

**THE EFFECT OF DIGITAL BROADCASTING MIGRATION
ON TELEVISION VIEWERSHIP: A CASE OF RUBAGA
DIVISION, KAMPALA DISTRICT**

By

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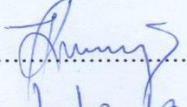
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DECLARATION

I, Kamunyi, Jane Mercy Muthoni, hereby declare that this research is a result of my original work and that it has never been presented to any University for any academic award. Where other works have been used, this has been acknowledged in the text or references.

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APPROVAL

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DEDICATION

This dissertation is dedicated to my lovely daughter Sandra Kirabo, the best gift anybody can ever wish for and my mother Mrs. Rosemary Igoki Kamunyi a woman who believes in me even when others think otherwise. Thank you mum.

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LIST OF ABBREVIATIONS

ASO	Analogue Switch Off
CEPT	Conference of Postal and Telecommunications Administration
COMESA	Common Market for Eastern and Southern Africa
DSO	Digital Switch Over
DTT	Digital Terrestrial Television
DTTB	Digital Terrestrial Television Broadcasting
DVB-TT	Digital Video Broadcasting for Terrestrial Transmission
DTV	Digital Television
FCC	Federal Communications Commission
FTA	Free to Air Transmission
GE-06	Geneva Agreement of 2006
GE-89	Geneva Agreement of 1989
GPS	Global Positioning System
HDTV	High Definition Television
ICAO	The International Civil Aviation Organization
IMT	International Mobile Telecommunications Services
ISDB	The Integrated Services Digital Broadcasting
ISDB-T	Integrated Services Digital Broadcasting for Terrestrial
ITU	International Telecommunication Union, Geneva
ITU-R	International Telecommunication Union — Radiocommunication Sector
ITU-T	International Telecommunication Union — Telecommunication Standardization Sector
MHz	Megahertz
PANOS	Pan African Open Society
Pty or PTY	Proprietary Company
RF	Radio Frequency
RRC-04	Regional Radiocommunication Conference 2004
RRC-06	Regional Radiocommunication Conference 2006
RF	Radio Frequency
RR	Radio Regulation
SDTV	Standard Definition Television

ST61	The Stockholm 1961 Agreement
UBC	Uganda Broadcasting Corporation
UCC	Uganda Communication Commission
UHF	Ultra High Frequency
VHF	Very High Frequency

ABSTRACT

The study on the effect of digital broadcasting migration on television viewership was carried out in Rubaga Division. The study scope was the period after analog switch off on 17th June, 2015 to December, 2018. The aim was to understand how television viewers migrated, settled and have experienced the digital broadcasting benefits. The study assessed: the levels of knowledge about digital broadcasting migration; digital broadcasting migration process; factors that affected digital broadcasting migration process; and factors hindering digital terrestrial television viewership. The study was descriptive mainly inclined to qualitative method. A total of 347 household head respondents and 15 key informants drawn from policy implementers, signal distributors and content providers, parliamentarian, judiciary and the academia were interviewed. The questionnaire and interview guide were used to collect data.

The study found out that under objective one: only 1.7 percentage of the respondents had knowledge about digital broadcasting migration. Objective two found out that 93 percentage of the respondents had migrated to digital broadcasting. However, 51.7 percentage of the respondents indicated that they had no choice but to migrate. Objective three found that use of equipment posed as major challenges to the respondents such as using the remote control 29 percentage; setting up the new television set, 28 percent; mounting the antenna 22 percentage and connecting the television set with the decoder. 21 percentage. Objective four found out that 69.1 percentage of the respondents were not on air continuously due to inability to afford subscription fee.

The study conclusions indicated that knowledge levels about digital broadcasting was low and the diffusion of the digital terrestrial television was slow. The costs of subscriptions were not sustainable by majority of the respondent's with viewers not on air continuously. The study recommended that government carry out an assessment to identify the challenges in the digital terrestrial television viewership, harmonize and standardize the pricing of decoders and subscription fees against channels provided. The signal and content providers to play their roles.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

A treaty signed at the conclusion (17th June, 2006) of International Telecommunications Union (ITU) Regional Radiocommunication Conference (RRC-06) in Geneva heralded the development of ‘all-digital’ terrestrial broadcast services for sound and television (TV). The conference resolved that the switch over from analogue to digital broadcasting services should be effected by 17th June, 2015. The process commonly referred to as Digital Migration involved converting the radio and television broadcast signals from analogue to digital technology. The most important achievement of the conference was that the new digital Plan would provide not only new possibilities for structured development of digital terrestrial broadcasting but also sufficient flexibilities for adaptation to the changing telecommunication environment (ITU RRC06).

The transition period was from 17th June 2006 to 17th June 2015 and according to Berger, (2010), the main reason why digital migration was targeting TV long before radio, and prioritizing the transmission stage over and above the production and reception stages, was because the switch to digital television signals was the one big thing that would free up lots of space on the airwaves. Furthermore, the digitalization was to represent a major landmark towards establishing a more equitable, just and people-centered information society; because the digital switchover was to leapfrog existing technologies to connect the unconnected in underserved and remote communities and close the digital divide (Berger, 2010).

For purposes of regulations, ITU divides the world into three regions, Region 1 (Europe, Africa, Middle East and northern part of Asia), Region 2 (Americas) and Region 3 (the southern part of Asia, Australia and Oceania), each with its individual frequency plans allocations and

regular modifications (Struzak, 2003). Globally countries were at various stages of switching over to digital broadcasting (Brown & Picard, 2004). Some countries had achieved Analog Switch-Off (ASO) (Nyman-Metcalf & Richter, 2010), (Haeberlé, 2014), while others had initiated the digital broadcasting process (ITU-R, 2008). The European Commission proposed the beginning of 2012 as the deadline for ASO throughout the European Union and 22 of the 27 EU Member States achieved ASO by the end of 2012 except Hungary and Romania slated to achieve ASO by 2015 (Laven, 2014).

Whereas, several of the pioneering countries in digital technology faced crises at some point, “newcomers were influenced not only by domestic dilemmas and disputes but also by regional and international forces (IRIS *plus*, 2010).” It was thus, important for Africa to adopt realistic time schedules, noting that in Europe the period between Digital Terrestrial Television Broadcasting (DTTB) launch and completion of analogue TV switch-off ranged from 3 to 14 years (ITU Guidelines, 2010).

1.2 Contextualizing the Digital Broadcasting Migration

Discussions about digital broadcasting migration are incomplete without the mention of radio frequency spectrum, which according to a French jurist is technology, industry, money, culture, and power (Dogan, 1992). The radio spectrum is the range of frequencies used for wireless computer networks, bluetooth, GPS, police dispatch and countless other general and specialized application that we use every day. (ITU Radio Frequency Allocation). To avoid conflicts and interferences, the radio spectrum is carved up into different portions called frequencies and allocated to one or more series to enable co-existence with each other and ease of coordination. The coordination and regulation worldwide is done through the International Telecommunications Union (ITU) (ICAO, 2009). The radio frequency spectrum has been divided into a number of specific frequency bands allocated to specific services in each of the three regions (Struzak, 2003).

The main driver of digital broadcasting migration was global increased demand for radio frequency spectrum and the primary objective was to achieve digital dividend from the switch-over (IRIS plus, 2010), which would be realized only when the migration process was completed. The highest demand for radio frequencies was from developed economies experiencing exponential expansions in mobile communications both terrestrial and satellite and in sound and television broadcasting. Therefore freeing up airwaves, was not of urgent relevance in the conditions and needs of Africa but the way that developed country agendas impact on globalization, international regulation and aspirational trends (Berger, 2010:18).

The Regional Radiocommunication (RRC06) meeting for planning the digital terrestrial broadcasting services in parts of region 1 and 3 which comprise countries in Europe, Africa and part of Asia, revised Stockholm 61 Agreement, set the transition period from 17 June 2006 to 17 June 2015 after which the analogue plan would be cancelled and not supported by ITU (ITU-RRC06). According to Laven (2014), countries seemed to be struggling especially in many in Africa which appeared less prospective of achieving ASO by 2015. Although, the ITU (2016) status of digital switch-over showed that countries had started switching off analogue TV services, Bozsóki (2016) indicated that 38 countries in Europe had completed their ASO against only 4 in Africa.

In Sub-Saharan Africa, Tanzania was the first country to switch off its analogue television signal on 31 December, 2012 (Berger, 2012). However, Tanzanian's pioneering switch-off was achieved at the expense of an appreciable number of viewers who lost access to TV for a time estimated at around 20 percentage in one city (Mason & Schuman, 2013). In Rwanda analogue switch off took place in July 2014, a year ahead of the June 2015 global deadline with 70percentage of TV households already having bought decoders (UBC Review Committee, 2016). The South African approach had been taken further by the government decision to subsidize 70 percentage of the cost of a set-top box for an estimated five million households

(out of nine million viewing households), who would otherwise not be able to afford the device (estimated retail cost \$60 - \$100 for a basic box) (Berger, 2010).

According to Media Institute of Southern Africa report (MISA, 2015), information relating to digitization process in Zimbabwe was inadequate in the country, and there was lack of public information on the process and inconsistencies of government position and timelines on digitization. Most West African countries adhered to ITU analog switch off with majority of the North African countries opting for the 2020 switch off date (ITU, 2006). Kenya on the other hand began Digital broadcasting migration in 2006 but faced numerous challenges, ranging from stakeholders' misunderstanding, politicization of the process for self-interests and gains by terrestrial titans such as the media regulatory authorities and the media houses (Nbonye et al, 2015).

In Uganda, the official switch off date set by the Uganda Communication Commission (UCC) was July 31, 2014 (UCC, 2012). According to the Digital Migration Policy 2011, Uganda Broadcasting Corporation (UBC) was to be the sole Signal Distributor for the first 5 years of implementation, a position that would be reviewed after 5 years (Digital Migration Policy, 2011). The policy further envisioned the digital broadcasting migration benefits to include: a) efficient use of the frequency spectrum, a public and scarce resource; b) more channels and more diverse content delivered to the public; c) better picture quality; and, d) potential for special interactive services to cater for people with visual and hearing impairments such as audio description and subtitling, and e) e-government delivery.

However, according to Haeberlé (2014:15), the UCC had not acted swiftly in the process and was unlikely to meet its target for analogue switch-off at the end of the year. This situation had been envisioned earlier by Lugalambi (2010), that Uganda was not prepared as late as 2010, since the digital migration policy was not in place, until 2011. As the deadline approached, the UCC (2015) assessment report indicated that: a) out of the 36 analog

transmission sites owned by the public broadcaster, only 18 sites would be converted to digital sites and only one site located in the city Kampala had been converted to digital; b) out of the 27 analog television channels only 12 analog channels were in the digital platform.

Limited studies have been carried out to explain consumer (television viewers) experiences of the digital broadcasting benefits however, there are no specific information about how Ugandan television viewers perceived the digital broadcasting migration, experienced the transition period, adopted to the digital terrestrial television, and experiences of the envisioned digital broadcasting benefits, issues which this study sought to find out.

1.3 Statement of the Problem

Global Analogue Switch off (ASO) aimed at gaining spectrum efficiency which would result in consumer benefits (more choice in television channels and services) and industry benefits (new revenue streams and business models) (ITU, Guidelines, 2010). Uganda switch off Analog on 17th June, 2015 within the 60km radius took majority by surprise, thus eliciting a backlash from consumers, television broadcasters, human rights groups and politicians with some people protesting by carrying television sets to the UCC offices (Parliament Watch 2015).

A UBC Review Committee Report, 2016, indicated that lack of transparency and adequate public awareness marred the implementation process and that Uganda Communication Commission (UCC) had barely enough time to carry out all activities meant for awareness creation among the television viewers. These issues were attributed to the delay in the formation of digital migration policy in 2011, which was the main document in the implementation. This meant that there was limited time for adequate preparation for the digital broadcasting migration implementation. Further, the government of Uganda had promised to subsidize the digital set-top boxes, however, there was no information on how this promise was fulfilled (Githinji, 2014) and as Berger (2010) posits, that unless the end-users were made aware of the need to adapt to receive digital signals, the digital broadcasting migration process

was doomed to failure. It is upon this backdrop, that this study sought to understand how digital terrestrial television viewers migrated, settled and experienced the envisioned benefits of digital broadcasting migration.

1.4 General Objective

Overall, the study aimed at understanding how television viewers had migrated, settled and experienced the envisioned benefits of the digital broadcasting migration in Rubaga division, Kampala district.

1.4.1 Specific Objectives

- (i) To assess the levels of knowledge about digital broadcasting migration.
- (ii) To evaluate the Digital broadcasting Migration Process in Uganda.
- (iii) To establish factors that affected the digital broadcasting migration process.
- (iv) To find out factors hindering digital terrestrial television viewership.

1.5 Research Questions

- (i) What are the levels of knowledge about digital broadcasting migration?
- (ii) How was the digital broadcasting migration process carried out?
- (iii) What factors affected the digital broadcasting migration process?
- (iv) What factors were hindering digital terrestrial television viewership?

1.6 Definition of key Terms

Analogue Switch-Off (ASO): The process of turning off the analogue broadcasting signal and replacing it with a digital signal.

Broadcasting Service: A radiocommunication service which may include sound transmissions, television transmissions or other types of transmissions.

Digital Broadcasting Migration: The process by which television broadcasting services offered on analogue networks are transferred to digital based networks over a specific period.

Digital Switch Over: The replacement of analogue transmission to digital transmission reception. Particularly marked by the switching-off of analogue terrestrial transmissions on a planned basis, enforced by government.

Digital Dividend: The amount of radio spectrum made available by the transition of terrestrial television broadcasting from analogue to digital.

Frequency: The electromagnetic radio spectrum point, which is assigned by the Council to enable broadcast of services.

Integrated Services Digital Network (ISDN): The technology which makes it possible to transmit sound, data and images as digital signals over regular twisted-pair telephone line. Through ISDN technology, users can be connected to any type of network or service, telephone, teletext, fax, data and video.

Radio Spectrum: The range of frequencies used for wireless applications such as broadcast television and radio, cell phones, satellite radio and television, wireless computer networks, bluetooth, GPS, police dispatch and other general and specialized applications.

Radio Frequency: The allocation of radio spectrum to enable coordination and co-existence of users within the same services to mitigate interference.

Radio Frequency Spectrum: The entire range of electromagnetic communications frequencies, including those used for radio, radar, and television.

Telecommunication: Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

Television: A form of telecommunication for the transmission of transient images of fixed or moving objects.

Terrestrial broadcasting: A service that is broadcast from a transmitter situated upon the earth surface.

1.7 Scope of the Study

The study was carried out in December, 2018. The study aimed at finding out the experiences of television viewers on realization of digital broadcasting migration benefits. The study was conducted in Rubaga Division, Kampala District, one of the areas that experienced the initial switch-off of analogue and switch over to digital terrestrial television on 17th June, 2015. The study targeted men and women household heads within Rubaga division who had incurred costs in the digital broadcasting migration process.

1.8 Significance of the Study.

The rationale of this study is divided into three folds: First the study aimed at bringing out television viewers understanding of the digital broadcasting migration process; Second, the study further aimed at generating new knowledge about television viewers adoption of digital terrestrial television to the benefit of government and industry; the third significance of the study was to contribute to the existing literature on digital broadcasting migration and further generate lessons for further research.

1.9 Theoretical Framework

This study on digital broadcasting migration on television viewership in Rubaga division, Kampala district was guided by two theories: 1) the diffusion of innovations theory (DoI) by Rogers (1962), and 2) the knowledge gap theory by Tichenor et al., (1970). As stated by Machiavelli in (the Prince, 1515:15) “...*And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things.*” Having a new innovation is one thing but having it adopted and used is another.

Diffusion is the “process by which an innovation is communicated through certain channels over a period of time among the members of a social system”. An innovation is “an idea, practice, or object that is perceived to be new by an individual or other unit of adoption”.

“Communication is a process in which participants create and share information with one another to reach a mutual understanding” (Rogers, 1995). This in context fits in within the case under study where digital broadcasting is an innovation and the communication of digital broadcasting migration is supposed to be diffused to the television viewers.

Diffusion of Innovation Theory (DoI) (Rogers, 1962), takes place through a five-step decision-making process: 1) knowledge; 2) persuasion; 3) decision; 4) implementation; and 5) confirmation. According to Rogers (1962), an individual’s decision to adopt or reject an innovation are influenced by intrinsic characteristics of innovation which are relative advantage, compatibility, complexity or simplicity, trialability (how easily an innovation may be experimented with as it is being adopted), and observer-ability (the extent that an innovation is visible to others). The researcher relating to the above view argues that while television viewers in Uganda may be open to new innovations, consumer satisfaction is shaped by the process and issues that arise from it.

The researcher found that the knowledge and persuasion of the television viewers were not adequately addressed hence only 1.7 percentage had knowledge about digital broadcasting migration while 51.9 percentage indicated that they migrated to digital because they were left with no choice. This imply that the decisions for the implementation were not tied to the first important aspects of diffusions which are knowledge and persuasion.

The theory identifies three types of innovation-decisions, optional innovation-decision which is made by an individual who is in some way distinguished from others; collective innovation-decision, decision made collectively by all participants and authority innovation-decision, which is made for the entire social system by individuals in positions of influence or power. Researcher found out that 51.9 percent decision to migrate was based on authority innovation decision because they indicated that they did not have a choice but to migrate to digital broadcasting.

The theory further identifies different categories of adopters, the “Early Adopters” who possess the highest degree of opinion leadership. They are young, have higher social status and more financial lucidity. The second category is the “Early Majority” individuals who adopt an innovation after varying degree of time. They are slower in the adoption process, have above average social status and seldom hold positions of opinion leadership in a system. The third category is “Late Majority” individuals who will adopt an innovation after the average member of the society. They approach an innovation with a high degree of skepticism and after the majority of society has adopted the innovation. The “Late Majority” adopters have below average social status, very little financial lucidity, and hold very little opinion leadership.

The final category are the “Laggards” who are the last to adopt an innovation. They show little to no opinion leadership and typically have an aversion to change-agents and tend to be advanced in age. More so, Laggards typically tend to be focused on “traditions”, likely to have lowest social status, lowest financial fluidity, be oldest of all other adopters, in contact with only family and close friends, and hold very little to no opinion leadership.

This study found out that the area of study did not have leaders who possessed high degree of opinion leadership. According to one household *“it seems we do not have leaders although we elect them they only care for themselves”* this statement reflects the apathy of television viewers on their leaders.

A study carried out by Rhodes (2004) to analyze digital television using diffusion of innovation theory to better inform policy found out that while DTV provides many enhancements over analog television, consumer adoption had been very minimal. The lack of diffusion was attributed to a variety of variables that existed within the technology, market, and regulation of the innovation of DTV. Rhodes further asserted that Rogers’ diffusion of innovation theory along with modern scholarship provide a platform for analyzing digital

television to better understand consumer adoption of DTV; and to better understand why society has been slow to adopt this innovation.

The Knowledge Gap Hypothesis developed by Tichenor et al. (1970), postulates that: “As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, thus, the gap in knowledge between these segments tends to increase rather than decrease.” It is important to understand that societies are continuously being inter-linked through “globalization”. This means that decision made in one part of the globe affects the rest of the globe. The Knowledge Gap Hypothesis Theory posits that societies are not at the same levels of knowledge and therefore a gap is created between different categories of people. The central concept of the “knowledge gap,” is knowledge itself.

In view of this theory, the researcher found out that there were studies that had been carried out by the ITU to ascertain the viability of adopted to digital terrestrial television, these studies informed the Regional Radiocommunication meetings held in 2004 and 2006 that led to the decision for the ITU member states agreement on the deadline for the final switch off analog and switch over to digital by 17th June, 2015 and 2020 respectively. According to (ITU, 1969:26), Joint Study Group for television transmissions produced a well-documented Report, which supplemented digital methods for television measurements. The subsequent studies led to the culmination of the final decision on mandatory global switch over to digital terrestrial television in June, 2006 (RRC-04, RRC-06). However, while some countries in Europe and America took the initiative and adopted to the digital technologies (Brown & Picard, 2004:2), in Africa this issue had rarely been discussed or considered, except in rare countries such as South Africa (Berger, 2010:3). Whereas the knowledge gap is apparent in both the west and south societies, the exposure and financial capacities influence how individuals make different decisions on adoption of technology.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two presents a review of related literature on digital broadcasting migration and television viewership. The process of digital broadcasting migration has received significant focus by scholars prior and during the critical moment of transition (ITU, 2010). This is because digitalization of television has been seen as a means of enhancing the viewer's experience by enabling better quality viewing through wide-screen high definition pictures and sound, and interactive services (ITU-RRC-06). The literature reviewed included: television broadcasting in Uganda; level of knowledge about digital broadcasting migration; the digital broadcasting migration process; factors that affected the digital migration process and factors that hindered digital terrestrial television viewership.

2.2 Television Broadcasting in Uganda

The broadcasting media was under exclusive control of the government between 1953 and 1993. According to the Uganda Communications Commission's 2nd national electronic media performance study (2012), the channels of broadcasting grew from one television to 9 in 2004. A UCC report of 2017 showed that the number of operational television stations were 33. Since then, there has been a large increase in the number of private radio and television stations (ITU News July-Aug, 2009). According to Lugalambi, et al., (2010), television service in Uganda started in 1963, a year after the country became independent. During that period, post-independence governments retained control over both Radio Uganda and Uganda Television managed directly under the Ministry of Information. Uganda airwaves were liberalised before any (broadcasting) policy was developed" leading to "uncoordinated development of the broadcasting sector. For instance, Radio Uganda and Uganda Television were opened up to

competition from private players before a policy on their future was decided (UBC Report, 2016).

In 2005, Radio Uganda and Uganda Television were merged with the passage of the Uganda Broadcasting Corporation (UBC) Act, which purportedly created a ‘public broadcaster’ and became UBC Radio and UBC TV respectively.

According to UBC Review Committee Report (2016:59), “there were strong external interests that from time to time exerted unwarranted pressures on decision-making in the broadcasting sector”. However, the television broadcasting in Uganda changed significantly following the International Telecommunications Union (ITU) decision made at RRC-06 to migrate to digital television broadcasting technology from analogue to digital platform by 2015 in Africa, Europe, the Middle East and the Islamic Republic of Iran. ITU saw the digitalization of broadcasting as a means of establishing a more equitable, just and people-centered information society, leapfrogging ‘existing technologies to connect the unconnected in underserved and remote communities and close the digital divide (Lugalambi, 2010).

Understandably, the switch-over from analogue to digital broadcasting was expected to expand the potential for a greater convergence of services, with digital terrestrial broadcasting supporting mobile reception of video, internet and multimedia data. The government of Uganda, considered the consultation document the digital broadcasting migration strategy to be issued in April, 2009. This proposed that the country could make an earlier switchover, in December, 2012, and that at least one more signal distributor could be licensed in addition to the Public Uganda Broadcasting. There was however, recognition of the challenges that Uganda had to meet in order to migrate to digital broadcasting from the need for consumers to install set-top boxes, to harmonization with neighboring countries. (ITU News July-August, 2009).

2.3 Respondents Knowledge about Digital Terrestrial Television Migration.

Low levels of DTTV take up included; limited consumer knowledge of DTTV, technology fatigue by consumers' high costs of DTTV reception equipment, consumer and industry uncertainty due to incompatible DTV technical standards as well as widespread consumer uncertainty and skepticism resulting from the failure of DTTV performance to live up to expectations and predictions (Brown & Picard, 2004).

International experience has shown that two of the key factors critical to the success of digital migration were affordable set top boxes and consumer awareness (Rosenberg, 2013). However, Atkin et al., (2000) in presenting a paper at an ICA conference pointed out that although the deadline for mandated digital transmission for broadcast television (DTV) was approaching, "there was still relatively little known about viewer knowledge and interest in adopting the new, high resolution television receivers." A similar observation was by Berger (2010) who pointed out that "the importance of digital television awareness was that unless the end-users were made aware of the need to adapt to receive digital signals, the entire process was doomed to fail." Laven, (2014) on the other hand asserted that experiences around the world showed that analog switch off needed to be carefully planned with a comprehensive publicity campaign involving broadcasters, network operators, governments, manufactures and retailers; aiming at enabling consumers to have adequate understanding of what ASO meant to them and what they needed to do to migrate to digital broadcasting.

According to Rogers (2003), people's awareness of a given technology is a key antecedent to the adoption of that technology. In particular, when a technology is in its early stages of diffusion, awareness of this technology plays an important role in differentiating adopters from non-adopters. United States of America, were among the fore runners in digital technology and digital terrestrial television (Brown & Picard, 2004). However, a study by Chan-Olmsted & Chang (2006), investigating the levels of consumer awareness and knowledge of digital

television (DTV) showed that, most Americans were not aware of the conversion to DTV. According to the study, 40 percentage of the respondents had never heard about the DTV transition and another 43 percentage were only ‘somewhat aware’ of the transition. Consumer knowledge about DTV appeared to be minimal, with almost half of the respondents indicating that they were not familiar at all with the differences between digital and analog TV, while close to 70 percentage did not know that most TV sets in use would need a converter box to continue receiving terrestrial broadcast signals when the transition is complete. Thus, Shu-Chu (2014) study carried out in Taiwan on digital television adoption indicated that “to better understand the factors that affect the diffusion of digital terrestrial television and digital cable in Taiwan, future studies should examine not only awareness about a given technology, but also a constituency’s knowledge about the technology.” The findings suggested that the government needed to exert more efforts to educate people about digital terrestrial television and digital cable. Doing so would speed up the diffusion of the two technologies in Taiwan.

A study by Atkin et al., (2003) found out that “when respondents were not aware of digital television, they did not know how to relate it to functionally similar technologies.” Conversely, Chan-Olmsted & Chang, (2006) found that consumers’ awareness levels were positively related to their intention to adopt digital television. It is not just public participation but incorporating public contributions as Dragomir & Thompson, (2014) asserts that although Hungarian government called for public consultations on the digital switch-over strategy, it did not incorporate the public contributions in the implementation of the digital transition process. Whereas in Pakistan, Egypt and some countries in Southeast Asia, there was not even a plan for the digital switch-off. The findings above concerning public engagements resonate with this study that sought to investigate viewers’ knowledge and awareness of digital migration in Uganda.

To ensure a smooth transition, African States employed different techniques. For instance, Common Markets for East and Southern Africa (COMESA) Digital Migration Roadmap (2011) pointed out that success of the transition programme would be determined largely by the extent to which the consumer is well informed on the key issues of the programme. They recommended that Member States embark on continuous sensitization of the general public on the digital switchover as approved, by raising public awareness on digital transmission. South Africa was a frontrunner in terms of policy and practice for digital migration and Pule (2009) in her speech on digital migration made a clarion call for a people-driven, and people-centered, inclusive digital broadcasting migration, where people were to be the determinant and the beneficiaries of digital broadcasting migration venture both socially and economically. Still in Southern Africa, Malawi Digital Broadcasting Policy (2018), awareness was required to prepare stakeholders and the public to understand the advantages, risks and actions required to migrate to digital television broadcasting so that they were ready to accept, embrace, support and adopt to the change.

In East Africa, a report by the Open Society foundations (2013) pointed out that many Kenyan were still unaware of the provisions of digital broadcasting and other concerns. Although the communication Commission of Kenya (CCK) continued to run advertisements under the “Digital Kenya” banner in the print media, educating the public on digital broadcasting needed to be done through consumer campaigns so that citizens understand the issues surrounding digital migration before they could participate in policy decision-making (Nbonye et al., 2015). Similarly, in Uganda, limited advertisements were run in the media and there was no clear indication of consumer education (Parliament Watch, 2015). This study posits that there could be a relationship between slow adoption and resistance to adopt to digital technology with limited consumer education. It is the intent of this study to find out this relationship within the respondents of Rubaga division in Kampala District.

2.4 The Digital Migration Process

The International Telecommunication Union (ITU), laid the ground for smooth transition from analog to digital by preparing the members states through guidelines (ITU, 2010; ITU, 2012, 2013). The ITU divides the world into three regions, Europe/Africa (Region 1), the Americas (Region 2) and Asia/Pacific (Region 3) and publishes a table of frequency allocations that represents agreement among the member-states (Hughes, 2008). Although the eventual switch off for region one was slated for 17th June, 2015, various countries were at various stages of digital transitions (Brown & Picard, 2004) and different stages of switching over from analog to digital terrestrial broadcasting (ITU-R, 2008). The digital terrestrial television switch off date set by RRC-06 was meant to guide the member states about the eventual global move (ITU-RRC-06). However, due to various challenges, different countries were at different levels of progress including on-going after the official switch off date expired according to an ITU assessment report (ITU, 2016).

According to Brown and Picard, (2004:2) major difficulty in the transition to DTV across Europe has been the tension between the jurisdiction and powers of the European Commission (EC) and those of the national governments and regulatory authorities. One of the main issues relating to the European regulation of DTV concerns the unwillingness of the EC to impose uniform standards across the various DTV ‘platforms’ for digital transmission and reception equipment. This has resulted in the determination of different transmission standards for each of satellite (DVB-S), cable (DVB-C) and terrestrial (DVB-T), and the need for viewers to acquire separate set-top boxes (STBs) for each platform.

This problem has been exacerbated by digital satellite operators employing proprietary and non-interoperable standards in order to ‘lock in’ their existing subscribers, rather than allow the market to be opened to new competitors by means of uniform standards. The experiences of France and the United Kingdom (UK) demonstrate that national regulators have been

inconsistent in their implementation of Commission directives regarding digital STBs. The lack of uniform standards has been at least partly responsible for confusion and uncertainty in the minds of viewers throughout Europe, and has significantly impeded the development and take-up of DTV services.

DTTV penetration in the UK at the end of 2002 was 5.3 per cent of total television households. Although a very modest level, this represented the highest take-up rate for DTTV in Europe (and indeed the world). The corresponding take-up rates for the other European countries to have commenced DTTV transmissions are 3.5 per cent in Sweden, 1.5 per cent in Spain, 1.4 per cent in Finland and 0.6 per cent in Germany (Berlin only). The reasons for these very low levels of DTTV take-up by European households included: limited consumer knowledge of DTTV; ‘technology fatigue’ by consumers; high costs of DTTV reception equipment; consumer and industry uncertainty due to incompatible DTV technical standards; widespread consumer uncertainty and skepticism resulting from the failure of DTTV performance to live up to expectations and predictions; and restrictions on the development of DTTV services due to its uncertain business potential, high financial risks and limitations on capital availability (Brown & Picard, 2004).

According to Lugalambi (2010:56), Uganda preparedness was wanting as late as 2010, “In spite of clear intentions, there was no digital migration policy in place to guide the digital migration process”. The UBC Review Committee (2006) noted that digital migration was marred by lack of transparency and adequate public awareness. This attributed to the fact that the regulator’s sensitisation had not stretched beyond a few media adverts and billboards scattered across the country, moreover in one language yet not comprehensively explanatory of what the technology was all about.

Besides the fact that digital migration process started late after the formulation of the digital migration policy 2011, Uganda Communications Commission (UCC) was embroiled in

suit with digital migration solutions 4 Africa (Pty) in November, 2012. The investigation carried out by PPDA was in regard to the supply, delivery, installation and commissioning of digital terrestrial television broadcasting system. The mishap was due to miscommunication between the two parties. The PPDA in giving its submission requested that “re-appointment of an evaluation committee and re-evaluation of bids be re-done.” PPDA requested that UCC adhere to the terms and conditions of the signed contracts between UCC and the consultants M/S. Digital Migration Solutions 4 Africa (Pty) Ltd. This investigation process took the period of June to November, 2012 a valuable time during the digital migration implementation phase (PPDA Report, 2012).

After assuming power in January 1986, the NRM government’s eventual embrace of the IMF and World Bank’s liberalisation policies extended to the broadcasting sector in the early 1990s. The first commercial private FM radio came on air in December 1993 – and into direct competition with the state-controlled Radio Uganda. At that time, there was no explicitly articulated regulatory framework for broadcasting, as the initial licensing regime was steered mainly by ad hoc procedures. The growth of the sector has been dramatic ever since. From December 1996 to March 2007, for example, the number of FM licences shot up from 14 to 158 and that of private TV stations from four to 32, according to UCC data (Open Society Initiative for East Africa, 2010). As of June 2008, according to the Uganda Communications Commission (UCC), the regulator of the communication industry, there were 176 operational private/ commercial radio stations. Out of the 44 applicants that had been issued licences to operate private/commercial TV stations, 18 were not operational and only ten were on air.

Uganda Digital Migration Policy for Digital Terrestrial Television (2011) set the parameters for migrating from analogue to digital terrestrial broadcasting. The areas of action included: separation of the role of service provision (content) from that of infrastructure (signal distribution); ensuring the availability of affordable digital receivers and set-top boxes; and

promotion of local content development (UCC, 2012). However, a report on UBC review committee (2016) comparing digital migration timeline in Uganda with similar processes in Rwanda and Kenya found out that Uganda was off to a late start. The Digital Migration Taskforce was set in 2008, two years after Rwanda had started their pilot digital broadcast.

In East Africa, Kenya was most advantaged because its laws already envisaged the digital migration process and incorporated all the necessary provisions which allowed the issuance of relevant regulations, such as the Analogue Switch-off (ASO) roadmap, in time. The UBC Review Committee Report, (2016), further found out that in 2010 Uganda authorized four private companies to commence digital broadcasts as pilot projects while Kenya licensed a second Broadcast Signal Distributor (Kenya Broadcasting Corporation) which was awarded the first license in 2009. At this time, Rwanda was completing its national digital broadcast implementation and commencing the simulcast period. The review committee noted that the process in Uganda appeared to have been rushed and not properly thought through with near unanimity among most individuals interviewed by the Review Committee indicating that the Digital Migration process in Uganda could have been managed better.

In 2012 the Ugandan regulator UCC provided technical and financial support to UBC to fast-track the migration exercise. The collaboration between UCC and UBC saw Uganda acquire its first digital broadcast site on Kololo hill in Kampala. In 2013 the entire Kampala area and its suburbs within a 60km radius of Kololo hill was able to receive a clear DTTB signal (UCC, 2014). Uganda completed a national ASO in June 2015, although some of the digital broadcast sites were implemented as late as April 2016. This was due to project challenges that led to damage of equipment as a result of flooding in some of the warehouses (UBC Review Committee Report, 2016). The ITU, (2016) assessment report showed Uganda digital migration process as on-going a year after the official switch off date. This is because the process was the most convoluted, having commenced late and picked up several challenges

along the way and reports the least favorable outcomes of the digital migration process (UBC Review Committee Report, 2016). The researcher of this study, therefore, seeks to investigate whether a delay in implementing digital migration in Uganda could have affected the quality of viewer experiences in the digital migration process.

According to the UBC Review Committee Report, (2016), since the migration process, many areas in the country experienced no TV coverage which meant that UBC had failed in its mandate of providing national coverage. The report further revealed that set-top boxes in Uganda were not affordable especially in rural areas making TV inaccessible to many people; which affected the viewership, by reducing viewers from 3.5 million to 1 million viewers, with 60percentage around Kampala (UBC Review Committee Report, 2016). This process which according to some of the respondents to the review committee of UBC was rushed and may have missed out on important components that could ensure the smooth transition such as the part 3 component in the ITU guidelines for the transition market and business development that provided information on customers and migrating viewers to digital (ITU, 2010; ITU, 2012). The importance of viewers cannot be overstated and it is probable that slow adoption could be attributed to inadequate preparation on the viewers. Therefore, it was important that this study assesses how this process was carried out and what gaps it could have created subsequently.

2.5 Factors that affected Digital Broadcasting Migration Process

A number of challenges the digital broadcasting migration process were experienced and according to Brown & Picard (2004), these challenges were not exclusive for Africa. Europe, too, had the tension between the jurisdiction and powers of the European Commission (EC) and those of the national governments and regulatory authorities. In Europe there was the unwillingness of the EC to impose uniform standards across the various DTV ‘platforms’ which resulted in the determination of different transmission standards for each of satellite (DVB-S), cable (DVB-C) and terrestrial (DVB-T), and the need for viewers to acquire separate

set-top boxes (STBs) for each platform (Brown & Picard, 2004:2). This lack of uniform standards was not only responsible for confusion and uncertainty in the minds of viewers throughout Europe, but also significantly impeded the development and take-up of DTV services.

Obiora and Chukwuma, (2017) analyzed challenges that hindered Nigeria from achieving full digital migration during the stipulated time and why this process seems elusive. They observed that besides the challenge of unawareness, there was the unavailable/inadequate digital equipment, scarcity of Qualified Manpower; Inadequate/Elliptic power supply and Poverty. They concluded that until these and other relevant issues are addressed, a successful migration may be unattainable in Nigeria. In relation to Uganda, Nigeria is a big economy and it is possible that although their population is about four times that of Uganda, it is fairly developed. Therefore, with such appreciation from scholars it is most probable that these issues could also be pertinent in the digital migration process experience in Uganda.

Another study by Ihechu and Uche, (2012) discussed a number of challenges to digital migration in Nigeria which included; technical and financial challenges noting that the switchover from analogue to digital broadcasting required huge investment on the equipment and gadgets which needs finance to acquire. They also identified the need for competent technical capacity to manage complex and fragile digital migration equipment. The task of training and retraining personnel to fit into the digital process poses a challenge. It is a question of whether countries at the point of switch off decision had adequate capacity to manage the equipment. This challenge could lead to those personnel that have no or limited technical know-how to exit the industry while others including expatriates join the industry. This scenario could escalate the unemployment levels which are already high in developing countries.

Another challenge identified by Ihechu *ibid* was the issue of power supply, noting that Nigeria generators were being used in homes, businesses and in manufacturing increasing the cost of production or service rendered charges which are later transferred to customers. Although Uganda does not have such an acute supply of power, the same cannot be said of the rural areas or areas outside of the town setups, where households many not be able to afford a solar panel. This situation could also jeopardize the digital migration process in the rural areas. This study seeks to isolate the fact that if the digital migration process was handled differently the status of television viewers would be different by appreciating that there are other competing factors that have existing before and could still continue hindering the successful transition to digital terrestrial television viewership unless they are address.

According to Berger (2010), while focusing on challenges and perspectives on issues of digital migration for African Media, acknowledges that digital migration offers a solution to frequency congestion and encourages more programs and offers other benefits in terms of managing the frequency spectrum available, regional planning, a reduction in energy consumption and costs. He recognizes the fact that while the West had already begun this process several years ago, in Africa this issue had rarely been discussed or taken into account, except in rare countries such as South Africa. Berger (2010) predicted that the end of analogue broadcasting and the production of dedicated equipment were likely to give rise to serious problems in Africa such as: problems of maintaining infrastructures which remain analogue and the further ‘Balkanisation’ of African production. In addition, the move to digital broadcasting would result into other crucial challenges regarding regulation planning, pluralism of information, media development and access-for-all, to new digital equipment, and increasing dependency beyond national borders in the sector.

Berger, (2010) further isolates the misunderstanding around the issue of digital migration having most of Africa operating in separate silos. On one hand, some countries thinking it is

the one tool to solve all African problems while other countries think it spells doom. Secondly, he notes that freeing up airwaves was actually not of urgent relevance in Africa. There is not a burning scarcity of frequencies on the continent. However, the driver of digital migration internationally is not the conditions and needs in Africa. It is, instead, the way that developed country agendas impact on globalization, international regulation and aspirational trends. This shows that it is not so much what any individual country wants but what global powers decide to their benefit. This then leaves the members countries almost at limbo to balance the dire needs in their countries and the high cost of digital migration.

In trying to assess whether there could have been another way to go around this process, Berger explains that there were answers to the puzzle of why much of Africa was trying to move to complete DTT by 2015, when there was not a pressing matter of frequencies, while many of the countries were exempted from the ITU deadline, and when the consequences of missing the due date are minor anyway. His reasons included: There was a severe lack of understanding about the First World character of the drivers behind the process, and their inapplicability to African conditions; reinforcing this is a susceptibility to succumb to global hype about digital benefits. There is also a sense of paranoia about the continent falling further behind developments elsewhere, and an aspiration to keep up (even when it does not make short-term strategic or economic sense); and feeding all this are many consultancies and signal equipment manufacturers, who have a vested interest in digital transition happening sooner rather than later (Berger, 2010).

Berger, (2012) in theorizing African communication observed that digital broadcasting migration came with a huge price related to the conversion of production, transmission and reception. It was not just an inexorable advance technology, but phenomenon that has been consciously constructed at the international level – and in particular in Geneva, under the auspices of the International Telecommunications Union (ITU). What is also minimally

discussed was what consequences would befall a country that fails to meet the deadline. For example, according to UCC (2011), Uganda failures around digital broadcasting migration were ‘bound to leave Uganda without television as the rest of the world goes digital by 2015.’ The consequences of missing ITU deadlines according to Imaka (2011) were that international body will not protect analogue television signals from interference from neighboring countries.

2.6 Factors Hindering Digital Terrestrial Television Viewership

It is an assumption that if the digital migration process was smooth then the adoption of digital terrestrial television could have presented different results. However, it is probable that there were underlying factors that could have affected the smooth digital terrestrial television viewership. According to Lee & McGuiggan (2009), consumer choice of television channels and programs had been of interest for decades. When viewers can choose from many channels, most viewers are not aware of all the options available to them and tend to select ‘brand names’ as an aid to simplify their choice (Cooper, 1996). Correspondingly, an abundance of channel choice and alternatives such as the internet can lead to viewers tending to have a limited and relatively small repertoire of preferred channels and programs that they frequently and heavily use (Yuan, 2009).

According to Brown and Picard, (2004). DTTV penetration among European households were very low levels because of; limited consumer knowledge of DTTV, ‘technology fatigue’ by consumers, high costs of DTTV reception equipment, consumer and industry uncertainty due to incompatible DTV technical standards and widespread consumer uncertainty and skepticism resulting from the failure of DTTV performance to live up to expectations and predictions; as well as the restrictions on the development of DTTV services due to its uncertain business potential, high financial risks and limitations on capital availability.

The performance of Uganda digital broadcasting migration could be assessed in the lens of the Digital Migration Policy 2011. The Policy was to provide a framework to facilitate a smooth

transition from analogue to digital terrestrial broadcasting with a number of stakeholders involved in the implementation framework.

The digital broadcasting migration is tied to the effective implementation that should ensure that governments, the industry and the consumers benefit. Research studies about digital broadcasting migration have mostly been carried out in the United States of America (USA), Europe and parts of southern part of Africa, focusing on different aspects of digital broadcasting. Apparently, limited research relative to consumers specifically television viewership experiences in Uganda have been carried out. The reviewed literature therefore underscores the need to assess the television viewership adoption of the digital broadcasting migration.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Chapter three presents the research design, sampling techniques and the tools used for collecting data. This chapter also presents information on how data was analyzed, the ethical considerations and study limitations.

3.2 Study design

The research employed a mixed methods research design. Mixed method according to Brian, H quoting from Creswell, et al (2011, p.4) in his book *Designing and conducting mixed methods research* “focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone.” Accordingly, the researcher used quantitative approach for the number of respondents which formed the comparative analysis, while qualitative approach was used for individual responses based on perceptions of what they knew about digital broadcasting migration.

3.3 Sources of data

Secondary data was collected from literature review of the existing documents mostly from online sources including both published and unpublished data. Furthermore, secondary data was attained from public libraries, newspapers and some documents were secured from offices such as the Uganda Broadcasting Corporation, Uganda Communications Commission and Signal Network Uganda.

The primary data was collected at different levels: first the researcher conducted Key Informant Interviews (KII) with government officials including; Uganda Communications Commission, Uganda Broadcasting Corporation and Signal Network Uganda, Parliamentarians

and Judiciary specifically Mengo Grade Two Magistrate Court. Secondly, the researcher conducted Key Informant interviews with content providers including; Digital Satellite Television (DSTV), GoTV, StarTimes Uganda, Azam Uganda and Zuku Uganda. Thirdly, the researcher conducted Key Informant Interviews with programme providers including; Nation Television (NTV), NBS, Bukedde and Star TV. Fourthly, the researcher conducted discussions with the academia from a university. Finally, the researcher conducted discussions with the consumers mainly targeting the household heads who presumably had the basic understanding of digital broadcasting migration process and specifically had incurred the cost of migrating to digital broadcasting.

3.4 Target Population

The study targeted respondents from Rubaga division, one of the divisions that make up Kampala City Council Authority (KCCA). Rubaga was among the first areas where the initial analog switch off and digital switch over was carried out on 17th June, 2015. Specifically, the study targeted both men and women household heads who had invested in the digital broadcasting migration process.

3.5 Sample Size and Sampling Techniques

Rubaga division had the second highest population in Kampala of 383,216 below Makindye division according to 2014 census report (NHPC-KCCA, 2017). However, Makindye division could not be selected for the study because it hosts a military barracks the process of authorization for carrying out research could have been delayed due to stringent requirements and security details. A sample size of 384 was selected from a population of 383, 216 using Krejcie and Morgan's (1970) sample size determination table.

To enable equal representation of the population within Rubaga division, the researcher obtained a sampling list of zones in Rubaga division from the local government offices. Rubaga division is divided into two constituencies, Rubaga North and Rubaga South. Rubaga

North constitutes 11 zones while Rubaga South has 10 zones. To enable equal representation, the researcher selected 2 zones from each constituency. From each zone, 3 villages were selected and in each village 32 household heads were interviewed. Making a total sample of 384 household heads respondents. Random sampling was used to select respondents. In case of non-responses in a sampled household, the researcher sought the responses from another household.

3.6 Data Collection Instruments

The researcher used a questionnaire to collect quantitative data from the household head respondents and an interview guide for qualitative data from the key informants' respondents. The data collection tools for the household heads respondents was translated in Luganda (the language commonly used by the population residing within the study area). The researcher tape-recorded and wrote down responses to ensure all the information was captured during the interview sessions. In addition to the tools used, the study made use of observation method especially at external antennas and satellite dishes to establish and ascertain the types of signal distributor per household.

The questionnaire was pretested in the selected study areas of: Kasubi zone in Rubaga North and Lubiri zone in Rubaga South. A sample of 30 participants were interviewed, 15 from each zone. A pre-test report was prepared. The candidate in consultation with the supervisor made the necessary adjustment to the questionnaire in terms of ease of understanding of the question by the respondents and clarity of the questions to elicit quality data.

3.7 Permission to carry out the Research

Prior to data collection, the researcher obtained an introductory letter from the office of the Chair, Department of Journalism and Communication Makerere University. The letter introduced the researcher to Rubaga Division headquarters. Rubaga Division Town Clerk then issued an authorization letter introducing the researcher to the local leaders in the study area.

The local leaders in the study area zones then appended zonal stamps to permit the researcher to have access to the required household heads. See the Appendix VII for details.

3.8 Data analysis processes and report writing

The Quantitative data collected mainly using the questionnaire was coded, cleaned and analysed using the Statistical Package for Social Scientist (SPSS version 16). The software enabled the researcher generate tables, graphs and charts to figuratively present the data and help in discussions and interpretation of the data. Qualitative data from Key Informants Interviews and probing from the household heads respondents was transcribed and analyzed thematically in accordance with the objectives of the study. As divergent issues began to emerge, certain evidence stood out in conflicts with the current study objectives. In those cases, the follow up interviews were done to confirm and/or correct the initial data in order to tie the evidence to the findings and to state relationships in answers to the research questions.

Analysis of qualitative data was an on-going process taking place throughout the study period. Emerging themes were identified as data collection exercise continued and thematic analysis was conducted. The triangulation of data from quantitative and qualitative was used in the discussions of the findings.

3.9 Report Editing, Review and Submission

The researcher sought the help of two professional editors to proof read. The editors' issues were addressed and included in the dissertation to the Department of Journalism and Communication for further examination. The dissertation was availed to the external and internal supervisors and subsequently the candidate was engaged by a viva voce panel.

The students addressed the correction identified by the external and internal examiners, the viva voce panel report and wrote a compliance report in conformity with the corrections in the dissertation. The final dissertation report was then submitted to the principle through the dean.

3.10 Study Limitations

The study anticipated manageable challenges; the first one was the likelihood that most of the respondents might be out of homes during formal working hours. In such scenarios, the researcher made appointments basing on the availability of the respondents. The researcher used random sampling of the household respondents so that in case a respondent was not willing to participate, the next respondent within the same area would be engaged. Throughout the study, the researcher explained the benefits of the study to enable respondent understand the importance of the study to ensure that the respondents give audience for the interview.

3.11 Ethical Considerations

The researcher upheld ethical considerations as per requirements of the Uganda National Council for Science and Technology (UNCST), which included; permission from the institution of leaning; in this case Makerere University. Subsequently, from the study area, Rubaga division and parish leaders. Voluntary participation of the respondents and confidentiality were highly emphasized, with clear explanations about the study to the respondents. In this regard, the research made sure that the questionnaire did not require the respondent to provide personal details relating to name of household heads and telephone contacts or any other respondents information not relating to the study.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.1 Introduction

Chapter four presents the research data, data interpretation and data analysis of the study on digital broadcasting migration and television viewership in Rubaga division, Kampala District. The study data was collected at both the secondary and primary data levels. The secondary data was presented under the literature review and incorporated into the report in chapter five under discussions.

The primary data was collected at various levels as per involvement in the implementation process; the first level comprised of the government which had the responsibility of putting in place the enabling policy, legal and regulatory environment. Under this category a representative from the Uganda Parliament was interviewed to represent parliament as the body that discussed and passed the digital broadcasting policy 2011. Further views were sought from Mengo Magistrate Court to collaborate information about a case presented at the court seeking the court intervention to compel the government to revert to analog broadcasting. Uganda Broadcasting Corporation (UBC) and Signal Network Uganda (Signet) representatives were interviewed since UBC in accordance to the digital broadcasting policy 2011, was the sole Signal Distributor for the first five years of the digital broadcasting policy implementation.

The second level comprised of the Regulator mandated with the enforcement of license conditions for signal distribution, content development and consumer protection. The Uganda Communication Commission (UCC), was the respondent in this category. The third category comprised of the Signal Distributors that ensure content aggregation and distribution/transmission of the signals from all the broadcasters to the consumer – clients and general public. In this category, DSTV, GoTV, StarTimes Uganda, Azam TV, Zuku TV were

the respondents. The fourth category were the Broadcasters involved with digital content development and processing, viewers from Nation Television (NTV) and Next Broadcasting Services (NBS) were sought.

The final category was the public, the consumers or television viewers, who were required to purchase Set Top Boxes or integrated digital TV receivers in order to receive digital terrestrial transmissions. In this category household heads both male and female were interviewed with specific consideration of respondents that directly incurred costs during the migration.

4.2 Demographic Characteristics of the Respondents

Initially, the researcher envisaged to sample 384 household heads however, due to unavailability of 37 respondents, the researcher interviewed 347 household head respondents. Figure 1 show the respondents' distribution.

Figure 1: Distribution of respondents in the sampled area of study.

Respondents Areas of Residents	Frequency
Nateete Kiggaga Zone	27
Nateete Church Zone	33
Nateete Kitooro Zone	32
Namirembe Market Zone	35
Namirembe Masiki Village	31
Namirembe Kayiwa Village	32
Lubya Zone I	30
Lubya Mapeera Zone I	31
Lubya Lusaaze Zone A	4
Nankulabye Zone 7	30
Nankulabye Senkatuka Village LC1	28
Nankulabye Zone IV	34
Total	347

Source: Primary Data, 2018

According to figure 1, the 347 respondents (90.4 percent) were interviewed, 56.5 percent were female and 43.5 percent male. The majority 42.7 percent of the respondents were aged 25-34 while the least 1.4 percent were aged over 54. The highest 54.2 percent of the respondents indicated being single 37.2 percent were married. A limited percentage 0.6 percent were divorced.

Education was a key parameter in determining quality of responses in this study, accordingly, the findings showed variances in education attainment of the respondents with the highest level of education being that of secondary level at 34.9 percent and the lowest 0.3percent respondents had certificates. Further, the researcher found that 62.8 percent of the respondents were engaged in businesses, 19.9 percent were employed in private organizations were while civil servants were 6.1 percent. Those indicated not being employed were 4.0 percent. The digital broadcasting migration had a cost implication requiring the television viewers to acquire set top boxes and or a new television set. This study therefore was keen in determining the monthly income of respondents. Table 1 shows the monthly income of respondents.

Table 1: Respondents Monthly Income

Monthly Income of Respondents	Frequency	Percent
Below 100,000	74	21.3
100,001 - 300,000	112	32.3
300,001 - 500,000	91	26.2
500,001 - 700,000	33	9.5
700,001 - 900,000	15	4.3
900,001 - 1,000,000	11	3.2
Above 1,000,000	11	3.2
Total	347	100

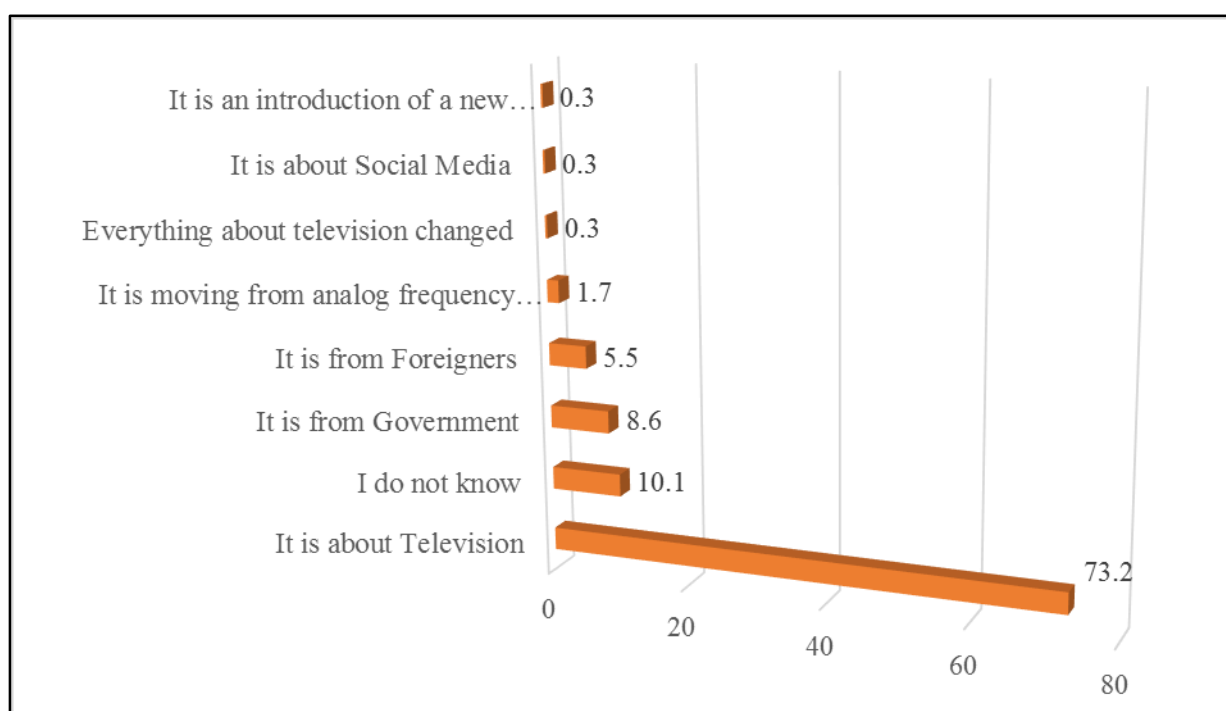
Source: Primary Data, 2018.

According to Table 1, 32.3 percent of the respondents were earning between 100,000-300,000 Uganda shillings per month, followed by 26.2 percent who were earning between 300,000-500,000/=. In addition to household head interviews, the study conducted 15 Key Informant Interviews.

4.3 Levels of Knowledge about Digital Broadcasting Migration

The digital broadcasting migration was a technical process that required television viewers to be adequately prepared and engaged. The study sought to find out the levels of knowledge about digital broadcasting migration from the television viewers of Rubaga division. Figure 2 shows the results.

Figure 2: Respondents Levels of Knowledge about Digital Broadcasting Migration.



Source: Primary Data, 2018.

According to Figure 2, 73.2 percent of the respondents indicated that digital broadcasting migration was about television. Only 8.6 percent believed it was a government project, while 5.5 percent attributed it to foreign investors, particularly from China. Results indicated that

only 1.7 percentage of the respondents were knowledgeable about digital migration broadcasting.

Respondents from the government who participated in the study acknowledged that there were a number of delays especially in budgeting and subsequently, the formulation of the digital migration policy which ultimately led to delays in programmes designed to ensure smooth transition (KI-Regulator, KI-MP, KI-UBC).

According to signal distributor informants, the government was expected to work with speed and engage them adequately but the government delays affected the operations, hence the rolling out of programmes especially on consumer awareness was carried out too close the switch off. According to these signal distributors, most of the messages were relayed on television and little face to face and question and answer sections were carried out.

Findings further revealed that the communication from the government was slow in reaching out to the broadcasters apart from the advertisement provided mostly by government. Apparently, there were few meetings and scattered information. “We relied on what was happening elsewhere in the world to implement the digital broadcasting” (Key Informant Signal Distributor, Broadcaster).

4.3.1 Information about Digital Broadcasting Migration

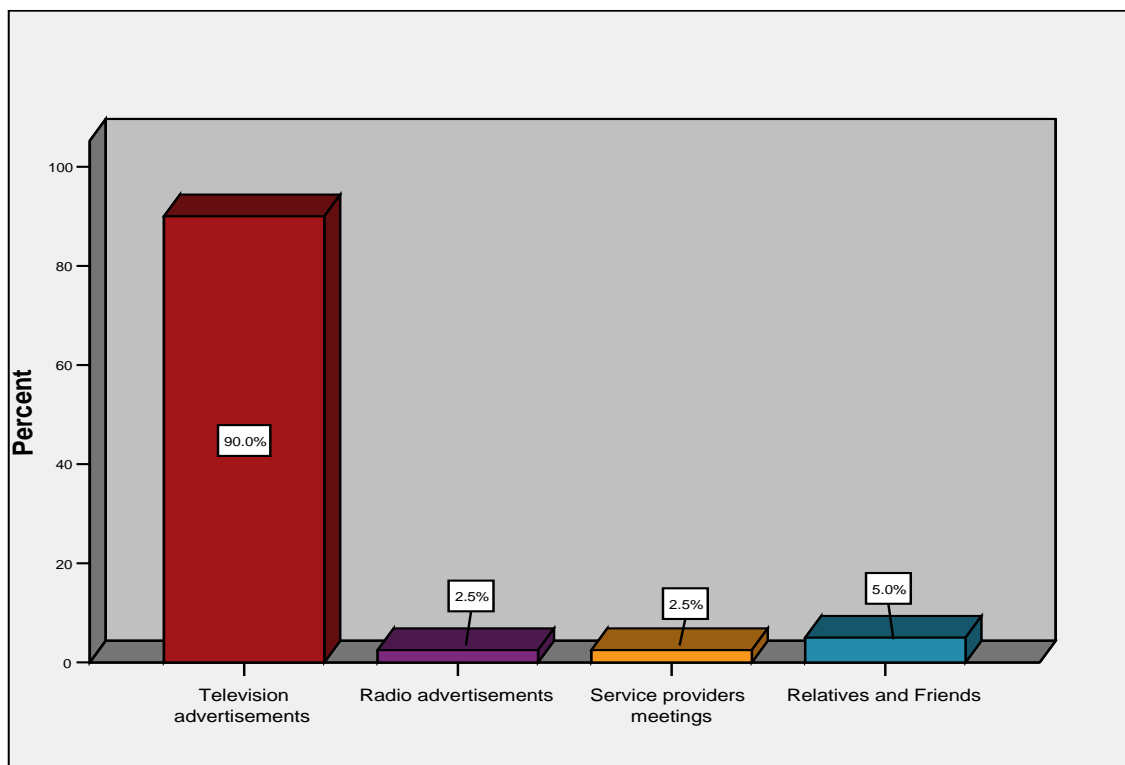
The researcher sought to find out whether the respondents had received any information prior and during digital migration transition period. According to the findings, 42 percent of the respondents acknowledged having received some information before and during the transition period. While 58 percent were of contrary opinion, one household respondent indicated that,

“There were some advertisement on television, but we are used to this government advertising many things which do not affect us, but this one actually did affect many television[s]” (Household Head Respondent).

4.3.2 Respondents' Source of Information about Digital Migration

The researcher sought to find the sources of information from the respondents who indicated having received information about digital broadcasting migration transition. Figure 3 shows the results.

Figure 3: Respondents Sources of Information about Digital Broadcasting Migration.



Source: Primary Data, 2018

According to figure 3, majority 90 percent of the respondents got information about digital broadcasting migration from television advertisements. Further probing on this finding revealed that advertisements were being played on television but television viewers indicated that they pay serious attention to them.

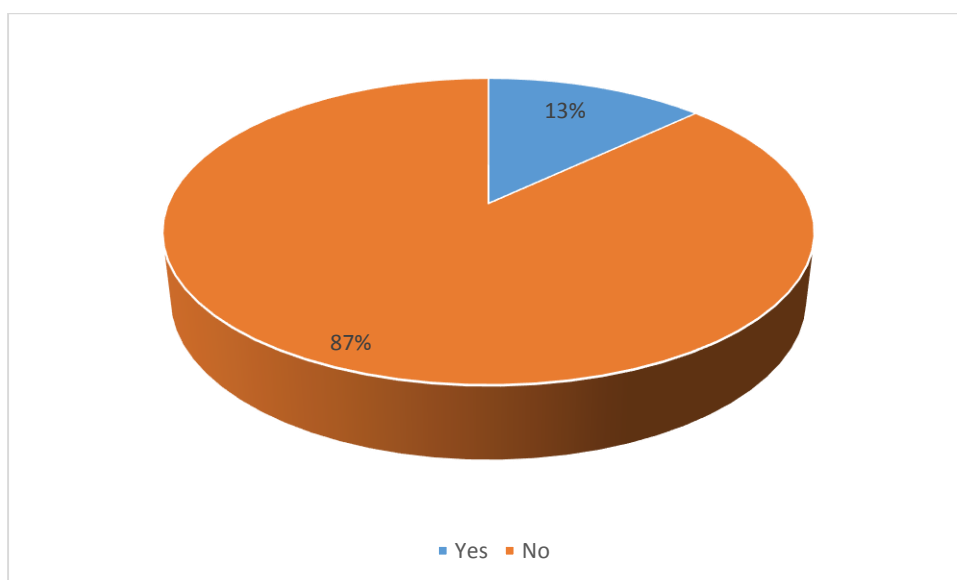
“Advertisement is the way of selling anything in Uganda, but I did not know it was serious business (Household Respondent).”

Television viewers rarely pay adequate attention to advertisement, probably some kind of fatigue or too much information and selling, sometimes the impact is not what is expected (Broadcaster).

4.3.3 Knowledge about the Equipment required for Digital Broadcasting Migration.

The digital broadcasting migration required television viewers to make a number of adjustments to enable transition, these included acquiring Set Top Boxes or integrated digital TV receivers in order to receive digital terrestrial transmissions. The researcher, therefore, sought to find out whether the respondents had knowledge of equipment that were required to enable digital broadcasting migration. Figure 4 shows the results.

Figure 4: Knowledge about Equipment Required for Digital Broadcasting Migration.



Source: Primary, Data, 2018

According to figure 4, majority 87 percent of the respondents indicated that they did not know what equipment were required for digital broadcasting migration. This finding implies that there may have been a gap in the official communication on the requirements about digital broadcasting migration transition. According to one signal distributor respondent, the government delayed in determining the standards for set top boxes, which subsequently made

it difficult for the signal distributors and broadcasters to import set top boxes and other equipment for digital broadcasting migration in time for the television viewers.

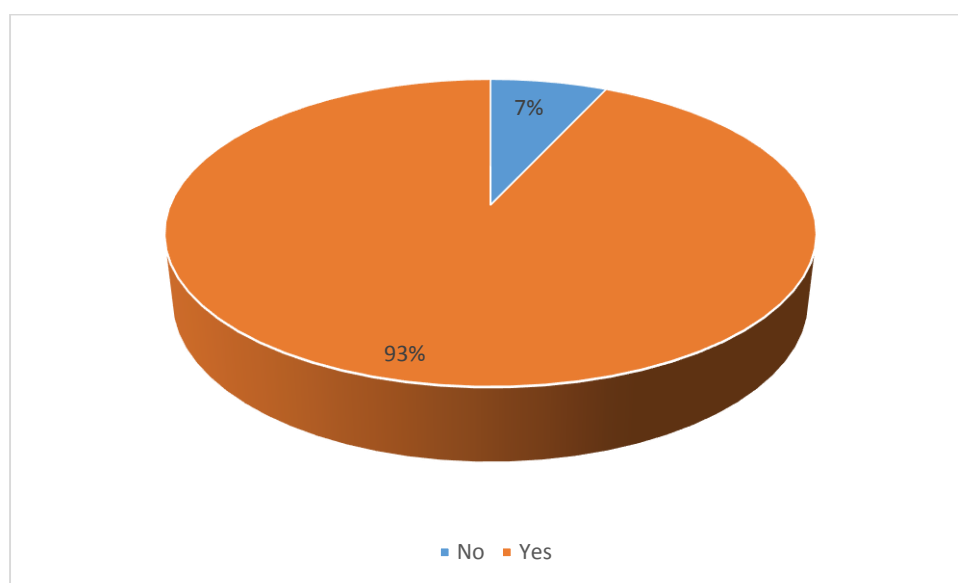
4.4 The Digital Broadcasting Migration Process

The digital broadcasting migration process commenced after the GE06 meeting with the deadline slated for 17th June, 2015 after which analog broadcasting would cease to be protected by ITU. This study sought to understand the migration process in regard to preparedness, period of migration and motivation to migration.

4.4.1 Have you already migrated to digital terrestrial television?

The researcher sought to find out the status digital migration status of the respondents after the analog switch off. Figure 5 shows the results.

Figure 5: Respondents views on Digital Broadcasting Migration Preparedness



Source: Primary Data, 2018

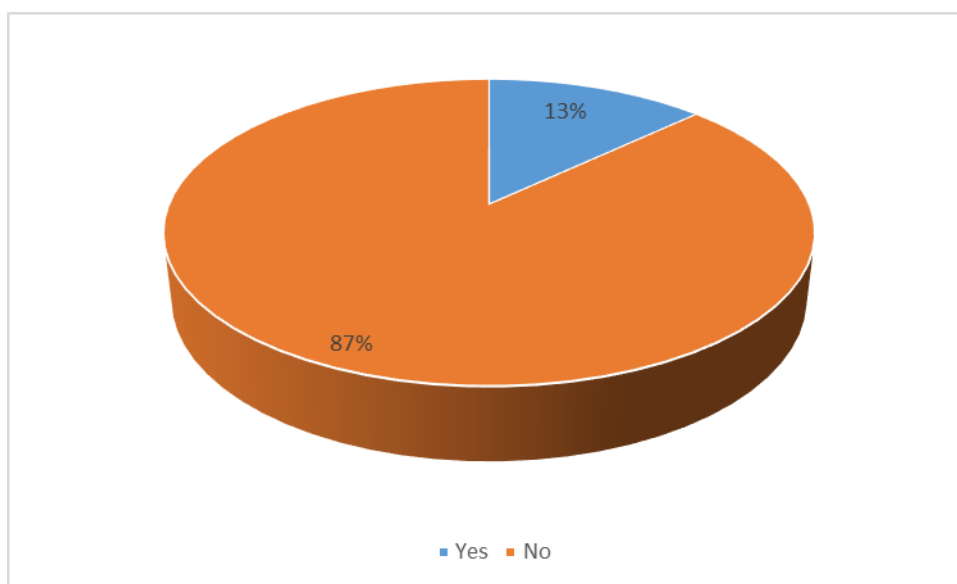
According to figure 5, most of the respondents (93 percent) indicated that they had already migrated to digital broadcasting. According to the signal distributors, there was a rush by television viewers to buy set-top boxes and compatible computers especially days following the analog switch off. Unfortunately, the set-top boxes were not readily available in the Market.”

“I found my television set off when I came back from work, the next day I borrowed some money and bought a set-top box” (Household Head Respondent).

4.4.2 Respondents views on Digital Broadcasting Migration Preparedness.

The respondents’ migration status indicated that majority had already migrated to digital broadcasting. The researcher then sought to find out the views of the television viewers about their preparedness for the transition. Figure 6 shows results.

Figure 6: Respondents Preparedness for the Digital Broadcasting Migration



Source, Primary, Data, 2018

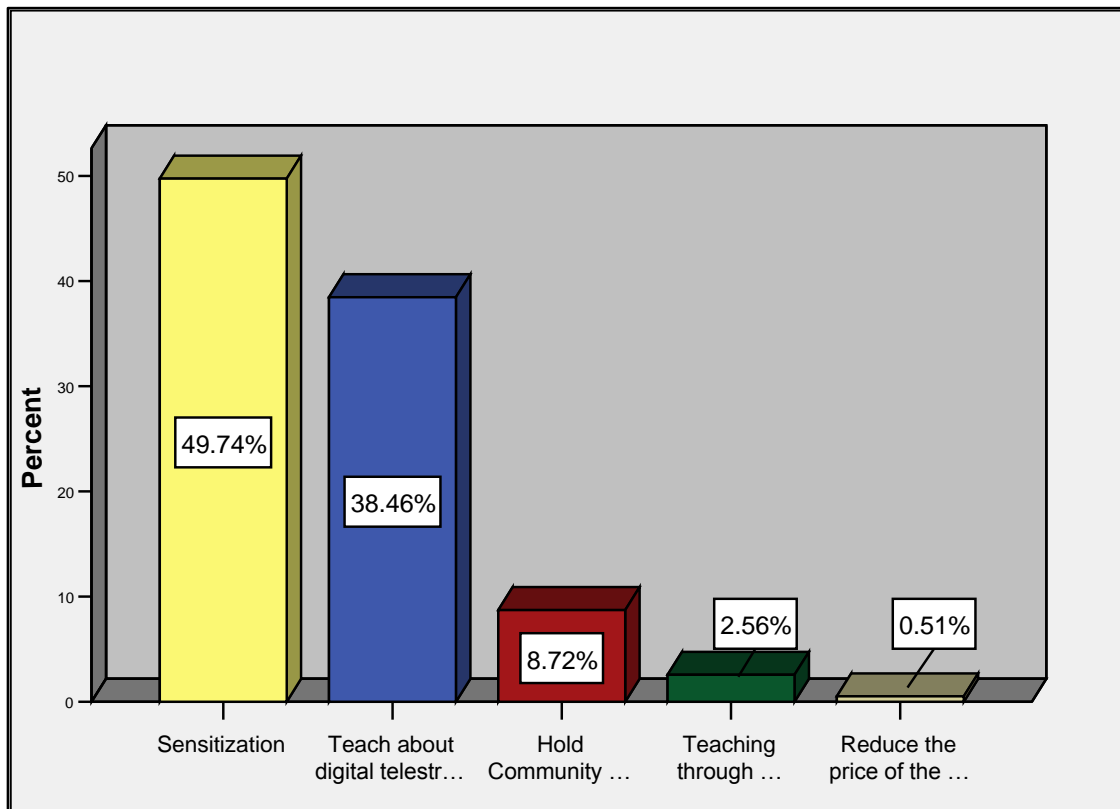
According to figure 6, most of the respondents (87 percent) indicated having not been prepared for the digital broadcasting migration. According to one broadcaster, the government was slow during the whole digital broadcasting migration process, thus most the activities that were meant to prepare the television viewers were not adequately addressed. The content providers indicated that there was no time for consumer sensitization, but only advertisements which most television viewers were not able to understand.

“This government is not serious, they are only interested in making money, television was free, now we have to pay, just because they want more taxes for political activities” (Household Head Respondent). According to one broadcaster, there was a problem with the flow of information from the government during the planning and execution of the digital broadcasting. The government was not giving adequate information making it difficult for planning. In contrast, the other broadcaster interviewed indicated that UCC carried out some training with broadcasters on how to work towards digital broadcasting migration.

4.4.3 Respondents views on what should have been done to ensure preparedness

The research then sought to find out what respondents thought should have been done by the government to ensure preparedness for digital broadcasting migration. Figure 7 shows the results.

Figure 7: Respondents views on what should have been done to ensure preparedness



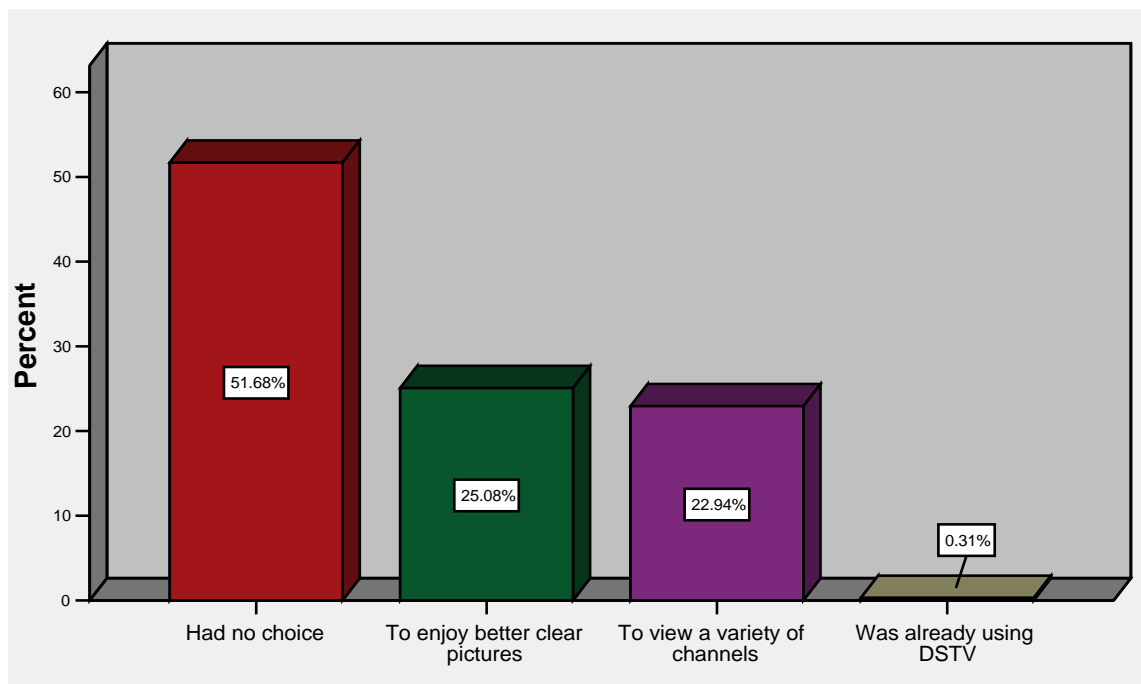
Source: Primary Data, 2018

According to figure 7, (49.74 percent) of the respondents indicated that more sensitization should have been carried out, while 38.46 percent indicated that viewers should have been taught more about digital terrestrial television to enable them adopt the new technology. These findings imply that majority of respondents needed sensitization and teaching about digital broadcasting in preparation for the digital broadcasting migration.

4.4.4 Respondents Motivation to Migrate to Digital Broadcasting

The study findings showed that majority of the respondents had migrated to digital broadcasting despite the fact there was inadequate preparation and information about digital broadcasting migration. The researcher then sought to find out what motivated respondents to migrate to digital broadcasting. Figure 8 shows the results.

Figure 8: Respondents Motivation to Migrate to Digital Broadcasting.



Source: Primary Data, 2018

According to figure 8, a small population 0.31 percent of the respondents were already on digital television through cable and satellite, however, 51.68 percent indicated that they did

not have a choice but to migrate to digital broadcasting. In his own words, one household head respondent disclosed that

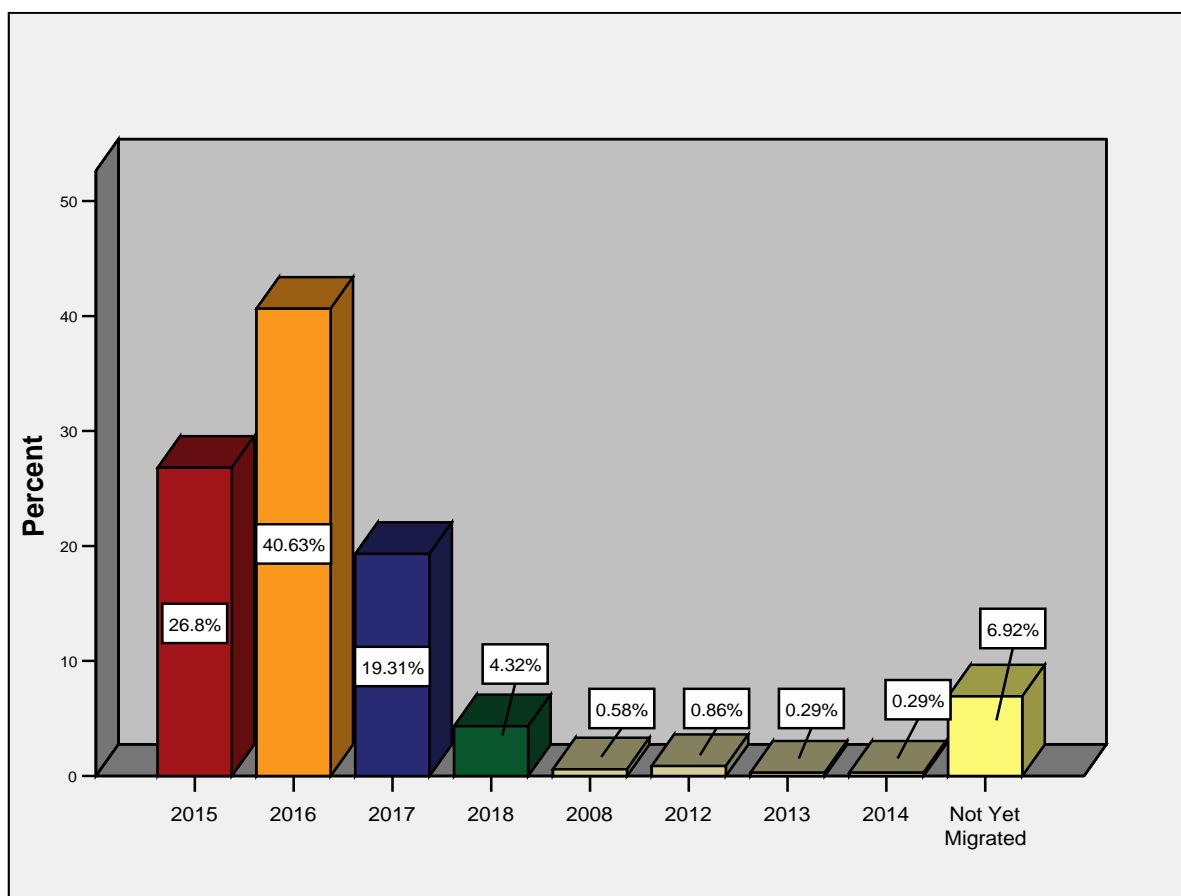
“I do not like this so called digital, I wish the government can take us back to analog.” (Household Head Respondent). According to one broadcaster, “Majority of the television viewers did not feel prepared, it is probable that they did not take the changes well and may not be happy with monthly transcription. Although there is free to air, some customers complain about signal and few channels.”

According to one signal distributor some television viewers were indifferent about digital broadcasting migration. They attributed the process as a government political gimmick to solicit money for elections through subscriptions and mobile money taxes. Reportedly, the viewer’s felt that digital broadcasting migration was like many government projects imposed on them. The government was working on a global commitment and so many things needed to be done, of course the bureaucracy played a part in delaying the process and a number of people involved did not have adequate technical knowledge (Member of Parliament).

4.4.5 Respondents Year of Migration to Digital Broadcasting.

The global deadline for analog switch off (ASO) was 17th June, 2015. The researcher therefore sought to find out the actual year the respondents migrated to digital broadcasting. Figure 9 shows the results.

Figure 9: Respondents' Year of Migration to Digital Broadcasting.



Source: Primary Data, 2018

According to figure 9, the respondents who migrated to broadcasting in 2015 were 26.8 percent. A significant number, 40.6 percent migrated to broadcasting in 2016 while 19.3 and 4.3 migrate to broadcasting in 2017 and 2018 respectively. A small percent however, had already been on digital television through cable and satellite in the years preceding the 2015 global analog switch off deadline.

These findings imply that majority 40.6 percent of the respondents migrated to digital broadcasting in 2016 a year after the switch off date and probably only new entrants were being registered as indicated by 4.32 percentage in 2018. According to one signal distributor, Ugandans normally do not act on any information fast, they wait and see. This attitude led to many of them being switched off analog before they were prepared to switch over to digital broadcasting.

According to one broadcaster, “digital broadcasting was new in the country and with the limited sensitization, many people including broadcasters did not know how effectively to go about it, it seemed to have been almost a gamble by implementers.” Indeed, according to study findings, some people were not happy about the digital broadcasting migration.

“The government want us to pay to watch television that is not good, what is this government ever giving its people for free? Look at the channels we are paying for, some are not good for us or our children” (Household Head Respondent).

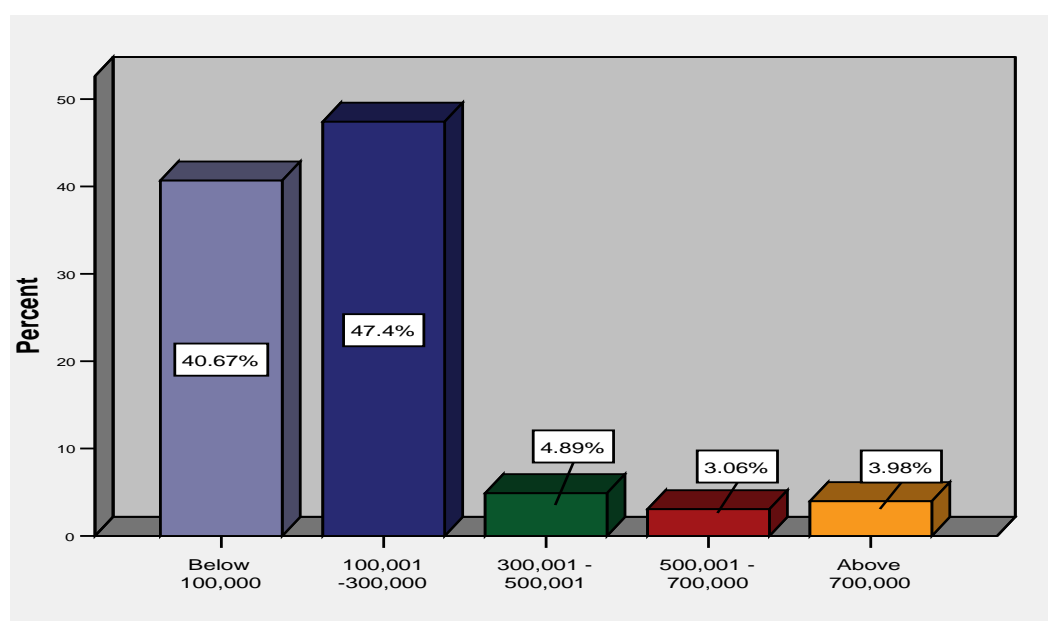
4.5 Factors that affected the Digital Broadcasting Migration Process

The digital transition period was 17th June, 2006 and eventual analog switch off was on 17th June, 2015. During the transition period, analog broadcasting and digital broadcasting were to be transmitted simultaneously, a process referred to as simulcast.

4.5.1 Initial Cost of Digital Broadcasting Migration

The researcher sought to find out the factors that affected the respondents during the digital broadcasting migration process. Figure 10 shows the results.

Figure 10: Initial Cost of Digital Broadcasting Migration



Source: Primary Data, 2018.

The one factor that affected most respondents was the costs of migration. According to figure 10, majority 40.67 percent and 47.4 percent of the respondents spent below 100,000 and 100,001-300,000 Uganda Shillings respectively as the initial cost for digital migration.

As disclosed by one signal distributor, many television viewers did not want to invest any money on digital broadcasting because they did not understand how digital broadcasting was to operate. So, when they were told that the set-top boxes were to be bought, most of them resisted until the actual analog switch off was effected.

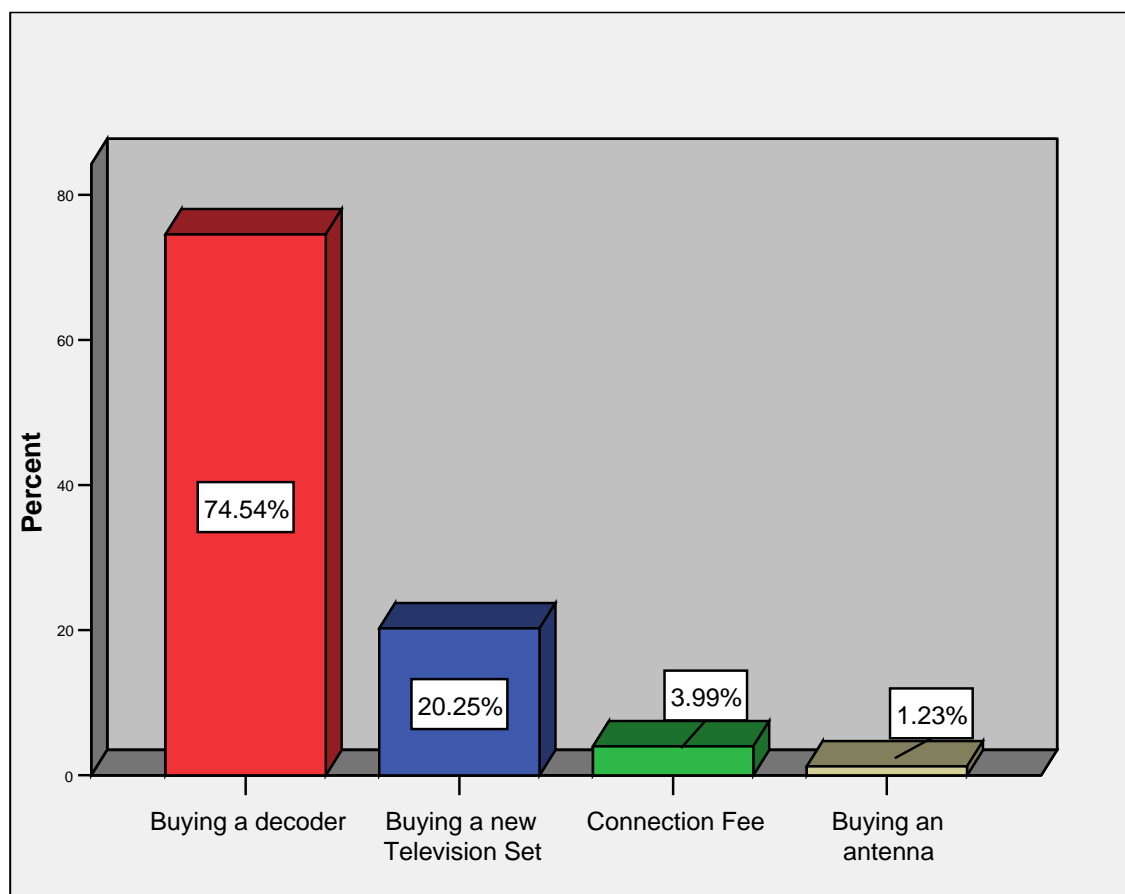
One household head respondent reported that the government took away even the free television they were watching and consequently, many Ugandans could only watch television if they had paid. In his own words, he lamented that “How many people can afford this television business? *‘Banange’ our government is not serious. My son was the one who bought this StarTimes decoder for me but sometimes it is off and the signal is not stable.*”

According to one broadcaster, there is a lot of competition because many broadcasters have joined the industry and we have to compete for the same viewers and there is little regard for quality.

4.5.2 Specific Item on which the Initial Digital Broadcasting Money Was Spent

The researcher sought to find out what specifically the respondents spent the initial digital broadcasting migration money on. Figure 11 shows the results.

Figure 11: Specific Item Initial digital broadcasting migration money was spent.



Source: Primary Data, 2018.

According to Figure 11, (74.54 percent) of the respondents spent their initial money for digital broadcasting migration on buying a decoder while 20.21 percent bought a new television set. This implies that most of the initial cost of digital broadcasting migration money was spent on purchasing decoders to enable reception of digital broadcasting signal.

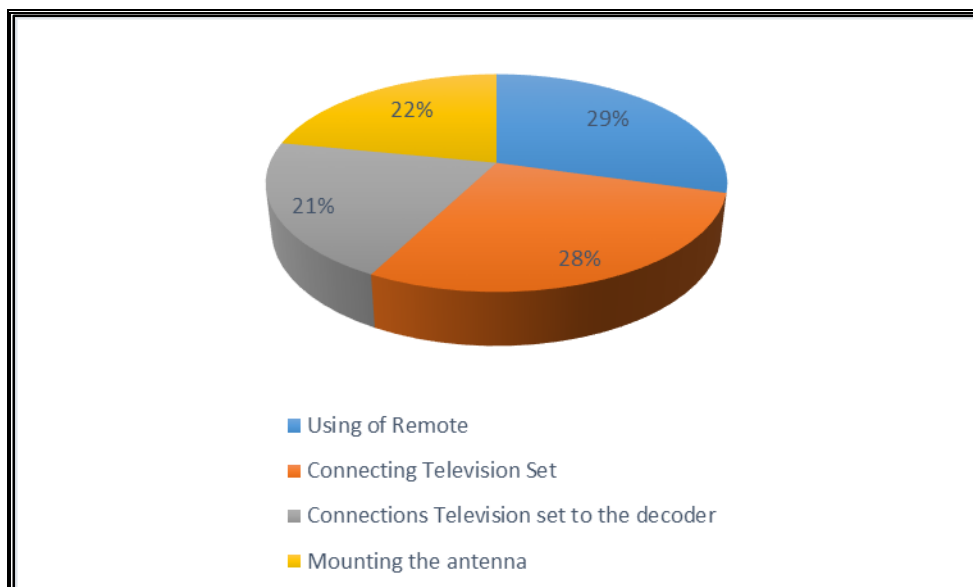
According to one Signal Distributor, one of the challenges they experienced was that the government did not plan early as per ITU agreement. The government did not avail the standard specifications for required set-top boxes. Furthermore, one of the signal distributor, indicated that the importation of set-top boxes was done very late in the implementation process, some consignments arriving after the analog switch off and this created a lot of anxiety among the consumers.

Interviews with broadcasters revealed that the television viewers could talk to the providers about what they should do and where they should get set-top boxes although the information from the government was not clear. The signal distributors and the broadcasters agreed that the government promised to import the set-top boxes and provide them to the consumers at subsidized prices, but there were delays that led to most of the government set-top boxes arriving after the analog switch off.

4.5.3 Use of gadgets for Digital Broadcasting

Use of gadgets for digital broadcasting was the other factor that affected digital broadcasting migration. Figure 12 shows the results.

Figure 12: Use of Gadgets for Digital Broadcasting.



Source: Primary Data, 2018

According to figure 12, there were challenges related to the use of gadgets to enable viewers' access digital broadcasting. Reportedly, 29 percent of the respondents had problems with the use of a remote control, while 28 percent had challenges with connecting the new television set. Other challenges included, mounting the antenna (22 percentage) and connecting television set to the decoder (21 percent).

“The old television set that we had did not need a remote, I think it got spoilt and misplaced some time back. We have been using the buttons to manage changing channels, there were not so many and sometimes we watch just one channel” (Household Head Respondent). Television viewers are not conversant with the details of managing television in the digital broadcasting dispensation. They have problems with following the manuals

provided and they want physical persons help in every step in the set up. They also scared of tampering with the antenna incase the signal is weak (Signal Distributor).

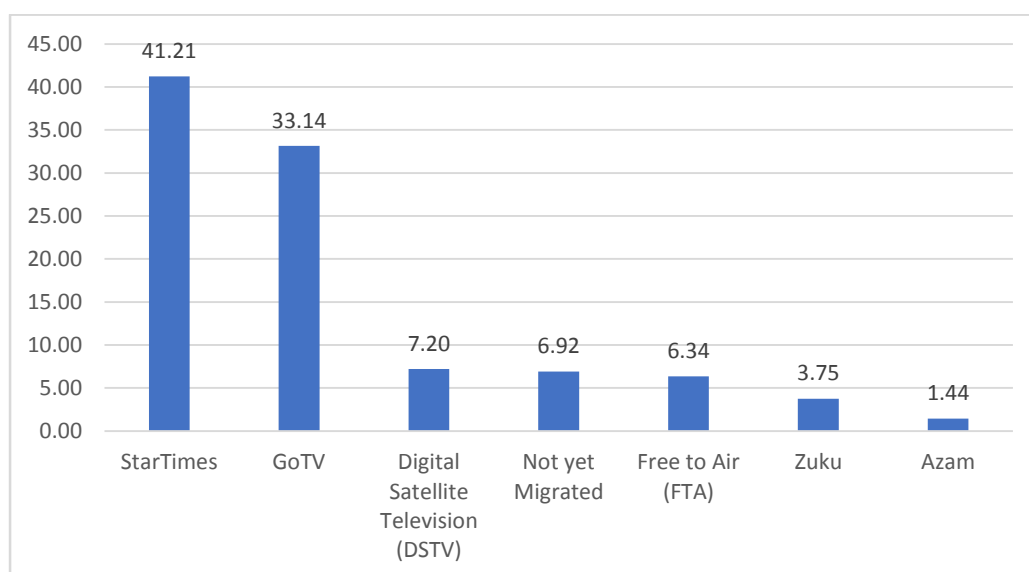
When the analog was switched off, many of our viewers were too confused, we literally had to send a team to some home stead, to help these customers in terms of setting the television set, connecting with the decoder and mounting the antennas, however, we could only reach so few out of the many that needed that help (Broadcaster).

“When we first migrated to digital, I could wait for my husband to come back from work, then he stays outside turning the antenna while am inside observing when we have a clear signal. Sometimes we ended up not watching anything, it was very frustrating. We finally acquired a dish” Household Head Respondent.

4.5.4 Respondents Signal Distributors

The digital broadcasting was a new dispensation where television viewers needed to subscribe to signal distributors as opposed to the public analog broadcasting which was provided by the government. The researcher therefore sought to find out the content providers that respondents were using. Figure 13 shows the results.

Figure 13: Respondents Signal Distributors



Source: Primary Data, 2018

According to figure 13, a total of 41.21 percent and 33.14 percent respondents were using StarTimes decoders and GoTV decoders respectively. These findings imply that respondents in Rubaga division subscribed to StarTimes and GoTV signal distributors.

According to a signal distributor, the StarTimes Uganda parent company is an electronic manufacturing company based in China. This company in preparation for the analog switch off, manufactured affordable set-top boxes for the Uganda market and that since the government procured set-top boxes delayed, the company had an advantage in the sale of set-top boxes.

According to another signal distributor, the company developed new products under a new company, the GoTV which enabled the provision of set-top boxes and fill the gap created by the government delayed set-top boxes consignment. The government, according to one household head respondent, was not fair since some people had already spent money on purchasing StarTimes before introducing free to air decoders.

“We are not happy with the way the government decided to give the signal distribution rights to a few players when all of us are paying taxes. This is because we provide the content for free to the viewers but the signal distributor evaluates and decides when you should be on or off. When the television viewers’ subscription expires they not able to view us, which I think is not fair. The discussions on this issues are still ongoing” (Broadcaster).

4.5.5 Bouquets Subscribed to by the Respondents.

The researcher sought to find out bouquets digital terrestrial television viewers subscribed to. Table 2 shows the results.

Table 2: Bouquets Subscribed to by Television Viewers.

Bouquet Subscribed to by television viewers	Frequency	Percent
StarTimes Basic	99	28.5
GoTV Plus	55	15.9
GoTV Lite	51	14.7
StarTimes Classic	26	7.5
Not yet Migrated	24	6.9
Free to Air Signet	22	6.3
StarTimes Nova	18	5.2
DSTV Premium	15	4.3
Zuku Super Plus	12	3.5
DSTV Family	7	2.0
GoTV Value	6	1.7
GoTV Maxi	6	1.7
Azam Plus	4	1.2
DSTV Access	1	0.3
DSTV Compact Plus	1	0.3
Total	347	100.0

Source: Primary Data, 2018.

According to table 2, StarTimes Basic Bouquet was subscribed to by 28.5 percent of the respondents while GoTV Plus and GoTV Lite bouquets were subscribed by 15.9 and 14.7 percent respectively with only 6.3 percent of the respondents indicating being on Free to Air decoders provided by government through Signet Uganda. This shows that although there were no monthly subscriptions on free to air decoders, it was not popular among the digital terrestrial television viewers.

Findings revealed that the government experienced some delays in the procurement of the decoders meant for free to air, and by the time they arrived the StarTimes and GoTV had sold their decoders to majority of the respondents.

According to one broadcaster, the digital broadcasting migration process did not go well with many people in Uganda with most of them thinking that government wanted to steal their money through subscription. So, the delay of the free to air decoders worked against the government free to air decoders hence the low penetration.

According to some household head respondents the signal of the Free to Air decoders provided by the government was so bad, and that some viewers abandoned them and bought GoTV decoders which apparently worked well for them.

“I want to view certain channels but when you subscribe for a bouquet you are provided with some channels you do not want and not given those that you want. Is it possible for one to pay for the channels they want, may be it could be cheaper than the current cost of subscription”
(Household Head Respondent).

4.6. Factors hindering Digital Terrestrial Television Viewership

The digital broadcasting migration is already an established phenomenon with some countries in region 1 and 3 having switched off analog on 17th June, 2015 and others expected to do so by 2020. The researcher therefore sought to find out the factors hindering digital terrestrial television viewership.

4.6.1 Cost of Monthly Bouquet Subscriptions

The researcher found out that one of the factors that hindered television viewers from experiencing digital terrestrial television viewership was the cost of subscription. Table 3 shows the results.

Table 3: Respondents Cost of Subscription.

Cost of Subscription	Frequency	Percent
5,001 - 30,000	146	48.03
30,001 - 60,000	115	37.83
60,001 - 100,000	3	0.99
Above 100,000	40	13.16
Total	304	100

Source: Primary Data, 2018.

According to table 3, a total of 304 out of 347 respondents were paying subscription costs for viewing television. A total of 43 respondents were on Free to Air or had not yet migrated. From the respondents who were paying for subscriptions, 48.03 percent spent between 5,001-30,000 Uganda Shillings, while 37.83 percent paid between 30,001 to 60,000 Uganda shillings per month. These findings imply that majority of the respondents spend between 5,000 to 60,000 Uganda shillings per month.

As reported by one signal distributor, “subscribers in Uganda are not loyal, they own more than one decoder from different signal distributors and only pay subscriptions at their convenient. They even have a free to air decoder, in case they have no money for subscription they can keep watching free channels.”

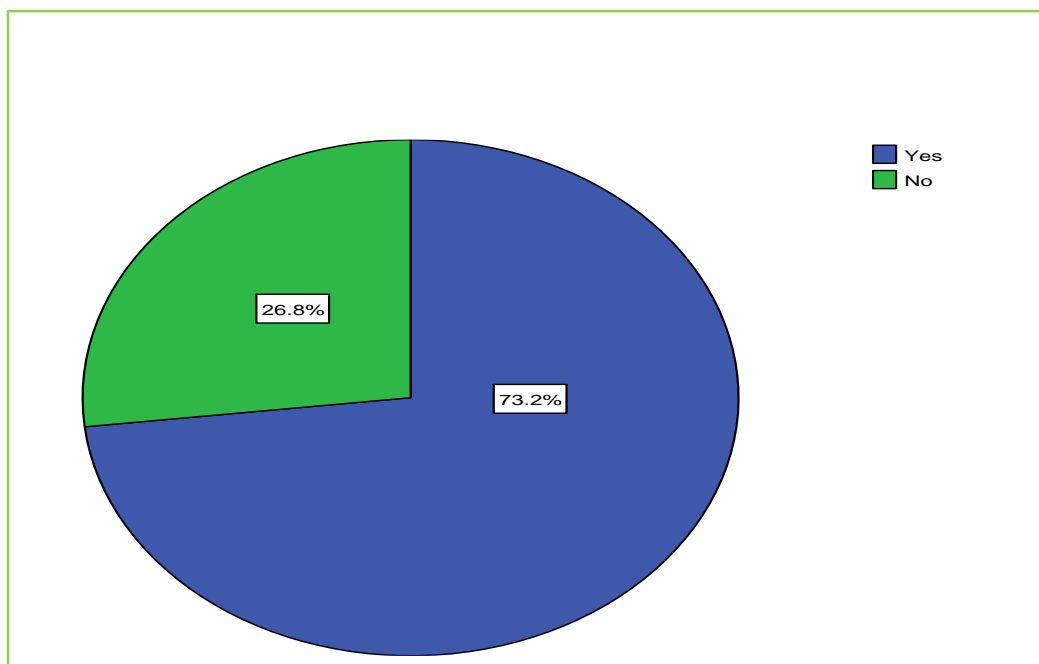
According to one broadcaster, “Uganda market is very difficult, people do not have enough money to spend on subscriptions for viewing television they prefer to watch few familiar channels.” A household head respondent expressed dissatisfaction with signal distributors, “they provide so many channels and want me to pay for them, when do, I have time to watch all these channels and that even our children are getting spoilt because of some foreign channels which show bad movies.” The cost of watching television, according to a Member of Parliament respondent, “the cost of subscriptions is high for a common *mwanainchi*, the analog broadcasting was fair to the people than this digital broadcasting, and that it might take a while before everybody enjoys the digital benefits.”

“The cost of watching television is very high the government has even brought in this tax for mobile money which makes the cost even higher” Household Head Respondent).

4.6.2 Respondents on Air Continuously Since Migrating to Digital Broadcasting.

One of the ways to view digital terrestrial television was paying subscription costs. The researcher therefore sought to find out whether the respondents were paying subscription costs to enable them continuously be on air and enjoy watching digital terrestrial television. Figure 14 presents the results.

Figure 14: Respondents “on air Continuously” Since Migrating to Digital broadcasting.



Source: Primary Data, 2018.

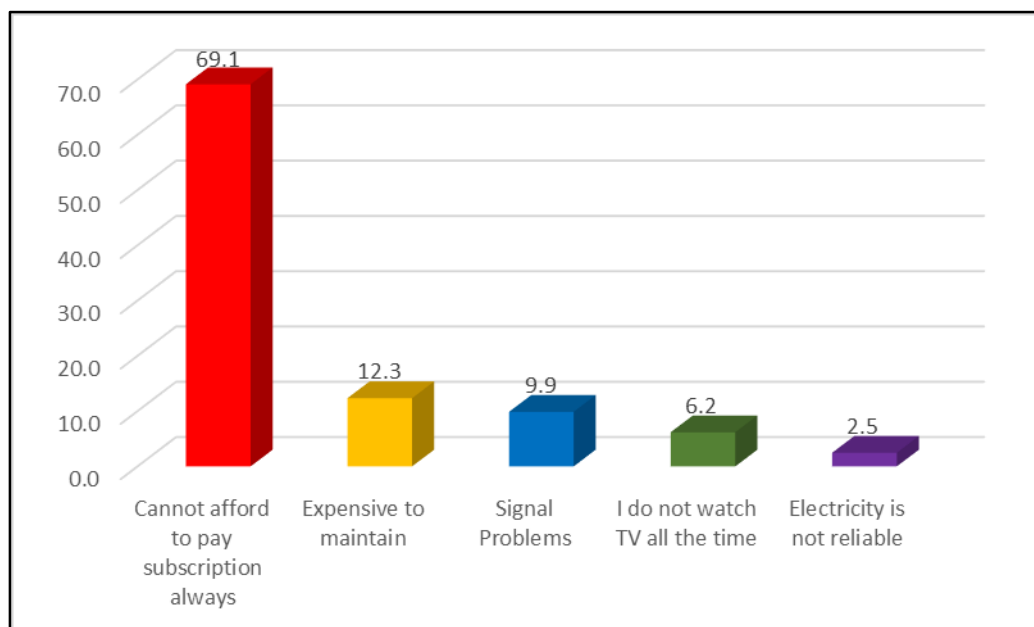
According to figure 14, 26.8 percent of the respondents indicated that they were not on air continuously. Thus, they regularly missed on their favorite programs due to inability to pay their subscription costs. This imply that television viewers coming from free public analog broadcasting were still finding it hard to be consistent on digital broadcasting subscription payment system.

One household head respondent disclosed his concerns, “You know our economy is not good, I have other demands for the little money that I get, so should I pay for television or pay school fees, or buy food for the family? I pay when I have money. If money is not there, we are off television.

4.6.3 Reasons why Respondents were Not on Air Continuously.

The researcher then sought to find from the respondents who indicated not being on air continuously the reasons.. Figure 15 shows the results.

Figure 15: Reasons for Respondents not being on air continuously



Source: Primary Data, 2018.

According to figure 15, majority 69.1 percent of the respondents not being able to afford to pay subscription always was the main reason for them not being on air continuously. 12.3 percent indicated that it was expensive to maintain being on air continuously.

According to one signal distributor, “Television viewers are not consistent in paying subscription costs, which subsequently affects our business because that is the only way we make profits. We have tried to devise ways to motive them to pay, such as paying per day or per week, but we have not been able to realize consistence subscriptions. We think in the next five years when digital broadcasting will have gained ground, the business might improve.

“ I pay for television when children are at home for holidays to prevent them from going to the neighbors to watch television, the other times I watch channels provided by free to air” Household Head Respondent. This imply that costs on subscription remain a hindrance to realizing full benefits of digital terrestrial television.

4.6.4 Respondents Preferred Television Programs

The researcher sought to find out what programs television viewers preferred to watch on digital terrestrial television while on air. Table 4 shows results.

Table 4: Respondents Preferred Television Programs

Preferred Television Programs	Frequency	Percent
Local News	236	68.01
International News	21	6.05
Movies	16	4.61
Soap Operas	26	7.49
Music	16	4.61
Sports	6	1.73
Cartoons	1	0.29
Documentaries	1	0.29
Not yet migrated	24	6.92
Total	347	100

Source: Primary Data, 2018

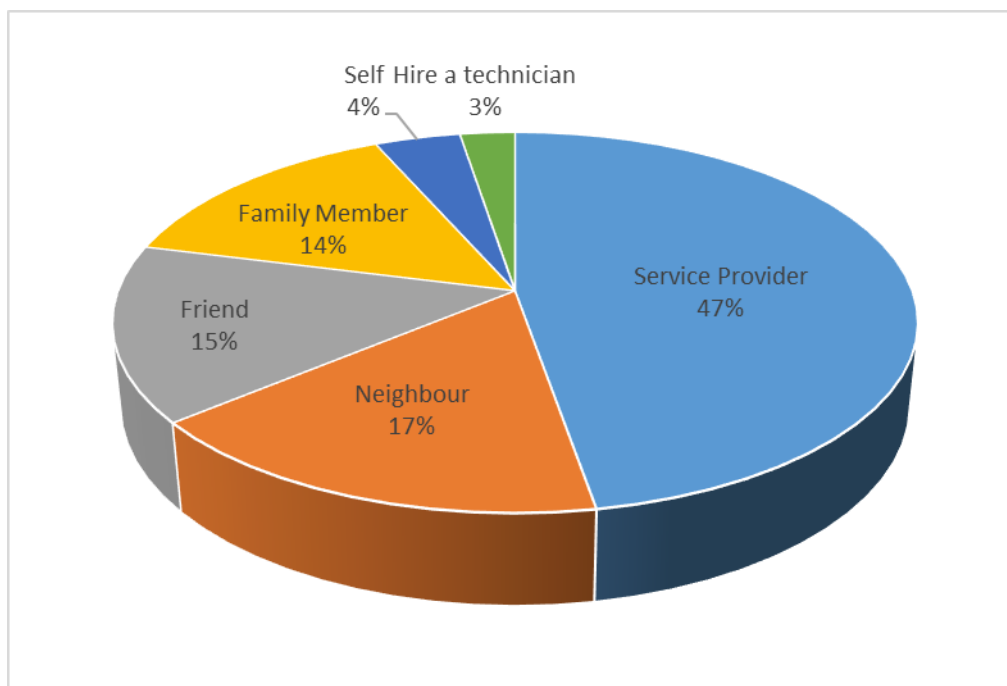
According to table 4, 68.01 percent of the respondents preferred watching local news. Some reported that their interest was in watching “*Agatalikonfuufu*”- the 10 o’clock Luganda news broadcast on Bukedde television. According to one broadcaster, “Local news are mostly sensationalized to capture the attention of viewers which many viewers like”.

A signal distributor revealed that viewership of television programs was dictated by factors such as those subscribed to when children were at home for school holidays, such as cartoons, documentaries and teenage programs and those subscribed when children are at school. The researcher further found that although one signal distributor had a software of finding out the viewership of various program at different time broadcasters relied on a research group to give them viewership status either quarterly or after six months.

4.6.5 Source of Help in case of Digital Broadcasting Problems.

The digital broadcasting was a technical process and there was need for substantial guidance to enable television viewers navigate through the available programs. Therefore, the researcher sought to find out in case of problems with the digital broadcasting where did the respondents seek for help. Figure 16 shows the results.

Figure 16: Source of help in case of Digital Broadcasting Problems.



Source: Primary Data, 2018.

According to figure 16, majority 47 percent of the respondent sought help in case of any problem with the digital broadcasting from signal distributors and broadcasters. However, neighbors, friends and family members were also sources of help as indicated by 17, 15 and 14 percent of the respondents.

One signal distributor affirmed that “Our service centres are out bound calls that means we can only call consumers, they cannot call us. So sometimes consumers may have issues and are constrained by lack of access to the call service care centres. However, we have people on the ground in different areas to service our customers.”

One of the household head respondents reported that “the service providers keep on holding customers on phone for so long which is so costly yet they do not return calls, thus forcing viewers to seek for help elsewhere. Indeed, other viewers, according to respondents, were dissatisfied with the television signal strength and wondered why the service providers would not resolve it.

The researcher found out that during the transition period and immediately after the switch off analog and switch over to digital broadcasting, there was a gap in the numbers of personnel from the signal distributors and broadcasters who had adequate technical capacity to handle the different issues emerging in the digital broadcasting. According to the signal distributors, this issues was being addressed with a number of people being trained to attend to different technical issues arising from digital broadcasting and these numbers are poised to increase. According to one broadcaster, there was still need to have the television viewers trained on basic knowledge of managing the digital terrestrial television in terms of handling and use of remote control gadget and antennas.

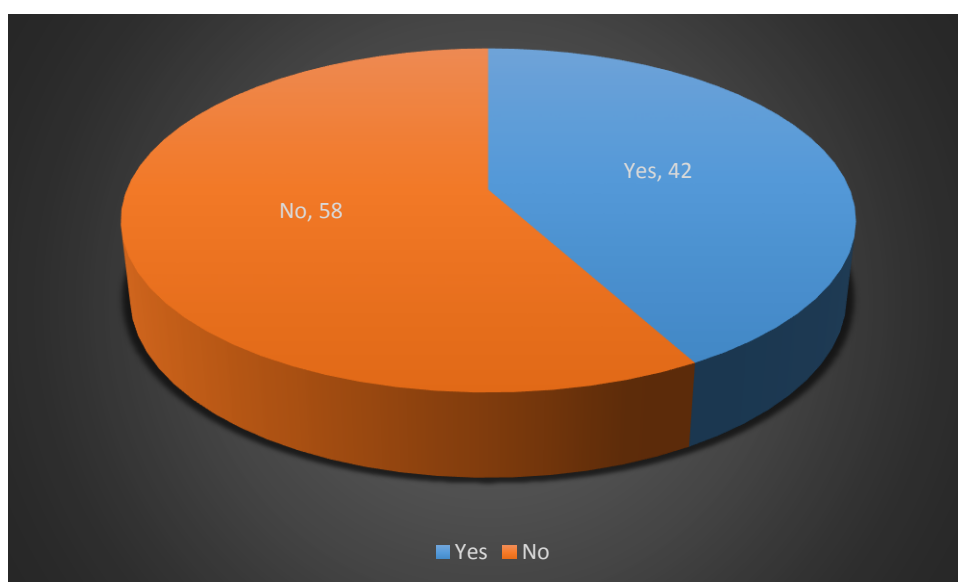
4.7 Respondents Views on Satisfaction and Benefits of Digital Broadcasting

The digital broadcasting was envisioned to bring significant benefits to the government, the industry and the consumers (television viewers). The research therefore sought to find out how satisfied the respondents were with the digital terrestrial television, the content providers and the government in the implementation of the digital broadcasting migration.

4.7.1 Respondents View on how comfortably settled they were in digital Broadcasting

The researcher first sought to find out the views of the respondents on how comfortably they had settled in digital broadcasting. Figure 17 shows the results

Figure 17: Respondents' view on how comfortably they had settled in Digital Broadcasting



Source: Primary Data, 2018

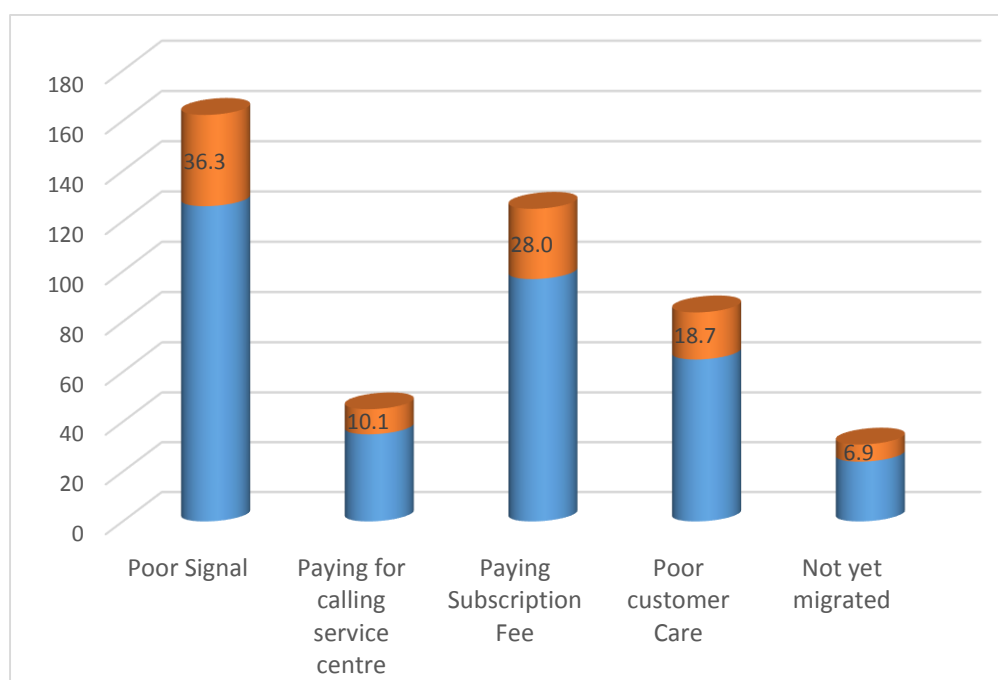
According to figure 17, 42 percent of the respondents had comfortably settled in digital broadcasting while 58 percent of the respondents were of contrary opinion. “The television viewers are enjoying the digital terrestrial television because the pictures are clear and they have access to many channels that in analog broadcasting, was not the case” (Broadcaster). According to one signal distributor, the numbers of people paying their subscriptions have steadied significantly over the past two years with television viewers taking advantage of one

of the available systems of subscription either, daily, weekly, months and others. “We are hopeful that the market may improve in the next five years if the government can play its role in providing good infrastructures”

4.7.2 Reasons for Respondents not comfortably settled in Digital Broadcasting.

The researcher then sought to find out the reasons why some respondents had not comfortably settled in the digital broadcasting. Figure 18 shows the results.

Figure 18: Reasons respondents have not comfortably settled in digital broadcasting.



Source: Primary Data, 2018

According to figure 18, a number of reasons made respondents uncomfortable in digital broadcasting. These included; poor signal reception by 36 percent, paying subscription fee by 28 percent and poor customer care by 18.7 percent of the respondents. These findings imply that signal distributors were major players in ensuring that digital terrestrial television viewers comfortably settled in digital broadcasting.

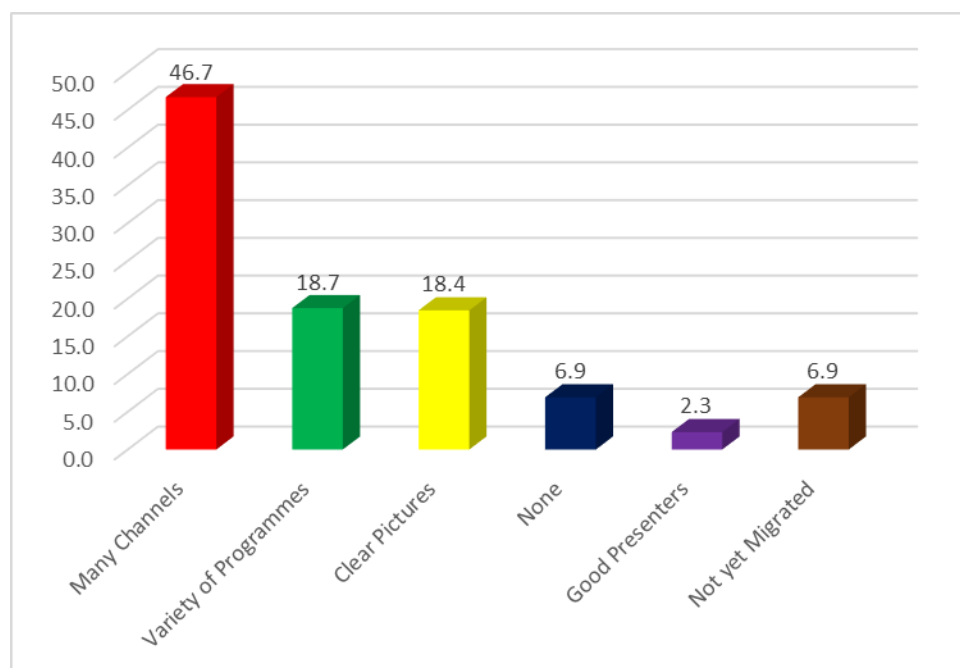
As reported by a signal distributor, the television viewers have majorly migrated to digital broadcasting but they are yet to get used to paying monthly subscription fees for

viewership. “We expect that since there is no turning back to analog broadcasting, the television viewers will create budgets for subscription and reduce on periods when they have to be off air”.

4.7.3 Respondents Perceived Benefits of Digital Broadcasting.

The researcher then sought to find out the benefits the respondents perceived to have experienced from being on digital broadcasting. Figure 19 shows the results.

Figure 19: Respondents Digital Terrestrial Television Perceived Benefits



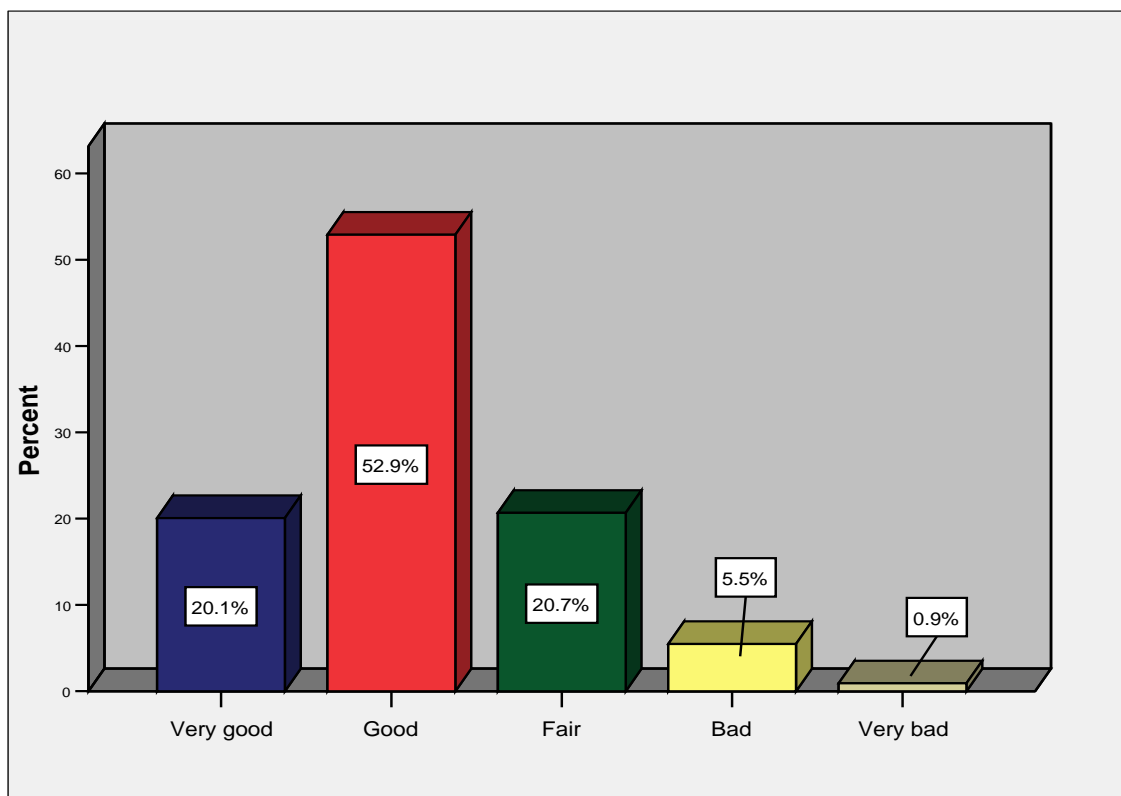
Source: Primary Data, 2018.

According to figure 19, a total of 46.7 percent of the respondents were enjoying viewership of many channels and 18.7 and 18.4 percent of the respondents were happy with variety of programs and clear pictures respectively. However, 6.9 percent of the respondents indicated that they had not benefited at all from digital broadcasting which was the same percentage of the respondents who indicated to have not yet migrated to digital broadcasting. It was reported that “Consumers are happy but the issue of subscriptions does not go well with them, therefore when it comes to expiry of subscriptions, then they complain.” (Signal Broadcaster).

4.7.4 Respondents Satisfaction Levels about Digital Terrestrial Television.

The researcher sought to find out the satisfaction levels of respondents about digital terrestrial television. Figure 20 shows the results.

Figure 20: Respondents Levels of Satisfaction about the Digital Broadcasting



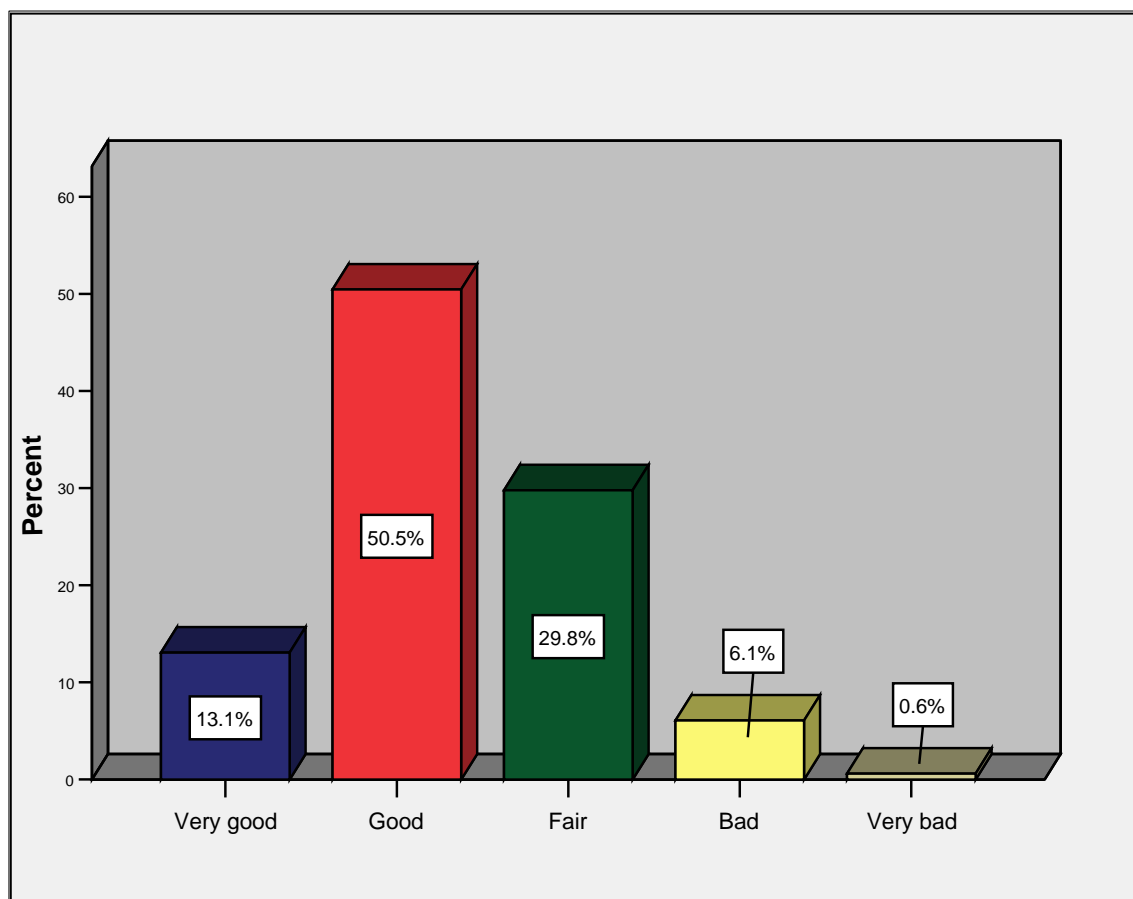
Source: Primary Data, 2018

According to figure 20, more than half of the respondents (52.9 percent) indicated that digital broadcasting was good. 20.1 percent and 20.7 percent of the respondents indicated that digital broadcasting was very good and fair respectively. These findings imply that consumers were fairly satisfied with the digital broadcasting.

4.7.5 Respondents Satisfaction Levels about Content Providers Services.

The researcher sought to find out the satisfaction levels of respondents about content providers' services. Figure 21 shows the results.

Figure 21: Respondents' Satisfaction Levels about Signal Distributors



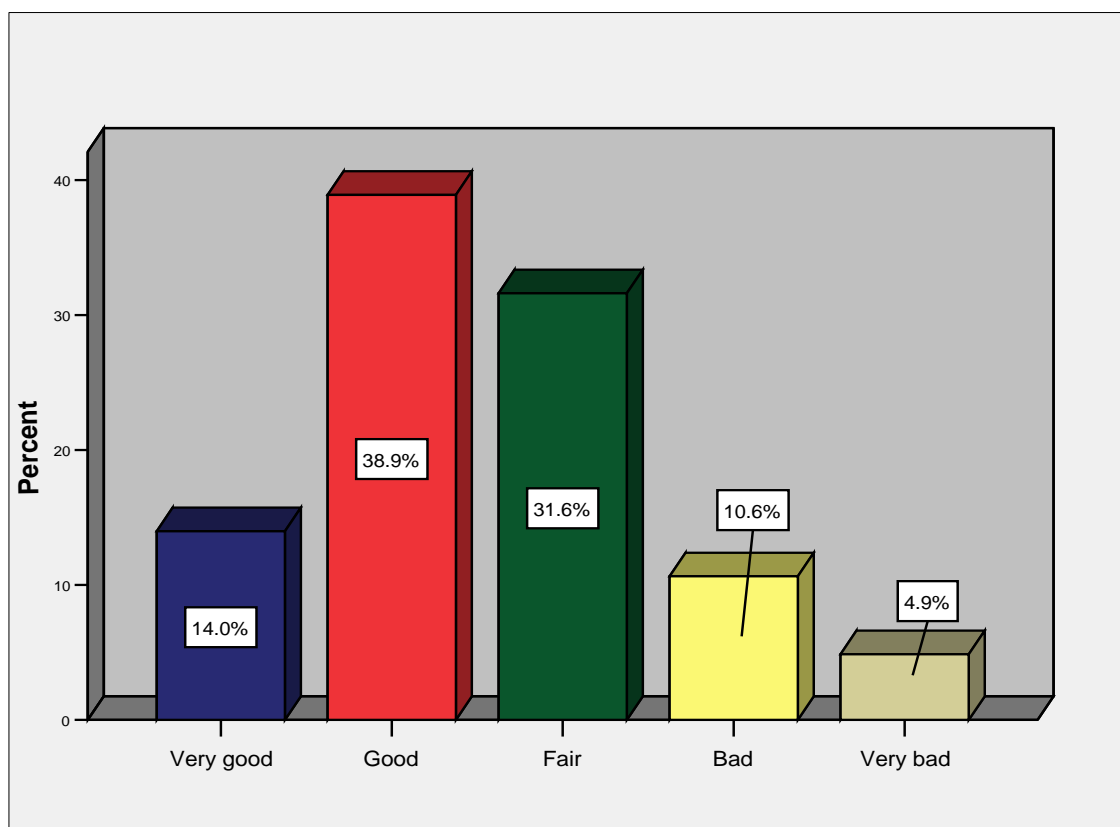
Source: Primary Data, 2018.

According to figure 21, (50.5 percent) of respondents indicated that signal distributors services were good. However, these findings further indicate that 6.1 and 0.6 percent of the respondents felt that signal distributors services were bad and very bad respectively. These findings imply that there is need for the signal distributors to improve the services and ensure that percentages of dissatisfied customers are significantly reduced.

4.7.6 Respondents Satisfaction Levels about the Government Implementation Process

The researcher sought to find out how satisfied respondents were with the way the government implemented the digital broadcasting migration process. Figure 22 shows the results.

Figure 22: Respondents Satisfaction levels about Government implementation process



Source: Primary Data, 2018

According to figure 22, respondents' satisfaction of government implementation process was below the 50 percentage mark of assessment with 38.9 percent indicating that it was good and 31.6 percent indicating that it was fair. These findings imply that the respondents were not well prepared by the government or did not perceive the digital broadcasting migration as key in aspects perceived development agenda of the government.

4.8 Recommendations on How to Improve Digital Terrestrial Television

The researcher sought recommendations from the respondents on how they thought should be done to ensure everybody enjoys digital terrestrial television in Uganda. Table 5 presents the recommendations.

Table 5: Respondents Recommendations to improve Digital Terrestrial Television.

Recommendations	Frequency	Percent
Reduce Subscription fee	87	25.1
Reduce on Taxes	65	18.7
Improve Signal	63	18.2
More public sensitization	24	6.9
Not yet migrated	24	6.9
Make digital terrestrial television free	23	6.6
Service Providers to run Local channels when subscription expires	12	3.5
Reduce cost of Decoders	11	3.2
Train customer care staff	5	1.4
Provide Decoders for Free	4	1.2
Government to extend Free to Air all over the country	4	1.2
Government to improve on Rural Electrification to support digital television	4	1.2
Give Promotion and Free Offers	3	0.9
Add More Channels	2	0.6
Add CNN on Free Channels	2	0.6
should be under government control	2	0.6
Revert to Analog which was free	2	0.6
Pay subscription once a year	2	0.6
Zuku should reduce the subscription rates	2	0.6
Harmonize charges across all service providers	2	0.6
Give all channels as long as we have paid	1	0.3
Make it compulsory for all people	1	0.3
Service Providers to send out scouts to subscribers	1	0.3
Government should put laws to reduce pornographic movies	1	0.3
Total	347	100

Source: Primary Data, 2018.

According to table 5, respondents recommended a number of things to improve digital terrestrial television. Reduction of the subscription fee was recommended by 25.1 of the respondents. This was followed by 18.7 and 18.2 percent of the respondents who recommended that reduction on taxes and improvement of signal strength respectively who significantly improve digital terrestrial television.

However, 0.6 percent of the respondents recommending reverting the digital to analog broadcasting imply that there are elements of respondents that were not clear on the global movement of broadcasting. The finding further shows that harmonizing of subscription fee across the service providers by 0.6 percent of the respondents and 0.3 provide all channels as long as one as paid the subscription fee shows that there were knowledge gaps in the customers (television viewers) understanding of the process and the future implication of the digital broadcasting.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

Chapter five present the discussions of the findings, the conclusions and recommendations of the study on digital broadcasting migration and television viewership carried out in Rubaga division Kampala District. This chapter is presented according to the study objectives to: assess the knowledge levels of television viewers about digital broadcasting migration; evaluate the Digital broadcasting migration process in Uganda; establish factors that might have affected the digital broadcasting migration; and find out factors hindering digital terrestrial television viewership.

5.2.1 Levels of knowledge about Digital Broadcasting Migration

Digital broadcasting migration process was a technical process that required adequate knowledge for effective migration. The researcher however, found out that only 1.7 percent of the respondents had the required knowledge about digital broadcasting migration. This finding agrees with the findings of a study by Chan-Olmsted & Chang (2006), investigating the levels of consumer awareness and knowledge of digital television (DTV) in the USA, which found out that consumer knowledge about DTV was minimal, with almost half of the respondents not familiar with the differences between digital and analog TV.

The issue of knowledge was an important component in the digital broadcasting migration as Berger (2010) had earlier pointed out that unless the end-users were made aware of the need to adapt to receive digital signals, the digital broadcasting migration process was doomed to failure. The researcher found that in most African countries particularly Uganda the knowledge about digital broadcasting migration was different from that of the European countries and as Bozsóki (2016) points out 38 countries in Europe had completed their ASO against only 4 in Africa by 2012 despite being in the same frequency region. Further agreeing

with Rogers, (1962), diffusion of innovation that decision to accept or reject an innovation is based on levels of knowledge and persuasion, which in my view could have been lacking in the case of Uganda especially in the case of only 1.7percentage indicating having adequate knowledge levels.

The digital broadcasting migration required television viewers to make a number of adjustments to enable transition, the major one was acquiring set top boxes or integrated digital television receivers to enable receive digital terrestrial transmissions. The researcher found out that 87 percent of the respondents did not have any knowledge of what equipment were required for digital broadcasting migration. The researcher however, found out that 87 percent of the respondents were not aware of the equipment's required to enable the transition, which Rosenberg, (2013), explains, that international experience had shown that two of the key factors critical to the success of digital migration were affordable set top boxes and consumer awareness. Furthermore, in Chan-Olmsted & Chang' (2006) study investigating levels of consumer awareness and knowledge of digital television in USA, which found out that close to 70percentage did not know that most TV sets in use would need a converter box to continue receiving terrestrial broadcast signals when the transition was complete, could explain the state of a Ugandan television viewer.

Knowledge to enable one decide to accept or reject an innovation as explained in the diffusion of innovation theory is based on levels of sensitizations through persuasion. The researcher further found out that although 90 percent of the respondents indicated having seen some advertisement on television, this information seemed not have impacted on their decision on digital broadcasting migration. Atkin et.al (2000) in agreement pointed out that "there was still relatively little known about viewer knowledge and interest in adopting the new, high resolution television receivers." Similarly, Shu-Chu' (2014) study carried out in Taiwan on digital television adoption, suggested that the government needed to exert more efforts to

educate people about digital terrestrial television and digital cable, which would in the long run speed up the diffusion of the technology in Taiwan. The researcher further observes that unless face to face engagements are taken up television viewers are not likely to experience the benefits of digital terrestrial television.

5.2.2 The Digital Broadcasting Migration Process

The smooth digital broadcasting migration process was crucial for transition from analog broadcasting to digital broadcasting. The researcher found out by the time the study was carried out in 2018 that although 93 percent of the respondents had already migrated to digital broadcasting, 87 percent of them indicated that they were not prepared for the transition,

According to the Digital Broadcasting Policy 2011 the government of Uganda was expected to carry out a number of activities to ensure that the migration process was executed smoothly and completed within the agreed timeframe. These included: a) Putting in place appropriate policy, legislative and regulatory frameworks to enable smooth execution of the migration process within the set time lines; b) Undertaking fiscal measures to enable consumers procure set top boxes and digital TV receivers at affordable prices, for example, through tax waivers and subsidies; c) Provide appropriate incentives and support for the signal distributor and broadcasters to put in place necessary digital infrastructure and systems; and d) Support the development of local content.

This scenario was earlier predicted by Lugalambi (2010), that “Uganda preparedness was wanting as late as 2010 and although there were clear intentions, there was no Digital Migration Policy in place to guide the digital migration process.” This similar view was identified by a Uganda Broadcasting Corporation (UBC) Review Committee report (2016) which found out that Uganda was off to a late start due to delays in making important decisions towards digital broadcasting migration which subsequently affected deadlines.

The researcher further found out that only 26.8 percent of the respondents migrated to digital broadcasting in 2015 with 40.63 percent of the respondents migrating in 2016. This finding imply that at the analog switch off on 17th June, 2015 the respondents may not have been well prepared to migrate to digital hence the higher percentage that migrated in 2016. The other reason could be the manner in which the analog switch off was perceived by the respondents. According to Parliament Watch report (2015), the analog switch off took majority of television viewers by surprise and provoked a backlash from consumers, television broadcasters, human rights groups and politicians with some people protesting by carrying television sets to the UCC offices. As if that was not enough, a private citizen presented a case at Mengo Grade II Magistrate court, where an injunction was issued to stay analog broadcasting, and although this action gave temporary relief, it reflected the uncertainty television were experiencing.

More so, the researcher found out that the motivation of the respondents to migrate to digital broadcasting was that they did not have a choice as was indicated by 51.68 percent of the respondents. Indeed, as Berger (2010) had earlier alluded to, digital broadcasting migration was a government's decision made at GE06 meeting by ITU and as such, member states had to back the ITU decision on a timetable for digital migration. This was because after the defined cut-off date, ITU would no longer intervene to protect a country's TV broadcast signals in any instances where these were being swamped by a neighbour's, unless those signals had been switched to digital; this was further echoed by Imaka (2011) who stated that the government had to switch off the analog broadcasting despite the levels of preparedness because the consequences of missing ITU deadlines would leave a country devoid of ITU protection of analogue television signals from interference from neighboring countries.

The researcher felt that the process could handle better if the process started early and all stakeholders were involved, however, there is need to adjust the gaps that created in the

process of digital broadcasting and enable all stakeholders enjoy the benefits envisioned for the digital broadcasting migration.

5.2.3 Factors that affected the digital broadcasting migration process

There were a number of adjustments that needed to be done to enable digital broadcasting transition but most importantly was the fact that there were costs that needed to be incurred by the implementers as well as the television viewers. The researcher found out that the initial cost of digital migration affected the digital broadcasting migration with 47.4 percent of the respondents having spent between 100,001-300,000 and 40.67 percent of the respondents having spent below 100,000 Uganda Shillings. These costs corresponded with monthly incomes of the respondents that showed that 32.3 percent of the respondents were earning between 100,001-300,000 Uganda Shillings and 21.3 percent of the respondents were earning below 100,000 Uganda Shillings. With an agrarian economy like Uganda where people are faced with a number of demands on income against dwindling incomes, the researcher found that respondents were hard pressed to migrate or not to migrate.

The researcher further found that 74.5 percent of the respondents spent their initial cost of digital broadcasting migration to purchase a decoder while 20.2 percent bought a new television set. Although, according to Githinji, (2014), the government of Uganda had promised to subsidize the digital set-top boxes, the researcher did not find any information on how this promise was fulfilled. This promise could have been made in line with the forerunner South Africa, where the government made a decision to subsidize 70 percentage of the cost of a set-top box for an estimated five million households (of a total of nine million viewing households), who were not able to afford the device (estimated retail cost \$60 - \$100 for a basic box), but there was still debate over how the subsidy was administered (Berger, 2010:39). The implication was that majority were switched off and had to wait before they could acquire the necessary equipment and pay required subscriptions to be on air. This could be explained by

the situation of Tanzania which Mason & Schuman, (2013) explains that Tanzanian's pioneering switch-off was achieved at the expense of an appreciable number of viewers who lost access to TV for a time estimated at around 20 in one city. The researcher could not however, ascertain how long people were off air but the respondents who migrated at the initial switch off on 17th June, 2015 were only 26.8 percentage. This implies that a sizeable number of respondents might have been off air for some time before they could have the perquisite to enjoy the digital terrestrial television.

The researcher further found that the use of digital migration gadgets affected the digital migration process. 29 percent of the respondents had problems using remote control device to navigate through digital broadcasting, 28 percent had problems connecting the new television set. 22 percent had challenges with mounting the antenna and connecting the television to the decoder was a problem to 21 percent of the respondents. These findings show that the television viewers had basic problems that could have easily been resolved if the necessary sensitizations and basic awareness creation was carried out. The signal and content providers agreed that there was indeed limited time of sensitization and they received a number of complaints with consumers who had manageable challenges of connections and management of antennas. The researcher further found out that as of 2018 when this study was being carried out 6.92 percent of the respondents had not migrated to digital broadcasting strangely an equal percentage with the respondents who were on free to air broadcasting. This implies that there is a mismatch of information about pay television and free to air or probably there is inability to incur the initial cost of set top box decoder.

5.2.4 Factors hindering digital terrestrial television viewership

The ultimate global Analogue Switch off (ASO) aimed at gaining spectrum efficiency which would result in consumer benefits. The key benefits include: Wider choice in TV and radio channels; Improved picture and sound quality; Greater flexibility due to portable and

mobile reception; Enhanced information services including the Electronic Programming Guide, enhanced 'teletext' services and, where a return path is available, a wide range of interactive services like video-on-demand, e-banking, e-learning;. Future innovative services and lower prices: increasing market competition and innovation thanks to the potential arrival of new entrants at different levels in the value-chain, for instance new service providers, broadcasters, network operators or developers of interactive applications. In addition, switchover implies specific benefits for some categories of market players: easier storage/processing of content and reduction of transmission costs. Lower prices (per channel) for the end-consumer are possible. International studies have shown that DTTB networks are inherently cheaper than the other two major competing platforms satellite and cable (ITU, Guidelines, 2010, p.8, 9).

The researcher however, found out that 26.8 percent of the respondents were not on air continuously. This implies that the realization of the benefits may not be realized with sections of being not being on air continuously. The researcher further found out that 69.1 percent of the respondents who were not on air continuously were not able to afford to pay for subscription always while 12.3 percent of the respondents indicated that being on digital broadcasting was expensive. This implies that there is need to have a program to enable consumers benefit from digital terrestrial television.

5.3 Study Conclusions

The study on digital broadcasting migration aimed at understanding the experiences of television viewers prior, during and after digital switch over. Ordinarily, the digital migration process was a global and complex involving many partners making decisions at various levels. At the global level, member states through the International Telecommunications Union (ITU) meetings led to the deadline on analog switch off and digital switch over in different regions. Thus, said the researcher through literature review observed that African countries including

Uganda have been slow in making decisions and putting in place infrastructure for implementation leading to the analog switch off and digital switch over. Despite representation in various meetings by ITU (see Appendix V) Uganda lagged behind in the global schedule leading to analog switch off. Uganda failed to learn from experiences of the countries that had already migrated, as explained by ITU It was thus, important for Africa to adopt realistic time schedules, noting that in Europe the period between Digital Terrestrial Television Broadcasting (DTTB) launch and completion of analogue TV switch-off ranged from 3 to 14 years (ITU Guidelines, 2010).

5.3.1 The levels of knowledge about digital broadcasting migration

The researcher found out that the levels of knowledge 1.7 percent on the lower end and therefore as Rosenberg, (2013), explains basing on international experience that two of the key factors critical to the success of digital migration were affordable set top boxes and consumer awareness. Therefore other factors notwithstanding the limited knowledge could have adversely affected the decision of the television viewers on whether to adopt or reject the digital broadcasting migration. This ultimately imply that the envision benefits at various levels including to the government, the business sector and the consumers may not be experienced in the short or medium terms unless measures are taken to bring all the parties at a common understanding of the digital broadcasting dispensation.

5.3.2 The digital broadcasting migration process

The study found out that although by 2018 majority 93 percent of the respondents indicated having migrated, there were still 7 percent of the respondents who had not migrated. Moreover, of those who migrated, 87 percent indicated that they were not prepared for the digital migration and were of the view by 49.74 percent and 38.46 percent that sensitization and teaching about digital broadcasting migration should have been carried out prior to the transition. This came as no surprise since 51.68 percent of the felt that they had no choice but

to migrate. These findings on the process of digital migration shows that television viewers felt left out of the process and forced to migrate by the government, there was less involvement of the television viewers in the process and they were left to devise ways of how best they could enjoy television viewership.

The Parliament Watch, (2015) captures vividly the reaction of the television viewers upon the analog switch off on 17th June, 2015 within the 60km radius. The parliament watch indicated that the analog switch off took majority by surprise, thereby eliciting a backlash from consumers, television broadcasters, human rights groups and politicians with some people protesting by carrying television sets to the UCC offices. This reaction can only be done by people who are caught unaware of the process. To make the matters more complicated in the digital migration process, a private citizen presented a case at Mengo Grade II Magistrate court, where an injunction was issued to stay analog broadcasting, and although this action gave temporary relief, it reflected the uncertainty television viewers were experiencing. After these uncertain times, television viewers stayed put and missed out on viewership as is reflected in the findings on the years of digital broadcasting migration where only 26.8 percent migrated in 2015 and 40.63 percent migrated in 2016. However, there was a still a 6.92 percentage of the respondents that are yet to migrate by 2018 and 26.8 percent of the respondents who indicated not being on air continuously.

5.3.3 Factors that affected the digital broadcasting migration process

The study found out that the initial cost of migration affected digital migration process, where 40.67 percent of the respondents spent below Ugshs.100,000 and 47.4 percent spent between Ugshs.100,001 – 300,000. Bearing in mind the respondents earning according to the study were 21.3 percent earned below Ugshs.100,000 and 32.3 earned between Ugshs.100,001-300,000. Most of the respondents 74.54 percent and 20.25 percent spent their initial costs on digital broadcasting migration on buying decoders and new compatible television sets.

However, if the promise to provide free set-top boxes which the government had made as mentioned by Githinji. (2014) in line with what was done in South Africa as mentioned by Berger, (2010), then probably the Uganda television viewers would have had a better transition.

It is important to note that the digital terrestrial television switch off date set by RRC-06 was meant to guide the member states about the eventual global move (ITU-RRC-06), and countries had a choice to choose from either 2015 deadline or extend to 2020. However, most African countries probably devoid of adequate consultations, opted for 2015 which turned out to be a tall order. Despite the fact that the country seems to have migrated, there is need for adjustments to be effected because as the guidelines to digital broadcasting migration ITU, 2010 advised that the digital terrestrial television and mobile television networks may need to be modified in the future because of the changing viewer needs, new technologies and services ITU, Guidelines, 2010. Pg 9).

5.3.4 Factors hindering digital terrestrial television viewership

The study found out that although majority 93 percent of the respondents had migrated to digital broadcasting by 2018, 26.8 percent were not on air continuously because they could not afford subscription fee always. The reasons for not being on air continuous were that 69.1 percent could not afford to pay subscription fee always and 12.3 percent indicated that it was expensive to maintain being on air always. This implies that the cost to view television in Uganda was a hindrance to majority of the television viewers since they had to regularly pay subscription fee which majority felt that it was high compared to their income. There was competition on the limited television viewer's resources with other household demands such as rental fees, utility payments, and school fees, household upkeep including food and groceries, airtime and tax payments. The researcher feels that the television viewers income was over stretched and feared that many could devise unlawful means of staying on air.

The researcher concluded that there was still low levels of knowledge about digital broadcasting and specifically digital terrestrial television, equipment and their use and the perceived high subscription costs by the respondents. This inadequate knowledge by television viewers may eventually delay the full realization and enjoyment of the envisioned benefits of digital broadcasting. Furthermore, the government, due to a number of factors, started the digital broadcasting process later than the ITU guidelines envisioned. This led to a haphazard process towards analog switch off, eventually making consumers uncomfortable in adopting to digital broadcasting. The researcher observed an unease perception of digital broadcasting by the television viewers with politics and foreigners hinted as the beneficiaries of the digital broadcasting. Nonetheless, Television viewers were very unhappy with monthly subscription fees payments, although some respondents assumed that the government was soliciting funds for political activities, thus creating unsubstantiated assumptions about digital broadcasting. Certainly, there is a need for deliberate clarity by the government and service providers on the actual goals and intended benefits of terrestrial digital migration for better viewership experience.

5.4 Recommendations

5.4.1 Levels of knowledge about digital broadcasting migration

The researcher recommend that although there is the notion that digital broadcasting migration has taken place, there is need for the government and other stakeholders to budget and roll out comprehensive sensitization programs beyond advertisements, targeting all stakeholders specifically television viewers to enable adequate knowledge about digital broadcasting which will lead to eventual experience of the benefits of the digital broadcasting.

5.4.2 The digital broadcasting migration process

The researcher further recommends that an assessment be carried out to assess the gaps at different levels of implementation and inform possible solutions to ensure a fully digital

Uganda. There a number of gaps that the academic could clarify with further studies especially in relation to the amount of radio frequency dividend realized and how this could trickle to the benefits of ordinary television viewers probably by lowering the cost of subscriptions of initial acquisition of decoders. There is also need for an assessment of signal distribution rights because initially as noted from other countries like Kenya (Ndonye, et al 2015) there were protruded court cases that delayed the implementation of the transition, a study would help understand how these program providers are working with the few authorize content carriers.

5.4.3 The factors that affected the digital broadcasting migration

The costs of migration was a major hindrance to the digital broadcasting migration process. There is a need for a candid discussion on equipment, especially decoders, in terms of availability, costing, quality and standardization so that the television viewers acquire equipment commensurate to the value for money. There is also need to revisit government promise on subsidization of decoders or any other promise for digital broadcasting. A clear pronouncement on the implementation should be communicated through the Uganda Communication Commission (UCC) using all available media to reach the television viewers.

5.4.4 Factors hindering the digital terrestrial television viewership

The cost of subscriptions is one major factor that is hindering television viewers from fully benefiting from digital terrestrial television. There is need for studies to guide on the alignment of subscription fees and channels provided to the television viewers. The study recommends that discussions be held with sector stakeholders to align the costs of subscriptions with the number of channels in consideration of the state of the economy in Uganda. The research further recommends that communication about the digital terrestrial television be made to enable reduce on the perceived or actual gap among the television viewers in view of affordability and right to access information through television.

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APPENDICES

Appendix I: Krejcie and Morgan (1970): Determining Sample Size for Research.

EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT 1970, 30, 607-610.

DETERMINING SAMPLE SIZE FOR RESEARCH ACTIVITIES

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The ever-increasing demand for research has created a need for an efficient method of determining the sample size needed to be representative of a given population. In the article "Small Sample Techniques," the research division of the National Education Association has published a formula for determining sample size. Regrettably a table has not been available for ready, easy reference which could have been constructed using the following formula.

$$s = X^2 NP(1 - P) \div d^2(N - 1) + X^2 P(1 - P).$$

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

No calculations are needed to use Table 1. For example, one may wish to know the sample size required to be representative of the opinions of 9000 high school teachers relative to merit pay increases. To obtain the required sample size enter Table 1 at $N = 9000$. The sample size representative of the teachers in this example is 368. Table 1 is applicable to any defined population. The relationship between sample size and total population is illustrated in Figure 1. It should be noted that as the population increases the sample size increases at a diminishing rate and remains relatively constant at slightly more than 380 cases.

Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.

S is sample size.

Appendix II: Data Collection Instruments

Dear Respondent

My name is Jane Mercy Muthoni Kamunyi Reg. 2015/HD03/2833K. I am a Master of Arts in Journalism and Communication student at Makerere University. I am currently carrying out research on the effect of digital broadcasting migration on television viewership a case of Rubaga division, Kampala District. The purpose of the study is to find out the experiences of television viewers prior, during and after digital broadcasting migration. You have been randomly selected to participate in this study and your views will represent many other television viewers who may not be sampled. The information that you will provide for this study is for academic purpose only and will be treated with utmost confidentiality. Your name will not be used in any way in the report of this research. If you consent to participate in this research, kindly sign on the provided space.

Signature of the Respondent :.....

Parish:.....

Village:.....

Date :.....

Questionnaire for the Household Respondents

Instructions: Tick or indicate and take note of where it is indicated observe

Section A: Basic Information about the Respondent

1. Gender (observe)

Male

Female

2. Age

18 – 24

25 – 34

35- 44

45-54

55 above

3. Marital Status

Single

Married

Co-habiting

Divorced

Other Specify:

4. Level of Education

No Formal Education

Primary Level

Secondary Level

Tertiary Level

Other Specify:.....

5. Religious Affiliation

Anglican

Catholic

Islam

SDA

Born again

Other Specify:.....

6. Economic Activity

Self Employed

Private Organisation Employed

Private Organisation Employee

Civil Servant

Other Specify:

7. Monthly Income

Below 100,000

101,000 - 200,000

201,000 - 300,000

301,000 – 400,000

401,000 – 500,000

501,000 and above

Section B: Levels of Knowledge about Digital Migration by Television Viewers in Rubaga Division

8. What do you understand by the Digital Broadcasting Migration?
.....

9. Did you receive any information about digital broadcasting migration?

Yes

No

10. What was your source of information about digital broadcasting migration?

Television advertisements

Radio advertisements

Community leaders meetings

Service providers meetings

Relatives and friends

Other specify.....

11. Did you know the equipment's or gadgets that you needed for digital migration?

Yes

No

Section C: The Digital Broadcasting Migration Process

12. Have you already migrated to digital terrestrial television?

Yes

No

13. Were you prepared for the digital Broadcasting migration?

Yes

No

14. What do you think should have been done to prepare television viewers for digital migration?

(i) Sensitization

(ii) Teach about digital television

(iii) Hold community meetings

(iv) Carry training in churches and mosques

(v) Other specify

15. Give reasons that motivated you to migrate to digital terrestrial television?

(i) Had no Choice

(ii) Better Clear Pictures

(iii) Variety of Programmes

(iv) Other Specify.....

16. Which year did you migrate to digital terrestrial television?

2015

2016

2017

2018

Other

Specify.....

Section D: Factors that affected the Digital Broadcasting Migration Process

17. What was your initial cost of migration?

(i) Below 100,000

(ii) 100,001-300,000

(iii) 300,001 – 500,000

(iv) 500,001 – 700,000

(v) Above 700,000

18. What specific item did you spend the initial cost of migration

(i) Buy a new Television set

(ii) Buying a decoder

(iii) Connection fee for television

(iv) Buying an antenna

(v) Other specify.....

19. Discuss the problems you have experienced in using gadgets in digital broadcasting migration?

20. Which Signal Distributor do you use?

DSTV

GoTV

Star Times

Zuku

Azam

Free to Air

Other Specify:.....

21. Which bouquet do you subscribe to?

(i) Indicate Service Provider:

(ii) Indicate the bouquet:

22. What is the cost of your bouquet

(i) Daily.....

(ii) Monthly:

(iii) Annually.....

Section E: Factors that affected Digital Broadcasting Migration Process

23. Are you on air continuously since digital terrestrial television migration?

Yes

No

24. Give reasons for not being on air continuously since digital terrestrial television migration?

.....

25. When you are on air which programs do you prefer watching on television?

(i) Local news

(ii) International news

(iii) Movies

(iv) Soaps

(v) Music

(vi) Sports

(vii) Other specify.....

26. What benefits have you experienced since you migrated to digital terrestrial television?

(i) None

(ii) Many channels

(iii) Clear pictures

(iv) Variety of programmes

(v) Good presenters

(vi) Other specify.....

27. Who offers help in case you have problems with the digital terrestrial television

viewership

(i) Service provider

(ii) Neighbor

(iii) Friend

(iv) Family member

(v) Self

(vi) Other specify

28. Do you think you have comfortably settled in the digital terrestrial television viewing?

(i) Yes

(ii) No

29. Give some of the reasons why you are not comfortable in the digital terrestrial television viewing?

(i) Poor signal

(ii) Paying airtime for calling service center

(iii) Paying subscription fee

(iv) Poor customer care

(v) Other specify.....

30. Rate your satisfaction level about digital terrestrial television?

(i) Very Good

(ii) Good

(iii) Fair

(iv) Bad

(v) Very Bad

31. Rate your satisfaction level about your Signal Distributor (s)?

(i) Very Good

(ii) Good

(iii) Fair

(iv) Bad

(v) Very Bad

32. Rate your satisfaction level on the government implementation of the digital migration?

(i) Very Good

(ii) Good

(iii) Fair

(iv) Bad

(v) Very Bad

33. What Recommendation would you give to improve digital terrestrial television viewership?

.....
.....

Appendix III: Interview guide for the Key informants Respondents.

Dear Respondent

My name is Jane Mercy Muthoni Kamunyi Reg. 2015/HD03/2833K. I am a Master of Arts in Journalism and Communication student at Makerere University. I am currently carrying out research on the effect of digital broadcasting migration on television viewership a case of Rubaga division, Kampala District. The purpose of the study is to find out the experiences of television viewers prior, during and after digital broadcasting migration. You have been purposively selected to participate in this study and your views will be very important in the analysis of the issues surrounding the digital broadcasting migration. The information that you provide for this study is for academic purpose only and will be treated with utmost confidentiality. Your name will not be used in any way in the report of this research. If you consent to participate in this research, kindly sign on the provided space.

Signature of the Respondent :.....

Organization/Institution:

Service provided (ie signal distributor, content provider, academic, judiciary, etc):.....

Date :.....

1. Objective One: Knowledge levels of the respondents

- (i) Briefly tell me about your organization, its existence and operations
- (ii) It was a requirement that television viewers are guided prior to digital migration. Can you explain to me the levels of knowledge about digital migration among your clientele the television viewers?
- (iii) What was your organizations role in disseminating information relating to knowledge by the television viewers?

2. Objective Two: The digital Migration Process

- (i) How can you describe the digital migration process in Uganda, especially in Kampala City Council Authority (KCCA) where the first switch off was carried out?
- (ii) How were your specific clients prepared for the digital migration? What mechanisms did you put in place?

- (iii) How were your clients able to acquire the necessary equipment's to be able to view digital terrestrial television?

3. Objective 3: Factors that hindered digital migration

- (i) What are some of the factors that posed as challenges during the migration process?
- (ii) How did you handle the issues relating to equipments and compatibility to enable digital terrestrial television viewership?
- (iii) What mechanism did you use to convince television viewers who were not paying previously on analogue to pay subscription fee?
- (iv) What pertinent issues arose in the process of digital migration that needed your attention as service providers?

4. Objective 4: Factors affecting digital terrestrial television viewership?

- (i) What mechanism do you have to find out whether viewers are happy with the digital terrestrial television?
- (ii) How are your clientele dealing with the issues of digital terrestrial television, are there any issues of concern that make them not able to enjoy viewership?
- (iii) What needs to be put in place to ensure digital Uganda?

Appendix VI: Letters of Authorization for the Data Collection

- 7.1 Department of Journalism and Communication Dated 29th August, 2018.
- 7.2 Department of Journalism and Communication to the Clerk, Rubaga Division Urban Council Dated 11th September, 2018.
- 7.3 Lubaga Division Urban Council Office of the Town Clerk Introduction letter dated 18th September, 2018.
- 7.4 Mengo Market Zone LC1 Namirembe/Bakuli Parish Rubaga Division. Dated 27th September, 2018
- 7.5 Masiki Village LC1 Namirembe Parish. Dated 27th September, 2018.
- 7.6 Luby Zone 1 Local Government Village Committee. Dated 27th September, 2018.
- 7.7 Chairman LC1 Lusaze Zone Lubaga Division. Dated 28th September, 2018.
- 7.8 Mapeera Zone LC1 Luby Parish. Dated 29th September, 2018.
- 7.9 Kitooro Zone LC1 Nateete Office of the Chairman, Lubaga Division. Dated 3rd October, 2018.
- 7.10 Church Zone Nateete. Dated 5th October, 2018.
- 7.11 Office of the Chairman LC II Nateete Ward, Lubaga Division KCCA. Dated 5th October, 2018.
- 7.12 Kigagga Zone 1 LC1, Nateete Parish Lubaga Division.
- 7.13 Chairperson LC II Nankulabye Parish. Dated 10th October, 2018.
- 7.14 Nankulabye Zone 7. Dated 17th October, 2018.
- 7.15 Senkatuka Village LC1, Naimirembe-Bakuli Parish Lubaga Division Kampala. Dated 18th October, 2018.



Final Acts of the Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz (RRC-06) Geneva, 15 May - 16 June 2006



ARTICLE 12

Entry into force, duration and provisional application of the Agreement

12.1 The *Agreement* shall enter into force on 17 June 2007 at 0001 hours UTC.

12.2 The provisions of the *Agreement* shall be provisionally applicable as of 17 June 2006 at 0001 hours UTC.

12.3 As from the date mentioned in § 12.2 above, broadcasting stations in operation with frequency assignments which do not appear in the *Plans* or which are not in conformity with the *Agreement* and its associated *Plans* (see § 5.1.2 of Article 5) may continue to be operated under the conditions of not causing unacceptable interference to, and not claiming protection from, any assignments in conformity with the *Agreement* and its associated *Plans*.

12.4 The *Agreement* shall remain in force until it is revised in accordance with Article 11 of the *Agreement*.

12.5 The *Transition period* shall commence on 17 June 2006 at 0001 hours UTC. During the *Transition period*, assignments in the analogue Plan (as specified in § 3.1.2 of Article 3) shall be protected.

12.6 The *Transition period* shall end on 17 June 2015 at 0001 hours UTC. However, for the countries listed in footnote below⁷, for the band 174-230 MHz⁸, the *Transition period* shall end on 17 June 2020 at 0001 hours UTC. After the end of the applicable *Transition period*, the corresponding entries in the analogue Plan shall be cancelled by the *Bureau*, and – the

provisions of § 4.1 of Article 4 referring to the modification of the analogue Plan; and – remarks with respect to analogue assignments shall cease to apply to the analogue assignments in the corresponding countries.

12.7 After the end of the above-mentioned *Transition period*, the *Bureau* shall review the status of the assignments which were contained in the analogue Plan and recorded in the *MIFR* and invite the administrations to cancel the corresponding entries in the *MIFR*.

IN WITNESS WHEREOF, the delegates of the Member States of the International Telecommunication Union from the *Planning Area*, named below have, on behalf of their respective competent authorities, signed one copy of these Final Acts. In case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary- General shall forward one certified true copy to each Member State of the International Telecommunication Union from the *Planning Area*.

Done at Geneva, 16 June 2006

For the Republic of Uganda:

Jack TURAMWIJUKA

Jonas M. BANTULAKI

Declarations and Reservations*

List of countries in alphabetical order giving the number(s) of their Declarations and Reservations: Uganda (Republic of) (14).

At the time of signing the Final Acts of the Regional Radiocommunication Conference for the planning of the digital terrestrial broadcasting service in Region 1 (parts of Region 1 situated to the west of meridian 170° E and to the north of parallel 40° S, except the territory of Mongolia) and in the Islamic Republic of Iran, in the frequency bands 174-230 MHz and 470-862 MHz (Geneva, 2006) (RRC-06), the undersigned delegates take note of the following Declarations and Reservations made by signatory delegations:

Original: English For the Republic of Uganda:

The Government of the Republic of Uganda, as a sovereign State and aware of the importance of the GE06 Agreement in whole, reserves its right by all means, to protect its broadcasting services in the frequency bands 174-230 MHz and 470-862 MHz if any Contracting Member to the Agreement contravenes any provisions of the Agreement either in part or in whole. The Government further observes that use of these bands by other terrestrial services by any administration can only be tolerated on a non-interference basis to the broadcasting services as provided in the Plan.