

**BROADCASTING DIGITAL MIGRATION IN SOUTH AFRICA: A CASE STUDY
OF TWO VILLAGES IN LIMPOPO PROVINCE**

by

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DECLARATION

I, Mahlatse Lucky Mocheki, whose student number is 201310298, declare that “ *Broadcasting Digital Migration in South Africa: A case study of two villages in Limpopo Province* ” is my own work and that all sources used in this dissertation have been acknowledged by means of complete references, and that this work has not been submitted before for any other degree at any other institution.

SIGNATURE:

DATE: 30 AUGUST 2021

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ABSTRACT

This is an exploratory study conducted to assess the effectiveness of the digital migration in South Africa. This study focused on two areas of domicile, which embarked on the process of migrating in Limpopo Province i.e. Shayandima Village in Thohoyandou and Rapotokwane Village in Bela-Bela.

The theories that were used to guide the study were the diffusion of innovations theory, political economic theory and media policy theory. These theories were employed to assist in assessing the process, the effectiveness and the importance of Digital Migration.

The results for this study are revealed that 85% of respondents asserted that digital broadcasting is very effective and easy to use compared to the analog broadcasting systems, as it shows clear pictures, quality sound and access to more television channels. This help television viewers to get quality television programs. It was interesting to note that respondents mentioned that they did not regret migrating from analog to digital broadcasting because of the benefits and impact that the Set Top Boxes Set (STB)s have on their televisions.

The findings reveal that the STBs are effective and affordable and enable to watch more television channels. There is also a need for the Department of Communication and Digital Technologies to ensure that every household in South Africa migrates to digital broadcasting system.

KEY WORDS

Analog broadcasting

Audio Visual

Broadcasting Auxiliary Service

Broadcasting Digital Migration

Department of Communications and Digital Technologies

Digital broadcasting

Digital Terrestrial Television

Digital video broadcasting

Digital video broadcasting satellite second generation

Direct to home

Information and Communication Technology

Information and Technology

International Telecommunication Union

International Telecommunication Union

Set top box

Terrestrial Television

Terrestrial wireless electronic news gathering

Very High Frequency

Video on demand

LIST OF ABBREVIATIONS

AV=Audio Visual

BAS= Broadcast Auxiliary Service

BCCSA=Broadcasting Complaints Commission of South Africa

BDM- Broadcasting Digital Migration

BDMPSA= Broadcasting Digital Migration Policy for South Africa

BRICS = Brazil, Russia, India, China and South Africa

CODESA=Convention for Democratic South Africa

DMWGR- Digital Migration Working Group Report

DCDT= Department of Communications and Digital Technology

DOF= diffusion of innovation

DSTV=Digital Satellite Television

DTH= Direct to home

DTT- Digital Terrestrial Television

DVBS-2= Digital Video Broadcasting - Satellite - Second Generation

DVB-T2 = Digital Video Broadcasting – Terrestrial (Second Generations)

ECA=Electronic communication Act

ECSA=Electrical Contractors Association of South Africa

EDTV= Enhanced definition television

ENG= Electronic News Gathering

FCC= Federal communications

FHDC= Faculty of Higher Degree Committee

HDTV = High Definition Television

HEVC= High Efficiency Video Coding

IBA=Independent Broadcasting Authority

ICASA = Independent Communications Regulatory of South Africa

ICT = Information and Communication Technologies

IOS= iPhone operating system

ISDB-T= Integrated Services Digital Broadcasting – Terrestrial

ITU = International Telecoms Union

MHZ= Megahertz

M-NET=Electronic Media Network

MPEG-2=Moving pictures Expert Group

OVHD = Open View High Defination

PSL= Premier soccer league

R2K=Right to Know campaign

SAARF = South African Advertising Research Foundation

SABC= South African Broadcasting Corporation

SADIBA = South African Digital Broadcasting Associations

SAP= Service Ancillary to programme making

SATRA=South African Telecommunication Regulatory Authority

SDTV= Standard definition television

SDTV= Standard definition television

SPSS= Software Statistical Package for the Social Sciences

STB- Set top box

SVODs= Subscription videos on demand

TV= Television

TWENG= Terrestrial wireless electronic news gathering

UHDTV= Ultra-High definition Television

UHF= Ultrahigh frequency

UNESCO = United Nation Educational, Scientific and Cultural Organisation

USAASA = Universal Service Access Agency of South Africa

VHF= Very High Frequency

VOD= Video on demands

ZAR= South African Rand

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 BACKGROUND AND MOTIVATION

The South African broadcasting system is currently undergoing an innovation revolution. Digital migration is the process of moving the broadcasting of television and radio from analog to digital (Broadcasting Digital Migration Policy for South Africa, 2008: 9). Digital migration is set to accelerate the economic growth, thus assisting in the achievement of the development goals particularly the government's quest to eradicate poverty through job creation. It is important to note that migrating from analog broadcasting to digital will create opportunities for development, use and wide dissemination of local content in all 11 official languages (Hadland, Aldridge & Ogada, 2006:45).

The changeover from analog to digital broadcasting system is a current phenomenon. Digital migration is the modern global trend in broadcasting. The International Telecommunication Union (ITU) set in 2015 for the entire broadcasting systems in the world to go digital. However, South Africa failed to meet the 2015 deadline for digital migration. Recently, South Africa commenced with the migration processes from analog to digital broadcasting in both radio and television. However, the process is very slow. The Northern Cape and Free State provinces already migrated to Set Top Boxes (STBs) installation. The installation of the STBs commenced in Limpopo, KwaZulu-Natal and Mpumalanga in early March 2017 (News24,2017:6). Furthermore, Haggard and Mclachlan (2008) states that digital technologies are changing the way services are delivered, leading to blurring of boundaries between types of services and the means of communication, and eroding the traditional distinctions between text, audio, and video.

According to the Digital Migration Working Group Report (2006:8), Broadcasting Digital Migration (BDM) is the practice of using advanced compression techniques to encode and transmit audio, video and image signals resulting in more efficient bandwidth usage in this case is the process of the television set top box. The Digital Migration Working Group Report (2006:8), further states that the process of change is often referred to as convergence, alluding to the

convergence that is taking place between the previously separate sectors of print media, data, telecommunications and broadcasting.

The South African Government Gazette No. 3148 (Republic of South Africa, 2008) highlights that migration of the national broadcasting system from analog to digital is set to transform the world of broadcasting across the whole world. For South Africa, this is an opportunity to position the country along with leading countries in Region 1 including Africa, Europe, the Middle East and the Republic of Iran (Go Digital South Africa, 2012). In Africa countries that have completed BDM process includes, Ghana, Kenya, Nigeria, Mali and Senegal (Brand, 2010).

Globally, television is one of the most important and powerful media of the 21st century. It has the ability to communicate to ordinary people right in living rooms, and one message can reach billions of viewers from different places simultaneously. In South Africa, television was introduced in 1976 (Henderson, W. 1999) with the desire to transmit pictures and sounds over a long distance.

South Africa is confronted with a wide range of developmental challenges such as the digital divide, as well as building social cohesion and common national identity, poverty eradication, and employment creation. However, digital broadcasting has the potential to contribute significantly to addressing these challenges.

The regional radio communication conference of 2006 resolved to switch from analog broadcast to digital broadcasting services (Digital Migration Working Group Report, 2006:10). Migration to digital broadcast transmission technology began all over the world. There are countries that have already advanced in their digital migration programs such as the United States of America (US), France, New Zealand and Sweden (Go Digital South Africa, 2012).

Once the installation of the set top box is done, the analog television transmission will be terminated because of the technological development that will be made, this statement is supported by Brand (2010), when he states that after June 2015, the analog television transmissions will no longer be protected from harmful interference caused by Digital Television Transmissions (DTT).

Brand (2010:23) contends that the digital migration strategy was announced in

2006 in contribution to the migration from analog broadcast into digital broadcasting system. The national information society revelation is to institute a South African progressive information society, in which information and communication technology tools are key drivers of economic and societal development (Mbatha & Ocholla, 2011; Lesame, 2013).

South African citizens who want to receive the terrestrial television broadcasts after the termination of the analog broadcasts which should happen by mid-2015 to meet a deadline imposed by the International Telecommunication Union (ITU) will have to purchase the set top box (Mail & Guardian, 2012).

2. RESEARCH PROBLEM

The researcher observed that South Africa faced some challenges in terms the digital migration process, and it also failed to meet the ITU 2015 broadcasting digital migration deadline. The researcher furthermore realized that three areas were affected by the BDM in all nine provinces of South Africa. which are the following:

2.1 The delay and failure of the South African government to meet the broadcasting digital deadline

The initial deadline delay while waiting for the migration, the as determined by the ITU was June 17 2015. Due to “legal wrangling and power struggles between the newly established” Departments of Communications and Telecommunications missed the deadline due to financial crisis (News24, 2017) and caused a delay.

2.2 Technical Challenges and Financial Challenges

The transition or migration from analog to digital broadcasting requires financial capital for equipment and devices, and to achieve this goal there should be financial assistance from the government. However, the Minister of Finance

Malusi Gigaba rejected the SABC request for funding from the Department of Communication South Africa (2017).

In South Africa only five out of nine provinces, are affected by the delayed transition to broadcasting digital migration and these are: Western Cape, Eastern Cape Limpopo, KwaZulu-Natal and Mpumalanga (News24, 2017).

1.3. LITERATURE REVIEW

In today's generation technological innovation is playing an important role in transforming human lives. Television exercises an undeniable impact literally in more than millions of people around the world (Kellison et al., 2013). It is patent that since 1995 South Africans have been living in a society of digital television (Fischer, 2004: 1). The Republic of South Africa is facing difficulties in migrating from analog television to digital broadcasting, to influence the migration of the existing terrestrial television services.

1.3.1 Broadcasting Digital Migration

Broadcasting Digital Migration (BDM) is a process in which broadcasting services which exist on the traditional analog technology are substituted with digital based networks systems over a particular period of time (Berger, 2010). The transformation from analog to digital television is referred to as a digital migration.

Digital technologies are transforming the way in which services are delivered, leading to a distorting of boundaries amongst types of services and the means of conveyance, and eroding the traditional distinctions between audio, video and text (Haggard & McLachlan, 2008). Digital migration allows content providers to provide extra services with a higher quality of signal (Mbatha, Lesame & Ngwenya, in Lesame et al., 2012: 156-157).

1.3.2 Benefits of Digital Migration to Consumers

This sub-section aims to distinguish between television analog from digital

television broadcasting. It has been highlighted that digital television broadcasting is the best and it has many advantages and benefits compared to the analog broadcasting (Mbatha, & Lesame, 2012).

Digital migration includes benefits such as an increase in broadcast channels and alternative use for the frequencies like broadband, savings on broadcasting stations, huge digital dividend and explosion in ICT. Content creation, digital dividend refers to the radio spectrum which is released in the process of digital television transmission (Mwiti, 2015). Many countries in the world have acknowledged the huge benefits that the digital broadcasting offers, and they are making a great stride in the modification from analog to digital broadcasting (Idoko, 2010).

Broadcasting digital migration presents the country with a unique opportunity to positively build the future dynamics of the ICT sector and brings with it many benefits including efficient use of frequency spectrum, a public and scarce resources, more channels and therefore, more diverse content delivered to South African public (South African Government Gazette No. 3148, 2008). Other benefits that digital television offers are the potential for special interactive services to create for people with visual and hearing impairments such as audio description and subtitling, and e-government delivery to the community market (Brand, 2010).

Additionally, digital migration provides the public with many benefits, and according to Flew (2003; 19) it is a good idea because it gives the users a degree of choice to have an access to information and control in the result of that information. There will be an economic growth, social services and wage goods will be affordable, and catalyst and platforms will be created to drive development of citizens well-being.

1.3.3 Differences between Analog and Digital Broadcasting

Kruger (2008:1) defines digital television as a development platform in the broadcasting sector since the inversion of the colour screen from black and white

television. The digital television is also considered as the latest innovation in the broadcasting sector with an ability to produce clear sound quality pictures and multiple video programs as well as High Definition Television (HDTV). Another characteristic of digital television is convergence. According to Fontaine and Pogorel (2006:55) convergence can be defined as converting all the old media services such as radio, text, services and video into one medium. The STBs will be similar to the PC in terms of its features since it is going to allow users to browse, save information and process number of television-based services (Galperin, 2002:6-7).

Moscow (2008:107) illustrates digital information as electronic information networks because this gives the media consumers access to all forms of data unlike analog which has poor sound system and low-quality pictures. According to Curran (2003:248), in the digital world, the public will have an opportunity to select what they want from the media instead of viewing what the media want them to see. This way South African local content will be given a platform. According to Armstrong and Collins (2010:15), one of the digital broadcasting characteristics is the opportunity to allow viewers to have an option to select among multiple languages or multiple subtitle options for a single program including services for people living with disability. Furthermore, the STBs will have the broadband and broadcast (Berger, 2010:27) “the STBs will be designed with SIM Card capacity in order to allow viewers to access internet via television screen” (ibid.).

1.3.4 Digital Satellite Platform in South Africa

The first digital satellite in South Africa was launched in 1995 by Multichoice, a company which offer Digital Satellite Television (DSTV) services. The DSTV caters for both disadvantaged background families and rich families; DSTV delivers more than 400 TV channels and many audio channels via satellite (Multichoice, 2011). DSTV offers different types of packages ranging from DSTV easy view, DSTV lite, DSTV select, Dstv compact and DSTV premium (ibid.).

DSTV plays a major role in the broadcasting sector of South Africa because they

have over 4,7 million household subscribers in the country with 12 million television household (Naspers, 2013). According to Statistics South Africa Census (2012: 99) the DSTV and Toptv also broadcast the SABC, educational television and some community channels through digital satellite platform. This allows over four million households in South Africa who have subscribed to the satellite to access SABC channels with clear pictures and quality sound.

1.4 ROLE OF THEORY IN THE STUDY

A theory in a study clarifies the concepts within the study, and it also highlights concepts on the existing knowledge. Theory determines what to focus on that is related to the study, and it shows the structure and the nature of the research problem and also assists to find solution. The main role of a theory in a research is to guide the researcher (Cooper & Schindler, 2011:36). Furthermore, theoretical framework highlights the understanding of the study and the way in which data will be interpreted.

The diffusion of innovations theory (Rogers, 2003) will be underpinning the concepts of the study. Innovation refers to the ability to build new technological developments in the society (Thompson, 2004). The diffusion of innovations theory is an old concept and was developed by historians and anthropologists to spread culture (Rogers, 2003). Furthermore, Rogers (2003) further explains that the role of internet and technology in making it possible for communication and exchange of ideas from around the world to be explored.

The theory explains why, how and what is new in the world of information and technology in the society. Diffusion of Innovation theory is the first key theory for implementation and adoption of technology development system (Rogers, 2003). Diffusion study examines how information and technology is disseminated in a society.

1.5. PURPOSE OF THE STUDY

The purpose of the study is to investigate the effectiveness of the digital

terrestrial broadcasting in South Africa, and establish new findings that will contribute knowledge to the South African broadcasting sector and in the Media Studies. The study also aims to explore the impact of digital terrestrial television (DTT) on television services in Shayandima Village (Thohoyandou) and Rapotokwane village in Bela-Bela, in Limpopo Province.

1.5.1 Aim of the study

The study aimed to explore the effectiveness of the digital migration at Shayandima and Rapotokwane villages in Limpopo.

5.2 Objectives of the study

The study objectives are to :

- a) To establish how digital migration will improve service delivery in South Africa, and
- b) To describe the nature of digital migration in the broadcasting sector.

1.6. RESEARCH METHODOLOGY

This research employs a quantitative research approach. The study embarked on using the quantitative research approach because it wants to examine the effectiveness of the set top box. A questionnaire will be used to collect data for the study. A questionnaire is a well-established research tool for acquiring information on participant social characteristics, present and past behavior, standards of behavior or attitudes and their beliefs and reasons for action with respect to the topic under investigation (Bulmer, 2004). Questionnaires are useful in collecting information that is exceptional to individuals, such as attitudes or knowledge; its central premise is the use of qualitative research method approaches that will provide a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2011). A group of people in Limpopo Province (Shayandima Village) have already shifted from analog to digital broadcasting, in terms of Digital Terrestrial Television (DTT) with the use of STBs. The study chose to use questionnaire because it will give the respondent leverage to choose the best answer of their choice on the

questioners.

1.6.1 Population and Sampling Procedure

The researcher planned to will distribute and distributed questionnaires to 50 households in Shayandima Village (Thohoyandou), and 50 households in Bela-Bela, Rapotokwane Village. The questionnaire consists of 22 questions, open-ended and closed-ended questions. Participants will be asked demographic questions which include basic information such as gender, age, and the origin of the participant.

The probability sampling method of simple random sampling (Du Plooy, 2009) was chosen to select the sample of 50 households out of a population of many households in these two villages. The number of the population is unknown but the villages have many households. The simple random sampling technique method was selected because of its scientific and objective nature, consequently any household in the villages will have a chance of being selected without bias.

The sample size of 50 people was chosen with the interest of time and finances. The study chose to distribute questionnaires at the community of Shayandima Village situated 26.4km outside the town Thohoyandou. The researcher chose Shayandima and Rapotokwane villages (Bela-Bela) because these are the only places in Limpopo Province that are making use of the STBs. They are the targeted group who already has the STBs installed in their households.

The researcher used a questionnaire to study how effective is the DTT broadcast compared to analog broadcasting. The questionnaire will be typed and given to the STB users in both villages to answer.

1.6.2. Data collection method

Questionnaires were distributed with the aid of voluntary research assistants

across Shayandima and Rapotokwane villages. The research assistants will also be randomly selected at the village without knowledge of the persons or bias, so that one remains objective.

1.6.3 Data Analysis methods

The study employed Quantitative data method. Data will be analysed according to the final results. Information will be written down when analysing the data, and graphs and tables will be drawn that will help and make it easy for the study to interpret the results. The graphs will reflect the number of households interviewed, location, and their response to the questions.

Neuman (2000) states that quantitative examines the importance of the usefulness of quantifying variables and validity theories, or assumptions in order to show the relationship between variations of data. Furthermore, data shall be analysed as it is on the feedback of the participants. The study will maintain objectivity such that there will be no data that will be fabricated. The study will generate a rich body of findings from the discussions, and they will be discussed in details.

1.7. ETHICAL CONSIDERATIONS

Ethical considerations can be quantified as one of the most important parts of the research. Dissertations may even be condemned to failure if this part is missing (Bryman & Bell, 2007). The researcher asked permission from the participants through a consent letter, and participants will not be forced to participate and they shall be treated with respect.

7.1 Respect for Individual

Respect shall be given to everyone every household (participants) who owns the STBs and they shall be treated with a full respect despite their age and their background, their rights and decisions will be also respected in other words they will be free to say no when they feel like saying no.

1.7.2 Non-Maleficence

Those who feel bad about answering other questions in both interview and questionnaire will not be threatened or forced to do that. They will be free to state how they feel. The interviewee will understand how the participants feel and a good communication shall be maintained with participants (Creswell, 2013).

1.7.3 Objectivity

The study will present and interpret the information to avoid being bias. All the collected data and ideas will be presented the way they were (Evans, 2013).

1.7.4 Honesty

Every information will be communicated through honest questions and answers will also be shared honestly. When reporting the data or giving back the information as results and procedures no information is going to be fabricated information, and participants as well as other members will not be deceived (Amankwaa, 2016).

1.8 QUALITY CRITERIA

In addressing the quality criteria, the study will maintain credibility, transferability, dependability and confirmability (Bryman, et al., 2008).

1.8.1 Validity

Validity requires ethically networking purposes, orientations, and ways of conducting quality research. Additionally, inductive inference means actively working to enact research purposes, and making research true by helping it to shape the world (Abrahamson et al., 2016). To achieve this ethically, the researcher will act in good faith, offering prescriptions and recommendations based on the best available information to fit the purpose of the study. To allow validity the study the researcher will likewise provide satisfactory information of

the context of the field of the study such that other scholars are able to decide whether the fundamental settings is similar to another and that they can be justified.

1.8.2 Reliability

Dependability (in preference to reliability) refers to consuming sufficient information and documentation of the methods employed so that the study can be scrutinised and replicated (Bryman et al., 2008: 266). The study will interpret the information that is valid, and information will be interpreted, as this will avoid bias. All collected data and ideas will be represented authentically. Data shall be shared, and the study will allow room for criticism. Every information will be communicated honestly, and questions and answers will also be shared honestly. When reporting the data or giving back the information as results and procedures no information is going to be fabricated.

1.8.3 Objectivity

Objectivity validates the adequate balance between different aspects of quality in research, relevance and credibility, and the need to be aware of tensions and to seek complementarities. Confirmability (in preference to objectivity) refers to ensuring that the study's findings are the result of the experiences of the informants rather than the preferences of the researcher (Cash et al., 2002). The researcher will demonstrate that factual information of the phenomenon under analysis will be presented. The study also seeks to ensure that the study measures or test exactly what is intended. The researcher will achieve objectivity through an audit trail of the raw data, memos, notes, data reduction and analysis.

1.9. SIGNIFICANCE OF THE STUDY

The study aims to analyses the digital terrestrial television (DTT) and to set top boxes as part of the digital migration processes in South Africa. This study brings to light the impact and the effectiveness of digital migration compared to the analog in the selected areas of research. This topic is relevant to field of Media

Studies (study and research purposes) and to media scholars because there are more than 10 million citizens in South Africa who watch television (Singer, 2014). Television is one of the mediums that is used by billions of people all over the world to send and receive information such as news updates entertainment and education.

5 SUMMARY AND OUTLINE OF CHAPTER 1

This chapter has outlined the research problem and had given the background of the study. It further described the theoretical background of the study, which is based on the fact that we are living in a fourth industrial revolution (4IR), and people have to adapt to technology, as well as the effectiveness of the set top box.

This chapter also presented the significance of the study, the theoretical framework and the objectives of the study. The chapter has acknowledged gaps which will be addressed throughout the study.

Chapter 2 discusses the South African broadcasting systems from analog broadcasting to digital broadcasting, the technology behind digital migration and the differences between digital and analog broadcasting.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the South African broadcasting systems from analog broadcasting to digital broadcasting, and the technology behind digital migration and the differences between digital and analog broadcasting. Ihechu (2012) observes that despite the benefits that digital broadcasting has, there are several factors posing challenges to the process of migration.

It is revealed by the South African Broadcasting Corporation (SABC, 2012) that digital television has more advantages compared to the analog television broadcasting due to its ability to produce clear pictures, multichannel features, interactivity, convergence ability and clean sound and voice Jabulani (2013). However digital television broadcasting in South Africa comes with a huge cost which mitigates against these benefits. This chapter also discusses the countries that have already migrated to digital broadcasting as well as the impact thereof.

In today's generation technological innovation is playing an important role in transforming human lives. Television exercises an undeniable impact literally on more than millions of people around the world (Kellison, et al 2013). It is patent that since 1995 South Africa has been living in a society of digital television (Fischer, 2004: 1). The Republic of South Africa faces difficulties in migrating from analog television broadcasting to digital broadcasting. Lack of funds and maladministration of funds this migration from the existing terrestrial television services.

2.2 BROADCASTING DIGITAL MIGRATION IN SELECTED AFRICAN COUNTRIES

Broadcasting Digital Migration can simply be described as the process of converting the television broadcasting system of television and radio signals from analog to digital technology system. The digital broadcasting requires much less bandwidth and it has got an ability to carry more content and provide better quality pictures and sound (digitalkenya.co.ke, 2017).

South Africa is one of the countries located in the International Telecommunication Union (ITU) Region 1 (Olwal, et al., 2013). Therefore, it is subject to the removal of protection for its analog television frequencies that was due in June 2015. The South African government took a decision to switch to digital broadcasting system in 2008 under the administration of the former minister of communication Faith Muthambi and switched off to analog signals, and the cabinet approved the Broadcasting Digital Migration (BDM) policy to guide digital migration process in South Africa (South African Government Gazette, NO. 31048, 2008). Digital broadcasting migration is a process in which broadcasting services existing on the traditional analog technology are substituted with digital based network systems over a particular period of time (Berger, 2010). The transformation from analog to digital television is referred to as digital migration. Digital technologies are transforming the way in which services are delivered, leading to a distorting of boundaries amongst types of services and the means of conveyance, and eroding the traditional distinctions between audio, video and text (Haggard & McLachlan, 2008). Digital migration allows content providers to provide extra services with a higher quality of signal.

Bevan, (2008) highlight that in 1976, television was introduced in South Africa. This medium is already more than sixty years old. There were technical problems of transformation in broadcasting sector from theories to practical means of transmitting pictures and sounds. Television has an incontestable impact of the lives of literally billions of people in the world (Kellison et al., 2013).

The transition or switch over from analog to digital television broadcasting is referred to as digital migration; and the digital television distribution allows a room for thinking a new paradigm for vehicles of mass communication by inserting mechanism of interactivity (Machiko, 2015). According to M-NET (2011) the planning of the changeover started in 2005. However, nine years later after, the planning process has not yet started in South Africa. Nonetheless only 9 countries in Africa that had officially launched national digital terrestrial television (Balancing Act, 2014).

Until the 1990s broadcasting was mainly a matter of transferring sound or video streams through the airwaves and cables as well, this was through analog signals

(Berger, 2010). The digital atmosphere is not stagnant and continues to advance quickly (Poole, 2011). Television seems to be playing a vital role in how people live their daily lives. Nickson (2013) contends that technology has radically innovated to third generation (3G) mobile cell phone that receives television broadcast signals.

The Balancing Act Africa Report (2014) states that the delay of digital migration in Africa can be viewed as a dark cloud hanging over the African television industry. However, South Africa is similar to the rest of the Africa positioned in International Telecommunication Union (ITU) region 1, and therefore subject to removal of protection for its analog television frequencies in June 2015 (Armstrong & Collins, 2010). They (ibidi) further record that South Africa is formally engaging on this challenge, devoting considerable resources and making policies effort and implementing a transition from analog to digital television. However, little constructive effect evidence is there in Limpopo Province, Shayandima village and Rapotokwane village, where a digital migration is taking place.

The United States of American (US) was the first to broadcast multichannel digital television broadcasting by the satellite in 1994 and since then it has been escalating (Yamanda, 2002). Two years later after the introduction of multichannel broadcast in US, Europe also migrated to the multichannel television broadcasting in 1996. Tanzania became the first county in sub-Saharan Africa to migrate from analog television broadcasting to digital broadcasting in December 2012 and managed to switch off its analog broadcasting systems in most areas more than two years ahead of the ITU agreed deadline of June 2015 in 2013 (Berger, 2010).

Digital broadcasting is considered as an innovation development since the initiation of television (Kruger, 2008:1). The digital broadcasting has an ability to transmit quality sound and pictures, multi-video and the High Definition Television (HDTV).

The ITU digital migration working group report (2006) defines broadcasting digital migration (BDM) as the practice of consuming advanced technological techniques to decode and encode audio, video and image signals leading in more effective

bandwidth usage. This enables providers room to provide content through a high quality signals than has been previously been transmitted.

It is true that the world is transforming from analog to digital broadcasting, and digital television is viewed as an advanced broadcasting technology that has transformed the viewer's television viewing experience (Haggard & McLachlan, 2008). In 2010, the first digital broadcasting system was deployed for the first time (Duncan, 2009).

Digital television allows television broadcasters to compress data, so as to transmit a huge amount of compressed content without the need of burdensome satellite dish. This transforms into more channels as well as better picture and sound quality (Armstrong & Collins, 2010).

2.3. SOUTH AFRICAN BROADCASTING POLICIES

The democratisation of South African broadcasting began with the negotiation of Independent Broadcasting Authority (IBA) Act of 1993. The substance policy of the South African government is to critically shape and roll-out digital migration (Berger, 2010). This is what determines if the subsidisation of the set top boxes will be of the state or not. However, the South African Government Gazette (No. 3148, 2008) states that it has been concluded that the Department of Communication and Digital Technologies (DCDT) will subsidise poorhouseholds only. During the apartheid regime the broadcasting policies of South Africa were arranged in a setting where it would fulfil the aim and the objectives of the apartheid government.

In 1994, South Africa became a free country, and apartheid came to an end with new policies amended through Convention for Democratic South Africa (CODESA). The parliament established South African Telecommunication Regulatory Authority (SATRA) and the Independent Broadcasting Authority (IBA) which is called the Independent Communications Authority of South Africa (ICASA) today to regulate broadcasting in public interest (Lloyd et al, 2010). Consequently, the IBA launched triple inquiry to investigate broadcasting policy which is in the public interest. As a result, the three systems of broadcasting included public, commercial and community was adopted in 1996 (IBA,1996).

According to Steenveld and Strelitz (1994), in South Africa there was a delay in the introduction of television due to debate that television might lead to negative political effects on the apartheid government. Prior to the introduction of constitutional democracy in South Africa in 1994, broadcasting was primarily regulated by the South African Broadcasting Act of 1976. Furthermore, the effect of these legislations requirements was government's exclusive control over the preparation of broadcasting policy and regulation of broadcasting. The government also had exclusive rights over provision of broadcasting corporation (National Association Broadcasters, 1994).

In 1995, the re-regulation of broadcasting commenced and resulted in the growth of a range of new media companies and owners in line with the legislations requirements of diversity such as WebTV, Amazon.com, Explorer and Microsoft etc to ensure ownership by historically disadvantaged groups (ICASA, 2004). In addition necessities in legislation dealing with cross media control and limiting foreign control have supported limiting any monopoly. Before 1998 South Africa only had one free-to-air television channel. According to the National Association of Broadcasters, in 1998 E.TV became the first free-to-air television channel in South Africa. E.TV, was given the licence after a competitive request process with 7 applicants. Furthermore, E.TV was then licensed to broadcast nationally, and from 2001 it was mandated to carry 45% South African content. E.TV. is governed by the rules laid out by the position paper on the licensing of South Africa's first free-to-air television channel (National Association of Broadcasters, 2014).

In 1998 the White Paper Forum on Local Government of 1998 noted that 60% of the South African population are reached by the television broadcast network in terms of the broadcasting and network access, and that the "regulation strategy for the signal distribution sector is to achieve universal access to service and facilities" (Zcoms, 2014). In South Africa there was only one free-to-air commercial television station that is licensed-(e.tv). E.TV provided a national service and in terms of its licence has reached at least 77 per cent of the population of South Africa (BCCSA, 2003).

The South African Broadcasting Corporation (SABC) was an established company with the public company (SABC Ltd) with the state as the sole shareholder in terms of the South African Broadcasting Act, no 4 of 1999 (Section 8A). This act (in line with the South African White Paper Policy in Broadcasting) established new policies for extending and reinforcing principles determined in the IBA's Triple inquiry report dealing with public broadcasting (South African Department of Communications, 1998). Moreover, the act also reorganised the broadcasting structures into two separate entities a public broadcasting services and public commercial wing (section 9).

South Africa has a collection of commercial radio and television services; these include both free-to-air channels and subscription services (satellite and terrestrial broadcasting systems) (White Paper on Broadcasting Policy, 1998). Likewise, the white paper (ibidi) highlighted that the government and regulatory policies should achieve certain public services responsibilities, though those were less time-consuming than those imposed on public and community broadcasters. Free-to-air broadcasters in turn have greater public service obligations than subscription services.

South Africa has a fledging community television industry. One of the interest television services was grandfathered during the time of announcement of the IBA in 1994. The ICASA's position paper on community television outlines numerous minimum principles for community channels. It state that "the majority of programmes must be sourced and produced locally, and that there must be community access to the channels, community television channels are also expected to air news reality programmes and children's programmes (South African White Paper on Broadcasting Policy, 1998).

According Armstrong and Collins (2010), ICASA promised inquiry in terms of section 67 of the Electronic Communication Act (ECA) into whether Sentech is in an anti-competitive position as argued by E.TV at the court of challenge to ICASA in 2009, due to Sentech's control over the only national terrestrial signal transmission infrastructure, and its control over the setting of terrestrial transmission. According to ICASA (2010), amended terrestrial broadcasters licences recognise broadcasters as users of both digital and analog frequencies

and possible amendment of broadcasters digital tariff agreements with Sentech, should Sentech tariff setting be found to be anti-competitive. However, Berger (2010) established that there are major policy questions that audiences need to acquire this equipment, so that they are not left bereft of television at the point when the analog signals is switched off.

Cape Town is particularly vulnerable because of frequency scarcity in that part of the country (ICASA, 2009), and that community stations cannot be given a guarantee to analog frequencies because frequencies are not enough to satisfy existing demand. Nonetheless, Beal (2013) states that all countries are required to migrate to digital technology according to the international agreement reached in Geneva 2016. The east Africa states agreed upon a target date of December 2012.

The Independent Broadcasting Authority (IBA) Act No 153 of 1993 established the independent broadcasting authority (IBA) on the 30th of March 1994. In permitting the IBA, its public interest mandate and pondered, enunciated in Section 2, 28 and 78 of this Act, it proclaimed a new system of regulating broadcasting in South Africa. In addition, it gave the policy directions in various broadcasting policy areas (South African Department of Communications, 2014).

During the apartheid regime the national party regarded television as a threat to party political ideology because of its power in transmitting culture. Dawson (2001: 119) states that television doesn't respect differences it breaks and unties up cultures; it swings aside borders and grubs away the values of communities. These outcomes highlight the range to which broadcasting policies of the past were used to promote apartheid ideology and identities.

The broadcasting digital migration policy (South African White Paper on Broadcasting Policy, 1998) indicates that the digital terrestrial television will be beneficial to the public at large through the multiple service availability and inordinate access of information. Today we are living in a society where access to information is very important since the Digital Terrestrial Television will allow consumers to have access to information. This will make it easier for society to participate in the economic issues, politics and social activities (South African Broadcasting Digital Migration policy, 2008).

According to the (South African DoC, 2010), the digital terrestrial television project is a massive project, thus, it requires all the stakeholders cooperation to participate. The Department of Communications and Digital Technologies (ibid.) further alluded that the stakeholders support the government interest, which is to look after the interest of the society for South African DoC (2010).

The nature of broadcasting policy making in South Africa tends to exclude the large stake of the country. Duncan (2012) points out that “the policy making on digital migration is notoriously susceptible to the industry capture, which can lead to a process driven by procedure interests rather than user interest”. The *Right to Know Campaign* uttered its concerns during the ICASA hearing in 2012 concerning the lack of public engagement when it comes to policy making. In their submission they highlighted that written comments are given insufficient time as a result of time limitation civil society groups are unable to make consultations with their constituencies (Right to Know, 2012).

Television is growing in terms of its viewership in South Africa the Department of Communications (2012) highlighted that in 2008 the community television viewership increased from 426 000 to 2.9 million in 2012 with a dominance shown on Soweto TV. This is a very interesting progression. According to TopTV (2012), there is an increase in terms of the DSTV viewership amongst all language groups with the statistics of 57% viewership in English and 40% in Afrikaans. According to the South African census (2010) and housing population (2010), South Africa had 5,245,768 households and there were more households in rural areas compared to the urban areas at 2, 663,743.

The central and clear objectives of the White Paper In (1998) was to safeguard that the government had the right to issue out directives related to broadcasting, and to ensure that the former Minister of Communications Faith Muthambi performs supervisory roles in the broadcasting sector South African DoC (2012). ICASA plays an important role in the broadcasting sector by regulating and censoring of some information. In relation to ICASA Section 192 of the constitution plays a role in protecting the authority independence because of its regulatory role (ICASA, 2011).

The White Paper in 1998 requires the South African parliament to continue to play the supervision role in the South African broadcasting regulation and outlining the responsibilities of stakeholders (BDM Policy, 2008). In terms of the editorial codes the white paper highlighted the issue of editorial codes and emphasising on the most important role of the regulation policy functions. According to the IBA (1997) the main function of the regulatory structures is to deal with complaints about broadcasters' observance of the societal standards in advertising and programming.

According to Zcoms (2014) phases four and five reports indicate that the prominence in the 1998 White Paper on Broadcasting Policy was on constructing a policy framework for further democratisation of broadcasting. The former chief operating officer of the SABC Hlaudi Motsoeneng introduced 90% local content in South Africa supporting the white paper policy objectives, which is to promote local content (News24, 2016). According to Zcoms (2014) the policy objectives are still relevant, and it is proposed that these objectives still inform future Audio Visual (AV) content and content service policy.

There is a policy vacuum in South Africa when it comes to the issues of digital migration and STBs (Berger, 2010). Furthermore, Lloyd (2009) highlights that more than five million South African citizens will not be able to afford the proposed price of the set top boxes that is R700.00. However, the government policy indicates that the poor will be subsidised with 70% to purchase the set top boxes through the universal access fund (BDM policy, 2008). In 2012 the government budget towards the subsidies for the STBs was on 6% (Duncan, 2012). Armstrong and Collins (2004) argue that it is clear that the government is undergoing some financial problems due to maladministration of funds in the DCDT.

The former Minister of Communications Faith Muthambi tabled two bills in National Assembly in 2005 aimed at changing the regulatory structure to encounter the needs of convergence, that is the convergence bill (B09-2005) and ICASA Amendment Bill (B32-2005). The Department of Communications National Association of Broadcasters, (2014) states that South Africa must reach the agreement of migrating. With the broadcasting experience of South African policy

decisions have been taken that proclaims that public funds will subsidise the state owned broadcaster, and the SABC is to digitise news-gathering (Berger, 2010).

The set top boxes were manufactured in South Africa and tested nationally. This boosted the national economy. The Department of Communications (2012) highlighted that the Broadcasting Digital Migration (BDM) amended policy issued under the Government Gazette No.35014, and requires that the set top boxes included the set top box system to protect the investment by the government in form of the subsidy scheme, as well as the electronic manufacturing industry (South African DoC, 2012).

One of the South African broadcasting policies is that the television consumers are supposed to subscribe and pay their television licence. According to ICASA (2017), the broadcasting sector in broad-spectrum has undertaken various changes and tremendous growth in terms of the quantity of licensed operators, revenues and viewers since the publication of the South African White Paper on Broadcasting in 1998 and commencement of Broadcasting Act in 1999 and the Economic Commission for Africa (ECA) in 2005.

South Africa has three television broadcasting subscription providers, that is, Multichoice, StarSat and Deukom (Jabulani, 2013). According to the DoC (2017), these three services provides viewers with different subscription services, the Multichoice provides satellite Direct To Home (DTH) subscription broadcasting service that includes DSTV, terrestrial subscription broadcasting service which is M-net service, the second broadcasting service is the StarSat. According to ICASA (2017), this is a service that provides a direct access to home satellite broadcasting subscription service. According to (ICASA, 2011), StarSat and Deukom provide viewers with the same subscription service methods.

The set top boxes are manufactured in South Africa (Berger, 2010). The manufactures of these set top boxes stand a chance to benefit financially from the Digital Terrestrial Television (DTT) projects since the Broadcasting Policy of 2008 proposed that STBs shall be sourced from local manufactures. Mahaye (2008) supported the digital broadcasting migration policy and government decision to support the local manufacturing industries in order to open a door for job opportunities for the local people to develop a world class manufacturing

industry (Mawson, 2012). Moreover, Brand (2010) states that this production will boost the national economic growth. There is a good relationship between the government and the manufacturers of the STBs, since the government had endorsed a policy that supports and allows STBs to be produced and used for the DTT.

This policy decisions will also boost the national economy growth, maximisation of revenues and creation of jobs in the STB manufacturing sector. Supported by Ardizzon and Ferrari (2010) states that digital broadcasting facilitates the e-government service delivery, opportunity for developing new skills and creation of new jobs. Dzonga (2012) emphasises the point of opportunities by highlighting that the digital broadcasting will also provide opportunities for investment and job creation. In this way, digital migration is bringing a development to the economic landscape.

One of the most important governmental developments since the IBA Act of 1996 came into power, was the expression provision for an independent broadcasting regulator (Zcoms, 2014). Furthermore, the Department of Communication and Digital Technologies emphasises that “with the reviewing of policies changes in the broadcasting industry will take place” (South African BDM Policy, 2008).

The Government Gazette No 34642 (2011) in terms of Section 3 (1) of the Electronic Communications Act 36 of 2005 states that the broadcasting authority made a decision to repeal the digital migration and replace it with digital terrestrial television. Digital migration was replaced by digital terrestrial in 2008 (Berger, 2010). There is an estimation of 11million television households in South Africa which need to switch from analog broadcasting to digital broadcasting (ICASA, 2011). According to the (Broadcasting Digital Migration Policy for South Africa, 2008: 9), migration to digital terrestrial television in terms of the regulations shall take place using the second General Digital Video Broadcasting Transmissions (DVB-T2). However, recently in South Africa, digital migration has started in three provinces Mpumalanga, Limpopo and Western Cape (South African DoC, 2018).

2.3.1 Media and Ownership

Digital migration is the process which emerged in 2005 and in 2015 all countries in the African continent were expected to migrate from analog broadcasting to digital broadcasting (News24, 2017). This has been state owned and led as the government assumed responsibility for securing public interest objectives on the behalf of the citizens (Duncan, 2012). However, there are several challenges which led to the delay in South Africa. According to Berger (2010), ICASA could be attributed for the delay of the launching digital migration frequency plan in South Africa, which is broadly considered as powerless. It has also found itself contradicting DCDT policy on digital migration by proposing a revised switch off date of 30th of March 2012 (Armstrong & Collins, 2010).

In early 2007, the South African cabinet approved a digital switch on the of first of November 2008, and the analog switch off on first November, 2011, consequently calling for a rapid three year migration period (South African DoC, 2012). This broadcasting migration timetable program was confirmed in the draft Department of Communications and Digital Technologies (DCDT) policy and implementation plan Documents were released in March 2007 (South African DoC, 2007). However, the DCDT acknowledged that the switchover target date may need to be reviewed (Ensor, 2010). ICASA has administrated that the broadcasting switch-off can only be in the early 2013 (McLeod, 2010).

Moreover, the government's digital plans have been striking both for their consistent ambition, that is the aspiring to notably short migration period of only three years and for the frequency of their television (Armstrong & Collins, 2010). The flagship broadcaster in South Africa, the SABC, has experienced the resignation of its board members, appointment of an interim board, dismissal of chief executive, prosecution of members of its senior management (for alleged fraud), proposed legislative revision of its governance regime to make it more directly answerable to the minister of communication (DoC, 2009), a financial bail-out amounting to nearly 1.5 billion ZAR (News24, 2009).

Duncan (2012) states that the digital migration delay work to the incumbent broadcasters' advantage, giving them opportunity and space to come up with new interesting content deals that may produce near-insurmountable barriers to entry

for new broadcasters in future. This situation is evident in the satellite television platforms whereby a delay to introduce competition to Multichoice has allowed them to create barriers for new content.

The white paper introduced the multi-channel distribution indicating that multi-channel distribution must not favour one technology over another. There should be equal broadcasting and there should be a balance even though the satellite is clearly favoured (DoC, 2012; Machesney, 2004). The multichannel broadcasting system must be in line with the broadcasting policy of putting South African content first as well as media ownership. Furthermore, the Zcoms (2014) also states that it is not yet clear whether DSTV and TopTV have priority to promote local content despite the fact their satellite platforms does not carry most community services.

According to Armstrong and Collins (2010) The United States was considered as the global media powerhouse when it comes to technology and communication sector. However, it was not easy for the United States to migrate to digital broadcasting due to the broadcasting policy and direction delay. Nevertheless in 1996 the federal communications (FCC) set a deadline of 31st December 2006 for the United States countries to make a switch over from analog broadcasting to digital television (Kwerel & Levy, 2006).

According to the SABC (2010), the terrestrial television make use of the transmission towers to transmit signals across the border, and each transmission there is specific area network coverage for each tower for the television signals. The Government Gazette No 31127 (2008) clearly states that the broadcasting signals are sent to various towers, and if viewers are within the respected areas covered by the towers, they will be able to receive the broadcasting services.

Information Communication Technology (ICT) offers enterprises a balanced and wide range of opportunities for improving competitiveness and market access that include provision to access new market opportunities, facilitating products innovations, market accelerating and intensifying the use of information and communications (Fulantelli & Allegra, 2003).

The STB software functions remotely and can be installed on the smartphones. Mukhebi et al. (2007) states that mobile phones can also be used to facilitate market transactions to develop efficiency and reduce high transaction costs. The information and communication technology covers technologically communication system application ranging from telephone, PCs, Networks, Internet. Ritchie and Brindley (2005) define ICT as the collection of primarily digital technological systems designed to collect, organise, store, process and communicate information, and in the case of this study it is the set top box.

2.3.2 Digital versus analog broadcasting

The Digital Migration has massive benefits that it renders to both audiences and broadcaster. The benefits of digital broadcasting can range from the programme content, media coverage quality signals and multiple channels. Udeorah, (2009) highlights the deliberated and determined different sectors of the society that shall benefit differently from the migration.

Digital Terrestrial Television (DTT) means carrying out of digital technology to make a greater number of channels to be available, especially when using standard definition television (SDTV). That includes better quality of pictures and sound when using enhanced definition television (EDTV) or high definition television (HDTV) and sound when Dolby digital through a conventional aerial instead of a satellite dish or cable connection (Digital Migration Working Group report, 2006). The analog and digital broadcasting varies in terms of transmission of signals and waves. Bunshak (2006) states that analog signals are continuous signals which represent physical measurements, however, on the digital broadcasting signals are discrete time signals generated by digital modulation.

According to RURA (2008), analog broadcasting system uses analog signals throughout the broadcasting system chain. Every programme that is broadcasted in analog system format is assigned a frequency channel making it possible for the broadcasters to distribute signals to all transmission sites as well as operating systems. The digital television (DTV) offers many advantages to the viewers. Additionally Rodman (2006), states that the pictures in the digital television are

very clear with a clean sound quality; and it also enhances the rectangularity of the screen (16:9) stretch and wide ratios unlike in the analog television, in which the ratio of the square is (4:3). Additionally, the opportunity to transmit on a super-resolution high definition television broadcast improved by digitalisation of television signals.

Kruger (2008) describes digital television as a milestone development in broadcasting since the invention of colour television. Digital television is also regarded as a substantial technological development because of its ability to provide quality sounds and pictures, multiple video programming and HDTV (Duncan, 2012). (ibidi) further argued that the digital migration process will be much beneficial to the consumers because this will lead to more than four channels with high quality pictures.

However, migrating from digital to analog will only benefit some individuals and stakeholders, but there will be some disadvantages along the way (Albornoz & Leiva, 2012: 303). For instance, the consumers who are poor are required to pay R700 by the DCDT to purchase the STBs in order to have access to the recent broadcasting system. According Communications Commissions of Kenya Information (2013), digital broadcasting is transmitted on television frequency through terrestrial space in the same way as standard analog television with a primary difference of being in the use of complex transmitters to allow reception of multiple channels on a single frequency range such as Ultrahigh frequency (UHF) and Very High Frequency (VHF) channel.

Digital broadcasting system varies from the analog broadcasting with the amount of information that the digital television can deliver and its flexibility that broadcasters have manipulate, the system in which the information is presented to the viewers (Sandberg, 1999). The transition from analog to Digital Terrestrial Television (DTT), a technology that uses the frequency occupied by analog broadcasters to deliver the digital signal, is a phenomenon of global dimensions (Ardizzon & Ferrari, 2010). Moreover, Mosco (2008) characterises digital communication as an information superhighway because of its ability to allow consumers to have instant and general access to all forms of information whereas analog is characterised by a low quality pictures and poor sound in some areas.

The date for analog switch off in the US was set for mid-2009 (Armstrong & Collins, 2010). In South Africa the deadline was set for 2012. Australia and most associates of the European Union were also supposed to complete the conversion by the end of 2012. Researchers were of the view that the changeover has been dictated primarily by political and industrial interests rather than as often presented by aspiration to develop citizen's access to the digital world (Ardizzon & Ferrari, 2010). According to the Communications Commissions of Kenya Information (2013) digital terrestrial television frequencies are assigned to signal distributors and not the other way round as it was done with the analog broadcasting.

South Africa is currently undergoing the process of changeover from analog digital broadcasting, the difference between the terrestrial broadcasting and satellite television broadcasting is that the analog allows one channel, for example the SABC uses out-and-out frequency to broadcast, this is because of the large amount of bandwidth the analog signals require, whereas in digital broadcasting the signals are compressed, allowing for more channels to flow in the same bandwidth as one current analog channel uses. Furthermore, terrestrial television uses a network of transmission towers to convey and transmit the signals across the country (Kruger & Guerrero, 2002).

Some scholars such as Gartenberg (2012) are supporting the statement that the reason for migration to digital terrestrial television is that analog requires a huge amount of bandwidth frequency to transmit one channel. According to Armstrong and Collins (2004) digital broadcasting system encode and decode signals in a routine whereby inputs whether video or sound are converted into a single stream of zeros and ones or "ons" and "offs," in the electrical current. Duncan (2012) states that the unbound up frequency can be utilised for so many different communication functions including the provision of broadband function and other additional functions. The digital signals require less power to transmit information therefore digital transmission allows approximately six to 10 digital channels to be squeezed into any single spectrum which normally accommodate one analog channel (Cave, 2002).

The digital television terrestrial also has an ability to perform multi-channels. With the availability of more broadcasting channels there will be an opportunity for more local content in the society. According to Armstrong and Collins (2010), one of the most unique characteristics of the multi-channel broadcast is that it allows viewers or consumers to choose a language of their choice among multiple language tracks and subtitles options.

The digital terrestrial uses electronic signals to transmit signals. Hanson(2005) highlights that the digital signal processing is done with the use of the computer or digital hardware, the signals are transformed into electronic signals for transmission by the transducer, and therefore the electronic processor converts them into the electronic magnetic wave to the receiver which transmits the electronic waves to the transducer that then converts the electronic signals back to the format that is understandable to by the receiver, and this forms part of the opportunity of choosing and selecting the language of your choice.

The digital terrestrial broadcasting has made it possible to put together multi-media formats into a single media. Zettl (2011) states that the digital television broadcasting system has led not only intensely improved the quality of pictures and sound, however, it also played a role in convergence of various media. The process of signal operations is involved in many technological applications such as communication systems, operating systems; instrumentation, etc. They can be instigated in two different ways; analog or digital transmission (Bunshak, 2006).

Digital terrestrial television provides consumers with so many benefits compared to the analog one. According to Flew (2003: p114), “digital television is super interactive because it gives the consumers a degree of choice to access of information and control in the outcome of using that information”. With the press of the button on the STB remote users of the set top boxes can now play a role in interacting, chatting, posing comments on certain television programs, saving information and data.

Fontaine and Pogorel, et al. (2006) state that there are so many other services that are available on within the press of button which includes supplementary services such as weather, sports updates, e-government services and traffic flow. With the digital terrestrial users can now view, read, news and sports updates

such as premier soccer league (PSL) fixtures, and be able set a reminder on a certain programs that they would like to watch. Correspondingly according to Minnie (2003), the set top box has an ability to keep track of ones favourite programmes, to provide the summery of movie which is currently playing. These options are only available on the digital television.

The digital terrestrial television can serve the net with search engines such as Google, Yahoo and Play store and be able to download content and videos online as it comes with the internal storage. Gartenberg (2012) states that analog and satellite broadcasting systems seems to lead the transition towards the new media landscape. Public administrations have shown a strong preference towards the digital terrestrial television and big internet companies such as Yahoo, Google or Apple continue to experiment with television manufactures around the concept of connected television.

Television consumers can now watch television programs that are sometimes live, others that are time shifted, streamed sometimes downloaded (Bury & Li, 2013). Watching television now is optional on how consumers are willing to watch their programs of choice. Newman and Levine (2012) state that television can still be watched on television set, however there is a strong number of consumers who are increasingly watching television on their digital gadgets such as desktops, laptops tablets, etc.

Strangelove (2015) states that with the analog broadcasting once viewers miss a television program they will have to wait for it to be played again by the service providers or catch the omnibus programs that usually take place on weekends, however, with the digital terrestrial television viewers are able to catch up on the programs that they have missed at any time of their choice. They can either save the program or press catch up button on their remote control. Van Cauwenberge, Schaape and Van Roy (2014) define catch up as a concept practiced by television service providers to offer ways to watch programs on television that already broadcast episodes of series often through the television interfaces or online content.

The Digital Video Broadcasting (DVB-T2) standards provides approximately the capacity available on multiplexes that the Digital Video Broadcasting standard

provides (DoC, 2008). It is thus necessary to undergo the evaluation process of the implications of this increase on the allocation of capacity in the complex to terrestrial television broadcasting services (Mawson, 2012). However, the new timeline for analog switch off which was December 2013 placed a role in putting pressure on all stakeholders to put in place a range of multifaceted systems to first achieve a successful digital terrestrial television broadcasting services (Government Gazette No 34642, 2011).

The SABC, E-TV and M-net will have more broadcasting capacity in the use of digital terrestrial and DVB-T2 compared to the analog on. The South African Government Gazette No. 3148 (2008) states that there is a downgrade of the capability allocated to SABC, M-net and E-TV in the multiplexes 1 and 2. Licensees will be provided with terrestrial signals with an electronic communications network services appointed in terms of Regulation Policy No9 a (Go Digital South Africa, 2012). The Government Gazette No 34642 (2011) argues that in terms of distributing signals, signals shall be provided to each terrestrial television broadcasting service licensees for digital broadcasting in multiplex 1 and 2.

According to Zcoms (2014), the digital terrestrial has introduced a new approach that increases the capacity for content delivery. Once migrating from analog to digital format is completed, availability of spare frequency will be used this is called digital dividend. The group further highlighted that there are two levels of digital dividends which is the (800MHz) band which the ITU has allocated for the mobile services. ITU (2006) maintains that there is a policy requirement for the second digital dividend (700MHz) as to how it will be allocated and to whom it should be allocated to.

Free-to-air channels are available for access to everyone in the country with a set of television it doesn't require subscriptions. According to M-net (2011) analog terrestrial is available as free-to-air subscription on, free to air television. Over 7.5 million households in South Africa use the free to air platforms that carries three SABC channels and e.TV (BDM Policy, 2008).

In some metropolitan areas, the free to air terrestrial also carries community television channels such as Bay TV, Cape Town TV, Tshwane TV and KZN TV.

According to Armstrong and Collins (2010) the digital satellite payment is very affordable recently in South Africa with the lowest cost from TopTV and Multichoice Dstv; and they further indicated that the E.TV and SABC which depend heavily on advertising revenue are likely to be affected by the changeover from analog to digital.

In South Africa Multichoice launched the first digital satellite television known as DSTV in 1995 (Multichoice, 2011). The DSTV caters for both disadvantaged background families and rich families; DSTV delivers more than 400 TV channels and many audio channels via satellite (Multichoice, 2011). DSTV offers different types of packages ranging from DSTV easy view, DSTV lite, DSTV select, DSTV compact and DSTV premium. According to Federal Communications Commission (FCC, 2007), in 1997 there was an agreement in the legislation of 1997 that if the digital terrestrial television reaches 80% the analog broadcasting will be switched off, and this shows how important digital broadcasting it is compared to the analog broadcasting moreover (Parades, 2006). In addition, the scholar highlighted that there was only 3.3% of the United State television households in 2004 who had integrated television receiver or the set top box of receiving television signals. Furthermore, Peredes (2002) states that in the world the digital transition powerhouse was characterised by tensions from diverse economic, political, and cultural groupings.

2.4 SOUTH AFRICAN BROADCASTERS AFFECTED BY DIGITAL MIGRATION

This section of the research discusses the south African broadcasters affected by the digital migration which includes the SABC (South African Broadcasting Corporation), E-TV, M-net and the basic technology of the analog and digital broadcasting systems technological innovations.

2.4.1 South African Broadcasting Corporation

The SABC hopes to benefit from more channels that will play a role in assisting the SABC to achieve its public service mandate in the digital era (SABC, 2012). As a contributor to the process of digital migration, the SABC participates in most

of the policies amended in the South African parliament. The SABC anticipated carrying its three existing channels and all 18 radio stations and other new channels to the Digital Terrestrial Television platform (Waghorn, 2011).

The digital migration will allow the SABC to have closed captions multiple language tracks, subtitle, audio description and also interactive applications. Waghorn, (2011) states that in 2011 the broadcaster also offered to have new channels on the themes of education, health, SMMES, 24-hour news, children and also the regional channels for both North and South that will cater for different language groups. "However, the SABC failed to achieve its wish due to lack of funds".

The SABC (2012) highlights that its concern was the development of digital satellite television which is led by the DSTV. The SABC audience is decreasing due to rise and development of digital satellite services. Masingo (2012) indicates that the more the delay in the migration process the more the broadcaster loses audiences, it is also highly impossible for the SABC to do a live broadcast of the most important events like the FIFA World Cups and Olympics due to its limitations of channels. This is done with the shifting of day to day programmes like soap opera and dramas (Masingo, 2012). However, SABC claims that the DSTV has been successful in filling all their channels because they are not subjected to the same licensing conditions like the SABC and E.Tv.

2.4.2 E-TV

E.tv is the only private free to air broadcaster in South Africa with the participation in the digital migration policy amendment. E-TV (2012) indicates that it play a role in participating in all ministerial and regulatory process that includes ICASA, the Digital Dzonga Council, the digital trials, the development of STBs standards and public awareness campaign. It further, highlights that it welcomes opportunities to broadcast in a multichannel environment, however, they are concerned that it might come with an additional cost to them (E-TV, 2012).

According to Berger (2004), "there is a need for more media with independent owners to greater the chances of variety of perspectives occurring". According to ICASA, (2012) E-TV will be allocated with 50 % multiplex 2. According to E.TV,

their views is that local content quotas will also entrench DSTV monopoly, as it is not subjected to any licensing conditions

According to Lloyd (2009), E.tv as a private sector is 100% reliant on advertising incomes and profit just like the SABC. It also concerned about the growth of satellite television as such E.TV wants the digital terrestrial television to be launched as soon as possible in order for them to participate in the multichannel globe which will retain their viewers and advertisers (E-TV 2012).

2.4.3 M-Net

M-net has been waiting for the migration process to happen because analog broadcasting has potential limitations to pay the television broadcasters M-NET (2012). According to ICASA (2012), M-NET also participates in a range of policy broadcasting forums such as Digital Dzonga committee, parliamentary forums, DMWG, etc. with its participation on these forums there's an illustration to which stakeholders like M-net were involved in the digital terrestrial television policy making. Makhaye (2011) states that Multichoice and M-NET poses threats to the digital migration by calling for a cheap convertor box which will not fulfil the objectives of the Set Top Box. In 2010 M-net further states that the pressure of migrating could also be recognised due to some technological development over the years and to the extent that it is very easy and cheaper to work on digital platforms (M-NET, 2011).

2.5 BROADCASTING DIGITAL MIGRATION TECHNOLOGY

This section of the research discusses the basic technology of the analog and digital broadcasting systems technological innovations. The most important service on television production is the Electronic News Gathering (ENG). Vangelista & Benvenuto (2009) maintains that news reporting, recording social and sports event are the most important television programs in today's generation.

ENG is the traditional combination recorded content in the broadcasting professional field from cameras and live production field to television studio to be broadcasted on air. These scholars added the impact of the ENG service in the broadcasting sector digital transmission and compression technologies such as

Digital Video Broadcasting (DVB-S) and the Moving Pictures Expert Group (MPEG-2) became available in 1990, and it had an impact on the ENG services by allowing high quality long distance communication services over satellite network compared to the analog broadcasting systems Vangelista & Benvenuto (2009).

Furthermore Vangelista & Benvenuto (2009) highlight that the ENG enables a full digital workflow process from the service providers to the television users, correspondingly. DVB (2011) emphasis that the wireless technology is quickly becoming a powerful tool for gathering news, as well as taking advantage of “ubiquitous” fast connectivity and cheap cost terminal.

According to DVB (2011) the digital video broadcasting (DVB) and terrestrial wireless ENG (TWENG) are the second generation broadcasting technology efficiency of the new second generation technology. ITU (2010) asserts that the terrestrial wireless can be extended using a vigorous communication with an immediate and inadvertent character with a high data carrying capacity. The ITU (ibidi) further redefine ENG service generally as a Broadcast Auxiliary Service (BAS) and SAP (Service Ancillary to programme making).

The digital migration from standard definition (SDTV) video broadcasting format to High Definition Television (HDTV) with 4K and 8K formats included in ultra-High Definition Television (UHDTV) standards requires extra capacity from network services. Vasquez (2015) supported by other scholars who indicated that there is a new video coding standard called HEVC (High Efficiency Video Coding) approved in 2013 for the ITU and ISO/MPEG which are revealed as the right solution for television video resolution development that demand extra bandwidth and also required for the premium television spectrum services (Hanhart & Rerabeck et al, 2012). According to Kruger and Guerrero (2002), the SDTV (Simultaneous Transmission of Multiple Programmes of Standard Television) is a lesser quality than the HDTV. However, it is significantly better than today’s television.

The HEVC (High Efficiency Video Coding) uses the standard wireless transmission broadcasting standards to improve the video quality standards. Liaison (2013) mentions that HEVC is a successor of MPEG-4 AVC/H.264 and

permits to achieve over 50% of bit rate saving compared to the H.264 for the same perceptual quality. Hanhart & Rerabek et al. (2012) supported Liaison's inputs by stating that spectrum enables a wide range of wireless applications to travel including mobile band (smartphones) radio and television broadcasting, GPS and remote sensing that navigate satellite.

ITU (2010) states that images from video cameras are encoded through the MPEG2 video coding technology and transmit them using COFDE technology to a relay node, IOS (2010) also states that the node encapsulates signals from different units (e.g. motorcycles, helicopters, reporters etc.) and transmit them to the satellite that transports the signals to the terrestrial television studio. According to Armstrong and Collins (2010), South Africa has planned to implement a system using the DVB-T standard. According BDM (2008), the DVB-T provision at 8MHz is knitted into the national radio frequency plan and specified in the 2008 broadcasting digital migration policy. However, the adoption of the DVB-T standard has recently been thrown into question (Armstrong and Collins, 2010).

ITU (2008) maintains that the DVB-T was replaced by ISDB-T, and it has occasioned much concern (Transition from DVB-T to DVB-T2). It is relatively explanation for consideration of Integrated Services Digital Broadcasting – Terrestrial (ISDB-T). South African Digital Broadcasting Association (SABIDA) coordinated the South African commitment to DVB-T in 2006, stating that ISDB-T has limited and fragmented implementation in Japan and Brazil with recent adoption by Argentina, Peru and Chile, among others McLeod (2010).

DVB (2011) asserts that the DVB-T increases the coverage that directly reaches the studio or network operator access point without the necessity of auxiliary logistics that will increase the cost transmission. This indicates that the DVB-T has an ability to reach place of events very quickly and also providing immediate video contents of the event.

There are problems with switching standard alluded by Kantor (2010: 133) when he mentions that "if we adopt we will be undermining the African consensus all countries in Africa have agreed on DVB-T". Kantor (abidi) further argued that the broadcasting industry's enormous financial investment in DVB-T would be wasted

and they are more expensive. The DVB-T STB cost around R700 while an ISDB cost R1, 400. Kantor (2010) asserts that it is very clear that migrating to DVB-T is affordable and strategic.

According to the DoC (2007), South Africa will make use of the set top boxes as a way of broadcasting this upgrade which was estimated in 2007 as costing R1 billion. However, 10 years later the estimated cost increased to R10 billion. With the technological innovations, digital terrestrial television will improve the quality of the broadcasting system. There is a new video coding standard called HEVC. According to Ohm & Sullivan et al. (2012), HEVC is the new video coding standard that provides a high-quality compression efficiency and standard video quality with a high screen resolution. This is supported by Koo and Junghye (2012) in their experiment in which they maintain that the HEVC can achieve a huge bandwidth saving up to 60% regarding current H.264. DVB (2011) confirms that the HEVC can give support to the high definition television and 3D.

Beal (2013) alludes that migrating to digital television technology will allow greater efficiency in the use of the country's electromagnetic spectrum. Therefore, it will create opportunities for free up spectrum for other purposes such as public safety and wireless use. In the terrestrial television broadcast STB is a receiver that decodes and converts digital signals to analog, so as to enable the channels to be displayed in an analog television set connected to a television set (Rosenberg, 2013).

According to BDM policy (2008), two metropolitan networks of frequencies designed for the provision of mobile broadcasting services will be made available in the three technical standards DVB-T2, DVB-S2 and MPEG-4. These are the approved technical standards. The broadcasting digital migration policy of (2008) states that the DVB-T2 is adopted as the national standard for broadcasting digital terrestrial television in South Africa.

DVB-S2 is adopted as the national standard for broadcasting digital satellite television and the MPEG-4 is adopted as the compression standard for South Africa's digital terrestrial television (DTT) rollout, while existing direct-to-home (DTH) services continue to use MPEG-2 with the option to migrate to MPEG-4 when commercially viable.

2.5.1 Signal distribution

The first digital satellite in South Africa was launched in 1995 by Multichoice, and it is well known as Digital Satellite Television (DSTV). The DSTV caters for both disadvantaged background families and rich families. DSTV delivers more than 400 TV channels and many audio channels via satellite (Multichoice, 2011). DSTV offers different types of packages ranging from DSTV easy view, DSTV lite, DSTV select, DSTV compact and DSTV premium (ibid.).

The DSTV plays a major role in the broadcasting sector of South Africa because they have over 4,7 million household subscribers in the country with 12 million television household (Naspers, 2013). According to Statistics South Africa Census (2012: 99), the DSTV and TopTV also broadcast the SABC, Educational Television and some community channels through digital satellite platform, this allows over four million households in South Africa who have subscribed to the satellite to access SABC channels with clear pictures and quality sound (SABC, 2007).

Broadcasting digital migration presents the country with a unique opportunity to positively build the future dynamics of the ICT sector and brings with it many benefits including efficient use of frequency spectrum, a public and scarce resources, more channels and therefore, more diverse content delivered to South African public (South African Government Gazette No. 3148, Republic of South Africa, 2008). Other benefits that digital television offers are the potential for special interactive services to create for people with visual and hearing impairments such as audio description and subtitling, and e-government delivery to the community market (Brand, 2011).

For the terrestrial over the air television transmission in South Africa to go digital, Sentech has to upgrade and convert roughly 220 terrestrial transmitter site around the country, so that the sites can transmit digital terrestrial television Armstrong & Collins (2010). In 2007 the upgrade cost was estimated at over R1 billion. However, the estimated cost in 2018 increased to R10 billion, of which government had in 2007 only committed just over R200 million (DoC, 2007). Moreover, the financial value of the South African government committed to

Sentech digital broadcasting infrastructure programme which is still uncertain (*Mybroadband*, 2010).

Sentech appealed to have covered out around 40% of its planned signal population of the digital terrestrial television transmitters in 2010 (*Mybroadband*, 2010). By then the minister of communication, the late Dr Ivy Matsepe Casaburri's target set her budget vote speech of 24 May, 2007 when she said "I am pleased to inform the members of the parliament that Sentech is on schedule to meet governments commitment by providing about 80 per-cent Digital Terrestrial Television (DTT) coverage by the 2010 FIFA Soccer Football World Cup" (Matsepe Casaburri, 2007: 13). However, only few provinces in South Africa were affected.

In 2010 ICASA promised inquiry in terms of Section 67 of the Electronic Communications Act (ECA), into whether Sentech is in an anti-competitive position as argued by E.TV in its court challenge to ICASA in 2009 (ICASA, 2010). However, in 2010 ICASA's promise to force pro-competitive measures onto Sentech if Sentech is found to be in an anti-competitive position, ICASA could regulate Sentech terrestrial transmission tariffs and compel Sentech to provide no cost digital terrestrial transmission to broadcasters during the dual illumination period (Armstrong & Collins, 2010).

However, Sentech strenuously denied that it lacked the necessary technical and managerial skills to effect digital migration, and that it dismissed the DCDT call for structural changed and for technological partnership consulted by the government on the matter of a technical partnership (Sentech, 2007).

The SABC has also taken swipes at Sentech, including the 2007 statement by the SABC that the "SABC notes that there has been a reduction in the current quality of service delivery provided by Sentech, and we are concerned about the Sentech's capacity to roll out DTT within the timeframes allocated" (SABC,2007: 186). Furthermore, the SABC also criticised the lack of clarity around the state subsidisation of the extra transmission costs necessary during dual illumination (SABC, 2007).

However, the E.TV was highly critical of Sentech's claims that digital transmission of a single channel would cost 70% of the current cost of analog transmission broadcasting channels (e.tv 2007). With each digital multiplex able to carry around eight channels, at a 70% charge Sentech will earn 560% of the signal distribution fee currently charged for an analog broadcasting service system and maintained that it was hugely inflated (E.TV, 2007).

Multichoice signal distribution subsidiary "Orbicom" has also been critical of Sentech's role in recent years. In April 2007 submission of the DCDT, Orbicom objected to the emphasis placed on Sentech as primary role-player in digital terrestrial migration. Orbicom (2007) protected that there are number of statements in the draft strategy and draft implementation plan which suggest that Sentech is currently the only licenced broadcast signal distributor in South Africa.

2.6 CONCLUSION AND OUTLINE OF CHAPTER 3

Digital migration is not a phenomenon that is being executed on people's way of life; rather it is an innovation that is being adopted worldwide. It is important to note that drifting from analog to digital migration is a process that had to take place in before 2015 whether a country is prepared or not. However, most of the countries in Africa failed to migrate due to some financial crisis. The primary objectives of digital migration are to advance the quality of life of citizens, not only in South Africa, but also those in other parts of the world. Besides bridging of the digital divide, is the gap between individuals who can effectively access information and digital content and those who have a strained access or do not have access at all, closing up gaps propagates a redress of the acquisition of uneven skills in society, and the appropriate application of technology thus resulting in enhanced standards of living and increased knowledge.

CHAPTER 3

ROLE OF THEORY IN THE STUDY

3.1 INTRODUCTION

The study adopted a few theories to ground the study arguments and discussions these theories are, the diffusion of the innovations theory, political economy theory and the policy theory because according to Corbin (2014), a theory is a set of interconnected hypotheses concepts, definitions and suggestions that present a universal view of phenomena by identifying relations among variables, with the resolution of explaining and predicting the phenomena. The chapter further discusses these theories in detail and the magnitude to which one could apply the theories in a study. A theory also guides a research, defining what to measure, and what to look for in the research statistical relationship and also shows how to conceptualize the nature of the research problem and its basis and the analysis chosen to investigate the problem, and interpret data (Rogers, 1995).

3.2 THEORETICAL FRAMEWORK OF THE STUDY

In the 4IR (fourth industrial revolution), it is very important to apply Rogers diffusion theory of innovation to measure universal access penetration. Rogers's diffusion of innovation theory is the model which is used to measure take up of digital services in the field of communication (Rogers, 1983). The diffusion of innovation model indicates the amount of time it will take for the population to adopt the newer communication technologies.

3.2.1 The diffusions of innovation Theory

The diffusion of innovations of 1962 is relevant to the current study because it discusses the adoption of innovations and likewise the study investigated the diffusion and adoption of innovations in telecasters. Nwachuku (2004) notes that information communication technologies are all techno-communications gadgets including computers, satellites technologies and other electronic equipment used in processing, transmitting, generation and managing the information to achieve the desired efficiency and attainment goal.

Collin (2010) defines satellite as a device that orbits the earth receiving, processing and transmitting signals or generating images or data to be transmitted back to the earth such as weather pictures and that communication technologies operate by receiving electronic messages from the ground uplinks to the earth station. A satellite is one of the technologies that have contributed overwhelmingly into human development in the areas of telecommunication.

Mbaezue (2006) states that satellite communication and broadcasting are significant concepts on international as well as national and regional broadcasting. On the other hand Obodopechi (2006) states that satellites serve broadcasters and cable operators as distribution devices for relaying programmes to widely dispread stations and systems. Ibemesi (2007) mentions that for a satellite communication to take place, two requirements need to be met: there should be a satellite located in space; and an earth station located on the earth surface.

Marcella (2000) asserts that the information communication and technology (ICT) have been variously described as the complex varied set of goods, applications and services used for producing, distributing, processing and transforming information including telecommunication and broadcasting. Applying the diffusion of innovations theory in this study is very critical because an innovative product or idea affects different levels of stakeholders, e.g. individuals, communities, organisations and the country at large, irrespective of the form of innovation.

Since the Diffusion of Innovations (DOI) theory is applied to various disciplines including, economics, sociology, technology management, marketing and communications, the perception of innovation has been related to new ideas, services, methods, and inventions (Rogers 1962). Therefore, the Diffusion of Innovations Theory appears to be germane in explaining the spread of the newly innovated digital broadcasting system, the set top box and the related technology within the society.

Rogers (1962) developed the first model of diffusion, defined diffusion of innovation as the process whereby which an innovation is communicated through certain channels over time among the members of the society. For its adopter, an innovation could be any idea, practice, or object that is perceived as new by individual or other members of the community (Rogers, 2003). As one of the most influential theories of communication and technology, the Focus of the Diffusion Theory is the means by which information about an innovation is distributed.

Rogers (2003) further states that communication is a process in which participants create and share information with one another in order to reach a mutual understanding and mass media and interpersonal communications are two communication channels when it comes to dissemination of information.

According to Rogers (2003), there are five stages of innovation adoption which are the following: obtaining knowledge, persuasion, decision making, implementation and confirmation. In the process of the decision of innovation adoption, the mass media channels are more significant at the knowledge stage, while interpersonal channels are more important at the persuasion stage.

The diffusion of innovation theory seeks to clarify how, why, and at what speed up new ideas and technology spread through cultures. Nwodu (2004) discoursed that the theory explains not only the medium, but about how the content of communication influence media users and the media owners and the communication technologies are turning the world into a global village.

According to this theory, it is not the technology itself that disrupts the operations of an established firm, but the fact that the new innovation phase out the business strategies of an old technology. This thus explains why an innovation can be disruptive for a certain firm and sustaining for others. Dimmick et al. (2009) states that a new standard survives, grows, competes and succeeds by providing gratification to consumers therefore providing new solutions to old or contemporary needs. Cha and Chan-Olmsted (2012) maintain that consumers in a digitalised society have alternative choices from many channels available as

well as the different video platforms and content.

When new developments are implemented the old media face exclusion and replacement. According to Afua (2001) the firms that are faster in adopting an innovation tend to be more successful. Internal productions are generated by independent producers who create their own concepts, write them and pitch them to a financier and have the creative license to produce the film the way they want once they win the finance (Nyutho, 2015). South Africa is left behind in terms of migrating due to financial crisis.

According to Doyle and Paterson (2008) the relations of trade governing commission to independent producers from the main United Kingdoms (UK) broadcasters have been subjected to oversight by the U.K communications regulators office of the communications (*Ofcom*), and this requires a deficit financing approach whereby the ownership of all or most of the secondary rights will remain in the hands of the production company rather than being transferred to the commission broadcaster. This was prepared to safeguard the commercial interest of the independent producers.

According to Moshe (2012) media time squeezing is linked to the innovation of digital television broadcasting, digital remote control and the digital video recorder where privatisation of media schedules transits from synchronic to asynchronic media consumption. Time changing implicates new developed programs for future playback, and in the process it weakens the relationship between advertiser, broadcaster, and the viewer separating the scheduled time from the viewing time. Dimmick et al. (2009) writes that the new medium survives, develops, competes and prospers by providing gratification to the consumers, hence providing new solutions to old or contemporary needs. The new medium will compete with established media for consumer satisfaction, time and adverting revenue.

Henderson (2006) states that consumers' preferences evolve and patterns of preferences in a market are defined. The adoption of technology and innovation

would bring competition in the media industry. Afua (2001) contends that organisations that are faster in adopting an innovation tend to be more successful. According to Nyutho (2015) internal production companies contains a large perpendicular integrated companies while independent productions are generated by independent producers who create their own concepts, write them and pitch them to a financier who allows them to have the creative license to produce the film the way they want to.

In the digital age, it is very important to apply Rogers (1983) Diffusion of Innovations theory to measure universal access penetration. Rogers (ibid) Diffusion of Innovations theory can also be classified as a model which is used to measure take up of digital development services in the field of communication and technology (Rogers, 1983). In South Africa the deadline for the digital migration set by International Telecommunication Union (ITU, 2015) international telecommunication union was set to 17th June 2015. The theory also indicates the amount of time it will take for a particular society or residents to adopt the newer communication technologies.

According to Bolter, Grusin and Grusin (1999), traditional media are determined to survive and re-affirm its place in a highly competitive digital media environment. The disruption in the broadcasting scene is also understood in the convergence of numerous digital platforms, which is interactive in that what is being aired on television is also streamed live in the television website and is accessible to online audiences.

According to Jenkins (2006) digitalisation is a flow of content across multiple media platforms, the cooperation between multiple media industries and the migratory behaviour of media audiences. The media digitalisation is involved in the video production process from the production stage to the distribution and consumption stages. According Jenner (2015), producers and distributors of the media inventive content for example Netflix, Amazon and Hulu are exploring the binge-model (more television networks) as a way to publish content and blind customers as 'bingeable' as a way to publish content and bind customers, as

'bingeagle' texts legitimises the viewing practice in terms it as acquisitive repetition where a product is bought and consumed repeatedly (Kompore, 2005).

The diffusion research examines how innovations are spread among the group of people in a society going beyond the two step flow theory, centering on the circumstances that intensify or reduce the likelihood that an innovation of new ideas, products or practice will be implemented by the member of a certain nation, in this case is the South African Government. The government exerts a large influence on the behaviour of individuals within the country, called adopters. However, there are also other mediators called the Department of Communications and Digital Technologies (DCDT), that is the change agent, this is the sector that can encourage the innovation and the technological developments to be adopted or rejected (Rancer & Womack, 1997).

The rewards to the members of the society from adopting a preventive innovation are often delayed in time and are relatively insubstantial, and the unwanted consequence may not occur anyway. Therefore, preventive innovations are relatively low in relative advantage, compared to non-preventive innovations. This theory relate to the situation of South Africa where broadcasting digital migration is moving slow because of the preventive innovation. It is still covering three provinces and only in some areas of those provinces (Rogers, 1995). Previous study shows that perceived relative advantage is the most important predictor of the rate of adoption of innovations, so here we see one reason why preventive innovations are relatively slow to be adopted (Rogers, 1995).

The theory of the diffusion of innovations purports to describe the configurations of implementation because it explains the mechanisms, and assist in predicting whether and how a new technology will be successful (Clarke, 1999). Furthermore Clarke (ibid) explains it by outlining the diffusion innovation of Innovation Theory. It is concerned with the manner in which new technological ideas, objects or techniques, or new use of an old one, migrates from creation to the society. In the study it is the replacement of the analog to digital broadcasting. Rodger (1995) records that those innovations which are perceived by individuals

as having greater relative advantage, compatibility, trial-ability and absorbability will be implemented more rapidly than those which are perceived as more complex for an example DSTV, TopTV and DSTV now.

Previously before the introduction of DSTV, the South African government utilised the conventional communication channels to disseminate information to the citizens. Although these channels have been used widely, they have been monologues, and they did not have nor allow much interaction, there were limitations. With the use of the ICTs facilities new ways of communications are presently being adopted such as the use of internet, email and mobile phones (Mbatha & Ocholla, 2011). Technologies are therefore new innovations that have been made available in telecentres in the society to make use of the rate of adoption of an innovation is influenced more by an individual's perception of newness of innovation than by the actual time.

Information concerning new innovations for communication has to be disseminated as to introduce the innovation; convey or challenge attitudes, influence decisions with respect to the innovation and support the evaluation of the innovation. This means that if the government wants to introduce an ICT tool or services via telecasters, it has to inform community members about that ICT tool or service. This would prevent a situation whereby new ICTs are introduced, only to find that they are not adopted because community members are not aware of them. Therefore, communication and awareness are fundamental.

Rogers (1972) explains that the early adopters of the information and technology tend to be integrated into the local social system more than the innovators, and people in the early adopter category seem to have the greatest degree opinion leadership in most systems, and provide advice and information sought by other adopters about an innovation, (Rogers, 1992). Change agents will seek out early adopters to help speed the diffusion process. The early adopter is usually respected by his or her peers and has a reputation for successful and discrete use of new idea.

Members of the early adopter's category will embrace new ideas just before the average members of the social system and technology. As the link between very early adopters and people late to adopt, early majority adopters play a vital role in the diffusion process (ibid). Their innovation decision time is comparatively longer than modernisers and early adopters, since they deliberate some time before completely adopting a new idea.

Rogers (1962) maintains that there is so much interest in this theory because getting a new idea adopted is very challenging. Many innovations require a lengthy period, often of a number of years from the time they are available to the time they are widely adopted (ibid). It is a common problem for various individuals and organisations to learn how to hasten the rate of diffusion of innovation in relation to the current status of broadcasting digital migration in South Africa. It has taken a lengthy number of years from 2005 to present year (14 years) for the process of digital migration to be implemented, however, only in few provinces has the process seen the light of the day.

Rogers (1995), proceeds to describe an innovation as an idea, a practice or object that is perceived as new by an individual or other unit of adoption. Therefore, the characteristics of innovation as perceived by members of the society determine its rate of adoption. Hence Rogers (ibid) seven main elements of new ideas are as follows

- a) Relative advantage: this is referred to as the degree to which an innovation is perceived as a better than the idea it replaces. The degree of relative advantage may be measured in terms of economic implications as well as social prestige, convenience and satisfaction. In relation to the digital migration status in South Africa, the digital broadcasting signals have greater advantage over the analog signals in terms of better sound and quality and a wider geographical coverage.
- b) Compatibility: This is a process in which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential adopters, therefore if the idea of broadcasting digital migration

(BDM) could be clashing with the values and norms of media consumers in the country.

- c) Complexity: this is the degree to which an innovation is perceived as difficult to achieve, understand and use. Currently in South Africa several media consumers have not yet shifted from analog broadcasting to digital broadcasting due to inadequate awareness, indicating that the adoption rate would be slower.
- d) Trialability: it is the degree to which an innovation may be experimented with on a limited basis few provinces in South Africa are undergoing the process of migrating. An innovation that tried on an instalment plan and represents less uncertainty to the potential adopter is like to be adopted more quickly as it will require the adopter to develop new skills and understanding. The digital terrestrial television (DTT) awareness campaigns that have been launched in South Africa have been attempting at making the media consumers aware of the change from analog broadcasting to digital broadcasting.
- e) Observability: it is a degree to which the results of an innovation are visible to others therefore, when the South African media consumers can gain access to the positive results of the change to digital broadcasting then would be able to adapt to it more rapidly.
- f) Communication channels: this is the means by which messages get from one person to another. Rogers (ibid) notes that mass media channels are a more effective means creating knowledge of innovations, while interpersonal channels work better in forming and changing attitudes towards new ideas, consequently influencing the decision to adopt or reject a new idea.
- g) Time: Rodgers (ibid.) describes the innovation-decision process as a

mental one where an individual passes from first knowledge of an innovation to forming an attitude towards it, to a decision to either adopt it or reject it, to the implementation of new idea and finally the confirmation of the decisions he continues to explore the stages in which an individual seek information in the innovation decision process in order to reduce the possibility of uncertainty about an innovations expected consequences.

In the world of information, communications and technology the late majority are the doubting group, adopting new ideas just the average members of the community and social systems. Their adoption may be mounted out economic necessity and in response to increasing social pressure. They are cautious about innovations and are reluctant to adopt until most others in their social system do so first, usually old people are traditionalist and the last to adopt an innovation (Rogers, 1971).

Individuals in a society cannot adopt an innovation all at the same time. Instead innovations tend to be adopted in a time sequence and can be classified into adoption categories based on how long it takes for them to begin to use the new technological ideas. Adoption of new technological ideas is caused by human interaction through interpersonal networks. If the initial adopter of an innovation discusses it with two members of a given society, and these two become adopters who pass the innovation along to two peers and so on the result distribution follows a binomial expansion. According to Creswell (2013) one intermediary is the change agent, someone who encourages an opinion leader to adopt or reject an innovation.

Rogers (1972) further explains that the early adopters tend to be integrated into the local social system more than the innovators. People in the early category tend to have the greatest degree of leadership opinion in most social system. They teach and provide advises and information by to the other adopters about the innovation.

McQuail (2005:102) details the timeline of communication technologies inventions, which are classified as being either conceptual or institutional such

as computers and satellites. According to Tustin et al. (2005), history indicates that several apparent trends more especially a modification over time in the direction of more speed, greater dispersion, wider reach and greater flexibility.

3.2.2 Political Economy Theory

Duncan (2012:23) describes critical political economy as the contribution of the study of power relations which communally establishes the distribution of the media in the society, production and consumption of resources of the communication. Hesmondhalgh (2002: 124) states that, “political economy is the term for the whole economic tradition as well as political analysis against mainstream institutions”. In this case the research will scrutinise the relations of power in the media production as well as the consumption and distribution. At the end of the 18th century political economy approach was formally established (Smith, 2014:73).

Flew (2003) states that if politics gets in the way of the development of digital television to such an extent that consumers at large rejects the new technology, then an important opportunity to address the digital divide issues around access to new information services will have been missed. This research uses critical political economy theory of the media to engage with the SABC status and its agenda. The Critical Political Theory has been chosen because it deals with issues of media ownership, media system in the society and power connotations, as well as the role played by the media in our society (Smith, 2014). This chapter will also examine the innovation theory as well as the political economy of the media.

According to Doyle (2016) online distribution has triggered a flowering of video on demands (VoD), including the catch up feature from broadcasters such as iTunes and YouTube that many program makers are optimistic about the opportunities created by the innovation of subscription videos on demand (SVoDs) and their disposition to pay high amounts of money in return for exclusive access to attractive content. According to Jenner (2015), SVoDs rely

on audiences who can financially afford not only to subscribe but to also own the newly advanced technology needed to consume it, such as computers, tablets, smart phones and broadband internet connection devices.

According to Hesmondhalgh (2005) critical political theories are more concerned about the extent to which major corporations always have a major say in media policies and regulations. The political economy focuses mostly on how scarce resources are allocated amongst the members of the society and the consequences for human actions. Mansell (2004) states that the unequal distribution of power, equipment and resources in the digital media contributes to a deep rooted inequality hence giving rise to digital divide. Moe (2010:100) contends that in order to understand the role of the media in a democratic society, one can neither focus on the formally recognised political uses in separation, nor limit ourselves to the rational deliberation.

Curran (2000:125) it is of the view that the ideal structure of public broadcasters is sustained by developing and maintaining the reputation that broadcasters are independent, maintains public trust and enjoys political support. This ultimately leads to a sustainable system which exceeds the current management. The relation of exchange dominates and shapes the public broadcasters within social relations. In South African neoliberal perspective, the economic system observes to these capitalist principles.

The key features of political economy are the ownership and control of the means of production by individuals in the society (Smith, 2014). This indicates that the SABC is controlled and owned by the minority in the society. The privately owned media organisations in South Africa focus more on making profit this causes a conflict of interest between organisations which creates competition. (Curran, 2000:148) maintains that there are particular characteristics which the media organisations should display when functioning in a democratic society. He further argues that the media should empower people by enabling them to explore where their welfares lie.

The media critical political economic involves indicating how interchanging opportunities of funding and cultural production have noticeable consequences for the public paradigms, which represent the public audiences and the access of the broadcasting system (Golding and Murdock, 2000). This statement relates to the state of the South African Broadcasting system whereby the former Minister of Communications (Faith Muthambi) failed to meet the deadline of the digital migration in South Africa on June 2015.

The political economy of the media is characterised by four main features; holistic, history that is concerned with the relationship between entrepreneurship, public participation and finally critical political economy of the media engages with issues of integrity and public interest (Golding and Murdock, 2005). These features are very relevant to the study because they outline the relationship between the media and the audiences.

Golding and Murdock (2005:60) describes and explains the three features of the critical political economy as follows:

- a) It is *holistic* in a sense that it zooms in the economic, political, social and cultural behaviour as interrelated to the economy of the country.
- b) It is centrally concerned with the balance between the capitalist enterprise and the public intervention.
- c) It goes beyond technical related issued of the efficiency to engage with the moral questions of the justice served equity and public interest.

The approach of the political economic approach of this theory is the impact of the economic dynamics on the cultural expressions and availability to various social groups (Golding & Murdock, 2007).

Critical political economy theory also highlights how certain micro-economics are shaped by general economic systems and the wider organisations they sustain. The state in relation to media ownership and control as well as the perceptions of the media universal access is raised is discussed by the critical political theory (Golding & Murdock, 2000). This is also supported by Mansell

(2004) who refers to the critical political economy as the process of power within the society and highlights that those who are in political power needs to be surveyed. It is very clear that the political economy of the media questions issues of power and what is done with such power which is beyond individual control is seconded by Inglis (1990) who states that the audiences does not have power towards the media only individuals who are in political power have control towards the media.

Totale (2003) contends that political economy examines how the economic structures of the media influence the content of the media. Cottle (2003) also indicates that recently modern companies view themselves as businesses, sites of investment and resources of employment. Golding and Murdock (2000:72) states that political economy of the media explores the issued between social relations and power relations. Murdock (1995) maintains that the media control and ownership, is of vital importance (for both academics and politicians) because of the role that the media plays in modelling social consciousness.

The political economy identifies the fact that the digital broadcasting will convey along a variety of media services and products that promotes access to the media does not overshadow the most concerning part for the critical political theory of new media which is about the structures and the process of power surrounded by the digital technology. According to Smith (2014), digital media offer a variety number of platforms that will open new possibilities that will turn the spectators into commercial commodities. Mosco (2008) highlights the process whereby new media are used for capital gains by corporate owners and he refers to it as digital capitalism, which is likely to retain the dominance of rich nation and reinforce the gab of inequality between the rich and the poor.

The political economic theory mainly focuses on the scarcity of recourses allocated within the society and the outcomes for human actions. This theory is relevant to the study because South African digital migration is not progressive due to lack of resources in the society. The unequal distribution of power and

resources in digital media plays an important role in inequality, thus increasing the digital divide (Manshell, 2004).

The media have power to persuade the audience on how to act and reacts towards certain events. According to Straubhaar (2013) the media has the power to persuade the public to accept the hegemony of ideas that keeps the owners at the top of the society. Papathanassopoulos and Negrine (2010) also support the statement when they state that the influential groups and powerful individuals influence the direction of policy makers during the process of bargaining with the polity.

The problem with the economic ownership involvement in policy making is that they will influence the decisions which will have serious setbacks to cultural system and universal access (McChesney, 2004).

3.2.3 The Media Policy Theory

Freedman (200) defines the Media Policy Theory focuses on the actions of the government, civil society, experts, media ownership and regulation. This theory will be more valuable in this study since this theory and the study consist of diverse conceptual frameworks that are applicable in broadcasting policy analysis of South Africa. Roux (2002) defines the concept policy as the various statements of authority which are amended by legitimised public institution proposing solution to deal with issues within policy.

Freedman (2008) explains that the legally enforced rules go through a process of meetings which involves a variety of stakeholders, stakeholders involves regulators, civil society, corporations and the public audiences. Adam and Kriesi (2007) state that policy network is a more recent policy dynamic which was intensely influenced by the Inter-Organisation theory. (ibid) state that the Policy Network Theory came into life since the state subsidises a special type of force of policy domains as they have access to particular resources, their decisions are binding in society and are backed by legitimate use of force.

Policy refers to all the ways in which public authorities shape or try to shape the structures and practices of the media (Freedman, 2008:10). However, McQuail (2000:21) defines media policy as a “projects of government public administration which are characterised by positioning certain means in the form of regulatory administrative measures that are legally binding, nationally or internationally”. In South Africa there is Independent Communication Authority of South Africa (ICASA) which is responsible for regulating all the media houses in South Africa. Arbatani, et al. (2012) proclaims that media policy defines the way in which the media should understand its role playing within the society: It is conducted by the owners and the government.

In South Africa the ruling political party plays a huge role in media policy making. Simeon (1976) maintains that politicians operate in a context that is limited by the public administration mandates arising from ruling political parties. As a result of bureaucracy and administration, some policy designs struggles to balance their benefits to different social grouping and individuals (Ingram et al, 2007: 94).

According to Freedman (2006) even though the state or government is seen to be the decision maker in a policy process it does not seem to be the case with the media. Freedman (ibid) explains that there is a lot more involvement coming from stakeholder engagement, including corporate lobbyists, NGOs, social movement activists, law enforcement officials, child protection agencies and consumer watchdogs, as well as government officials.

According to Adam and Kriesi (2007), with the emergence of network approach, political actors is no longer the most influential policy makers in the process of policy formation and implementation. As such there is distorting of lines between the role private and public actors in the process of policy making (Adam & Kriesi, 2007). In weak government without resources and expertise, the process of policy making has been sourced to various networks and the state is only responsible for overseeing the process. Arbatani et al. (2012) explains that the process of policy making plays an important role in the

communications and media in terms of influencing the society.

The theory is based on the principle that large numbers of strong network are capable of changing the policy positions so that serve the best interest of the public, therefore policy network theory appears to be the most useful theory in the policy research. This theory suggests the shift of power from influential political and economic factors to the network influence.

The process of decision making and policy making of the media is the most important process not only in the media sector and digital migration, but also in any jurisdictional transformation in a procedure which affects the nation. According to Hills (2003:39) it is the role of the government to develop broadcasting policy and structure within the local society. The government also plays a role in deciding how the media should operate, however, these processes have been threatened by globalisation.

According to Adam and Kriesi (2007), due to globalisation and dominance of multinational factors in policy making, the policy networking theories are extremely finding it difficult to analyse policy at the national context. In order to locate the policy networking one needs to take into consideration that the international networking policy plays an important role in policy making.

According to Levy (1999) the fast rate of technological development characterising the communication industry, the rapid emergence of news, services, new market opportunities and particular the convergence between telecommunications and broadcasting sector are continuously calling for a new policy initiatives. This statement supports the idea that there is a need for amending new policy in the process of digital migration in order for it to become successful.

There is a need for the society to participate in the process of the policy making of the media in the country. Freedman (2006) discusses and focuses mainly

specific on media policy making and participation of ordinary citizens. Freedman (2006) states that the unwillingness of the public to participate in issues which concerns the shape rather than the content of the media is connected to a perception of the policy making process as 'unwelcoming' and not accessible to the general public.

Stones (2004:133) mentions that the European Union is promoting the harmonisation of policies between the state through a number of initiatives such as economic incentives, voting rights structural funds and cohesion funds. According to Dolowitz & Marsh (2000) there are three causes that can lead to a policy failure. First, uninformed transfer is the extent to which the deriving countries lacks is the sufficient knowledge to implement the transferred policy. Secondly, they state that incomplete transfer is also a crucial element of which made the policy to be successful in other countries however, in the copying countries were not followed. Thirdly, the inappropriate transfer refers to the extent by which differences in terms of economic, political or social were not considered before the policy was implemented. Beger (2010b) also argues that the best way of policy implementing in one society might not be the best to the other society. Therefore, different approaches need to be taken when embarking on the innovation of new technologies.

According to McQuail (2010) public service broadcasting is related to a system which is set up by policy and is normally funded by the public. McQuail (2010:178) explains that there has never been a generally accepted theory of public services broadcasting. He further argues there has never been a generally accepted theory of public service broadcasting, and that if there is a common theory, it consists of certain goals, that it is presumed can only be adequately achieved by a public form of ownership and regulation.

Adam and Kriesi (2007) have identified numerous contradicting approaches to policy making proposed by different actors in policy network theories. Freedman (2008) explains that media policy, as suggested in political literature, is focused around the actions of government, civil society, regulators and experts.

Freedman (2005), explains that the legally enforced rules go through a process of meetings involving a variety of stakeholders.

The decision making process is believed to be the most important process not only on digital migration, however also in any legislation change in a process which affected the nation. Hills (2003:39) mentions the role of the government to develop broadcasting policy and its structure within the local society. Freedman (2006) discusses explicit media policy making and the participating of an ordinary citizens, that the reluctance of the public to participate in issues which concern the shape rather than the content of the media is connected to a perception of the policy making process as unwelcoming and not accessible to the general public.

Hacker and Mason (2003) maintain that some academics and policy experts argues that gaps will close naturally over time as a result of natural marketplace dynamics. Hacker and Mason (ibid.) further support their arguments by referencing literature that has shown the gaps which seem to be slowly decreasing and people who have previously not had access now have more access to the media.

Technology is emerging at such a fast pace that the communities who are limited to very basic skills are being left behind. According to Van Dijk (2005), access to information and computer technology (ICT) is related to two different nation's inequality. Blake and Turker (2004) contends that the digital migration which occurs in South Africa, branches from a historical background of colonial, racist capitalist and apartheid systems and division and stratification of large assemblies of people.

According to Mutula (2008), even though the digital migration has some certain elements which need to be recognised and addressed, this concept has notably been viewed from a point of view which focuses on access to the use of information and communication technologies. There has not been a significant quantity of work conducted in the past explaining the more societal challenges

and other issues resulting from the digital divide. Mutula (2008) maintains that it is what is being realised more and more often, is that the challenge of digital divide is not solely due to the lack of technological infrastructure.

3.3 CONCLUSION AND PREVIEW OF CHAPTER 4

In conclusion, this chapter discussed the Diffusion of Innovations Theory which deals with the technological transformation in the world, how people react to the newly developed technologies, and the way they adopt these innovations. However, the Political Economy Theory illuminates the accumulative role of private ownership in the media industry and the media policy making process by government bodies and agent.

This Chapter also discusses the Marxist Political Economy Theory that explains the magnitude to which wealthy and powerful owners of the media are amending policy on the behalf of the government without the governments contribution. It further argues that the ability of the state in making policies is also destabilised by the growth of new digital media which contributes to deeply rooted differences therefore the critical political approach also calls for the public to interfere by means of policies and protocols which will defend the interest of the public.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

The purpose of this study is to determine the effectiveness of digital broadcasting in Shayandima and Rapotokwane villages in Limpopo Province of South Africa. This chapter describes the research, outlining the methodology used in the process of conducting the study. The chapter begins by stating the research design, the target population of the study and the sample size as well as the sampling procedure. Further it describes the research instruments used in the study and highlights the pilot testing, validity and reliability of the instruments. Lastly the chapter discuss in details the data collection method, data analysis techniques, and the variables in the questions.

4.2 AIM OF THE STUDY

This study is an exploratory study aimed at:

4.2.1 Exploring the effectiveness of broadcasting digital migration at Shayandima and Rapotokwane villages in Limpopo province of South Africa.

In attempt to achieve this aim, and the study seeks to contribute towards the following objectives:

- a) Establish how broadcasting digital migration will improve service delivery in South Africa.
- b) Describe the nature of broadcasting digital migration in the selected villages.

4.3 RESEARCH QUESTIONS

This chapter will introduce the summary of the research questions by reviewing the research problem, the research question, the theoretical framework, the methods and the findings. In this sense, the chapter will also evaluate whether the research questions were sufficiently answered by the findings.

How effective is the digital broadcasting system compared to the analog broadcasting system?

To answer this question and gather information about the effectiveness of digital migration, the following sub-questions are addressed:

- a) What documents are required for you to receive the set top box?
- b) What are the benefits of the television set top box?
- c) How many channels do you have access to through the Set Top box?
- d) Did the government offer you any training about the digital broadcasting system before or after the installation?
- e) What are the challenges that you come across when you are making use of the STBs?
- f) How much did you pay to receive this broadcasting system?

4.4 RESEARCH METHODOLOGY

This research employs the quantitative research approach. The study chose the quantitative research approach because the researcher wants to examine the effectiveness of the set top box on the consumers. A questionnaire will be used to collect data for the study. A quantitative research approach is defined as the investigation of phenomena that lend themselves to precise measurements and quantifications which often involves rigorous and controlled design (Polit & Beck, 2010). "Research is an acquisition of new knowledge through the activity that investigate and answers questions a marketer might pose regarding human behaviour and is often viewed as the pillar of systematic growth in organisations" (Malhotra,2012:37).

Research is thus the national and methodical search for new and useful information on a particular topic or situation in a society. The information which is received by conducting research will assist the society in identifying opportunities and/or problems. It further allows the researcher to gain a better understanding of environment in which products will be competing and, in turn, increases organisational performance (Mcdaniel & Gates, 2010).

Leedy and Ormrod (2010) state that quantitative research comprises of analysing theories by specifying narrow hypotheses and collecting data to support or refute the hypotheses. It is descriptive in nature and generates statistics over and over with the use of comprehensive survey research, using approaches such as questionnaires or structured interviews.

Maree (2007:145) argued that the quantitative research approach is a procedure that is systematic and objective in its techniques and it make use of numerical data from a particular subgroup of an association in order to simplify the results that are being researched. Thomas (2010) also states that quantitative research approaches were initially established in the natural science to research about natural phenomena.

This approach makes use of questionnaires, surveys and experiments to collect information that is premeditated and presented in numbers that allows the data collected to be categorised by the use of statistical analysis. Quantitative studies measures variables on sample of subjects and also define the link between variables using statistical effects such as corrections or frequencies. According to Nueman (2003:139) “almost all quantitative investigators rely on the positivist social science”

Some of the questions that were asked in the questionnaires was, for an example how effective is the set top box when it comes to broadcasting, between analog broadcasting and digital broadcasting? Which one is the most effective one when it comes to broadcasting, etc.

A survey is an effective method for gathering information from individuals for the purpose of assembling quantitative descriptors of the characteristics of the large population of which the individuals are members of the community. According to Daponte (2008) a survey measures or collects information about the population and a sample survey involves data collection from a small number of individuals who fit a particular category of people. According to Groves et al. (2009), Survey method strives to identify principles about the design, data collection, processing and analysing of data that are associated to the cost of quality of survey estimates, which means that the field focuses on improving quality within the cost constraints.

Questionnaires are useful in collecting information that is exceptional to individuals, such as attitudes or knowledge; its central premise is the use of quantitative research method approaches that will provide a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2011). fifty people in Limpopo Province Shayandima (Thohoyandou) and Rapotokwane villages (Bela-Bela) have already migrated from analog to digital broadcasting, in terms of Digital Terrestrial Television (DTT) with the use of Set Top Boxes (STBs). The study chose to use questionnaire because it will allow the respondent to choose the best answer of their choice on the questioners.

Quantitative research on the other side involves an in-depth understanding of human reaction nor behavior and reasons that govern that particular behavior. Unlike quantitative research that depend on reasons behind different attitude (Bulmer, 2004). The qualitative research methodology differs from the quantitative research approach because qualitative methodology does not rely on the analysis of numbers or quantitative data, however on text and other mediums of communication that are not numerical.

According to Moghaddam et al. (2003), one other major limitation of the quantitative research approach is that measurement typically separates information from its original ecological context, however, Golafshani (2003) sums up quantitative research approach as a paradigm that:

- (a) *Emphasis* is based on facts and the cause of behavior measured by predetermined instruments.
- (b) *Reliability and objectivity* are measured with essential tools.
- (c) *Information is presented* in a form of numbers whereby it can be quantified and summarised.
- (e) *Mathematical process* is the norm for analysing the numerical data and final result is expressed in statistical terminology.

This study aims to explore and explain how effective is the digital broadcasting compared to the analog broadcasting in Limpopo Province at Shayandima and Rapotokwane villages. The purpose of using the quantitative research approach

is to examine the effectiveness of the set top box towards the consumers of the above mentioned areas in Limpopo Province.

Therefore, it was important to survey the participants in fair number and ensure that they are a representative sample of the target population. This study was approached in the method of a survey by handing out questionnaires to the participants of the study to be filled out. At the end of the questionnaire there was a comment section describing their experience of the research being conducted.

4.4.1 Research Design

The research design is the plan and structure to obtain answers to the research objectives and is as blueprint for the collection, measurement and analysis of data (Burns & Bush, 2010). However, Creswell (2014) contends that a research design are varieties of analysis that apply to all types of research approaches, that is, qualitative, quantitative and mixed method and that provides a specific direction for procedures in the research study.

The researcher chose exploratory design because the study is attempting to increase their understanding of Broadcasting Digital Migration (BDM) in South Africa and also wants to clarify the current situation of digital migration and unveil ideas that could potentially come up with critical solution for digital migration.

According to Brown and Suter (2011) exploratory research design utilised to clarify indistinct situations and disclose ideas that could potentially create business opportunities. However, Aaker et al. (2011) contends that exploratory research is preliminary research which is utilised when the researcher is attempting to increase their understanding of nature of problem, able substitutes or related variables that can be studied.

Moreover, Zikmund and Babin (2010) states that the research design serves as a framework that specifies three elements: the sources of data, type of information that should be collected and the choices of data collection method. Green & Thorogood (2009:4) refers to the design as the logic of the study: the what, how and why of data production". Meanwhile Polit and Beck (2017) describes research design as a strategic approach which the researcher embraces to develop

accurate and interpretable evidence, as well as the methodological decisions justifying such a course of action.

Research designs are procedures adopted by researchers to assist in providing valid, objective, relevant and economic responses to the research questions (May 2011). additionally, May 2011 reiterates that research designs are, firstly, applied in research methodologies to conceptualise an operational plan to undertake various procedures and tasks to complete the study and, secondly, to ensure that these procedures are adequate to obtain valid, objective and accurate answers to the research questions. Research design are therefore types of inquiry that apply to all types of research approaches, that is quantitative, qualitative and mixed method research approaches and that provide specific directions for procedures in the research study (Creswell, 2014).

A research design is critical to any study since it provides a framework or an act as the basis of gathering and evaluating data in a procedure that exhaust the possibilities off validity of the information. According to Creswell (2009:22) research design are plans and procedures for a research that extent the decision from broad assumptions to comprehensive methods of collection of data and analysis aimed at solving a research problem.

4.4.1.1 Population

According to Du Plooy (2009) a target population is the actual population to which the researcher wants to generalise the results. According to Babbie (2013:134), a population is defined as “the group or population that were interested in generalising about”. In simple terms, populations refers to the total number of units from which data can be collected (Babbie 2013:135). It is the entire aggregate of cases in which the researcher is interested and which meet the criteria for inclusion in the study (Polit & Beck, 2012). The study was conducted in two different villages in Limpopo namely; Shayandima and Rapotokwane villages. The researcher selects a portion of population to represent the entire population so that inferences about population can be made (Polit & Beck, 2012).

The main aim of sampling is to draw conclusions about the whole population in a more cost-effective and less-time consuming manner (Wiid & Diggins, 2013).

Researcher's need to develop research plan that is described as a framework, which ensures that data collected is representative of the population (Hair et al, 2011).

The target sample selected is 50 households in each village from these two villages who make use of the Set Top Boxes (STBs) in villages, Shayandima village and Rapotokwane village. According to the statistics of South Africa, Census (2011) Shayandima village has 17,345 households and Rapotokwane village has 2,018 households. It was useful to consider these households in order to determine the effectiveness of the digital broadcasting with the support of the television set top box compared to the analog broadcasting.

4.4.1.2 Sampling Procedure

The study applied random techniques; random sampling is a probability sampling technique wherein the research divides the entire population into different subgroups. Random sampling signifies the random selection of components in such a way that each member in the sample has an equal chance of being selected (Ott & Longnecker, 2010). This type of sampling is considered adequate if the chance of selection is equal at any given period in the process of sampling.

Random sampling has the benefits of obscuring biases and providing statistical means for estimating sample errors (Babbie, 2013). Moreover, According to Orodho (2003), reliable research results require a good sample, for solid samples, the sample presented should represent as closely as possible the characteristics of the initial bulk sample. Sampling was based on selecting a portion of the population that needed to be generalised for the study.

According to Burns and Grove (2009) sampling is the process of selecting subjects or elements that will participate in a study. The researcher selects a portion of population in a group to represent the entire population so that inferences about the population can be made (Pilot & Grove, 2012). A sample is the subject or proportion of population or respondents selected to partake in the study and from whom to collect data; it represents the entire population (De vos et al. 2011).

There are two different types of sampling techniques; probability and non-probability sampling. The researcher employed non-probability sampling technique. This technique is convenient and economical even though it may not represent the population. In this case, the researcher cannot specify whether each element has an equal chance of being included in the sampling (Brink et al, 2012). According to Lacobucci and Churchil, (2010) non-probability sampling refers to a sampling technique in which participants of the population do not have an equal chance of being selected, therefore cannot be comprehensive to population outside the sample.

Non-probability sampling comprises of four sampling methods; convenience, snowball, quota and purposive sampling methods however the study chose the convenience sampling because In convenience sampling, the elements are selected due to their convenience and accessibility; hence also referred as availability. For the purpose of the study, researcher adopted purposive sampling technique and expedient random sampling technique. Varghese, Boeswald & Campbell (2013) referred to purposive sampling technique as judgmental sampling, as the non-probability sampling that makes the deliberate choosing of an informant or informants who are solicited to act as guides to a particular culture.

- a) *Convenience sampling* is a sampling technique based on the judgment of the researcher it is also and it is also a non-probability (Saunders et al, 2007). Additionally, Johnson et al. (2007) states that the convenience sampling technique relies on conveniently available subjects and used where the accurate size of population is not easily determined or not known. According to Gravetter and Forzano (2012), Convenience sampling technique in which the researcher simply uses individuals who are easily accessible or readily available for inclusion in the study. Kumar (2011) also reiterates that the convenient sampling is also known as accidental or haphazard sampling, it is the most commonly known and used sampling technique which is based on the practicality and ease of accessing the sampling population.

It was firstly vital to establish whether these households were seeing the difference between the old broadcasting system (analog) and the new broadcasting system (digital) from the very first time where they stated to make use of these systems. It is also necessary to include two different villages in Limpopo in different regions and municipalities as part of the population to acquire existing and appropriate information regarding the effectiveness of digital broadcasting in South Africa. The gathering of recent information and data collection is of paramount importance to authenticate the research project.

Shayandima is a village located on the banks of Venda in the Vhembe District Municipality and currently form part of the Vhembe District Municipality in the Limpopo Province of South Africa. Rapotokwane village is located outside Bela-Bela is a village situated in the Waterberg District Municipality of the Limpopo Province in South Africa. It is situated in a lush, high rainfall fertile region with tropical and subtropical agriculture taking place in a 44,919.39 square kilometres region (google maps, 2019).

Limpopo Province share international borders with three countries namely: Zimbabwe, Botswana and Mozambique. On the south it shares a border with Gauteng Province. The Limpopo Province is divided into six districts namely, Mopani, Vhembe, Sekhukhune, Capricorn, Bohlabela and Waterberg (Statistics South Africa, 2019). The province is the far north province of South Africa on the map. In this study, attention focused on two areas Bela-Bela (Rapotokwane Village) and Thohoyandou (Shayandima Village).

4.4.1.3 Data Collection Method

Data was collected through a questionnaire from 50 households who make use of the STB from both villages. According to Burns and Grove (2009), data collection is a precise, systemic gathering of information relevant to the research objectives or study purpose, specific questions, hypothesis of a study. Data collection in quantitative research comprises of numerical information to address the research objectives (Burns & Grove, 2009). In addition, (Kumar, 2011) maintains that research study relies on primary and secondary source of information to collect data. The study utilised the primary source, in that, the data was collected from the respondents.

A study depends on a research paradigm for data collection methods. Quantitative research employs structured data collection methods such as interviews, observations or questionnaires (Kumar, 2011). In structure methods of data collection, the researcher collects data according to an established plan (Brink et al. 2012). In the case of this study, the researcher opted for the self-administered questionnaires. This indicates that the respondents completed the questionnaires on their own.

Questionnaires were distributed to various key participants in order to get a diversity of perspectives, representatives from the following two communities in Limpopo Province: Shayandima and Rapotokwane villages. A questionnaire is a Document or printed self-report form with a set of questions, designed to elicit information (obtainable through written or verbal responses) from the respondents for analysis (Burns & Grove, 2005). According to Kumar (2011), structured questionnaires have close-ended questions from which respondents choose predetermined responses, facilitating questionnaire completion and data analysis.

Hagger and Johnson (2009) states that the use of questioners in a research entails a vital method of collecting data from a large number of people that are involved in the study, primarily for the need of quantifying data or examining using statistics. Concerning quantitative data collection in this study, questionnaires were structured consisting of 22 questions and distributed to 100 households in Limpopo. The structured questionnaires collected background information of the respondent's mainly demographic data: Secondly, information on the benefits of the set top box and its effectiveness.

Researchers may also use existing questionnaires to collect data or develop their own. In this study, the researcher developed the questionnaire. Before doing so, the researcher searched both local and international literature, but could not find a suitable data collection instrument for the study. As a result, the researcher developed the questionnaire that would suit the study and its objectives. In this regard the literature review on the concepts 'digital migration' and 'digital broadcasting' was instrumental in the questionnaire construction. The questionnaire was then submitted to the supervisor who suggested some

changes. The changes were implemented, and the questionnaire was subsequently approved by both supervisor and the (Faculty of Higher Degrees Committee) FHDC at the University of Limpopo.

(a) Testing of Data Collection Instrument

This study employed questionnaires because they were used by other researchers on related studies and produced good results. It was necessary to carry out a questionnaire testing exercise of questionnaire pilot prior to its finalisation before being used for substantive research. The respondents were accurately informed about what was required of them, and research topic was explained to them in order to ensure that they could answer all questions without any confusion. The pre-test respondents were also conducted to establish if the respondents would understand the questions being asked, and when they experience any difficulties in reading the instructions given.

This study used questionnaires to gather information from the respondents. According to Bryman (2008), a questionnaire helps the researcher to gather large volumes of information within a short space of time; it includes both open ended and close ended questions. The researcher also explained the importance of answering questions honestly. For the purpose of this study and its findings, three households were randomly selected to test the questionnaire so that the necessary revisions could be made before the questionnaires can be distributed to the participants and used on a larger scope to collect the data.

According to Babbie (2013:231) and Burns and Grove (2005:147), as well as Kumar (2011:148), some of the *advantages* of using a questionnaire as related to the study are as follows, a questionnaire saves time as can be self-administered, it can reach large numbers of people over a wide geographical area and the respondents can be assured as no name is attached to the questionnaire.

According Brink et al. (2012:155); Kumar (2011:149), the use of questionnaires also has some disadvantages, which are as follows:

- (a) The main disadvantage of a questionnaire is that there is no opportunity to ask respondents to elaborate/clarify or illustrate answers; hence the researcher has been meticulous in formulating questions in a way that will give clear answers.
- (b) The respondents may misinterpret questions; the researcher minimised/mitigated this disadvantage by pretesting the questionnaire.
- (c) Developing and testing the questionnaire is time-consuming and costly for the researcher.
- (d) It tells little about the context in which respondents formulated their response.
- (e) Data collected may be superficial, researcher cannot probe more, and the sequence of questions was such that they bring clarity to what was asked.
- (f) If the questionnaire is completed in the absence of the researcher, it cannot be guaranteed that the questionnaire was completed by the respondents or that it was not discussed.
- (g) It can only be used to collect certain type of information.
- (h) Should respondents need clarity regarding some questions, the researcher is not there to clear any queries.

(b) Questionnaire Design

The researcher felt that questionnaire should be specifically designed to obtain the necessary information of the study regarding the effectiveness of digital migration in South Africa. According to Bryman (2008:697), a questionnaire is “A collection of questions administered to respondents.” The respondent is expected to react to these questions usually in writing. The questionnaire was aimed to brief and to point so that the questions were easy to understand to avoid errors and confusion. All respondent were guaranteed of their anonymity, respect, moral and discipline was maintained.

A questionnaire is a well-established research tool for acquiring information on participant social characteristics, present and past behavior, standards of behavior or attitudes and their beliefs and reasons for action with respect to the topic under investigation (Bulmer, 2004).

The aim of the questionnaire was to obtain statistical data that is to be analysed in order to benefit the research by determining the unknown attitudes and perceptions towards the digital migration in South Africa, as well as to determine whether the use of STBs have carried a positive or negative impact on these residents. Consequently, if the residents have enough information about the questionnaire would also proceed to find out the source of hesitation or particular preference despite their awareness of change in broadcasting and devices involved.

The respondents were also well informed about the aim of the study and it was made sure that they understood the questionnaire. The researcher was available to explain and clarify any further questions if needed. The questionnaire (Appendix 2) was formulated by using closed-ended or structured questions and was designed based on the literature review in chapter two. Secondary information was also gathered from journals, books, newspapers and internet articles before the questionnaire was formulated and also to determine the type of question that needed to be presented.

The questionnaires were pre-tested before they were used to collect the information in order to establish if the content and the sequences of the questions were correct. Any improvements that needed to be made were done before the researcher could embark on collecting data. The respondents were asked to select from possible choices of responses and, where necessary, rating scales were also used where respondents were given a range of responses to express their own opinion.

The approach used to elicit a response is primarily the 5 point Likert Scale (1=very poor up to 5=Excellent). According to Jenner (2015), the Likert Scale involves the use five typically series of statements that convey various levels of agreement with an item stem. The reason for using the Likert Scale was influenced by the questions being easy to code and analyse. It also saves time and creates an

atmosphere where respondents will want to complete the questionnaire. Simple and clear words were used to structure the questions in an attempt to make it easy for the participants to interpret and answer.

A multiple-choice questions (forced answers which are mutually exclusive as well as checklist answers), rating scales: Likert, semantic differentials, and matrix questions. This provides a necessary balance that is not monotonous for respondents. However, it still achieves clear and accurate responses with a restriction on the range of available answers. Open-ended questions allow the respondents to answer the question the way he or she likes with fewer restrictions except for the length which is indicated with lines.

In closed ended questions the respondents are provided with alternative answers from which they can select the answers on. According to Mc Burney and White (2010:246), a closed ended questionnaire's is one that "limits the respondents to alternatives determined in advance by the questionnaire's designer" in other words closed ended questionnaires are questions with answers which are already predetermined. The advantage of using closed questions is that they serve on time because respondents already have answers to choose from.

The questions are made clear in order to avoid confusion that is often found in loaded or double-barrelled question. In order to generate the most accurate results and accurate representation of the chosen population, the random sampling method was implanted during this research. By using this technique, there is a basis for future extensive continuation on the study, and the research can generalise results on the entire population of the study.

4.4.1.4 Data Analysis Methods

The study makes use of the statistical data analysis software. The study also generated a rich body of findings from the discussions and they are discussed in detail. According to Statcan (2010), the elementary steps in data analysing process consist of identifying issues, determining the availability of suitable data, deciding on which methods are appropriate for answering the questions of

interest, applying the methods and evaluating, summarising and communicating the results.

All data with regard to the number of households that have migrated from analog broadcasting to digital broadcasting, demographics, socio-economic and location that were collected on the questionnaire, and were put into Software Statistical Package for the Social Sciences (SPSS) by a statistician (Miss Mulalo). The information was verified with the manual copies of the responses. This was done to ensure that the information obtained through the ITS System, which is subject to errors due to human data input, was as accurate as possible. Data and questionnaire were analysed by the statistician so that the study could be authentic.

(a) Source of Data

This study is going to use the primary data. Primary data signifies the information that is collected specifically to address the research problem of the study (Cant et al. 2010) It is generally conducted when secondary data fails to answer the research question or solve the current problem (Tustin et al., 2005). Primary data is information that is specifically collected in order to solve a problem or opportunity that faces management (Kapoor & Kulshrestha, 2010).

Data can be obtained from two sources, either primary or secondary. Secondary data is information that exists (like organisations sales figure), or data that was collected for a purpose other than the identified research problem, whereas primary data is purposely gathered to solve a specific research problem (Berndt & Petzer, 2011). Secondary data is usually the starting point of any research design- reviewing the past records and previous studies reveals a lot about decision making patterns and could help refining the research problem, choosing and appropriate research design method (ibid.).

Similar to secondary data, primary data can also be collected from either internal or external data sources. Internal primary data is data that is collected for example from employees or management, while the external primary data is collected

from, for instance, the consumers or retailers from which the organisation would like to obtain information from (Cant et al., 2010). Collecting primary data can be very expensive and time consuming; however, it is generally more relevant to the researcher to achieve the research objectives than secondary data (Strydom, 2011).

4.5 QUALITY CRITERIA

Before going out into the field, the researcher followed etiquette procedure of conducting the research. The study formulated questions that would be included in the questionnaire that would evoke the responses that would provide the answers to the research questions established as well as the objectives. Research ethics consist of moral rules and professional codes of conduct in the process of collecting data, analysis, reporting and publication about a research topic. The individual's rights to privacy, confidentiality and informed consent are critical elements of ethics (Marshall, 1998).

4.5.1 Validity

Validity requires ethically networked purposes, coordination, and ways of constructing quality research. Gaber and Gaber (2010) states that validity is an instrument based on gathering of the observations and it is a compilation of cultural judgments from individual's directly impacted by an assessed research conclusion; its main aim is to determine whether the analysis or questions appear to measure what they were projected to measure. Validation was done by evaluating the questionnaire in a pilot test using experts at the research office and the statistician.

Litwin (1995) states that validity provides decent basis on how to construct a methodologically rigorous research of the survey instruments validity and when examining the content validity for an example, remedial scales, when it is important to use actual patient in the evaluation process. Pilot and Beck (2010), reiterates that validity, means the level to which the instrument measures what it is implemented to measure, and it means the extent to which the instrument actually reflects the intellectual concepts being examined.

Additionally, inductive inference means actively working to enact research purposes, making research true by helping it to shape the world (Abrahamson et al., 2016). The study attained this ethically; and the researcher was transparent, offering guidelines and recommendations based on the best available data to fit the purpose of the study. To allow validity the study provided satisfactory information of the context of the field of the study for other scholars to be able to decide whether the essential settings is similar to another and they can be justified.

4.5.2 Reliability

Reliability means the degree of consistency, accuracy or dependability which the instrument measures the attribute it is designed to measure, thus produce the same results every time (Brink et al. 2012). Trustworthiness in preference to reliability refers to consuming adequate information and documentation of the methods employed so that the study can be examined and replicated (Bryman et al., 2008: 266).

The instrument was pre-tested using six households and it was used for actual study as it was found suitable during pre-testing. If the respondents of the same population can be used again, the same results will be expected. The researcher calculated the correlation of each item with every other item to develop internal consistency. A statistician was also requested to evaluate the substances for relevance to specific research questions and to check for the reliability of the instrument. Most items designed were based on the literature review and conceptual frameworks that underpin the study (Polit & Beck, 2010).

The study interpreted the information that is valid and information was interpreted as it is to avoid bias. Hernon and Schwartz (2009) indicate that for a quantitative research, reliability seeks to define the extent to which the data or measurement is consistent and consistency refers to a level in which same results are produced from different samples of the same population or the degree whereby an instrument measures the same way every time it is used under similar conditions with the same subjects.

To reduce the standards of errors and increase the level of reliability of findings on the study, questionnaires were standardised and the questions were consistent and in a sequential order for each respondent to ensure inclusive consistency. All the questionnaires were also pre-coded to avoid inconsistency when decoding and analysing the information.

All collected data and ideas were represented the way they are. Data were shared and the study allowed a room for criticism and opinions. All the information was communicated honestly; questions and answers were also shared honestly. When reporting the data or giving back the information as results and procedures no information was neither misinterpreted nor fabricated.

4.5.3 Objectivity

Objectivity validates the adequate balance between different aspects of quality in research, relevance and credibility, and the need to be aware of tensions and to seek complementarities. Cash et al. (2002) highlights that conformability in preference to objectivity refers to ensuring that the study's findings are the result of the experiences of the informants rather than the preferences of the researcher.

The researcher will validate that factual information of the phenomenon under analysis will be presented. The study also seeks to ensure that the study measures or test exactly what is intended to. The researcher will achieve objectivity through an audit trail of the raw data, memos, notes, data reduction and analysis.

4.6 ETHICAL CONSIDERATION

According to Neuman (2012), ethical consideration are issues that are vital to the research process therefore need to be addressed and analysed before the researcher embarks in a research field. McMillian and Schumacher (2012) explains that the researcher's authority to conduct research is accompanied by a responsibility to protect, guide and oversee the interest of the people being studied.

4.6.1 Informed consent form

Informed consent form is achieved by providing explanation of the research to the participant at any time with no penalty and full disclosure of any risk associated with the study (McMillian & Schumacher, 2012). This would ensure informed consent is adhered to, the respondents were provided with written information about the purpose of the study and the procedure to be followed.

In the current study participants were informed that their participation on the project was completely voluntary and that they could feel free to withdraw from participating on the questionnaire. The respondents were also notified that the information that they are providing will be kept strictly confidential and that their identity will be anonymous. The ethical clearance approval letter for the researcher in the research study (Appendix 1) includes the ethics of the research to the participants. The study met all the research policy and guidelines of the university. The significant of the ethical clearance was to allow this researcher to conduct the field research in the two villages.

The consent form that each participant filled in was based on self-administered questionnaires. In this study questionnaires were distributed to 50 households in two different villages in Limpopo. During this process the researcher ensured that the rights of the participants were protected and that the questionnaire cover letters were given with all the facts needed to provide informed. The aim of the consent letter was also to reduce the possibility that the potential respondents might disregard the questionnaire when they receive it. As a researcher it is important to respect your participants and treat them equally in this case, participants were treated with full respect despite their age and background status or their title. The researcher ensures and guarantee the confidentiality and anonymity of the participants throughout the study and acknowledge all the sources used. All participants were informed of the purpose of the study.

Permission to conduct the study was granted by the Faculty of Higher Degree committee in media studies (FHDC) at the University of Limpopo. Permission to conduct this study was also granted by Humanities Research Ethics Committee at the institution.

4.6.2 Confidentiality

Confidentiality refers to the promises by the researcher not to disclose the respondents' individual responses, or information should she become aware of such (Babbie, 2013). It means any information about the subject identities and responses in the study are not accessible to unauthorised persons. Breaching confidentiality by a researcher is unacceptable as it may reveal information relating to respondents that may be harmful (Neuman, 2012). In the same vein the researcher ensured confidentiality as no information about the subject matter could be linked to respondent's identities.

4.6.3 Anonymity

According to Check and Schutt (2012), anonymity in research studies refers to the process where no identifying information is recorded in order to link the respondents with their responses. With regard to protecting the rights and confidentiality of the participants and honouring their trust, no information that could identify participants were requested, for example home address, physical address, ID copy or contact details. All results were reported in aggregate format and not according to individuals. No names of individuals were mentioned during the process of reporting of the results. Data was also protected; the contextual information that could provide direct inference to the participant was not included.

4.4.4 Critical Analysis of the Research Design

This study has few limitations. The primary factor has been changing of locations. The study had to change two locations; Tiyani village and Dan Village to Shayandima and Rapotokwane village, because the STBs were not yet distributed to the households in these areas. The strength of this study is the use of quantitative research method which allowed the researcher to collect views and opinion about the effectiveness of digital migration from the respondents, which is one of the advantages of employing open questions in research

4.8 SUMMARY AND OUTLINE OF CHAPTER 5

This chapter encapsulated and critically analysed the research methods and procedures employed in this study. The study also distinguished between the qualitative and quantitative research approaches and stated the specific steps undertaken to collect and analyse data.

Lastly, research methodology includes explication of the method selected by the researcher in order to achieve the objectives and aims of the study and also collect and analyse collected data. The researcher chose to use a quantitative research approach because of the importance of the study rests in the depth of human experience of an individual and their adoption and use of broadcasting digital migration and set top boxes. Furthermore, in this study questionnaires were chosen and used as a proper data collection method.

CHAPTER 5: FINDINGS AND DISCUSSIONS

5.1 INTRODUCTION

This chapter presents data and discusses the study findings. The study sought to assess the effectiveness of digital migration in South African villages known as, Shayandima and Rapotokwane.

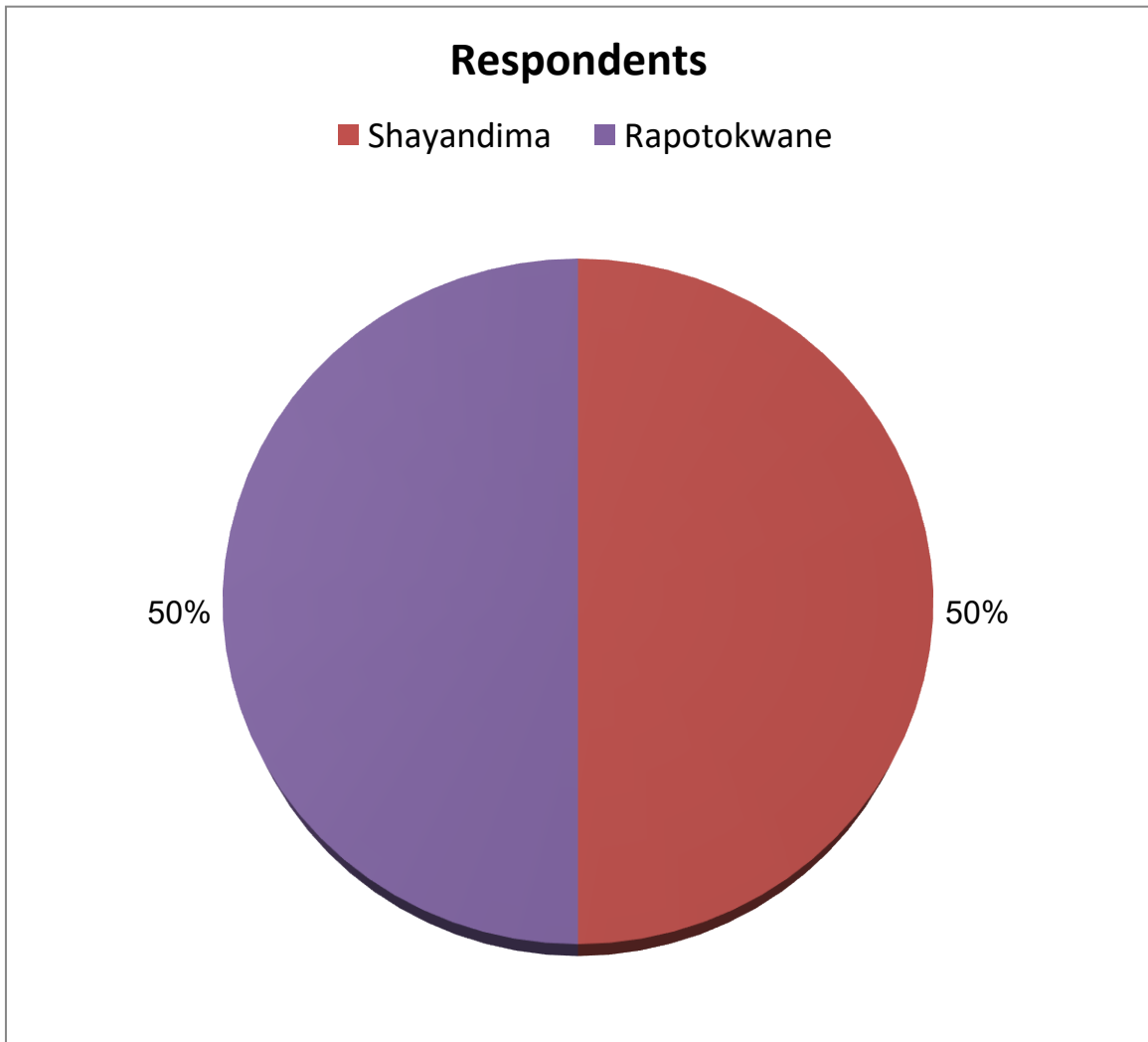
The presentation of data or results and the discussion therefore is based on the sequence of questions in the questionnaire (Appendix 3) used to collect data. The data collected in the field were reported and presented in tables. Questions relating to demographic characteristics of the respondents were asked first; therefore, the related findings are presented first in the next section. These questions, in the final analysis, provide solutions to the problem statement of the research and contribute to the achievement of the study objectives, which were stated in Chapter 1.

The research findings are presented in the form of Bar graphs, illustrations, as well as engaging and informative quantitative data. A total number of 100 respondents formed part of the study, with 50 respondents from Shayandima in Thohoyandou and 50 respondents from Rapotokwane in Bela-Bela. The aims and objectives of the study focus on exploring the effectiveness of digital migration in these villages and to establish how digital migration can improve service delivery in South Africa.

The next section provides information about the effectiveness of digital migration in both two villages. The third section, preceding and conclusion of the chapter, details impact of set top boxes from the user's perspective view.

Figure 5.1 illustrates the number of respondents who participated in the study in each village. The pie chart indicates that there were 50 respondents from Shayandima Village in Thohoyandou and 50 respondents from Rapotokwane Village in Bela-Bela.

Figure 5.1 Respondents or Participated per village.



5.2 USER DEMOGRAPHIC CHARACTERISTICS

This section provides the demographic details of the users, that includes age group, gender, employment status and location of the respondents

5.2.1 Respondent Gender at Shayandima village in Thohoyandou

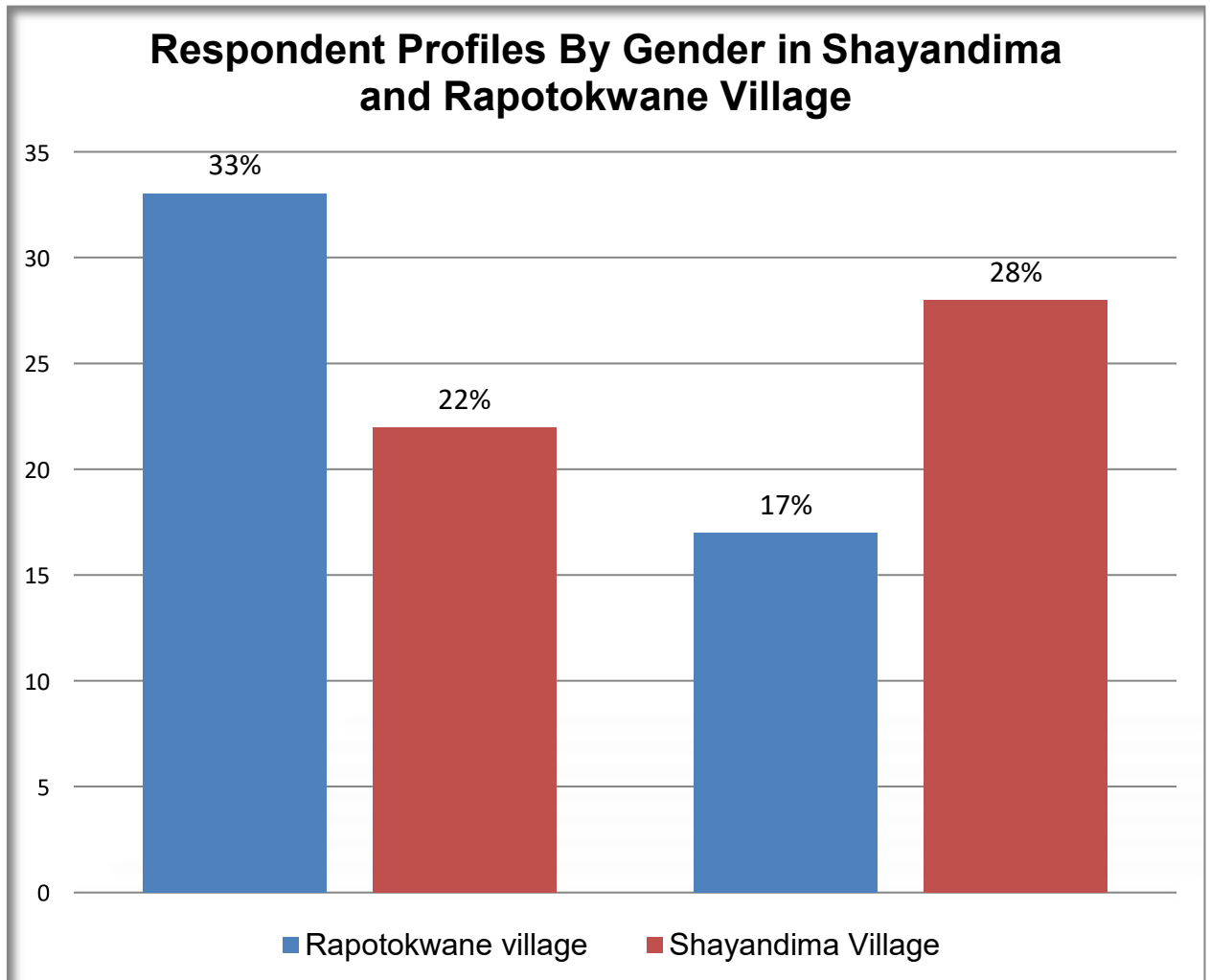
Table 5.1: Respondents profile by gender per household

Rapotokwane village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	2.0	2.0	2.0
	Females	33	64.7	64.7	66.7
	Males	17	33.3	33.3	100.0
	Total	50	100.0	100.0	
Shayandima Village		Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Valid	Females	22	44.0	44.0	44.0
	Males	28	56.0	56.0	56.0
	22.00	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Explaining the demographic respondents by gender is a critical function of research for qualities for the worldview. The findings indicate that 28 of the 50 respondents at Shayandima Village outside Thohoyandou were males (i.e. 56% of the Shayandima group) and 22 were females (i.e. 44%) of the Shayandima respondents all of the questionnaires were returned and all of the respondents managed to respond to the questions. However, 33 respondents 50 respondents in Rapotokwane Village (Bela-Bela) were females (i.e. 66% of the Bela-bela respondents) and 17 respondents (i.e. 34% of the Bela-bela respondents) were males. The findings revealed that many respondents were males in Shayandima

Village with 56%, and in Rapotokwane Village female respondents were many compared to male respondents (66%). The results revealed that most of the people who answered the questionnaire were males in Shayandima village and females in Rapotokwane Village. These results are also presented in Figure 5.2.

Figure 5.2 Respondents profiles by gender per household

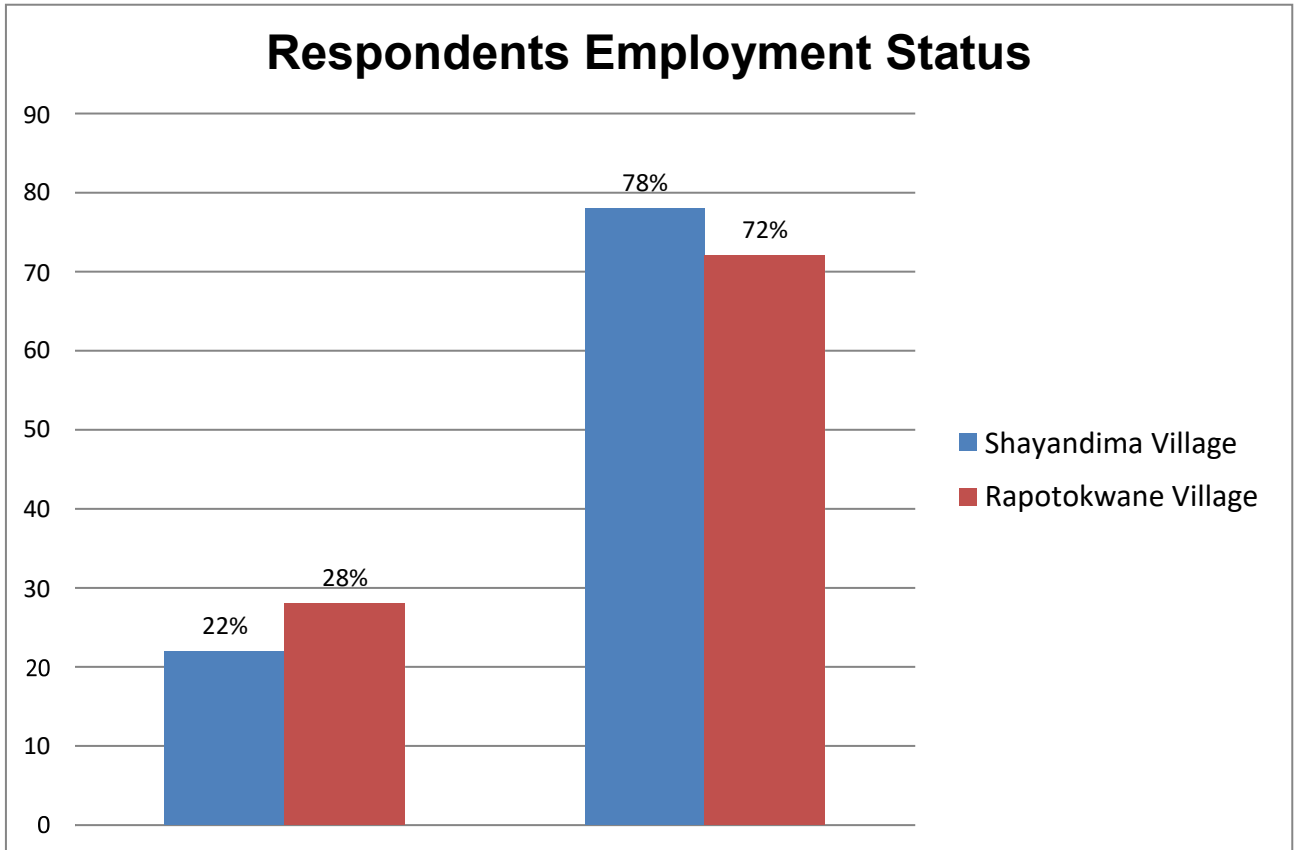


5.2.2 Table 5.2 represents Respondent profile by Employment Status

Table 5.2

Shayandima Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	39	78.0	78.0	78.0
	Employed	11	22.0	22.0	100.0
	Total	50	100.0	100.0	
Rapotokwane Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	36	72.0	72.0	72.0
	Employed	14	28.0	28.0	100.0
	Total	50	100.0	100.0	

Figure 5.3 Respondents Employment Status



The results indicate that 39 respondents (i.e.78 %) in Shayandima Village were unemployed and only 11 respondents (i.e. 22%) were employed. However, the study also revealed that in Rapotokwane the number of unemployed respondents were less than Shayandima’s unemployment rates. In Rapotokwane 14 respondents (i.e. 28%) were employed and 36 respondents (i.e. 72 %) were not employed). The results revealed that the majority of the respondents in both villages in Limpopo Province were unemployed.

5.3 The age of the respondents.

The results will be presented in both table and bar graph form.

Table 5.3 Respondents Profile by Age Group

Shayandima Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25 years	6	12.0	12.0	12.0
	26-30	14	28.0	28.0	40.0
	more than 31 years	30	60.0	60.0	100.0
	Total	50	100.0	100.0	
Rapotokwane Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25 years	9	18.0	18.0	12.0
	26-30	16	32.0	32.0	40.0
	more than 31 years	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

In Shayandima village the majority of the respondents (i.e. 60% of the group) were aged 31 years old and above. In Rapotokwane village the majority of respondents (i.e. 50%) were 31 years and above.

Figure 5.4 Respondents by Age Group

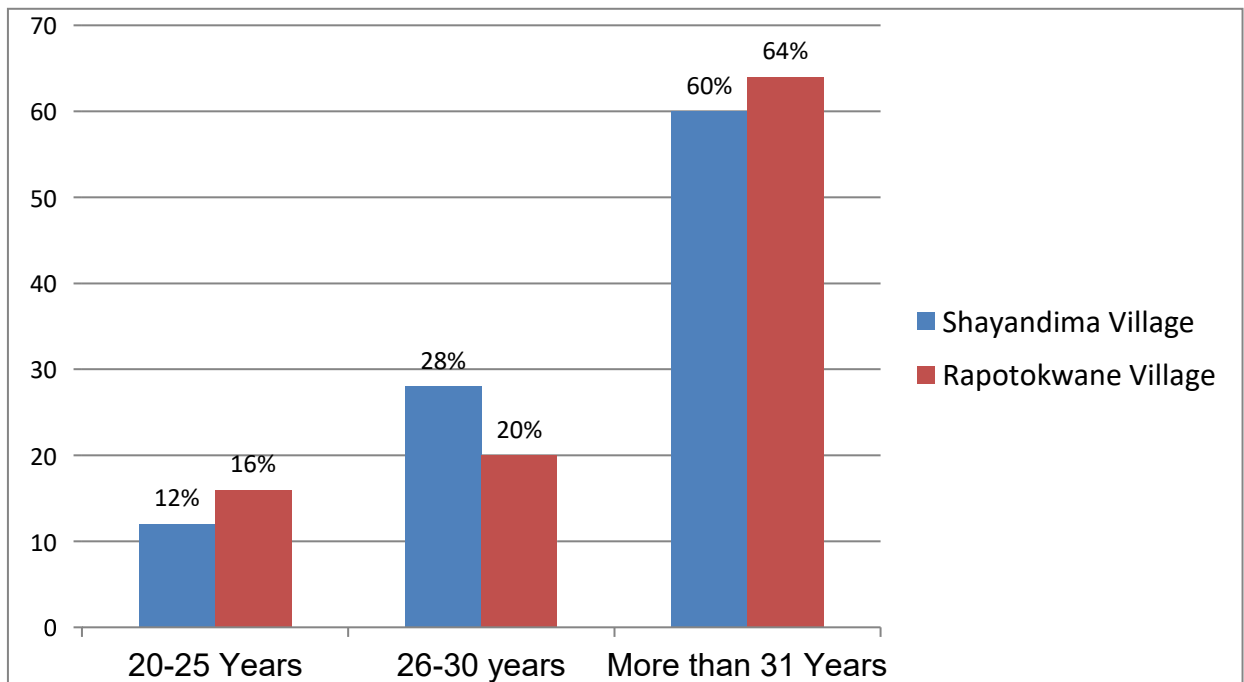


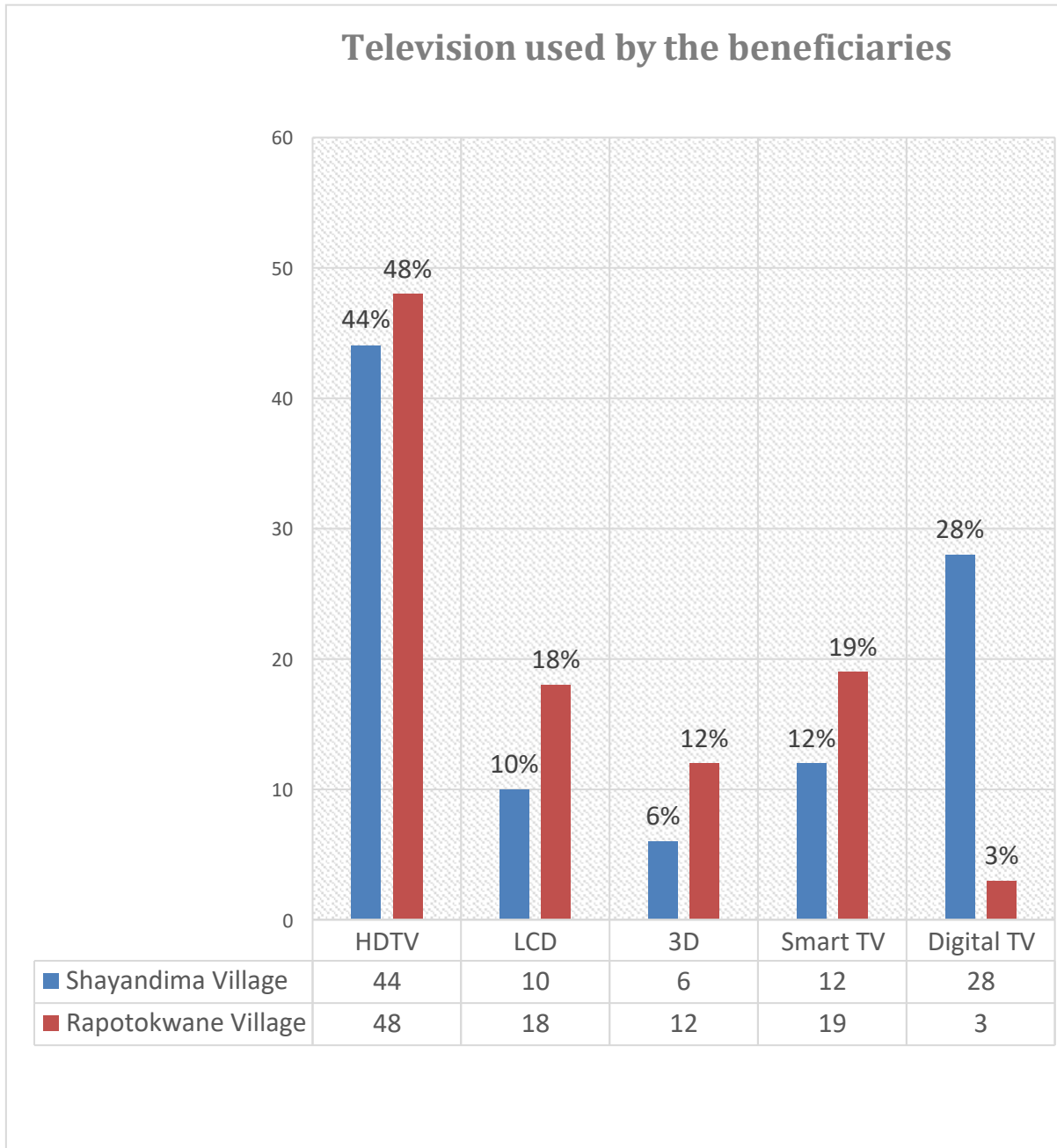
Figure 5.4 indicates that of 50 respondents who answered the questions in Shayandima Village, six people (i.e. 12% of the group) were aged between 20-25 years, 14 respondents were between the age of 26-30 years (i.e. 28% of the group) and 30 people (i.e.60% of the group) were between the age of 31 and above.

However, the results in Rapotokwane Village indicate that of the 50 respondents who answered the questions nine respondents (i.e. 18%) were aged between 20 and 25 years old,16 people (38%) were between the age of 26-30 years old and 25 people (i.e. 50%) in Rapotokwane village were over 31 years old and above. The results also revealed that the majority of the respondents are old people who are over 31 years of age.

The results reveal that most of the people who answered the questionnaire were aged 31 years and above in both two villages.

5.4 The different types of television used by the beneficiaries who makes use of the Set Top Boxes.

Figure 5.5 types of television Used to Watch the digital terrestrial television Programs



HDTV= High definition television

LCD=Liquid crystal display television

3D= Three-dimensional television

Smart TV= Smart television

Digital TV= Digital television

Figure 5.5 indicates that in terms of the television ownership, the option with the highest number of responses is the HDTV with 24 (i.e.48%) respondents in

Rapotokwane village and 22 respondents (i.e.44%) of the group related in Shayandima village.

In Shayandima Village five households (i.e.10% of that group), used the LCD-TV three households (i.e.6%) of Shayandima group used the 3D television, 6 people make use of Smart-TV (i.e. 12% of the sample) and 14 households make use of the Digital-TV (i.e.30% of the sample).

Table 5.4 Type of televisions Used to Watch the Programs on the Set Top Box

Shayandima Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HDTV	22	44.0	42.0	42.0
	LCD	5	10.0	10.0	52.0
	3D	3	6.0	6.0	58.0
	SMART TV	6	12.0	12.0	70.0
	Digital TV	14	30.0	30.0	100.0
	Total	50	100.0	100.0	
	Rapotokwane village		Frequency	Percent	Valid Percent
Valid	HDTV	24	48.0	48.0	48.0
	LCD	9	18.0	18.0	66.0
	3D	6	12.0	12.0	78.0
	SMART TV	9	19.0	18.0	96.0
	Digital TV	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Table 5.4

Table 5.4 indicates that in terms of the television ownership, the option with the

highest number of responses is the HDTV with 24 (i.e.48%) respondents in Rapotokwane village and 22 respondents (i.e.44%) of group related in Shayandima village. In Shayandima Village five households (i.e.10%) used the LCD-TV, three households (i.e. 6%) of the Shayandima group make use of use of the 3D television, 6 people used Smart-TV (i.e. 12%) of the group and 14 households (i.e.30%) used the digital-TV.

However, the findings in Shayandima village differed from the findings from Rapotokwane village. In Rapotokwane village nine homes use of the LCD-TV (i.e. 48% of the sample), six households (i.e. 12%) of the group used the 3D-Television, nine households (i.e.19%) used the Smart-TV and two households (i.e.4%) used Digital-TV. The results revealed that the most used television device to connect to the set top box is the HDTV with 24 households (i.e.48%) in Rapotokwane and 22 households (i.e.44%) in Shayandima. This shows that the STBs connect to the advanced smart televisions. The study also attempted to establish what the respondents mostly use television for.

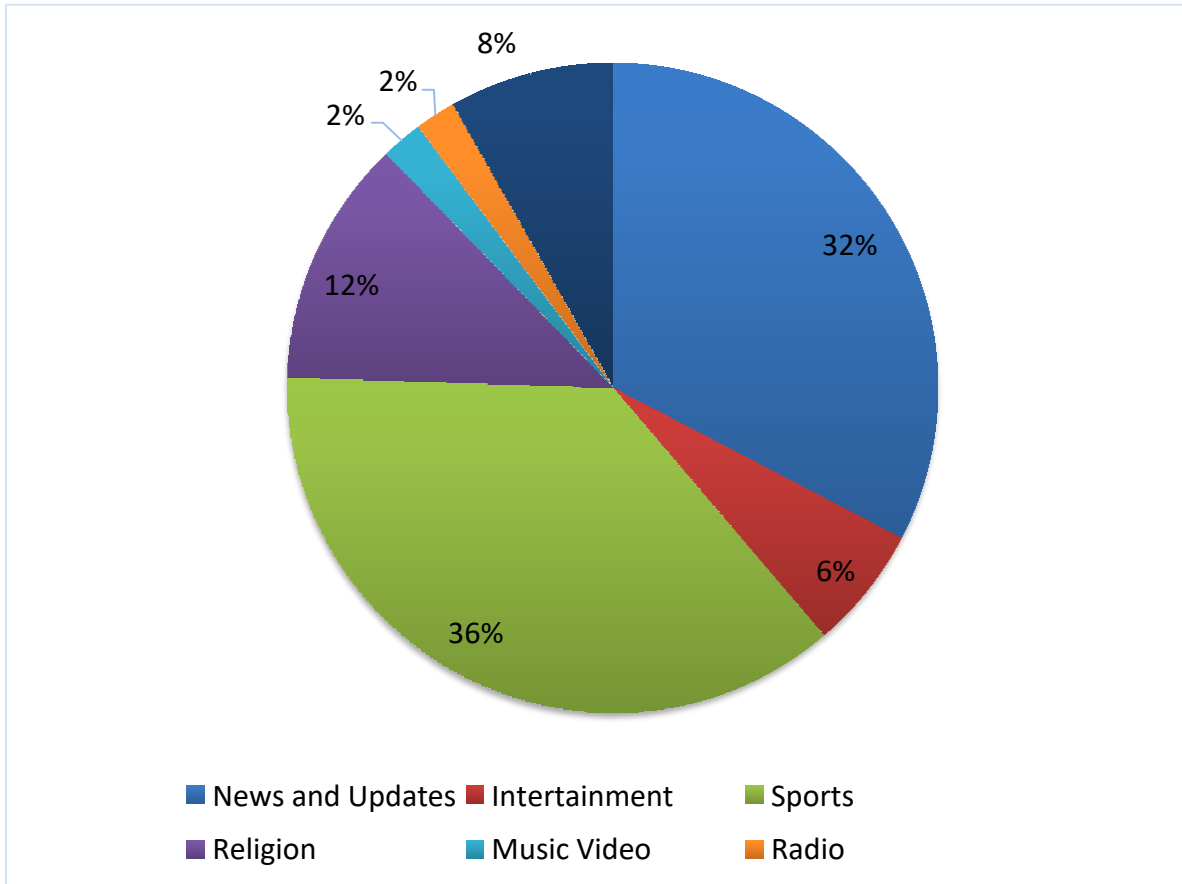
Table 5.5 television programs watched using the set top boxes

Shayandima Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	News and updates	16	32.0	32.0	32.0
	International News	1	2.0	2.0	34.0
	Entertainment	3	6.0	6.0	40.0
	Sports	18	36.0	36.0	76.0
	Religion programs	6	12.0	12.0	88.0
	Music Video	1	2.0	2.0	90.0
	Radio	1	2.0	2.0	92.0
	information Broadcasted	4	8.0	8.0	100.0
	Total	50	100	100	

Rapotokwane Village					
Valid	News and updates	22	44	44.0	44.0
	International News	2	4.0	4.0	48.0
	Entertainment	1	2.0	2.0	50.0
	Sports	17	34.0	34.0	84.0
	Religion programs	4	8.0	8.0	92.0
	Music Video	1	2.0	2.0	94.0
	Radio	2	4.0	4.0	98.0
	Anything Broadcasted	1	2.0	2.0	100.0
	Total	50	100.0	100.0	
Total	50	100.0			

In Shayandima Village the results indicate that, out of 50 respondents, 16 respondents (i.e. 32% of the Shayandima group) used the STBs to watch news and updates, three people used the STB to watch entertainment shows, 18 people used the STB to watch sport programs, six people used the STB to watch religious programs, only one person used the STB to watch music video one person also used the STB to listen to radio and four persons used the STB to watch information broadcasted that is broadcasted.

Figure 5.6 Television Programs Watched Using the STB



In Shayandima Village the results indicate that, out of 50 respondents, 16 respondents (i.e. 32% of the Shayandima group) used the STBs to watch news and updates, three people used the STB to watch entertainment shows, 18 people used the STB to watch sport programs, six people used the STB to watch religious programs, only one person used the STB to watch music video one person also used the STB to listen to radio and four persons used the STB to watch information broadcasted that is broadcasted.

In Rapotokwane Village, the results indicated that, out of 50 respondents, 22 respondents used the STBs to watch news and updates, one person used the STB to watch entertainment shows, 16 people used the STB to watch sports programs, four people used the STB to watch religious programs, one person used the STB to watch music video, two people used the STB to listen to radio programs and one person used the STB to watch information broadcasted.

The results reflect that majority of the respondents in both villages used the set top boxes to watch sports and news updates. The study sought to determine how effective is the digital terrestrial television compared to the analog broadcasting. A total of 100 respondents answered the questions, 50 respondents from each village. Respondents were asked about the effectiveness of the DTT and the set top box, Majority of the respondents maintained that the digital terrestrial television is very effective compared to the analogue broadcasting.

The study further sought to establish the effectiveness of the DTT. On 4-point Likert Scale where 1= effective, 2= Very effective, 3 Neutral and 4= not effective, the respondents were required to rate their level of agreement to the various aspects of obtaining the digital infrastructure in relation to the effectiveness of Digital Migration.

Table 5.6 A summary of Findings: STB Effectiveness

Shayandima					Cumulative
Village		Frequency	Percent	Valid Percent	Percent
Valid	Effective	5	10.0	10.0	10.0
	very Effective	43	86.0	86.0	96.0
	not effective	2	4.0	4.0	100.0
	Total	50	100.0	100.0	
Rapotokwane					Cumulative
Village		Frequency	Percent	Valid Percent	Percent
Valid	Effective	12	24.0	24.0	24.0
	very Effective	34	68.0	68.0	92.0
	not effective	4	8.0	8.0	100.0
	Total	50	100.0	100.0	

Table 5.6 illustrate the effectiveness of the set top boxes at the two villages, Shayandima and Rapotokwane.

In Rapotokwane village 12 out of 50 respondents indicated that digital migration

is effective, 34 respondents indicated that the set top boxes are very effective and eight respondents out of 50 respondents states that the set top boxes are not effective.

Figure 5.7 STB Effectiveness

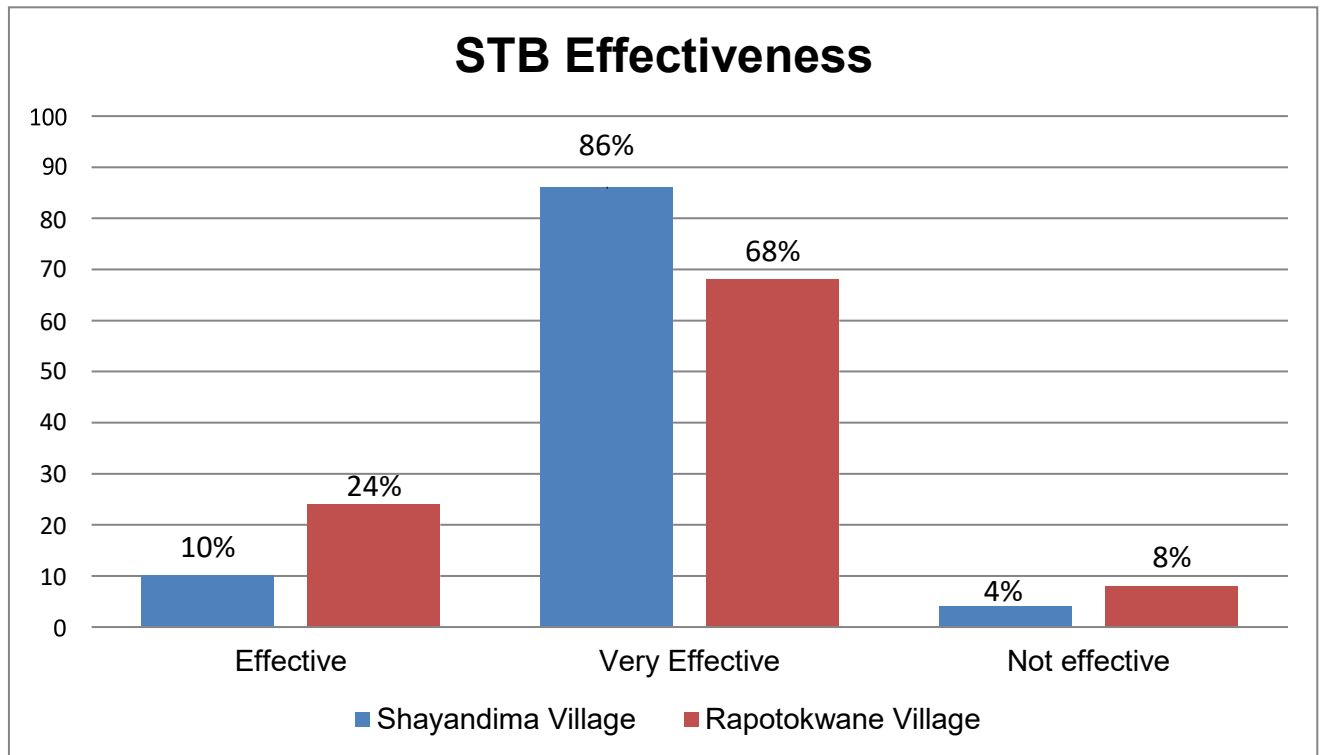


Figure 5.7 illustrate the effectiveness of the set top box at the two villages, Shayandima and Rapotokwane. In Rapotokwane village out of 50 respondents indicated that digital migration is effective, 34 respondents indicated that the set top boxes are very effective and eight respondents out of 50 respondents states that the set top boxes are not effective.

However, in Shayandima Village five people indicated that the set top box were effective, 43 respondents indicated that the set top boxes were very effective and four people states that the set top boxes are not effective. The results showed that the majority of the respondents states that the Set Top Boxes were very effective. 77 respondents out of 100 respondents, 17 respondents out of 100 respondents stated that the set top box were not effective and only 6 respondents who indicates that the Set Top Box is not effective at all.

Table 5.7 Respondents Reasons for Migrating from analog to digital broadcasting

Rapotokwane Village		Frequency	Percent %	Valid Percent%	Cumulative Percent %
Valid	Affordability	27	54.0	54.0	54.0
	Availability	10	20.0	20.0	74.0
	More channels	7	14.0	14.0	88.0
	Reliability	4	8.0	8.0	96.0
	Internet Connection	2	4.0	4.0	100.0
	Total	50	100.0	100.0	
Shayandima Village		Frequency	Percent %	Valid Percent %	Cumulative Percent %
Valid	Affordability	31	62.0	62.0	62.0
	Availability	8	16.0	16.0	78.0
	More channels	10	20.0	20.0	98.0
	Reliability	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Table 5.7 illustrate the reasons stated by the respondents as digital migration in these two villages: Shayandima and Rapotokwane in Limpopo Province.

In Rapotokwane the findings revealed that 27 out of 50 respondents indicated that they migrated because of the affordability of the set top box, 10 respondents indicated that they migrated because of the availability of more television channels, seven people have migrated because of access to a variety of programs, four respondents indicated that they migrated because of the reliability of the technology and two respondents indicated that they migrated because of access to the internet connection services.

Figure 5.8 Respondents Reasons for migrating from analog to digital

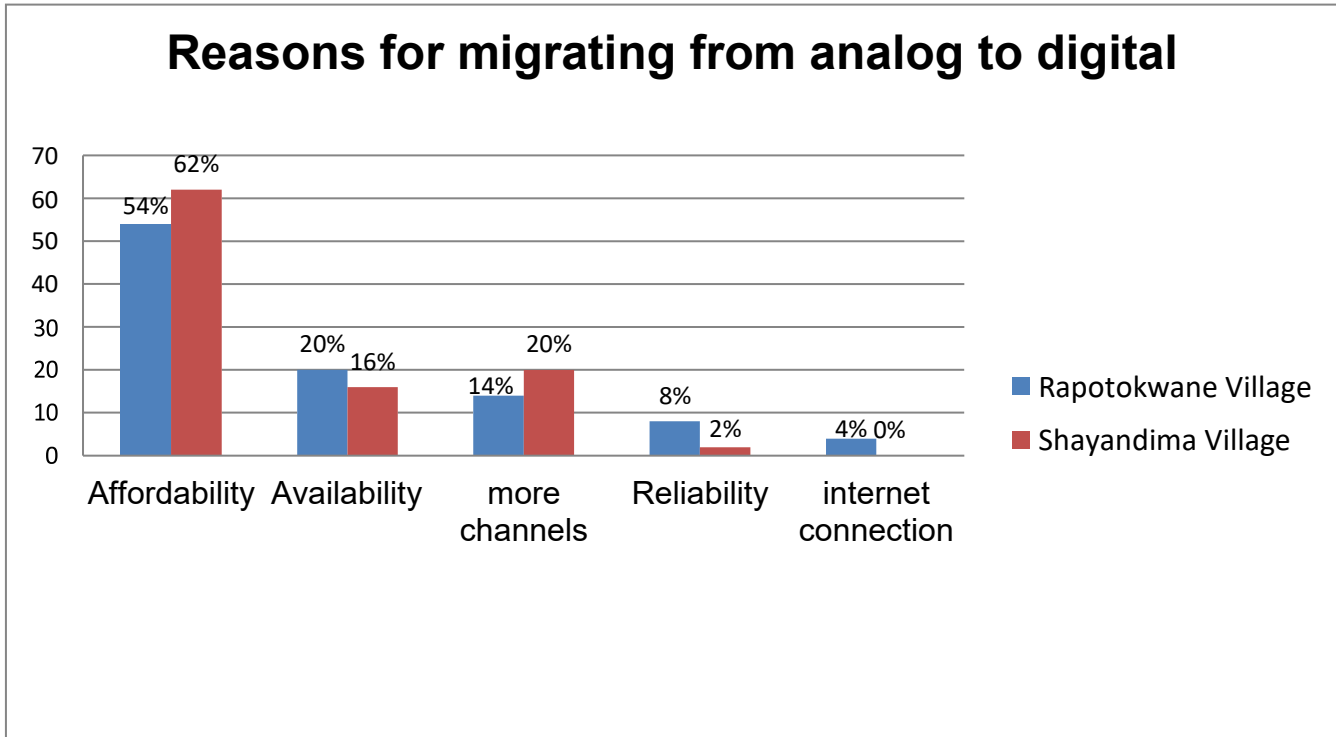


Figure 5.8 illustrate the reasons stated by the respondents as digital migration in these two villages: Shayandima and Rapotokwane in Limpopo Province.

In Rapotokwane the findings revealed that 27 out of 50 respondents indicated that they migrated because of the affordability of the set top box, 10 respondents indicated that they migrated because of the availability of more television channels, seven people have migrated because of access to a variety of programs, four respondents indicated that they migrated because of the reliability of the technology and two respondents indicated that they migrated because of access to the internet connection services.

In Shayandima village the findings discovered that 31 respondents out of 50 respondents migrated because of the affordability of the broadcasting system (i.e.62% of the sample), eight respondents indicated that they migrated because of the availability of more television channels, 10 respondents indicated that their migration was influenced by the variety of television programs on the DTT and only one respondent indicated that they digital migration was swayed because of the reliability of the broadcasting system. It should be noted that in Shayandima village respondents did not choose option 5= for the internet connection. The

results indicated that the STB was very affordable and that was the reason why most of the people have migrated was also because of the availability of more channels.

The Results Show a summary of the findings. In a recent research by (Njogu, 2016) on the average the television viewers in urban areas spends an average time of 3.6 hours watching television weekly, compared to the rural areas where they spend 3.4 hours daily. There is a difference of 0.2 hours.

Table 5.8 Television Viewership Hours per Day

Shayandima Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 Hours	16	32.0	32.0	32.0
	3-4 Hours	21	42.0	42.0	74.0
	5 hours and above	13	26.0	26.0	100.0
	Total	50	100.0	100.0	
Total		50	100.0	100.0	
Rapotokwane Village		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 Hours	20	40.0	40.0	38.0
	3-4 Hours	10	10.0	10.0	64.0
	5 hours and above	20	40.0	40.0	100.0
	Total	50	100.0	100.0	

Table 5.8 illustrate the television viewership of the respondents, Television was viewed daily by 16 people in Shayandima village, watching television for 1-2 hours daily, 20 people in Rapotokwane village watched television between 2-3 hours daily and 21 people in Shayandima Village who watch television between 2-3 hours daily. There were 13 people who spent more than five hours watching

television in Shayandima, and we have 10 people spend over five hours watching television in Rapotokwane village

Figure 5.9 Television Viewership Hours per Day

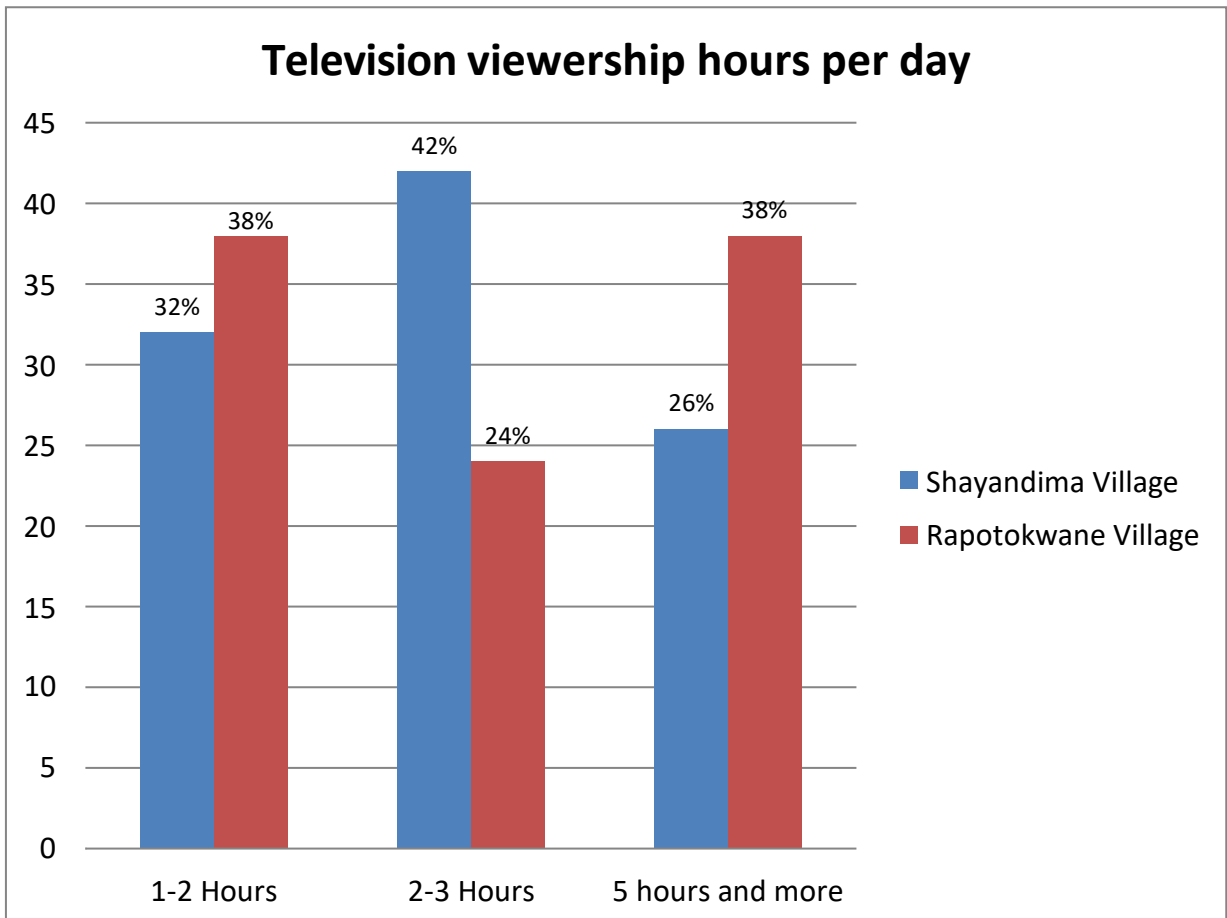


Figure 5.8 also illustrate the television viewership of the respondents in a graph form, Television was viewed daily by 16 people in Shayandima village, watching television for 1-2 hours daily, 20 people in Rapotokwane village watched television between 2-3 hours daily and 21 people in Shayandima Village who watch television between 2-3 hours daily. There were 13 people who spent more than five hours watching television in Shayandima, and we have 10 people spend over five hours watching television in Rapotokwane village.

5.9 Question 4 Documents required by the government from the respondents in order to be able to receive the set top box, According to the respondents, the study found that there were few documents that were required by the government when applying for the STB which were follows.

- a) Identity copy
- b) Proof of income or pay slip which indicates your monthly salary
- c) Affidavit which states that you earn less than R3 000.00 monthly or you are not working
- d) Proof of residence;
- e) Proof of television ownership; and
- f) TV Licence

These findings indicated that in order for one to be able to receive the set top box from the government the above mentioned documents were required and they had to be submitted to the nearest post office for the application of the DTTs.

5.3 SUMMARY AND OUTLINE OF CHAPTER 6

Chapter 5 provided the data analysed for the research based on the information collected from respondents residing at the two selected villages that use of the set top boxes for digital broadcasting in Limpopo Province. These responses were gathered through the administration of questionnaires, which is included at the end of the dissertation as Appendix 3. The questionnaire consisted of two sections. Section A asked the respondents about personal information while Section B focused on the respondent's views on broadcasting digital migration, why they migrated from analogue to digital broadcasting, whether digital broadcasting was effective compared to the analog.

The purpose of asking these questions was to achieve the aim of the study and to answer the research questions. These operate around exploring the effectiveness of the digital migration at Shayandima and Rapotokwane villages in Limpopo Province.

In conclusion, Chapter 6, provides a critical evaluation of the research with a view to concluding the study and illustrating the way the research goals were achieved. Challenges experienced during the actual field research process are also briefly stated and recommendations are made for further research in this area of study. Chapter 6 also discusses the shortcomings of the study before the final study conclusions are stated.

6. CHAPTER 6: SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The previous chapter presented collected data and discussed findings. This chapter provides a summary of those findings. Further, it discusses the findings and provides recommendations and a conclusion of this study by emphasizing specific areas that the government (Department of Communications and Digital Technologies) can consider in order to accelerate and advance the process of digital migration in South Africa. It also proposes recommendations for future study. The chapter also offers conclusions to the study, which are reflections of the quantitative findings that were produced in chapter 5. It further offers an overview of the aims and objectives of the study that were mentioned in Chapter 4 Research Methodology.

6.2 SUMMARY OF THE STUDY

The summary of the findings of this study are presented according to the objectives of the study. The purpose of the study was to investigate the effectiveness of digital terrestrial broadcasting in South African rural areas and establish new findings that will contribute knowledge to the South African broadcasting sector. This section further summarizes the study findings as per the study objectives. Inclusive of most of the respondents, it was stated that the government would have done much more to aid the broadcasting digital migration, from subsidizing costs further to ensure proper awareness of the digital migration project.

6.2.1 The Effectiveness of the Set Top Box

The findings of the current study established that respondents generally had a positive perception of broadcasting digital migration. From this study, it emerged that the majority of respondents (90% of the sample) in Rapotokwane and Shayandima villages agreed that broadcasting digital migration and the use of the

set top boxes are very effective. Only 10% of the respondents indicated that the STBs are not effective, and this could be because the operational technological techniques differences between the analog and digital broadcasting. This is an indication that there is a need for South Africa to migrate from analog to digital broadcasting systems.

Digital broadcasting provides not only the space within which new and cutting edge technologies can be developed however it has potential to directly contribute to the socio economic development and the improvement of the quality of life of all the people in South Africa.

6.2.2 The Use of the Set Top Box System to Watch Television Programs

The current findings of the study noted that the respondents in both villages use the set top box to watch different television programs such as sport, religious entertainment news and information updates, etc. Generally, most of the respondents use television to watch news and other programs in both national and international content, followed by sports and radio programs. This also indicates that the consumers have choices in terms of selecting the television programs of their own because of preferences.

Broadcasting digital migration will completely change South African television industry by bringing so much to South Africans through more choice of channels and content. Digital migration will revolutionise the world broadcasting and it will leave the consumers with more channels to choose from.

change the South African television landscape. In support of the findings above, digital television is capable of changing the landscape of the television industry by opening up the future through watching educational, entertainment, sport, information and cultural programmes.

6.2.3 Reasons for Broadcasting Digital Migration

It has been revealed by this study that consumers have different reasons behind their migration from analog to digital television. The current study found that the respondents use digital television because of five different reasons namely: affordability, availability of more television programs, variety of channels, reliability and internet connection.

The study revealed that majority of the set top boxes consumers have switched from analog to digital broadcasting because of its affordability. The study found that 27 respondents out of 50 (54%) in Rapotokwane migrated because of the affordability and subscription of the set top box. Furthermore, 62% of respondents in Shayandima migrated from analog to digital broadcasting because of the affordability of the set top box.

From the above findings it is clear that the once-off subscription of the set top box played an important role in influencing the consumers or the viewers to migrate because it is very affordable compared to other broadcasting systems where one pays an expensive monthly fee (e.g. Multichoice DSTV).

Use of more set top boxes by most members of the society will ensure that there is adequate circulation of information and also ensures that there is a maximum participation in civic life.

6.2.4 Television Viewership Hours

It has been revealed by this study that the STB consumers spend different times watching television daily. This study found that the majority of the respondents, 36 or i.e.72% of the respondents, spend between one to two hours watching television, followed by 33 respondents or i.e. 66% of the sample, who spend over five hours watching television: The study also found that 31 respondents 62% of the sample spend between two to three hours watching television.

6.2.5 Documents Required in Purchasing the Set Top Box

It has been revealed by this study that the STB consumers were requested to submit documents to their post offices in order for the government to select households or people who qualify for the STBs. The current study found that there are six documents required from each household in order for the consumers to qualify to receive the set top box device. The following Documents were required:

- a) ID copy;
- b) Proof of income or pay slip;
- c) Affidavit;
- d) Proof of residence;
- e) Proof of television ownership; and a
- f) TV Licence.

These findings indicate that in order for the consumers to be able to receive the set top box from the government the above-mentioned documents were a necessity and had to be submitted to the nearest post office for the application of the DTTs.

6.3 Recommendations

6.3.1 Recommendations for Government

- I. Government should insure that the set top boxes are available through fiscal and other low-cost measure; in order to make it easier for the society to access the set top boxes.
- II. The Department of Communications and Digital Technologies should be able to assign frequencies to signal distributors and fasten the process of the speed frequency allocation.
- III. The Independent Communications Authority of South Africa (ICASA) should provide appropriate regulation and enticements towards the implementations of digital broadcasting.
- IV. It is true that in South African broadcasting digital migration is a challenge because South Africa failed to meet the ITU (International Telecommunication Union) deadline of July 2015 due to lack of enough funding.
- V. The DCDT should find a harmonious mechanism to resolve the standoff between the broadcasting policy and the merging of DCDT with broadcasting council so as to have one point of focus in migration other than court disputes.
- VI. The DCDT should provide appropriate regulation and incentives towards the implementations of digital broadcasting which will force people to migrate from analog to digital broadcasting.
- VII. The DCDT should make sure that the South African citizens know about the digital migration processes.
- VIII. Given the fact that a significant number of the set top boxes in Limpopo Province villages spend most of their time watching television, therefore there is a need to further strengthen local content by encouraging more TV stations to increase on local films content, especially among the channels offered on the DTT.
- IX. There could also be a consideration to revise the price of the STB and

payments requirement by decreasing the payments to ensure that a huge number of South African households can migrate from analog to digital broadcasting.

- X. Government should institute measures to ensure the availability of set top boxes and digital technology access country wide at time of switch over date set to be 2020.

6.3.2 Consumers Recommendations for Television Consumers

- I. Consumers are very sensitive to technological changes; therefore, to avoid technophobia, consumers should be given adequate and timely information from the post office and local municipals on broadcasting migration implementation timeframe to enable them to prepare for change.
- II. The digital migration board should respond to public concerns even beyond the switchover date as well as all concerns may not be anticipated in time.
- III. Government informing a section of people however, consumers education should involve broadcasters, retailers and other role players in the broadcasting industry as well as local users who may not be able to access media where current information dissemination about the transition.
- IV. The implementation strategies should target vulnerable groups such as, marginalised areas, people living with disability and the poor to ensure that they are included by educating them about the broadcasting digital migration process hence social responsibility.

6.4 LIMITATIONS OF THE STUDY

In Chapter 4 the shortcomings of the research were discussed. The main limitation of this study was the change of locations. As a result, the study had to change two villages that the researcher aim to assess, viz, Dan village (Tzaneen)

and Tiyani village (Giyani). The initial villages were changed because the post offices in those two areas did not manage to distribute the set top boxes to the community in time. However, the set top boxes were there in the post office. Furthermore, the two villages were replaced by two villages in Limpopo viz Rapotokwane Village (Bela-Bela) and Shayandima Village in (Thohoyandou).

The two villages were changed because the post offices in those two areas did not manage to distribute the set top boxes to the communities. However, the set top boxes were there in the post offices.

Time constraining was also a limitation to the conducting the research effectively and efficiently. This was because the questionnaires were written in English and some of the respondents did not understand the questions or the language used. The researcher had to interpret most of the questions to the respondents who had language barriers.

6.5. CONCLUSION

This section of Chapter 6 presents the conclusion of the study against backdrop of the study objectives. The purpose of the study was to investigate the effectiveness of broadcasting digital migration in two villages in Limpopo Province.

The study also focused on identifying the benefits of the STBs. For broadcasting consumers located in the selected villages It should be pointed out that, South Africa is experiencing a comprehensive range of technology innovation such as broadcasting digital migration, efforts of deploying technology to communities to bridge the digital divide, as well as constructing social cohesion and common national identity, eliminating poverty and creating new job opportunities because the STBs are installed and manufactured in South Africa. Many benefits have been identified with the digital technology.

From the current study it was discovered that digital television offers good sound quality and produces clear pictures. It also allows multiple channels to be viewed

by consumers. Signals are less prone to distortion. The advantages are numerous which includes receiving quality signals, clear pictures, quality sound and access to more television channels. However, digital technology is also confronted with some challenges; Most people are not aware of what the process of broadcasting digital migration is about.

Nevertheless, South Africa cannot be said to be catching up her deadline when is compared to other advanced countries such as Australia and countries of Europe. Therefore, South African broadcasting policies should be consistently followed by the department of communication and digital technologies. The government should come to the aid of parties involved by way of funding and subsidy process.

The South Africa government has the potential to contribute significantly towards addressing the challenges of broadcasting digital migration in South Africa. Therefore, the government of South African has acknowledged broadcasting digital migration as a national priority. The broadcasting digital migration process in South Africa is being successful because it has already started in the Eastern Cape, Limpopo, Gauteng and Mpumalanga Province. It is necessary for the government to have a clear policy and implementation plan. It should also be noted that broadcasting digital migration will entail concerted efforts to increase the congruence of generating digital content.

Globally, the future development of the broadcasting industry has been impacted by the process of convergence and digitalisation of communication technologies. These innovations and data compression impact not only on commercial broadcasting operations, but also bring to consent the new and emerging commercialize based on provision of innovative digital applications and services. The findings indicate that digital television has brought so much more to these two villages in Limpopo, South Africa through more choice of channels and content.

Thus, the digital television content delivers more informational, educational, cultural, sport and entertainment programming. It is exciting that South Africa will

be amongst the most technologically advanced countries in the world by going digital in a way that will meet its unique challenges. Digital migration is set to accelerate economic growth, thus assisting in the attainment of the development goals predominantly South African quest to eradicate poverty. To ensure that the goals of wider access to broadcasting and information technology as well digital inclusion are achieved. It is crucial that government reduces the high national digital divide by accelerating the Go Digital Campaign. This study has indicated that the broadcasting digital migration is indeed effective in the broadcasting sector of rural villages of Limpopo province because villages found the advanced digital broadcasting services, very affordable and easy to maintain.

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APPENDICES

APPENDIX 1: ETHICAL CLEARANCE CERTIFICATE

TITLE: Broadcasting Digital Migration in South Africa: Case study of two villages in Limpopo Province of South Africa.



University of Limpopo
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TURFLOOP RESEARCH ETHICS COMMITTEE
ETHICS CLEARANCE CERTIFICATE

MEETING: 05 November 2019

PROJECT NUMBER: TREC/389/2019: PG

PROJECT:

Title: Broadcasting Digital Migration in South Africa: A case study of two villages in Limpopo Province of South Africa

Researcher: ML Mocheke

Supervisor: Prof NC Lesame

Co-Supervisor/s: N/A

School: Languages and Communication Studies

Degree: Master of Arts in Media Studies

PP. Masoko
PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

- Note:**
- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
 - ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
 - iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Finding solutions for Africa

APPENDIX 2: INFORMED CONSENT FORM FOR PARTICIPATING IN A RESEARCH STUDY

Candidate: Mr Mocheki

Student number: 201310298

Department of Communication, Media and Information Studies

University of Limpopo

Private Mail Bag X 1106

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0727

E-Mail Address: mahlatsemocheki@yahoo.com

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You are cordially invited to participate in a MA field research to assist the researcher to complete the study. You are requested to record your agreement to participate in this study in this consent form which also serves as a letter of request. If you agree to assist this researcher in this study, please indicate your agreement to participate below.

I -----(DO NOT WRITE YOUR FULL NAME, YOU CAN ADD A NAME) agree to volunteer to participate in this research project from the University of Limpopo. I understand that this research is designed to gather information about broadcasting digital migration (BDM) in South Africa, Limpopo Province in Shayandima village in Thohoyandou and Rapotokwane village in Bela-Bela, and to identify the effectiveness of the television set top boxes installed in these areas.

Moreover, I understand that:

1. My participation in this research is voluntary, and that I will not receive financial compensation for my participation. I may withdraw my

participation in a case of discomfort, and my withdrawal will not affect my relationship with the researcher.

2. I have the right to decline to answer certain questions if I am uncomfortable with any question.

3. My responses to the questions will be recorded at my permission only if I agree to the recording process. However, if I am not comfortable about recording my responses, I will not answer the questions and the researcher will have to write down my responses himself.

4. Information that will be obtained from me in the form of views will be strictly used for research purposes and I have a right to receive a copy of the final research once it is completed.

5. I have a right to be anonymous and the information that I have provided to the researcher should remain confidential.

Participant

Location of village

Date

I, Mahlatse Mocheki, have clarified the scope of the research to the participant and explained his/her rights concerning his/her participation in the research project. He/ she freely agree to participate in this study.

Kind regards,

Researcher

Signature

Date

APPENDIX 3

Questionnaire

The study is about Broadcasting Digital Migration in South Africa case study of two villages in Limpopo, South Africa. This research is about how effective broadcasting digital broadcasting in South Africa and is a case study of Rapotokwane village in Bela-Bela and Shayandima village in Thohoyandou. Please select answers that applies to you from the options provided. Please add an X in the answer applying to you.

1. What is your age group?

Bellow 20 years	1
20-25	2
26-30	3
31 and Above	4

2. What is your gender?

Female	1
Male	2

3 What is your location

Rapotokwane Village	1
Shayandima Village	2

4. What Documents are required for you to receive the set top box? Please write your answers in the space provided bellow.

5 What are the benefits of the television set top box? Please write your answers in the space provided hereunder.

6 How many channels do you have access to through the Set Top Box?

7 When did you start using the set top Box?

8 What are the features of the set Top Boxes? Mention any (3) in the space bellow.

9 How long do you wait to renew your set top box?

One year	1
----------	---

2-3 years	2
5-4 years	3
Six and more	4

10 What programs do you watch using your use your set top box? Mention one in the space bellow.

11 What are the challenges that you come across when you are making use of the STBs? Explain in the space provided under.

12 What reasons led you to connect from analog to digital broadcasting system? Explain in the space provided under.

13 Did you pay to receive this broadcasting system?

Yes	1
No	2

14 If yes to Question 13 above, how much did you pay

R100- R200	1
R300- R400	2
R500- R600	3
R700- R800	4
R900- R1000	5

15 Does the Set Top Box have a catch-up programs?

Yes	1
No	2

16 How is the set top box service?

Excellent	5
Good	4
Average	3
Poor	1

17 Can you access the internet through the STB?

Yes	1
No	2

If yes to question 16, what are the requirements for you to access the internet.

18 How effective is the STB compared to the old broadcasting system?

a. Effective	3
b. very effective	2
c. Not effective	1

19 What are the advantages of the Set Top Box?

20 Do you think it would be a good initiative for all the South African citizens to migrate to digital broadcasting?

Yes	
No	

21. Please give reasons for your answer to 18.

22 What type of a television are you using to connect to the STB?

Digital television	1
LCD	2
HD-TV	3
3D	4
Smart TV	5

Thank you for your participation.