, responsible for signal distribution and rolling out the digital network infrastructure on behalf of broadcasters, was selling the set-top-boxes via Zambia Postal Offices (ZAMPOST) at a cost of K130 and the antenna at K80 which came to a total of K210 (ZNBC News, June 17, 2015).

TopStar Limited, a company formed out of a joint venture between ZNBC and Star Times a Chinese Company, has been charged with the signal distribution and sale of STBs and they are now being sold at a cost of K200. The new distribution points for STBs are Arcades mall, Cairo mall in the Central Business District (CBD) and Embassy mall in Makeni. 50 vendors have also been brought on board to increase on the number of distribution points. TopStar is a new content distributor for all content providers on digital terrestrial television platform.

Critical success factors identified by the European Union were the “low cost and widely available” set top boxes and audience awareness (Rosenberg 2013, p. 1).

The Task Force on Digital Migration and Government were working on plans to establish a mechanism to support ownership of STBs to assist poor households that cannot afford set-

top-boxes. However, information was not available on how to access the subsidy and how government will monitor and control the process (MIBS 2012, p. 9).

According to the latest data, there are 3,014,965 households in Zambia out of which 37.5 percent (1,130,612 households) possess TV sets. 22.3 percent (672,337 households) were accessing television through satellite dish (free to air/DSTV/GOTV) (LCMS/CSO 2015, pp. 80-84). Therefore, 15.2 percent (458,275 households) relied on analogue terrestrial platform for television access.

5.3.2. In-depth Interviews

In-depth interviews were conducted with four (4) members of the taskforce on Digital Migration from Zambia National Broadcasting Corporation (ZNBC) and the director of planning for digital migration from the Ministry of Information and Broadcasting Services (MIBS). In-depth interviews attempted to answer the following questions:

Zambia National Broadcasting Corporation (ZNBC)

5.3.2.1. What awareness measures have you put in place for the public about digital migration process?

In the first phase of the digital migration process a deliberate policy was put in place by the Corporate Affairs unit to sensitise the public on digital migration through the programme called On-air. However, now that TopStar has been charged with the sale of STBs for phases two and three of the digital migration process, no awareness programmes have been put in place whether on radio or television.

5.3.2.2. How is the process funded?

The digital migration process has been divided into three phases. The first phase was funded by the Zambian government at a cost of $9,200,000. For phases two and three, the government acquired a loan of $273,000,000 from Export Import (EXIM) bank of China in December 2016.

5.3.2.3. Are set-top-boxes available?

250,000 have been brought into the country out of 1,250,000 intended for phases two and three of the transition process.

In the first phase, 10,000 STBs were put on the market prior to the digital migration deadline of 17th June, 2015. After the deadline, there were no STBs on the market up to January, 2017.

At the time of this interview, STBs were only being sold in Lusaka.

5.3.2.4. How is the demand for the set-top-boxes?

The demands were very low. Only about 200 STBs were being sold in a day.

5.3.2.5. What are people's views on the price of set-top-boxes?

People buying from Arcades shopping mall usually do not complain about the price of buying STBs. Those buying from vendors such as from Kalingalinga township complain saying the STBs were expensive and wished the price could be brought down to K100 or K80.

5.3.2.6. Do you have any special payment plan for vulnerable households?

At the cost of K200 the STBs are already subsidised. The initial price was K800 and the price has been brought down to K200.

Despite STBs having been already subsidised, the price is still on a higher side for low-income households.

5.3.2.7. 17th June, 2015 was the deadline for digital migration for the region where Zambia belongs, but ZNBC only managed to have a simulcast along the line of rail being phase one of the transition process. Are you ready for digital migration?

The late disbursement of funds has hampered the digital migration process. The government only managed to acquire a loan of $273,000,000 from Export Import (EXIM) bank of China in December 2016 for phases two and three of the transition process.

Installation of digital transmitters around the country is expected to be completed by June 2018. In the first phase, 10 digital transmitters were installed. In phases two and three of the transition process, 36 transmitters were going to be installed by June, 2017 and 27 by September, 2017.

However, the new roadmap for analogue switch-off was not in place and that a review of a roadmap might take place before the end of 2017.

The reason for being on simulcast for a very long time along the line of rail was because of the non availability of STBs from June 2015 to December 2016.

Ministry of Information and Broadcasting Services (MIBS)

5.3.2.8. What policies have you put in place to ensure the transition process from Analogue to Digital broadcasting is a success?

The policies put in place in 2014 are the same policies the ministry is implementing such as: separating content from distribution which led to a formation of a company out of a joint venture between ZNBC and Star Times of China. A company formed is called TopStar which has taken over the signal distribution aspect from ZNBC. ZNBC now remains a content provider only. The second policy was to find money to roll out digital terrestrial television to other parts of the country which is done and dusted through a loan from Export Import (EXIM) Bank of China to a tune of $273,000,000. The last policy was to rehabilitate ZNBC and Zambia National Information Services (ZANIS) studios and construction of studios in provincial centres which is on-going.

5.3.2.9. The deadline set by the ministry for the transition process was December, 2014 before the ITUs deadline of 17th June, 2015. But up to now only phase one has been done. What are your reasons for this delay?

Policy implementation issues take time. The other reason for the delay was lack of finances. However, the ministry will follow the same guidelines as earlier planned.

5.3.2.10. What plans has the government put in place to ensure low-income TV owning households that rely on terrestrial platform to have access to set-top-boxes?

The government has no intentions of giving out STBs for free because the loan acquired from China has to be paid back and selling STBs is one way of raising funds towards the repayment of the loan.

In rural areas, set-top-boxes will be sold at a cost of K100 as for urban areas, the set-top-boxes will continue to be sold at a cost of K200. There is no further subsidy as the government has already heavily subsidised the set-top-boxes from K800 to K200 and K100 respectively.

5.3.3. Focus Group Discussions (FGDs)

FGDs attempted to address the following questions:

5.3.3.1. What is digital migration?

- The digital transition in broadcasting is a global process involving the switch from analogue to digital broadcasting signals.
- The transition or switch from analogue television to digital television.
- The process in which the analogue TV broadcasting services are converted to and replaced by digital television broadcasting.

5.3.3.2. Why is the world migrating from analogue broadcasting to digital broadcasting?

- The main reason for the world's migration to digital is to release valuable spectrum which can be used for other services. Spectrum is inadequate; therefore more efficient use of the spectrum is necessary if more terrestrial telecommunications and broadcasting services are to be made available.

5.3.3.3. What are the benefits of digital migration?

- With digital TV you will have access to more channels.
- A better picture and sound quality.

5.3.3.4. What is a set-top-box (STB)?

- It's a receiver that decodes or converts the digital signal to analogue to enable the channels to be displayed on your analogue TV set.

5.3.3.5. Do you have set-top-boxes?

- All the participants had not purchased the set-top-boxes.
- Some of the participants said they were already digital through Digital Satellite Television (DSTV/GOTV).

5.3.3.6. Is the price of the set-top-boxes (K200) affordable?

- The participants said the rate being offered for the digital set-top-box was fair. Some of the participants stated that poverty was not the reason why people should not buy set-top-boxes. In the same way they managed to acquire television sets, they would also manage to acquire STBs.
- Others were of the view that government should offer help to households that would not afford buying STBs at a cost of K200 especially domestic workers as their wages were very low.
- Perhaps if government, through TopStar, introduced a "pay slow system", then even low-income households might afford STBs.

Observation:

- Some of the participants were open-minded they argued proving they were quite knowledgeable in the area of study. While others could not give clear definitions of a set top box or what is meant by digital migration.

- Male participants identified most benefits of the digitisation including better sound and picture qualities while female participants as the benefit mostly perceive greater choice of TV channels.

CHAPTER SIX

DISCUSSION OF FINDINGS

6.1. Introduction to the Chapter

This chapter presents the analysis of findings thematically derived from 100 questionnaires, four (4) in-depth interviews and ten (10) Focus Group Discussions.

6.2. Socio-Demographic Characteristics of the Sample (n=100)

6.2.1. Age

The youngest in the survey was a male aged 17 and the oldest male was 35years old. The youngest female in the survey was 23 years old and the oldest respondent was a female aged 63.

6.2.2. Sex

60 percent of the respondents were female and 40 percent male. More females took part in the survey because demographically, Zambia constitutes more females than males. Males are usually engaged in economic activities away from home and therefore are rarely home. While most females are housewives or homemakers hence, they were found home.

6.2.3. Marital Status

20 percent of the respondents had never been married and they were all males. 50 percent of the respondents were married out of which 30 percent were female and 20 percent male. 10 percent were divorced and 20 percent widowed all of which were females as shown in table 2. The 20 percent widows were even more vulnerable.

6.2.4. Education

The highest education qualification attained by the respondents was secondary school. 60 percent attained primary school education and 40 percent secondary school education.

30 out of 40 male respondents in the study had reached secondary school and only 10 females out of 60 in the study had attained secondary school education as shown in table 3. History shows how in the past a boy child was given an opportunity to go to school while a girl child

was kept home to perform house chores. Another reason for keeping a girl child at home was because they were going to be married off hence,men tend to be more educated than females and this study has proved that. This finding is in line with the 2010 Central Statistical Office (CSO census, whose finding on the secondary school of education completed was that, out of 633, 704 that completed secondary school of education, 388,669 (61%) were male and 245,035 (39%) were female (CSO 2010, p. 202).

Respondents with primary school education asked for more elaboration on the questions before responding. The anticipated lower levels of education attained by the respondents in Kalingalinga, justified the use of personal interviews using a structured questionnaire for data collection.

6.2.5. Occupation Status

20 percent of the respondents were employed of which 10 percent were females and 10 percent males. Mainly most of those who said were employed, were domestic workers and this could have been attributed to the lower levels of education attained by the respondents.

Those that were self-employed were 20 percent further split in 10 percent females and 10 percent males.

10 percent of the respondents were students all of which were males. The students were learning at Munali Boys Secondary School and living in Kalingalinga Township renting bedsitters.

30 percent of the respondents were housewives or homemakers. 10 percent were retired and 10 percent unemployed females and males respectively.

6.2.6. Income per Month

60 percent of the respondents claimed to have earned an income per month which fell in the income bracket of K450-K600. 30 percent had their income per month falling between K600-k800. According to CSO, (LCMS, 2015, p. 80) these two categories are classified as poor. 10 percent of the respondents had their income per month falling in the income bracket of k800-k1000 and this category is classified as below average.

6.3. Objective One: Awareness Levels on Digital Migration among Low-Income TV Owning Households (n = 100)

This section discusses the levels of awareness and understanding of digital migration among low-income television owning households who rely on terrestrial platform for television access.

According to tables 4, 6 and 9, 80 percent (80 out of 100) of the respondents were aware of the digital migration and its benefits. Most of them claimed that their source of information was television and radio. Male respondents identified most benefits of the digitisation including better sound and picture qualities while female respondents as the benefit mostly perceive greater choice of TV channels. This was also observed in FGDs. Most of the participants simply said "With digital TV you will have access to more channels, better picture and sound quality" (Chapter 5, p. 62).

A check on the ZNBC campaigns and sensitisation programme on digital migration to the public showed that they did a good job. According to information from one of the key informants at ZNBC,it stated that in the first phase of the digital migration process a deliberate policy was put in place by the Corporate Affairs Unit to sensitise the public on digital migration through the programme called On-air. Flyers and brochures with education information on DTT were being distributed during this period.

Literature also says the advantage of the main stream media or mass media is its ability to reach a large population across many demographics and also good at generating general public awareness about an issue. Equally the Diffusion of Innovation theory says the mass media's most powerful effect on diffusion is that it spreads knowledge of innovations to a large audience rapidly (Rogers 1995, p. 285). It can even lead to changes in weakly held attitudes.

Another key informant at ZNBC from the Marketing Department however stated that now that TopStar, a company formed out of a joint venture between ZNBC and a Chinese company Star Times, has been charged with the sale of STBs for phase two and three of the digital migration process, no awareness programmes had been put on both radio and television to sensitise the public where to buy or find STBs. At the time of the interview, TopStar was only engaged in outdoor advertising (bill boards). Another key informant from

ZNBC Engineering Department also concurred with the marketing counterpart saying there was no marketing effort to sensitise the public where to find STBs.

When education was cross tabulated with awareness levels, the study revealed that education had nothing to do with being aware about digital migration as all respondents with either primary or secondary education were aware about the digital migration process and its benefits as shown in table 5.

70 percent of the respondents knew about digital migration through television while 10 percent through radio. This shows that television is more popular than radio in Kalingalinga Township. These findings confirm with the notion that access to TV is more in urban areas than Radio. Hence when analogue terrestrial television signal is switched off before households could acquire STB, a lot of households will be affected.

Despite 80 percent of the respondents being aware of the digital migration, 70 percent (70 out of 100) of the respondents did not understand what the STB was as shown in table 7. The Diffusion theory says there are five (5) stages in the adoption process of an innovation and these stages include: awareness, interest, evaluation, trial, and adoption.In the awareness stage "the individual is exposed to the innovation but lacks complete information about it"(Rogers 2003, p. 82). This study has confirmed that the people of Kalingalinga are at the awareness or definition knowledge stage in the adoption process because most of the respondents were aware about digital migration but had no knowledge of what a set-top-box was. Hence other forms of communication are important such as interpersonal communication. Interpersonal communication (IPC) can complement mass media efforts in disseminating messages and influencing others to accept a new idea. According to Roger's (1995, p. 311) strong interpersonal ties are usually more effective in the formation and change of strongly held attitudes. Research has shown that firm attitudes are developed through communication exchanges about the innovation with peers and opinion leaders. These channels are more trusted and have greater effectiveness in dealing with resistance or apathy on the part of the recipients.

Successful efforts to diffuse an innovation depend on characteristics of the situation. To eliminate a deficit of awareness of an innovation, mass media channels are most appropriate. To change prevailing attitudes about an innovation, it is best to persuade opinion leaders.

It appears that education plays a role in the understanding of an innovation. The study has revealed that 30 percent of respondents who knew or understood what a STB was had attained secondary school education as shown in table 8 and 20 out of the 30 respondents were males.

Roger's diffusion of Innovation theory also says people with less education are usually the last ones to adopt an innovation and belong to the laggards in the adopter categories. The criterion for adopter categorization is innovativeness. This is defined as the degree to which an individual is relatively early in adopting a new idea than other members of a social system. Innovativeness is considered "relative" in that an individual has either more or less of it than others in a social system (Rogers 2003, p. 22).

Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. They are the most localite in their outlook of all adopter categories; many are near isolates in social networks. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done in previous generations and these individuals interact primarily with others who also have relatively traditional values. When laggards finally adopt an innovation, it may already have been superseded by another more recent idea that is already being used by the innovators. Laggards tend to be frankly suspicious of innovations and change agents. Their traditional orientation slows the innovation-decision process to a crawl, with adoption lagging far behind awareness-knowledge of a new idea. While most individuals in a social system are looking to the road of change ahead, the laggard's attention is fixed on the rear-view mirror. This resistance to innovations on the part of laggards may be entirely rational from the laggard's viewpoint, as their resources are limited and so they must be relatively certain that a new idea will not fail before they can afford to adopt. The laggard's precarious economic position forces these individuals to be extremely cautious in adopting innovations (Rogers 2003, p. 250).

6.4. Objective Two: Availability of Set-Top-Boxes (STBs) among low-income TV owning households (n= 100)

This section discusses the availability and distribution of STBs.

When respondents were asked whether they owned or bought STBs, all the respondents (100) did not have the STBs as shown in table 10. This is an indication that the uptake of digital terrestrial television is slow. A key informant from TopStar limited also confirmed with the findings that the STBs were available in Lusaka but the uptake was slow. He further added that about 200 STBs were being sold in a day. So for the 250,000 STBs to be sold out, it would take about 1,250 days which is equivalent to about 41 months.

According to the diffusion of innovation theory, low-income households belong to the laggards in the adopter categories and are usually the last ones to adopt an innovation. Possibly all the 10,000 STBs that were offloaded on the market in the first phase of Digital Migration might have been bought by early adopters that is why among the people of Kalingalinga none of them had an STB.

However, the respondents were all willing to buy the STBs after the researcher explained to them that when the analogue terrestrial signal will be switched off they would no longer be able to access new services on their old television sets without the STB/decoder as shown in table 12.

It is human nature for some people to do things at the last minute. When the date for analogue switch off (ASO) is announced there will be panic buying. However the road map for Analogue Switch-Off (ASO) as stated in the Digital Migration Policy has not been followed and at the time of the interview with the key informant at the Ministry of Information and Broadcasting Services, the government had not put up other guidelines to follow. This state of affairs might lead to slow uptake of digital terrestrial television (DTT).

The earlier road map for Analogue Switch-Off (ASO) as stated in the Digital Migration Policy was as follows: 31st September, 2014 was a set deadline for switch on to digital broadcasting television along the line of rail as phase one of the transition process from analogue to digital television. Switch on to digital television for phase two had been set for 31st December, 2014 covering provincial centres and phase three had been set to switch on to

digital television on 30th April, 2015 covering the remote sites of the country (MIBS 2014, pp. 10-11).

Since all the respondents did not make an effort to buy STBs they also did not know whether the STBs were available. In response to the question on the availability of STBs, one of the key informants at ZNBC stated that the availability of STBs was a very big problem. For instance in phase one of the transition process which covered the line of rail from Chililabombwe to Livingstone, prior to the deadline of digital migration (17th June, 2015), only ten thousand (10,000) STBs were made available to the public and were being sold in Postal Offices (ZAMPOST) at a cost of K210. He further said that ZNBC relied on Multi choice for the procurement of STBs in phase one of the digital migration process. So from 17th June, 2015 to December 2016, STBs were out of stock. At the time of an interview, TopStar Limited was selling STBs in Lusaka only at a cost of K200. TopStar had brought into the country two hundred and fifty thousand (250,000) STBs out of the intended one million two hundred and fifty thousand (1,250,000) for phases two and three of the transition process. Currently TopStar Limited is the only official distributor of STBs in the country unlike in Tanzania, where each town had a distributor of STBs.

In the first phase of digital migration process, the distribution points for STBs were the postal offices (ZAMPOST) along the line of rail. When the respondents were asked whether the postal office was well located for the sale of STBs, only 10 percent said the location was good because they felt that buying from the postal office they were assured of buying the original product. However 10 percent of the respondents stated that the postal offices were located far away from residential areas and they never operate on Sundays as shown in table 13.

When the respondents were asked to suggest the distribution points for STBs, 60 percent suggested Shoprite and 40 percent suggested the markets as the most convenient places as shown in table 14. At the time of the interview, a key informant from ZNBC said there were only three permanent places TopStar was selling STBs from namely, Arcades shopping mall (head office), Cairo mall in the Central Business District (CBD) and Embassy shopping mall in Makeni. Vendors have also been engaged to quicken the sale of STBs in townships,Kalingalinga inclusive. However, a key informant at ZNBC was concerned about mobile vendors selling STBs without prior notice of where they would be found the following day. He suggested permanent places like markets or supermarkets like Shoprite. He

further added that the distribution points were inadequate and that there was little or no marketing effort to sensitise the public where they could find the STBs.

6.5. Objective Three: Affordability of STBs among low-income TV owning households (n= 100)

This section discusses how people felt about the price of buying Set-Top-Boxes. The cost of an STB was at K210.

According to table 15, half (50%) of the respondents felt the set-top-boxes were expensive, 40 percent said they were affordable and 10 percent stated that they were very affordable. When income per month was cross tabulated with affordability of STBs, out of 70 percent of the respondents who said STBs were expensive, 40 percent had their monthly income fall in the income bracket of K450-K600 and 30 percent between K600-K800 as shown in table 16. This shows that most of the surveyed households might not be able to afford buying STBs at a cost of K200. According to Central Statistical Office (CSO), households whose average income is K746 and below are classified as poor (LCMS, 2015, p. 80). The estimated average income for the surveyed households was at K525. This point is further strengthened by the Jesuit Centre for Theological Reflection (JCTR, 2016), which carried out a research in December 2016 on the cost of basic food items and essential non food items known as Basic Needs Basket (BNB) for a family of five. The findings were that such a family of five people needed to spend K4, 976.67 in a month. As can be observed, this is far much higher than the monthly income of the respondents. So how could they manage to buy the STBs when their monthly income was far much lower than the basic needs basket?

Income is a determinant factor in adopting the technology because the consumption of goods and services is dependent on the sum of income available to a household at any given time. Equally, when education was cross tabulated with income per month, most of the respondents whose income was in the income bracket of K450-K600 had primary education. For this reason, most employers would not give a salary to a person with primary education beyond a minimum wage of K525 set by the government for domestic workers. That is why Kalingalinga was chosen as a study site due to its low-income status as classified by the Central Statistical Office (CSO).

A key informant at ZNBC felt the price of STBs was high for low-income households despite the price having been already subsidised from K800 to K200. He suggested that the government should come up with measures that will quicken the uptake of digital terrestrial television such as further lowering the price of STBs or a payment plan. In the United States of America (USA), the issue of affordability of STBs delayed the country from switching off from analogue terrestrial television to digital terrestrial television as the threshold of 85 percent of households to have bought STBs was not met. Low-income households felt the price of buying STBs was high. In Tanzania, analogue switch off (ASO) was temporarily halted because 57 percent of households felt the price was high and were cut-off from receiving the new services (Rosenberg 2013, p. 2). Equally in Australia ASO was postponed twice because consumers were faced with high prices for digital television sets, particularly high definition sets, and set-top-boxes, consumers were reluctant to adopt the new technology (Mackay 2007, pp. 34-38).

According to Roger's diffusion of innovation theory, the laggards in the adopter categories are the individuals or other units in a systemwho mostly need the benefits of a new idea (the less educated, less wealthy, and the like) are generally the last to adopt an innovation (Rogers, 2003, p. 295).

Another key informant at ZNBC stated that at the moment, the poor households that can't afford STBs cannot come out because they are watching TV. When ASO is announced, that is when they will come forward and say they can't afford to buy STBs. He further added that for those that can afford they would rush to buy STBs when ASO is announced like what happened with SIM card registration exercise.

When respondents were asked to suggest the price for STBs, half of the respondents said they should be sold at a price of K50. 30% and 20% of the respondents suggested K80 and K100 respectively. However, the chairperson of the digital migration process from ZNBC said that at the cost of K200 the STBs were already subsidised and cannot be subsidised further as government has to mobilise funds to repay the loan of $273,000,000 acquired from Export Import (EXIM) bank of China for digital migration.

6.6. Objective Four: Intervention Measures by the Zambian Government to Enable Access to STBs among Low-income TV Owning Households (n= 100)

This section discusses the measures which government should put in place to enable access to digital terrestrial television among low-income TV owning households.

When respondents were asked regarding themeasures which government should put in place to enable access to digital terrestrial television among low-income TV owning households, half of the respondents (50%) stated that government should provide a payment plan because their incomes are low and they cannot afford to buy STBs at K200 at once as shown in table 18. They suggested paying a K20 per month. Most of the respondents (60%) had their income fall between K450-K600 and surely it is not easy for households whose income is K450 to part away with a K200. What about rentals and food which are basic human needs? The respondents further added that it is not possible for the government to give out STBs free of charge because government is also spending to bring STBs into the country.

20 percent of the respondents said that the government should further subsidise the price of STBs. However, 30 percent of the respondents postulated that STBs should be given out free to very poor households so that they are not excluded from receiving the new services.

A policy maker from the Ministry of Information and Broadcasting Services indicated that the government has no payment plan in place or intentions of further subsidising the cost of STBs because the loan acquired from China has to be paid back and selling STBs is one way of raising funds towards the repayment of the loan. He further added that in rural areas, set-top-boxes would be sold at a cost of K100 because that is where the majority of households are poor.

This means that the already cash-strapped households will be forced to choose between their survival in that month, taking on even further debt or being switched off from acritical source of information – television.

The subsidisation of the STB mustbe of as little inconvenience and cost to the user as possible for the widespread uptake of the set top box to be a success.

Critical success factors identified by the European Union were the “low cost and widely available” set top boxes and audience awareness (Rosenberg 2013, p. 1). In the USA the government set aside $990 million to help viewers purchase digital set top boxes and also

engaged in massive awareness campaigns. In Australia the Government established a household assistance scheme which provided eligible households with a set top box and full installation at no extra cost. In countries such as Sweden and Germany financial aid was given through social services in which set top boxes were distributed to low income families who relied on the terrestrial platform for television access (Mackay 2007, pp. 34-38).

In conclusion, from the research findings and literature reviewed, it should be stated that most respondents were aware about digital migration through the main stream media and television was the most popular source of information. However, none of the respondents had bought a set-top-box. Half of the respondents felt that the price of buying a set-top-box was high and wanted government to provide a payment because from the little income they earn it was not possible for them to part away with a K200 at once.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

7.1. Introduction to the chapter

This chapter presents a summary of the entire research work, the conclusion of the research work and recommendations.

7.2. Conclusion

Most respondents confirmed their awareness about the digitisation but it seems that they didn't really understand what it implied. It is important to provide detailed and accurate information from the perspective of practicalities. People will be mostly interested on why and how and judging from the survey, it can be concluded that there should be more information on practical tips on the purchase and the connection process of the set-top box.

From the research findings and literature reviewed, it should be stated that most respondents were aware about digital migration through the main stream media and television was the most popular source of information. However, none of the respondents had bought a set-top-box. Half of the respondents felt that the price of buying a set-top-box was high and wanted government to provide a payment plan because from the little income they earn it was not possible for them to part away with a K200 at once.

Evidence from the research reveals that low-income television owning households who rely on terrestrial platform for television access might not afford to buy set-top-boxes at K200 without government offering a solution and this might lead to low uptake of digital terrestrial television (DTT). Respondents felt the cost of buying set-top-boxes (STBs) has been forced on them and hence, government should give STBs free of charge to poor households, provide a payment plan or further subsidise the cost of buying STBs. Availability and distribution of STBs will delay access to DTT for instance, at the time of the interview 250,000 STBs were being sold in Lusaka only by TopStar limited, a company formed out of a joint venture between Zambia National Broadcasting Corporation (ZNBC) and Star Times a Chinese company. How about the rest of the towns along the line of rail with digital terrestrial signal? There is also less marketing effort to sensitise the public on the distribution points of STBs.

The recommendations on the fast uptake of DTT have been highlighted and that government can quicken the process of Analogue Switch-off in towns on dual illumination (simulcast).

7.3. Recommendations

The major intention of this research was to assess the levels of access to DTT among low-income TV owning households with an intention of drawing findings that will have a positive impact on the levels of access to DTT and quicken the uptake process.

- Digital Migration has been forced on people and majority of households who most need the benefits of DTT cannot afford to pay for STBs. Therefore, government should find a solution to enable access to DTT among low-income TV owning households such as providing a payment plan (hire purchase) if giving STBs away for free is not feasible.
- TopStar Limited is the only company mandated with the sale and distribution of STBs. There is need to open up distribution dealership of STBs to private retailers throughout the country in order to increase availability and distribution points.
- After the deadline (17th June, 2015) of the digital migration process, awareness campaigns had slowed down to a point where the public had temporarily forgotten about it. There is need to constantly inform the public on the requirements of digital migration and its benefits till analogue terrestrial signals are completely switched off.
- Some Non Governmental Organisations (NGOs) in the past had food for work projects. Poor people and especially women came forward and worked and payment was in form of food. Perhaps if NGOs came through and in addition to giving food, they also buy STBs as payment for the work done.
- Prize winning activities could be introduced and winners in these townships could be awarded STBs.
- Employers could be encouraged may be to introduce some bonus for their workers by awarding them STBs or increase on working days or hours so that the extra income is converted into money to buy STBs.

7.4. Future Research

Since it’s inevitable that the country will migrate however, the technology might bring other areas of concern such as durability and health impact. It might be a concern to undertake research in future over these concerns.

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APPENDICES

APPENDIX 1: Household Questionnaire

QUESTIONNAIRE No.....

QUESTIONNAIRE FOR KALINGALINGA HOUSEHOLDS

Topic: ***An Assessment of the levels of access to Digital Terrestrial Television among low-income TV owning households in Lusaka Zambia***

INTRODUCTION:

I am a postgraduate student at the University of Zambia (UNZA). I am currentlyworking on a research that aims to assess the levels of access to Digital Terrestrial Television among low-income television owning households in Lusaka and Kalingalinga has been picked as a study area. This study is done purely for academic purposes and in partial fulfilment of the requirement for the award of the Degree of Master of Arts in Communication for Development Studies at the University of Zambia.

I would appreciate if you would take a few moments to have an interview with me and you are assured of complete anonymity. You are free to refuse to be interviewed or stop an interview at any point you feel like doing so. Your cooperation is highly appreciated.

Are you willing to participate? Yes [ ] No [ ]

SELECTION CRITERIA

1.Do you have a working television set?

Yes [ ] If yes continue with the interview

No [ ]If no, move to the next household

2. What is your household membership status?

1. [ ] Head of household
2. [ ] Spouse

} If the head of household or spouse are not home, move to the next household

SECTION A: DEMOGRAPHIC CHARATERISTICS

1. How old were you on your last birthday? [/]

2. What is your sex?

    1. Female [ ]

    2. Male [ ]

3. What is your marital status?

    1. Never Married [ ]
    2. Cohabiting [ ]
    3. Married [ ]
    4. Separated [ ]
    5. Divorced [ ]
    6. Widowed [ ]

4. Your highest education qualification?

    1. Primary school [ ]
    2. Secondary school [ ]
    3. Certificate/ Diploma [ ]
    4. Degree [ ]
    5. Postgraduate Degree [ ]

5. Occupation status?

1. Employed [ ]
2. Self-employed [ ]
3. Student [ ]
4. Housewife/Homemaker [ ]
5. Retired [ ]
6. Unemployed [ ]

6. What is your income per month?

1. K450-K600 [ ]
2. K600-K800 [ ]
3. K800-K1000 [ ]
4. K1000-K1200 [ ]

SECTION B: DIGITAL MIGRATION

PART 1. AWARENESS

7. Are you aware of digital migration?

1. Yes [ ]
2. No [ ]

If yes, explain what it is?

.....

8. Would you say digital migration is beneficial?

1. Yes [ ]
2. No [ ]

If 'Yes' List the benefits.....
.....

9. Do you understand what set-top-boxes are?

1. Yes [ ]
2. No [ ]

10. What was the source of your information?

1. Radio [ ]
2. Television [ ]
3. Newspapers [ ]
4. Others ----------

PART 2. AVAILABILITY

11. Do you have a Decoder /set-top-box?

1. Yes [ ]
2. No [ ]

12. If no, do you plan to buy a Decoder /STB or a digital TV?

1. Yes [ ]
2. No [ ]

13. STBs and antennas are being sold at the post offices. Do you think the current method of set-top-boxes distribution is well-located or well-situated?

1. Yes [ ]
2. No [ ]
3. Don't Know [ ]

14. Would you say STBs are readily available?

1. Yes [ ]
2. No [ ]
3. Don't Know [ ]

15. What would you suggest is the best distribution point or outlet for STBs?

Record distribution points in the space below

.....
.....

PART 3. AFFORDABILITY

16. The price of STBs and Antenna is currently at K130 and K80 respectively. Would you say the price is affordable for you?

1. Very affordable [ ]
2. Affordable [ ]
3. Uncertain [ ]
4. Expensive [ ]
5. Very expensive [ ]

17. If not affordable, what price would you suggest?

Record amount.....

PART 4. GOVERNMENT INTERVENTION MEASURES

18. What should the government do about the provision of set top boxes to those that cannot afford?

1. Subsidies the STBs [ ]

2. Provide a payment plan [ ]
3. Give out free to vulnerable households [ ]
4. Other (Specify..... [ ]

The end.Thank you very much for your cooperation!!!

APPENDIX 2: semi-structured in-depth interview guide for key informants

I. FOR ZAMBIA NATIONAL BROADCASTING CORPORATION (ZNBC)

QUESTIONS IN THE INTERVIEW

1. What awareness measures have you put in place for the public about digital migration process?
2. How is the process funded?
3. Are set-top-boxes available?
4. . How is the demand for the set-top-boxes?
5. What are people's views on the price of set-top-boxes?
6. Do you have any special payment plan for vulnerable households?
7. 17th June, 2015 was the deadline for digital migration for the region where Zambia belongs, but ZNBC only managed to have a simulcast along the line of rail being phase one of the transition process. Are you ready for digital migration?

II. FOR MINISTRY OF INFORMATION AND BROADCASTING SERVICES (MIBS)

QUESTIONS IN THE INTERVIEW

- What policies have you put in place to ensure the transition process from Analogue to Digital broadcasting is a success? Probe.
- The deadline set by the ministry for the transition process was December, 2014 before the ITUs deadline of 17th June, 2015. But up to now only phase one has been done. What are your reasons to this delay? Probe.
- What plans has the government put in place to ensure low-income TV owning households that rely on terrestrial platform for TV access have set-top-boxes? Probe.

APPENDIX 3: semi-structured focus group discussion (FGD) guide

Semi-structured discussion guide prepared to assess the levels of access to digital terrestrial television among low-income TV owning households in Kalingalingatownship in Lusaka, Zambia

Total Number of Participants per FGD[6]

Introduction:

- Greeting and introducing the moderator and note taker with participants;
- Introducing the main objective of the study;
- Introducing the main theme of the discussion;
- Obtaining consent; and Creating conducive atmosphere

QUESTIONS IN THE DISCUSSION

1. What is digital migration?
2. Why is the world migrating from analogue broadcasting to digital broadcasting?
3. What are the benefits of digital migration?
4. What is the set-top-box?
5. Do you have set-top-boxes?
6. Is the price of the set-top-boxes (K200) affordable?

Summarizing the Discussion:

- Accepting any questions, comments or suggestions; and

- Showing appreciation for participants and closing the discussion.