INFLUENCE OF DIGITAL MIGRATION PROJECT ON CITIZENS' ACCESS TO INFORMATION ON TELEVISION IN KENYA – THE CASE OF MACHAKOS TOWN CONSTITUENCY, MACHAKOS COUNTY, KENYA

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A Research Project Report submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Arts in Project Planning and Management, of the University of Nairobi

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DECLARATION

This research project is my own original work and to the best of my knowledge has not been previously presented for the award of a degree in this and/ or any other university.

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REG. NO: L50/72697/08

This research project report has been presented for examination with my approval as the University Supervisor.

Signed: ……. Date: ……

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DEDICATION

This research project report is dedicated to my parents, Paul and Nancy. Many thanks for all your support to the completion of this research paper writing. A thousand words are not enough to express my full gratitude.

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS / ACRONYMS

ASO	Analogue Switch Off
BTH	Broadcasting to Handheld
COMESA	Common Market for Eastern and Southern Africa
DAB	Digital Audio Broadcasting
DSO	Digital Switch Over
DTH	Direct to Home
DTT/DTV	Digital Terrestrial Television
DVB-H	Digital Video Broadcasting Handheld
DVB-S	Digital Video Broadcasting Satellite
DVB-T	Digital Video Broadcasting Terrestrial
EACO	East African Communications Organization
EPG	Electronic Programme Guide
FTA	Free To Air
GE06	RRC06 Agreement of 2006 at Geneva
HDTV	High Definition Television
iDTV	Integrated Digital Television
ITU	International Telecommunication Union
OTT	Over-The-Top content
RRC06	Regional Radio-communications Conference of 2006
STB	Set Top Box

ABSTRACT

The marvels of digital television have been presaged for more than two decades. Compared to the old analogue technology, digital compression allows more channels to be transmitted with better image quality and improved interactive applications. Approximately six times as many channels can be broadcast with the same amount of transmission capacity as is currently used for one analogue channel. The switch off of the analogue signal could result in a large increase in the supply of television channels available to viewers or in bandwidth being freed up for other uses. The benefits to digital broadcasting (known as digital migration) are imperative for television and radio, hence the recommendations by International Telecommunications Union that all countries to move to digital broadcasting by the year 2015.While the West had already begun this process several years ago, in Africa this issue has rarely been discussed or taken into account, getting many of their citizens off guard come the June 17th deadline of analogue transmission. Kenya reported 1.3 million citizens no longer able to watch television in the comfort of their homes, for various reasons. The purpose of this study is to research on the reasons why a section of Kenyan citizens was not able to migrate to the digital environment by assessing costs required, the monthly payments for the new digital platform, technological preparedness of the consumer and accessibility of various media / broadcasting stations. The research design used for the study is descriptive survey, with special emphasis on Machakos Town Constituency. The target population is households in the county with a sample size drawn from the 264500 households as per the last official government census. The research employed questionnaires for data collection, data analysis utilized the descriptive statistics and presented in frequency tables. The findings presented showed that cost and technological preparedness of the consumer was a big setback to the success of the Digital Migration project, and the content broadcasted needs quite a bit revision to auger well with the viewers. However there was a notable positivity in terms of the signal clarity from the TV stations. There is still more to be done to ensure Kenyans benefit more from the Digital Migration in terms of costs and content. It would also be a better income earner with better productions and more Kenyans having gainful employment from the new broadcast platform.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Television transmission has come a long way since the inception of television experiments in the 1920's and early 1930's, with the first television station W2XB broadcasting mechanical television in Schenectady, New York on May 28th, 1928 (Reilly, 2003).

On 16 June 2006, a treaty agreement was signed at the conclusion of ITU's Regional Radiocommunication Conference (RRC-06) in Geneva, heralding the development of 'all-digital' terrestrial broadcast services for sound and television (itu.int). A target date for the digitalization of broadcasting in Europe, Africa, Middle East and the Islamic Republic of Iran was set (covering 116 countries) for the frequency bands 174–230 MHz and 470–862 MHz. The television, like other means of mass communication, follows the global trend of digitalization through an accelerated process of replacing its analog platforms to digital platforms interoperable. The transition from analogue to digital terrestrial television broadcasting presents governments, broadcasters, regulators and the general public with immense opportunities and challenges. Digital terrestrial broadcasting provides possibilities for adding new programs and interactive multimedia services.

Governments across the globe have been implementing this in their countries, with the promise that this represents a major milestone towards establishing a more equitable, just and people-centered Information Society connecting the unconnected in underserved and remote communities and closing the digital divide. According to the plan (known as the GE06), the latest analogue switch-off date was 17 June 2015 (except for some countries in some frequency bands where the deadline is 17 June 2020).

Digital transition is the migration from analogue broadcasting to digital broadcasting (Berger, 2010). Digital broadcasting is transmitted on radio frequencies through terrestrial space in the same way as standard analog television, with the primary difference being the use of multiplex transmitters to allow reception of multiple channels on a single frequency range (such as a UHF or VHF channel) known as sub-channels (digitalkenya.go.ke).

There is a distinct reason why digital migration is targeting TV long before radio, and why it is prioritizing the transmission stage over and above the production and reception stages. This

is because the switch to digital television signals is the one big thing that will free up lots of space on the airwaves (Berger, 2010). Analogue television requires a large amount of bandwith to transmit sound and picture. Digital signals in contrast require much less bandwith and can therefore carry more content and provide better quality pictures and sound (digitalkenya.co.ke). The United States was first to broadcast multichannel digital television signals by satellite in 1994 and since then this has been expanding (Yamada, 2002). In Europe, multichannel digital television of a similar type has been broadcast since 1996.

The Government of Canada and the CRTC (Canada Radio-television and Telecommunication Commission) mandated that over-the-air television transmission switch from analogue to digital in many parts of Canada on August 31, 2011. CBC/Radio-Canada decommissioned its over-the-air analogue television transmission network on July 31, 2012.In a study of digital migration in Canada and the US, Canadian academic Gregory Taylor argued that Canada's process was largely market-driven, to the point where industry and the Canadian Radio and Telecommunications Commission effectively co-regulated the process (Duncan, 2012).Civil society and academic scrutiny was practically absent, leading to key public interest elements being marginalized.

Yet, given the highly deregulated nature of its media market, USA policymakers and the regulator have been forced to take public interest considerations more seriously than in Canada. Civil society engaged the process proactively to prevent a full-scale spectrum heist by corporate interests. In the US, on the other hand, civil society advocacy led in part to a Federal Communications Commission decision to approve a portion of white spaces for unlicensed use, creating space for new broadband projects as barriers to entry were reduced. Canada rigidly pursued the provision of High-Definition Television (HDTV) rather than standard definition, chewing up lots of spectrum, and reduced the number of channels. This undermined one of the touted benefits of migration, increasing viewer choice, and penalized viewers who could not afford HDTV sets.

Most African countries, including Nigeria, had promised to migrate in 2015, and they all signed agreement to that effect. Nigeria, for instance signed and an agreement to migrate on June 17, 2015, but failed to meet the deadline, as a result of paucity of funds (Okonji, 2015).

In South Africa, the process started in 2005 and has been state-led as the state assumed responsibility for securing public interest objectives for its citizens. To save costs, the government decided on a short dual illumination period – broadcasting both analogue and digital signals – to allow broadcasters to phase in the digital signal and to give viewers time to buy set-top boxes. The government also decided on an ambitious strategy of manufacturing the boxes locally, rather than bringing in cheap imports; 70 percent of the costs would be subsidized to make them affordable for poorer households (Duncan, 2012).

On 31 December 2012, Tanzania became the first country in mainland Sub-Saharan Africa to switch off its analogue television signal (Berger, 2010). Of particular note, however, is Tanzania's clear success: it managed to switch off its analogue signal in most regions more than two years ahead of the ITU-agreed deadline of 17 June 2015. The digital terrestrial signal, first deployed in late 2010, now achieves almost the same population coverage as the earlier analogue signal. The country has also avoided the cost of extended dual illumination (where analogue and digital broadcasts are run in parallel, carrying the same content).

A key factor in all of these successes has been the clarity and firmness of the TCRA and the government, which set a positive precedent for future initiatives in the ICT sector. (Schumann, 2013) The rest of the countries in the Sub Saharan region effected the switch over this year. In Kenya, since 2006 the government in line with keeping with the objectives and the GE06 deadlines came up with initiatives to spearhead the project (Obam, 2015), with the formation of the Taskforce in 2007 that developed an elaborate frame work for the migration process and laid the strategy on the roll-out of the DTTV signal across the country.

The taskforce saw the establishment of the Digital Transition Committee (DTC) to manage and oversee the migration following recommendations of the Taskforce, which designated KBC and licensed PANG to provide signal distribution services during the Dual illumination (simulcast) period. It set an analogue switch-off (ASO) for 2012, then 2013 and 2014 and now 2015.

The first digital TV signal was launched in Nairobi on 9th December 2009 when the then President, Mwai Kibaki, launched the digital TV signal in Nairobi. The initial phase saw Kenya acquire the DVB-T technology, but the government decided to upgrade to DVB-T2 in

December 2010, since it has improved security features, can support digital audio, mobile TV and can accommodate both high and standard definition.

The Taskforce oversaw waiving of vendor registration fee and reduced type approval fee for set top boxes (STBs) from Kshs 20,000 to Kshs 4,000, and revised the minimum specifications for STBs making the Conditional Access feature optional for STBs intended for free to air (FTA) use. As per EAC Agreement, import duty on STBs was waived, also ensured liberalization of the supply of Set Top Boxes to allow more players into the market. The taskforce funded SIGNET – the Public FTA BSD, and also funded a comprehensive consumer awareness and education campaign to prepare Kenyans for the analogue TV switch-off. Kenya, then, being under Region 1 in African continent promptly switched off the Analogue signal on the set deadline (June 17, 2015) as per the GE06 directive.

Benefits presented from the switch over include better quality picture and sound information; 50% more programme channels in one TV frequency than DVB-T (better frequency utilization); larger coverage area by a single TV transmitting station; flexibility to simultaneously accommodate high definition and standard definition channels (Electronic Program Guides – EPG's), mobile TV and digital audio and job creation.

Moreover, it has improved security to prevent unauthorized persons from receiving services. The primary objective of digital migration is to clear the radio frequency spectrum occupied by broadcasters to enable the provision of wireless mobile broadband services and other innovative applications. Only once digital migration has been concluded will the important spectrum — "the digital dividend" — be released to boost Internet access and penetration (Mochiko, 2015).

1.2 Statement of the Problem

The process has not been a walk over as would be expected, the entire project has been met with differing views and trips to the judiciaries from stakeholders, media owners, government and the citizens, thus the project has not been wholly successful. ITNewsAfrica (2015) reported that come the switch off; 1.3 million Kenyan citizens were unable to watch TV, meaning there was a cluster of citizens no longer at the forefront of the latest happenings like government announcements. For instance, the concluded teachers strike in 2015 Kenya where the President's directive was aired on all stations late evening hours.

According to Analysys Mason, Schuman (2013) reports Tanzania's pioneering switch-off of analogue TV was, also, achieved at the expense of an appreciable number of viewers who lost access to TV for at least some time – estimated at around 20% in one city. Many reasons were alluded to this – the management of the entire project from the governments, stakeholders and regulators. With regards to accessibility of different broadcasting stations, the current FTA broadcasters in Kenya also wanted to lock out other vendors from carrying their signal, and have only their own approved STB's to receive their signal, increasing the cluster that would not access their signal (to date some media houses in Kenya still have not provided the said STB).

This means that what was ordinarily used as a means of mass communication by, for instance, government to its citizens is now no longer a standard media with so many citizens locked out of the transmission, with the governing reason being the costs of infrastructure required and lack of thorough consumer awareness.

1.3 Purpose of the Study

The purpose of this study was to assess the influence of digital migration on citizen's access to information on television, the case of Machakos Town Constituency, Machakos County, in Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:

i) To assess how cost of acquiring digital infrastructure influence citizens access to information in Machakos Town Constituency.
ii) To determine how technological preparedness influence citizens access to information in Machakos Town Constituency.
iii) To establish how monthly subscriptions influence citizen's access to information in Machakos Town Constituency.
iv) To determine how accessibility to different media stations of the various broadcasters influence citizens' access to information in Machakos Town Constituency.

1.5 Research Questions

This study sought to answer the following research questions:

i) How does cost of acquisition of digital infrastructure influence access to information in Machakos Town Constituency?
ii) How does technological preparedness by the citizens influence access to Television information in Machakos Town Constituency?
iii) How do monthly subscriptions influence citizens' access to Television in Machakos Town Constituency?
iv) How does the accessibility of different broadcasters / media stations influence citizens' access to Television?

1.6 Significance of the Study

This research aimed at assessing how access to information for Kenya's citizens, with special study of how Machakos Town Constituency has been affected after the mandatory Digital Migration. It was expected to be beneficial to the various stakeholders as it aims to dissect on what could have gone awry with the project implementation, what could have been averted and how the stakeholders stand to gain with the new directive.

The research was anticipated to be useful as it outlines the benefits of Digital Switch Over (DSO), the various stakeholders' contributions, assess the overall project preparedness and give a feedback on the various factors that can be assessed to have more citizens being able to access information on television after the DSO, hence an important area to be researched on. To academicians and researchers, the study is a source of reference material for future researches on related or similar topics.

The study revisits the digital migration project in light of the Kenyan citizens that are not able to access, and why it is important to bring all citizens on board. Government, media stations / broadcasters and other stakeholders will utilize it to assess what can be done for all Kenyans to appreciate and have the necessary digital equipment for viewership.

1.7 Assumptions of Study

The study assumed that most of the citizens had access to television before the Digital Switch Over, and now for various reasons that the research paper aims to find out, they have been locked out – no longer access information on their television sets. The study also assumed that the sample population would be a representative of the whole population of citizens who are no longer able to watch television at the comfort of their homes, and that the respondents would give true information without bias. Finally, it also assumed that the research tools would be adequate in collecting valid data for the desired objectives of the research.

1.8 Delimitations of the Study

The study chose to concentrate on Machakos Town Constituency in Machakos County, Eastern Province for the research. It falls in the County that has been set aside as the hub for technology with a sizeable chunk of area ear-marked for the famous Konza Technology City, hence garnering a lot of interest globally from investors and governments alike. The 2009 census statistics indicate Machakos Sub County to be amongst the top 10 with access to TV out of the 164 counties then (KNBS, 2009), hence a surety of a prolific research region for Digital TV Migration. It is also a part of the greater Nairobi County which encompasses four out of forty seven counties in Kenya but generating 60% of the country's wealth.

With a literacy percentage of 88%, this forms a fertile ground for research, communication barriers being minimal as possible. Since the new constitution came in to play, the county has benefited from various development projects and infrastructure upgrades. Machakos Town Constituency is now regarded as the trend setter of county governance under the greater leadership of Dr. Alfred Mutua.

Machakos Town Constituency is located in Eastern province and comprises of the following County Assembly Wards: Mua Ward, Kalama Ward, Mutituni Ward, Machakos Central Ward, Mumbuni North Ward, Muvuti/Kiima-Kimwe Ward and Kola Ward.

1.9 Limitations of the Study

Time and finances were a major challenge considering the myriad of activities for a thorough research, which the researcher endeavored to work through. The researcher also encountered the challenges of language barrier (as it does not necessarily mean Machakos Town

Constituency has only one ethnic cluster), the transportation in the vast geographical spread and security, which required coordination with a few more individuals to enable the research to be done.

1.10 Definition of Significant Terms Used in the Study

Accessibility to different media stations/broadcasters – This refers to both geographical access of various broadcasters (where their digital signal can be accessed from) and the hardware that is able to receive their signal.

Citizens' access to information – This is access to information on Television medium.

Cost of acquisition of digital infrastructure – The initial purchase price of equipment that can receive digital signals. This is the Set Top Box and the new television sets coming with the digital tuner included.

Digital Migration Project – As per the government directive, the switch off of the Kenyan Analogue Transmission of signals in favor for Digital Transmission, transforming media broadcasts from analogue to digital platform which consists of acquisition of digital enabled hardware, monthly payments, technological preparedness of the consumers and accessibility of different broadcasters / media stations.

Monthly payments – The payments made monthly to gain access to content from various broadcasting stations. Variables include actual monthly costs of various players, content available and affordability across the market.

Technology preparedness – Consumer awareness of the Digital Migration project, the reasons behind the shift in technology and why government is driving the process

1.11 Organization of the Study

This study is organized into five chapters; Chapter One of this study aims to give the background of the research project and the specific problem that the study aims to establish in regards to the Digital Migration Project in Kenya, setting the objectives the project aims to research on.

Chapter Two gives an in-depth outlook of what other researchers have come up with in regards to the topic the researcher is working on in this paper, with a conceptual framework illustration that is guiding this study.

Chapter Three shows the research methodology the researcher intends to use, the research design, target population, sample size and sampling procedure, research instruments comprising of testing the validity of the instruments with a pilot run, the data collection procedures and data analysis techniques to be employed. Ethical considerations while conducting the research will also be discussed here.

Chapter Four shows the full analysis of the research findings after the researcher having gone to the field and done all data entry. These is in relation to the objectives of the study.

Chapter Five gives the conclusions and discussions to the research, in comparison with the Literature Review from other researches of this study, and recommendations after the research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

Television wields an undeniable impact of the lives of literally billions of people around the globe (Kellison, Morrow, et al 2013). It influences how we view and shape our culture, an influence that can be both positive and deeply distressing. Television is more everywhere than before, accessible in the remotest areas in the country – all it needs is a simple generator or solar power and a portable satellite dish. In urban areas, television offers hundreds of channel options; it also commands a place in corporate boardrooms, hospitality and learning institutions, and with access to internet the coverage has been extensively extended.

With television, the possibilities are endless. Since the 1950's, television has been recognized as the primary global catalyst for social and political dialogue; its convergence with the internet and other venues compound its potential as an agent for change. The ever lowering costs of digital technology and ease of use has had a visceral impact on how we learn and communicate.

Thus television can be used as Advocacy, both for business and social concerns (including advertising, marketing, propaganda, public relations, and political communication), Entertainment and education e.g., promoting a nations culture, and most importantly public service announcements and emergency alerts (that, also, can be used as political device to communicate propaganda to the public).

2.2 Concept of Digital Migration and Citizens Access to Information

Digital Broadcasting Migration is a process in which broadcasting services offered on the traditional analog technology are replaced with digital based networks over a specific period (Berger, 2010). The transition or switch from analog television to digital television is referred to as the Digital Migration. The Digital TV deployment allows thinking a new paradigm for the vehicles of mass communication, by inserting mechanisms of interactivity.

Until the 1990s, broadcasting was mainly a matter of transferring sound or video streams through the airwaves (or in some developed countries, through cable as well) by means of analogue signals (Berger, 2010). This was a linear process, with each element in the content

stream taking its turn to transmit behind the one that went before it. This worked well enough, except it required a lot of bandwidth. A lot of capacity was taken up on wireless electronic frequencies in order to carry signals in this manner. This meant only a limited number of stations could be accommodated on the radio spectrum. A radio frequency like FM 105.7 would, for instance, be available for use by a single analogue radio station. Other frequencies were often unsuitable for audio transmission, or were better used for TV or cellular telephony, or were reserved for military communications.

In TV, which uses UHF and VHF frequencies, it was the same story: one station, one frequency. With limited frequencies, the effect was a limit to the number of stations. Much of this changed with the advent of digital electronics. These technologies meant that sound and video, as well as text and still images, could be stored and transmitted digitally, heralding a new way to transmit content and connect the people of a nation and, thus, eventually show up on various social aspects of a country.

The impacts of the digitalization wouldn't be concentrated only on the technologies involved in the encoding, transmission and capture, but also in various aspects of society such as education, economy, trade, governance and others. Digital streams of content are also amenable to being stored on the receiving device, providing the user with the power to pause and even rewind up to a point.

Digital signals are much more robust (not prone to electromagnetic and noise interference like analogue), more secure, and most importantly use less bandwith unlike the analogue counterpart – allows multidirectional transmission simultaneously. Digital TV allows TV broadcasters to compress data so as to send large amounts of information without the need of a cumbersome satellite dish. This translates into more channels, as well as better picture and sound quality. Digital TV also allows you to transmit data back to the service provider so as to interact with the broadcaster or one of its associates.

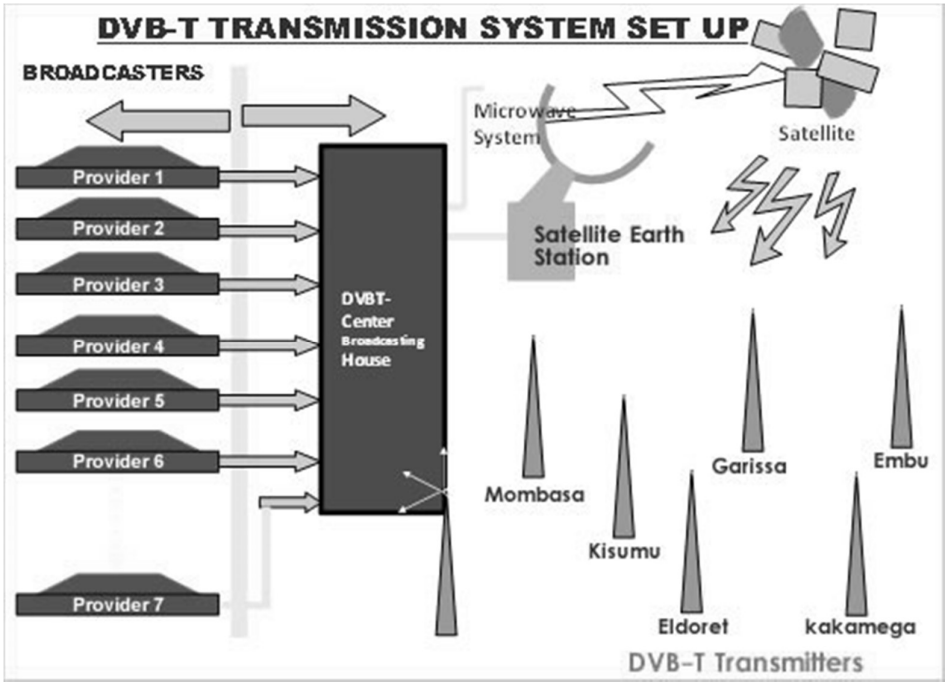


Figure 2.1 DVB-T Transmission System set up, source: digitalkenya.co.ke

Potential indirect benefits to the Digital Migration could include: Re-shaping public interest broadcasting, the digital transition raises questions around on who will get access to the new channels created. It offers a moment to reflect on what African public interest broadcasting might be and the business models that could be used to underpin its public interest purposes (APC, 2011). The digital transition offers an opportunity to review the effectiveness of local production quotas and of Government schemes that support local production, hence increasing local content on the digital platform.

There is also the aspect of convergence - broadcasting and telecommunications are in many African countries treated as separate, vertical markets. However, digital convergence means that telecoms operators have become involved in broadcasting and broadcasting companies are looking at how they might deliver Internet and voice services. For instance, Safaricom, Kenya's premier mobile operator is also offering the 'Big Box' platform for Television on top of the mobile broadband services.

2.2.1 Why Television, not Radio is the Focus of Digital Migration

Berger (2010) gives an understanding on why radio is much more complicated than TV in terms of digital migration. A conversion device to play digital signals on analogue radio sets does not make economic sense for starters. Also, digital radio sets will take a very long time

to disseminate. More importantly, the key difference to TV is that there is no urgency in digitizing radio transmissions in order to free up frequencies for other uses.

This is because, far from freeing up airwaves, most digital radio distribution technologies do not operate in the place of FM frequencies – they need to use the frequencies used by analogue TV. So, even if all FM radio broadcasting was closed down immediately, its frequencies are generally not suited to digital audio. This is unlike television, where the same analogue frequencies are needed for re-use so as to carry multiple digital channels. It is in this light that the taskforce on digital migration in Kenya has stated: "The switchover of existing sound broadcasters from analogue to digital transmission is not required since AM and FM broadcasting will not be affected by the transition."

2.2.2 The Technology behind Digital Migration

There are currently three digital standards vying for international markets: the European digital Video Broadcasting (DVB) standard, adopted by around 100 countries, including the European Union; the Advanced Television Systems Committee (ATSC) standard, developed by the US and adopted there and in four other countries; and the Japanese Integrated Services Digital Broadcasting (ISDB) standard, adopted by two countries.

The US approach focused on seeking higher definition television, while the European system opted to take advantage of the optimization of spectrum space to offer multi-programming capability, supplying more signals (or programs, in the new terminology) in the same bandwidth. The Japanese standard facilitates access to the growing market for mobile services (on mobile phones and in motor vehicles) through a single digital transmitter. Experts believe that in the medium term all three systems will essentially offer the same features (Germano, 2007)

To fully understand the digital concept, digital technologies such as digital TV code data into discrete states or values. For instance, computers convert all data to strings of 1's and 0's. When information is transmitted, whether by digital or analog means, some level of noise or interference always occurs. However, in the case of digital media small variances in the transmission don't matter because when the data is decoded any signal close enough to the discrete values used will be interpreted as that value regardless of the interference or noise in the transmission (Goleniewski, 2001).

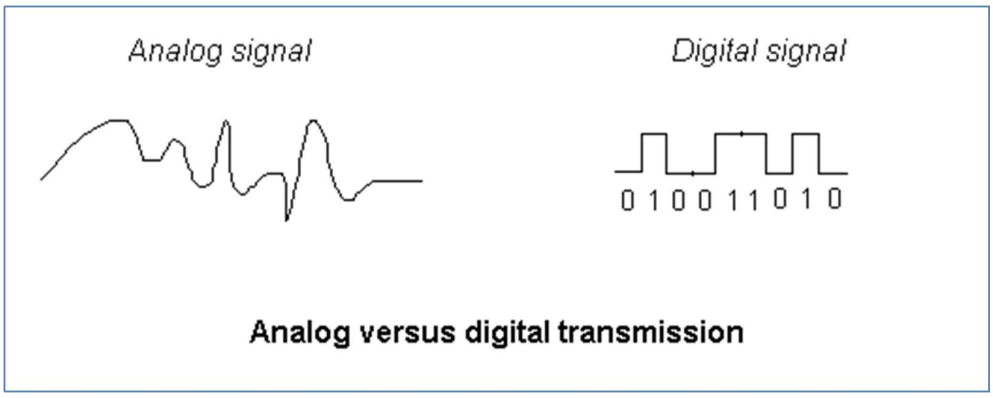


Figure 2.2 Analogue transmission and digital transmission

Before the digital age, TV stations broadcasted their programs by transmitting electric signals of changing frequency or amplitude filmed by analog cameras, the old tape-format models. Digital TV converts light and sound waves collected by digital cameras and microphones into digital signals which are transmitted as packages of ones and zeroes. This ensures the picture is crisp without interruptions or interferences.

To note, for analog TV viewers the converter box connected to your antenna doesn't really convert an analog quality TV to its digital equivalent. The only thing a converter box does is read the digital signals transmitted to the antenna and translate to the lower resolution your analog TV will understand. This means an analog TV won't reflect the quality levels of a digital TV. To enjoy the full capacity of DTV, a TV with a digital tuner, or, even better, an HDTV is required.

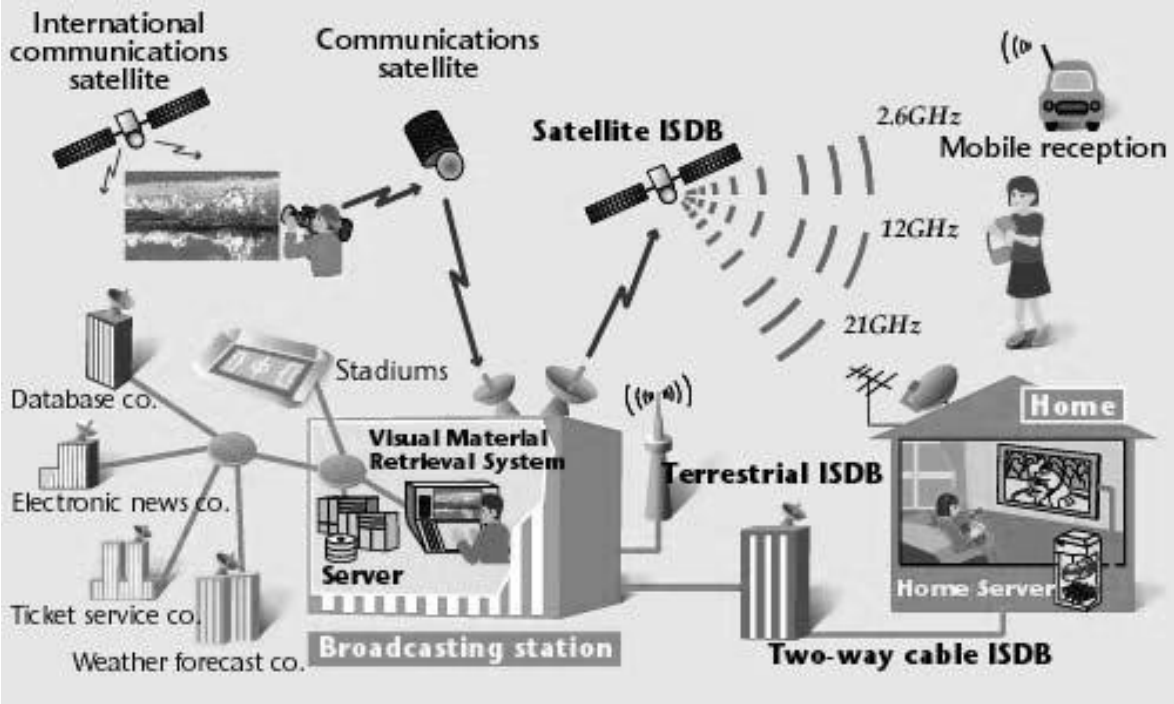
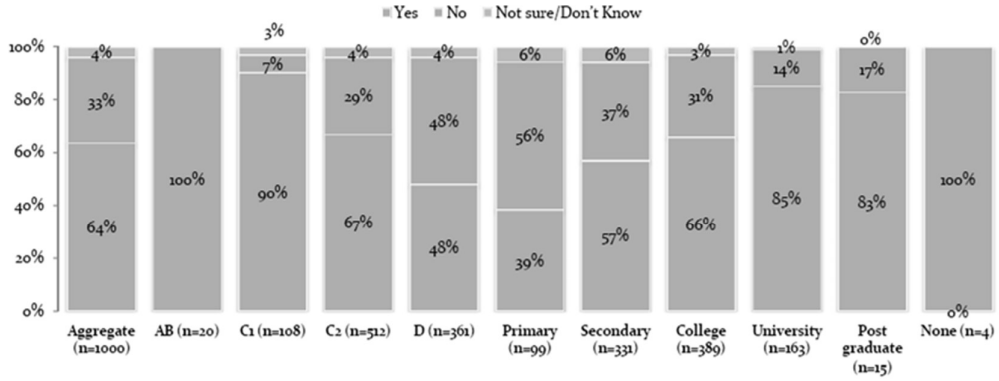


Figure 2.3 Sequence of Broadcasting Signals, Source: NHK (Japan Broadcasting Corporation)

2.3 Cost of Acquiring Digital Infrastructure and Citizens Access to Information

Whilst Kenya was in the throes of deciding the ASO date, with the back and forth between the media stations, the government and other stakeholders, Infotrack in their survey 'Readiness for Digital Migration' established nearly half (48%) of the low income group (social economic class D) were not ready for digital TV migration, as depicted in their findings below. It's noteworthy that readiness for digital TV migration was highest among the wealthy and highly educated (social economic classes AB, C1):



Are you ready for digital TV migration?

Figure 2.4 Source Digital Migration - Survey Report for Consumers Federation of Kenya (COFEK) December 2013

A majority (53%) of the survey respondents preferred the Set Top Boxes to be priced at Ksh 1000 or below. A majority of those preferring this pricing were the poor. As such, the current pricing of STBs may be unaffordable to many. A set top box (STB) is device that generally contains a tuner and connects to a TV set and an external source of signal, turning the signal into content, which is then displayed on the TV screen or another display device (digitalkenya.go.ke).

The cost of the migration from analogue to digital broadcasting needs to be reduced for the ordinary consumer if enough people are to be able to afford the set-top boxes necessary to watch digital terrestrial television, as per Richard Alden, chief executive officer of Wananchi Group, who told the AfricaCom conference in Cape Town too many people would be cut off from television as a result of the high costs. The cost to the consumer to migrate to DTT is huge. Most of the population in this market watches free-to-air (FTA) channels.

There was need for more to be more done to reduce the cost to consumers. Tanzania and Rwanda in turning off analogue broadcasting signals employed hard shut-off tactics, a policy which could be used by more African countries as the June 2015 deadline approached. Tanzania's migration was completed last year, though only 500,000 decoders were in use by the estimated 3 million television sets in use in the country, while in Rwanda, which turned off analogue signal in July, only 27 per cent of television owners had acquired decoders at the time of the ASO.

However, that this was not a viable solution to meeting the deadline, and that more needed to be done to make the set-top boxes accessible, as it means the vast majority of consumers cannot watch television anymore which is not a sensible solution. Many African countries have faced challenges with the digital migration process, with Kenya in and out of court and the process in South Africa facing confusion over what minister is mandated to carry out the process (Jackson, 2014).

One of the critical success factors identified by the European Union was "low cost and widely available" set top boxes. In order to ensure that the migration to DTT is successful, the free-to-air DTT set top box should be a basic affordable set top box with the minimum specifications necessary for its purpose (Rosenberg, 2013). Free-to-air DTT set top box

should not have non-essential requirements which may be “nice to have”, but would unnecessarily pushup the cost of the set top box. For instance, there was a mandatory requirement for an internet connection on the free-to-air DTT STB (e.g. an Ethernet port), as proposed in Namibia.

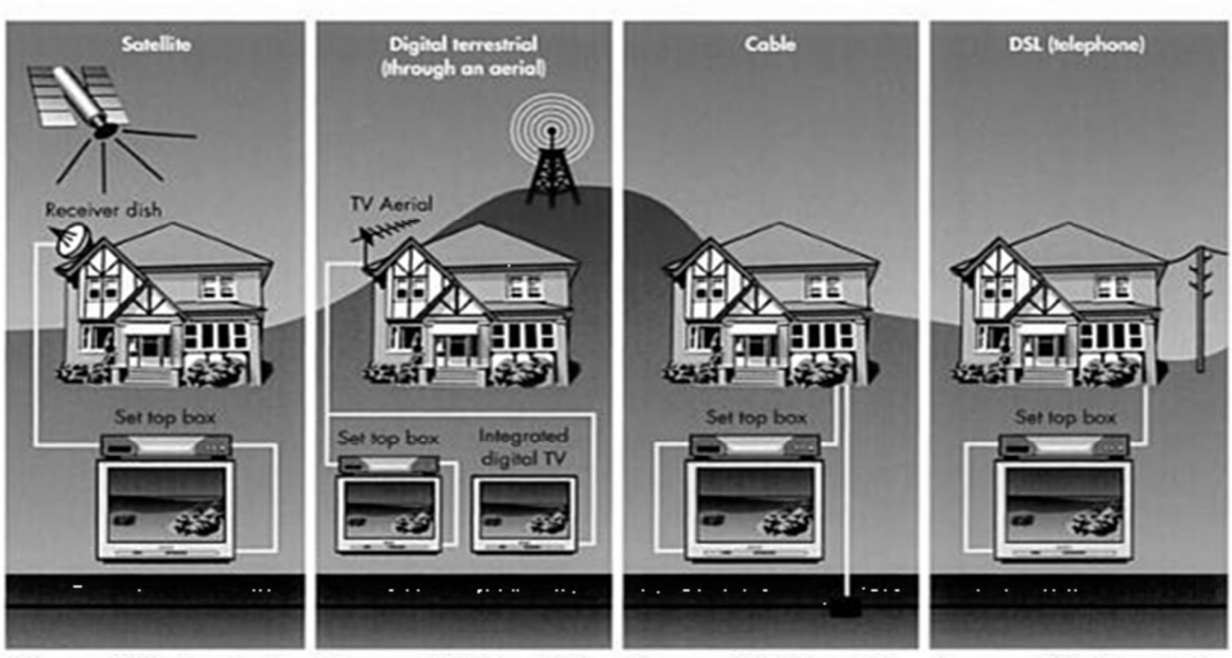
Research shows there is no consumer demand for interactivity or Internet connectivity through their television sets. Rather, televisions are “lean-back” devices, unlike computers and mobile phones, which are “lean-in” devices. Consumers generally prefer to connect to the internet using their computers, mobile phones, and tablets (e.g. iPads), facilitated by mobile telephony.

Accordingly, mandating the inclusion of an Ethernet port on a DTT set top box unnecessarily pushes up the cost of the DTT set top box, without a corresponding tangible benefit. Another example of an unnecessary set top box element is “set top box control” – a technological mechanism to prevent set top boxes from being used outside a particular country.

To further extrapolate the cost factor in digital migration and citizens’ access to information, an understanding of the infrastructure is required to assess the costs in acquisition of the same. There are four different ways of receiving digital television as depicted in below diagram, but coverage and current take up vary depending on the locale, the geographical spread, the receiving equipment, etc.

New digital TVs that conform to the technical standard and can receive DVB-T signals directly are priced at approx. US$1,000. A very limited number of the population can afford TV’s at that price. Hence the most cost-effective alternative is the set-top box which acts as an adapter for an analog TV to receive digital broadcasts. The ability for potential audience to pay for a new digital set-top box or TV could also be a challenge at a price of US$63 – 100 (APC Ghana, 2011).

Figure 2.5 Modes of receiving the digital signal



2.4 Technological Preparedness and Citizens Access to Information

It is a common known fact in project management circles that a huge percentage of the success of the project depends on how the people perceive it, if they understand and own it there is a definite success path. Change is always resisted (Haughey, 2012). It is no surprise then the many setbacks and resistance most countries had to endure in rolling out the digital migration project.

Rosenberg (2013) in her brief on *'The great migration from analogue to digital terrestrial television in Southern Africa*' states that international experience has shown that two of the key factors critical to the success of digital migration are affordable set top boxes and consumer awareness. Consumer awareness was critical to educate people about the impending migration process, how it will impact on them, and the steps they will need to take to ensure that they acquire a set top box (through government subsidies if eligible or through their own means) and are able to access DTT. This depended on strong and clear market communication.

A case in point was Tanzania, which, on 31th December 2012, became the first country in the East African community to gradually switch off analogue terrestrial television broadcasting.

Despite being the first to "go digital", Tanzanians have been critical that the migration process took place prematurely. Various NGOs and broadcasters called for the reinstatement of analogue terrestrial television to give people more time to purchase set top boxes. In March 2013, Article 19 issued a press release stating that, at the end of December 2012, 50% of Tanzanian TV owners could not access TV services because they did not have set top boxes. Article 19 expressed its concern that Tanzanian consumers had received insufficient information about the new digital technology and about financial assistance in cases when they could not afford set top boxes. In April 2013 the Tanzanian government agreed to temporarily halt the second phase of migration from analogue to digital television broadcasting to assess impact of the first phase on the public.

Berger (2010) also gives another outlook to consumer awareness and readiness for citizens to migrate to digital platforms, especially in Africa. Rightfully, it may be asked why the quest to free up the airwaves is relevant to Africa, a continent where TV broadcast industries are generally weak, and often don't even have enough quality content to fill up existing opportunities for analogue broadcasting. Freeing up airwaves is actually not of urgent relevance in Africa, as 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. Even while digital migration in Africa is objectively not a pressing matter today, it is also something that is going to be hard to avoid in the medium term, hence the need for consumers to understand fully the driving factors behind the ASO. In Kenya, a research conducted by Infotrack (2013) established Digital TV migration is not a priority to majority of Nairobi residents. In terms of household budgetary priorities, a majority (58%) of the survey respondents would place digital TV migration as low when compared to other needs like food, rent and transport.

2.5 Monthly Subscriptions Required and Citizens Access to Information

Amongst the advantages of digital migration, it is far more efficient, allows better picture and sound quality, has capability for enhanced applications such as electronic programme guides and ultimately has the potential to increase the amount and variety of television content and increase consumer choice, with many positive economic spin-offs (Rosenberg, 2013).

This however comes at a fee, the ardent television viewer has to now budget a stipend for watching TV, most common plans being the monthly subscriptions. Over the last three decades, viewers' choice has drastically improved in many countries with the introduction of pay television platforms, which broadcast mostly through cable and/or satellite. Typically, pay television operators offer FTA as well as a large number of other channels, charging monthly subscription fees according to the package of channels selected by the viewers.

Due to digitization of the broadcasting technology, this distinction between FTA and pay television is fading. For example, UK viewers interested in seeing more than the five FTA analogue channels often have two options (Ottaviani, 2004). They can either sign a contract with the satellite or cable operator with a periodic subscription fee but no upfront charge for the provision of the necessary reception equipment - set-top box, and satellite antenna if necessary.

Alternatively, they can purchase a digital terrestrial decoder, enabling the reception of various free terrestrial channels without paying a subscription fee. The choice is essentially between services with different content and different payment schedules over time. Effectively, free-to-air and pay television competes in the same market for viewers, programme content and advertisers.

In order to view digital television signals on an ordinary analogue television set, consumers will need the STB (Set Top Box). The purpose of the set top box is to convert the DTT signal for reception on an ordinary analogue television set. This is different to set top boxes in the Pay TV environment, where the set top box is integral to ensuring that only authorized subscribers are able to view the service. In the free-to-air environment, its function is simply that of a digital tuner; a temporary measure pending the availability of affordable television sets with integrated digital tuners.

Delaying digital migration, as per Berger (2010) in the view of some, is depriving African audiences of extra TV offerings for them to choose from, but African broadcasters can barely fulfill their current potential on analogue TV channels. Technically, more channels are available on a digital signal; practically, who is going to supply and pay for the content – unless no one cares about the source, quality, and agendas of programs on offer.

Local content in most African countries of all television stations is limited. An interview with GBC (Ghana Broadcasting Corporation) staff suggested only about 20% of output is local which comprises of news, sports, a few game shows and contests, and drama. International content comprises of content from other African countries especially Nigeria (Nollywood movies) and other shows such as Big Brother Africa taking about 40% of the output. The final portion of the international content, comprise western movies, sports such as the English premier league, news programs CNN and Al-Jazeera (APC/Balancing Act, 2011).

The Communications Authority of Kenya (CAK) has developed a roadmap aimed at increasing the local content aired on local channels from 36 percent currently to 60 percent in 2018. The Authority has partnered with Kenya Film Commission (KFC), which is responsible for development of the local film industry, and the Media Council of Kenya in order to help local investors take advantage of convergence technologies. Local content has recently experienced a shot of adrenaline because of the Digital TV migration, generating great interest in producing and distributing local content, simply because, for the first time in a long while the barrier to entry for television broadcasting is very low (Wanjiku, 2015).

2.6 Accessibility to Different Media Stations and Citizens Access to Information

Some of the benefits from the digital migration include an increase in broadcast channels and alternative uses for the frequencies like broadband, savings on broadcasting stations, huge digital dividend and explosion in ICT and content creation. Digital dividend refers to the radio spectrum which is released in the process of digital television transition (Mwiti, 2015).

Digital broadcasting is also said to be far more efficient and it allows better picture and sound quality. It also has capability for enhanced applications such as electronic programme guides and ultimately has the potential to increase the amount and variety of television content and increase consumer choice, with many positive economic spin-offs.

This issue takes on particular importance for broadcasting regulators and policy makers, since the transition could be very lengthy - it could take much longer in developing countries than in developed countries for the entire population to purchase new television sets with digital tuners, or at least the set-top boxes needed to view digital broadcasting on conventional sets (Germano, 2007).

One positive feature of the digital transmission is that there would not be a need to hire transmitters. The broadcaster may only have to hire a channel within a transmitter as the transmitters for digital broadcasting possess multiple channels unlike those analogue which transmit only one channel. A universal access policy equivalent for TV broadcasting is being considered (APC/Balancing Act, 2011).

The average cost of reaching viewers with different delivery mechanisms depends on the population density. A highly concentrated population is cheaply served by cable, while satellite is ideal to reach areas with low population density.

Development of unique, relevant, quality and audience driven content will be a key element in brand differentiation in the media industry. Content diversity is set to increase. Media will adopt content production as a revenue stream, so advertisers and PR firms should be based on affiliations with quality content developers. This way, content and advertisements can be sold as a package.

Unlike now where majority of TV stations have one show, same script, different title, different station and creators of content must be creative. It means creating niche products for specific audience segments (MCK, 2015). Kenya can leverage on the increasing demand for good quality local content which offers a higher degree of regional relevance, cultural identity, and national identity. Exportation of quality content would not only boost the Kenyan economy, but also promote regional diversity, prosperity and overall growth. With digital migration, the next battle front will then be content development, with the audience reach being even thanks to the uniform digital television signal distribution across the country, broadcasters will have to appeal to their audience and grow their viewership by offering relevant, educative and entertaining programming.

There is another model claiming viewers, the OTT (Over-The-Top) content, term used for the delivery of film and TV content via the Internet, without requiring users to subscribe to a traditional cable or satellite pay-TV service like Time Warner Cable (itvdictionary.com). An example of the OTT content is Netflix. OTT is playing a significant role in the proliferation of Internet television and Internet-connected TVs. A new study suggests cable and satellite may indeed lose subscribers in connection with these launches (Vasquez, 2015).

2.7 Government Policy, Digital Migration Project and Citizens Access to Information

Government has the greatest role to play in actualizing the migration. It is the role of government to lead the movement by fashioning out appropriate policy on methodology and pace of migration, acquisition of set-top boxes for existing receivers already in the country and generally giving direction to the industry in the interest of the nation (Nigerian National Broadcasting Commission).

Industry players and consumers have welcomed as prudent and timely the decision by the government to adapt the more advanced, second generation DVBT-2 digital broadcasting platform during the ongoing migration from analogue to digital broadcast services in Kenya.

The conversion from Digital Video Broadcasting – Terrestrial (DVBT) to the higher technology DVBT-2, was the result of a policy shift adopted late last year in consultation with all stakeholders including broadcasters, potential content providers, broadcasting infrastructure providers, equipment vendors and, of course, consumers. On the positive side, the government has been clear and firm about the process, and stakeholders were involved from an early stage. This encouraged investment by the private sector and avoided an excessive burden on public finances.

Having made a decision to proceed with digital migration, governments have to begin moving to the stage of policy formulation. The policy sets out roles and responsibilities regarding law, regulation and state-subsidy for digital migration. The policy should not only look at the broadcasting, but the entire digital platform / digital interfaces with the internet. In many cases around Africa, there is neither policy nor strategy. At best, some preliminary technical work is being done by a small team of officials confined within a particular ministry (Berger, 2010).

But best practice on the continent has seen wider stakeholder forums being established in order to develop a comprehensive approach to the challenge. One initially successful example of this approach was the Digital Dzonga in South Africa, bringing together all the broadcasters, as well as government, signal distributors, and consumer appliance manufacturers and sellers. There was also a representative of consumer interests involved.

These representatives attempted to co-ordinate the process amongst themselves as stakeholders. It was a formalization of a less established body dubbed the “Digital Migration

Working Group" that had been set up by government in 2005. The work of the Dzonga helped ensure that in 2009, there was a test rollout of DTT in selected areas, and associated piloting of set-top-boxes, plus research into consumer behavior. The body was also charged with developing consumer awareness about the transition.

It is critical to have policy attention to digital migration because of immensity of the change. An example here is that, because of the expense involved, it is unrealistic to expect the broadcast industry to take any serious steps towards DTT unless there is clear and specific government policy on the subject of migration. The same goes for signal distributors. Likewise, manufacturers and retailers will not act in terms of making or distributing set-top boxes until there is policy certainty around specifications and costs.

2.8 Theoretical Framework

A theoretical framework guides a research, determining what things to measure, and what statistical relationships to look for. It shows is how to conceptualize the nature of the research problem, its basis and the analysis chosen to investigate that problem. This framework determines how you perceive, make sense of, and interpret your data.

This study will be guided by Theory of Diffusion of Innovation (1962). The Theory of Diffusion seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Everett Rogers, a professor of communication studies, popularized the theory in his book *Diffusion of Innovations*; first published in 1962.

Diffusion research examines how ideas are spread among groups of people, going beyond the two-step flow theory, centering on the conditions that increase or decrease the likelihood that an innovation, a new idea, product or practice, will be adopted by members of a given culture. In multi-step diffusion, the opinion leader (in this case the Government of Kenya) exerts a large influence on the behavior of individuals, called adopters, but there are also other intermediaries between the media and the audience's decision-making. One intermediary is the change agent, someone who encourages an opinion leader to adopt or reject an innovation (Infante, Rancer, & Womack, 1997).

Innovations are not adopted by all individuals in a social system at the same time. Instead, they tend to adopt in a time sequence, and can be classified into adopter categories based upon how long it takes for them to begin using the new idea. Adoption of a new idea is

caused by human interaction through interpersonal networks. If the initial adopter of an innovation discusses it with two members of a given social system, and these two become adopters who pass the innovation along to two peers, and so on, the resulting distribution follows a binomial expansion.

Expect adopter distributions to follow a bell-shaped curve over time. The criterion for adopter categorization is innovativeness. This is defined as the degree to which an individual is relatively early in adopting a new idea then other members of a social system. Innovativeness is considered "relative" in that an individual has either more or less of it than others in a social system (Rogers, 1971).

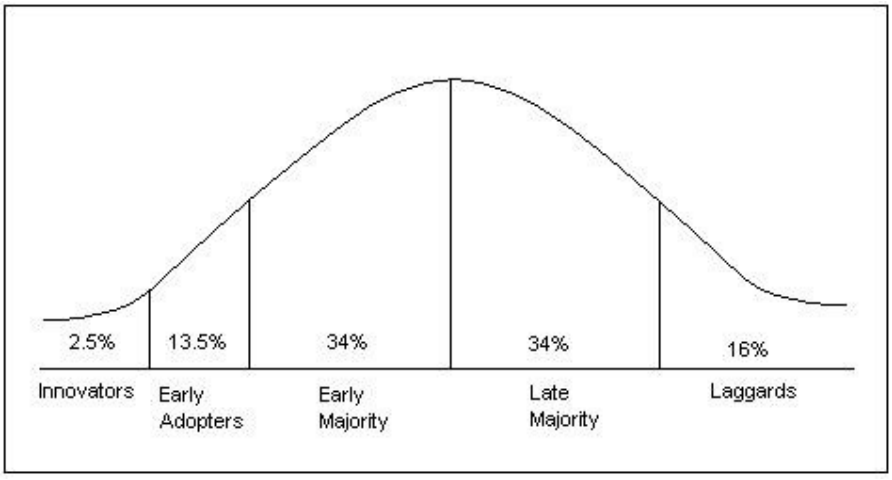


Figure2.6 Adopter categorization on the basis of innovativeness (Rogers, 1971)

This method of classifying adopters is not symmetrical, it is unnecessary for it to be so. There are three categories to the left of the mean and only two to the right. While it is possible to break the laggard group into early and late laggards, research shows this single group to be fairly homogenous (Rogers, 1971). While innovators and early adopters could be combined, research shows these two groups as having distinctly different characteristics. The categories are exhaustive, in that they include all units of study; mutually exclusive, excluding from any other category a unit of study already appearing in a category, and derived from one classificatory principle. This method of adopter categorization is presently the most widely used in diffusion research.

Rogers (1972) goes on to explain the early adopters tend to be integrated into the local social system more than innovators. People in the early adopter category seem to have the greatest

degree of opinion leadership in most social systems. They provide advice and information sought by other adopters about an innovation. Change agents will seek out early adopters to help speed the diffusion process. The early adopter is usually respected by his or her peers and has a reputation for successful and discrete use of new ideas.

Members of the early majority category will adopt new ideas just before the average member of a social system. They interact frequently with peers, but are not often found holding leadership positions. As the link between very early adopters and people late to adopt, early majority adopters play an important part in the diffusion process. Their innovation-decision time is relatively longer than innovators and early adopters, since they deliberate some time before completely adopting a new idea.

The late majority are a skeptical group, adopting new ideas just after the average member of a social system. Their adoption may be borne out of economic necessity and in response to increasing social pressure. They are cautious about innovations, and are reluctant to adopt until most others in their social system do so first. Laggards are traditionalists and the last to adopt an innovation.

Possessing almost no opinion leadership, laggards are localite to the point of being isolates compared to the other adopter categories. They are fixated on the past, and all decisions must be made in terms of previous generations. Individual laggards mainly interact with other traditionalists. An innovation finally adopted by a laggard may already be rendered obsolete by more recent ideas already in use by innovators. Laggards are likely to be suspicious not only of innovations, but of innovators and change agents as well (Rogers, 1971).

2.9 Conceptual Framework

A conceptual framework as a visual or written product, explaining either graphically or in narrative form the main things to be studied – the key factors, concepts, or variables, and the presumed relationships among them (Miles and Huberman, 1994). It is a system of concepts, assumptions, expectations, beliefs, and theories that supports and informs the research, hence a key part of the design. This research is guided by the conceptual framework in figure 2.1.

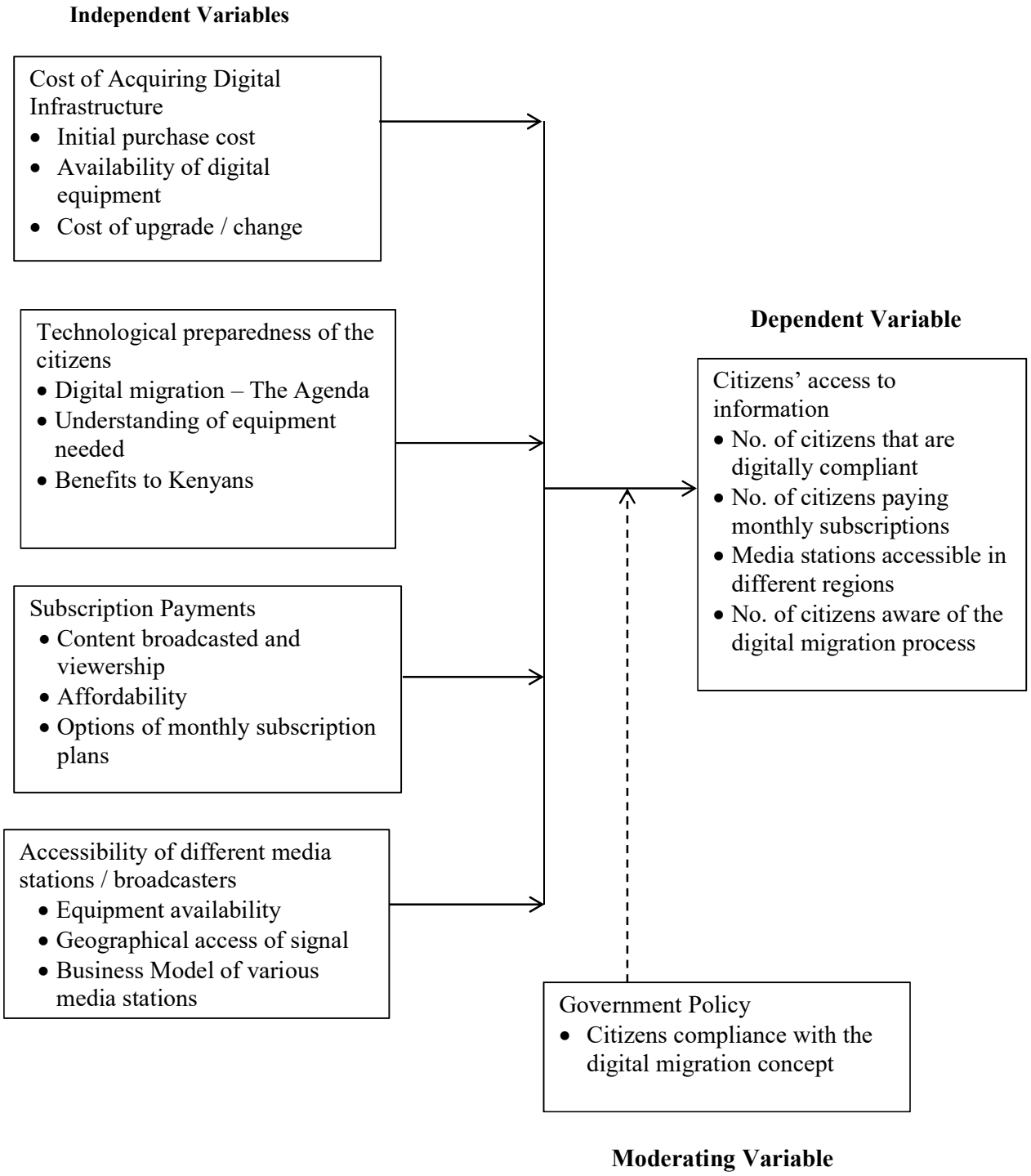


Figure 2.1 *Conceptual Framework showing the relationship between Digital Migration project and Citizens Access to Information*

Table 2.1: Summary of Literature

Variable	Indicators	Author (year)	Title of Study	Findings	Knowledge gaps
Digital Migration	No. of consumers on digital platform	Berger, Guy (2010) ITU	Challenges and perspectives of Digital Migration for African Media International symposium on the digital switch over	• The technology behind digital transmission • Convergence of operators • Why radio transmission is not the focus, but TV	Disposal of old TV's, non-working equipment
Cost of acquisition	- Costs of STB - Cost of TV with digital tuner	Rosenberg, Wendy (2013) Infotrak Research & Consulting (2013)	The Great Migration Digital Migration Survey Report for Consumers Federation of Kenya - COFEK	• Standards of STB equipment • Quality of signal with STB and analogue TV • Overall costs to consumer, government and broadcasters	Unscrupulous businesses selling outdated / fake equipment in the name of digital
Technological preparedness	Consumer awareness	Obam, Daniel,	Migrating from Analogue to Digital	• Impact to the consumer • The African agenda to the digital migration	Digital exclusion
Monthly subscriptions	-Affordability of monthly payments - Push for local content creation for broadcasting	Kellison, et al (2013)	Producing for TV and new media: A real world approach for producers	• Development of unique, relevant, quality and audience driven content • Delay of digital migration	The changing entertainment market
Accessibility of broadcasters	-STB accessibility of different broadcasters -Geographical accessibility of different broadcasters	Salman, et al (2011)	The impact of New Media on Traditional Mainstream Mass Media	• Mode of operation between the different STB players in the market • Geographical strength of the signals from various media houses / broadcasters	Standards governing accessibility of FTA channels

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this research was to determine the influence of the Digital Migration Project on citizens' access to information on television in Kenya, the case for Machakos Town Constituency. This section describes the research, giving an outline of the methodology followed in conducting the study. It begins by stating the research design to be followed, the targeted population in this research with the sample size and sampling procedure. It then goes on to describe the research instruments to be used in the study and also show casing the pilot testing, validity of instruments and the reliability of instruments. Finally, it elaborates the data collection procedure, data analysis techniques, the ethical considerations to the study and the operationalization of the variables in question.

3.2 Research Design

The study adopted descriptive research design, which sought to obtain information that describes existing phenomena by asking individuals about their perceptions, attitude, behavior or values (Mugenda and Mugenda, 2003). The research design refers to the overall logical structure that integrates the different components of the study in a coherent and logical way ensuring the research problem is effectively addressed (De Vaus, 2001). The research design constitutes the plan for the collection, measurement, and analysis of data.

A descriptive study is one in which information is collected without changing the environment (i.e., nothing is manipulated), also referred to as correlational or observational study (Blakstad, 2008). This was the one chosen for this particular study as the research seeks to determine the influence of independent variables on the dependent variable with no manipulation whatsoever.

3.3 Target Population

For this particular study the targeted population were households that have access to television. According to the last Kenyan census figures Machakos Town Constituency has a Total Population of 199,211 people with 48,979 Households and covers an area of 925.3 SQ.

KM. The Population density is 215 persons per SQ. KM (KNBS, 2013). The Akamba people are the dominant habitants of Machakos Town Constituency.

The target population defines those units for which the findings of the survey are meant to generalize. Defining the target population should be the second step after establishing study objectives and must be specifically defined as the definition determines whether sampled cases are eligible or ineligible for the survey (Cox, 2008).

3.4 Sample Size and Sampling Procedure

The section describes the sample size and procedure to be used in the study. In addition to the purpose of the study and population size, three criteria usually need to be specified to determine the appropriate sample size: the level of precision, the level of confidence or risk, and the degree of variability in the attributes being measured (Miaoulis and Michener, 1976).

3.4.1 Sample Size

The sample size for this study was 381 drawn from a target population of 48, 979 households based on the Krejcie and Morgan Table (1970, see appendix). The ideal interviewee was the head of the home.

3.4.2 Sampling Procedure

The study applied stratified random sampling and judgmental sampling techniques. Stratified sampling is a probability sampling technique wherein the researcher divides the entire population into different subgroups or strata – in this case the researcher used the location, economic bracket, age bracket to randomly select the final subject proportionally from the different strata. The strata must be non-overlapping, as this grants some individuals higher chances of being selected as subject. This completely negates the concept of stratified sampling as a type of probability sampling (Lund Research, 2012).

Reliable research results require a good sample. For solid samples, the sample presented should represent as closely as possible the characteristics of the initial bulk sample (Orodho, 2003). Sampling was based on selecting a portion of the population that needed to be generalized for the study.

3.5 Research Instruments

For this study the questionnaire was preferred for primary data as the research instrument, having both open ended and closed questions. For secondary data in terms of media and broadcasters position in DM and the government policies, the researcher employed documents analysis and literature review on the research subject. The questionnaire had various sections; demographics and socio-economic characteristics, strategies and implementation of the project, feedback and overall feel of the migration (see appendix for the questionnaire used).

3.5.1 Pilot Testing

The researcher carried out a small run-through of this research and used online questionnaires and availed the link to a few respondents, based on the stratified sampling theory indicated above. A copy of the questionnaire was shared with a few of her colleagues in a direct interview to assess the validity of all the questions.

The purpose was to make sure that everyone in the sample not only understood the questions, but also understood them in the same way. An assessment of questions that would make respondents feel uncomfortable was also done. The importance of conducting a pilot study felt by the researcher was it presented advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments, in this case the questionnaire, were inappropriate or too complicated.

3.5.2 Validity of Instruments

For this study, the first validation was through presenting the research tools to supervisors for assessment before having them tested in a pilot study. Content validity determined whether questions achieved the objectives by subjecting questions to experts e.g. the supervisors. Construct validity determines how questions are constructed, i.e. the simplicity of the language and question phrasing to ensure continuity and that respondents as much as possible will not need translation.

3.5.3 Reliability of Instruments

Reliability refers to whether an assessment instrument gives the same results on repeated trials using same setting with the same type of subjects i.e. consistent or dependable results.

To ensure reliability of the research instruments, the researcher used test and retest method of the instruments in different situations and found that the results were similar.

3.6 Data Collection Procedure

The main consideration here was to ensure that any information collected is done in a way and for a purpose that is consistent with the University and complies with freedom of information and privacy protection legislation. To protect the credibility and reliability of data, information was gathered using accepted data collection techniques.

For this study the primary data was sourced through questionnaires. The researcher obtained an authorization letter to present to the County for permission and for respondents to have more confidence in answering to the questionnaire. The researcher used a research assistant to ensure better coverage and more efficiency in administering the questionnaires.

3.7 Data Analysis Techniques

The data collected was analyzed using descriptive statistics and presented in frequency tables and percentages. The basic steps in the analytic process consist of identifying issues, determining the availability of suitable data, deciding on which methods are appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and communicating the results (StatCan, 2010).

The research with the data collected described and summarized the data by identifying relationships between variables, comparing variables, identify differences between variables and forecast outcomes.

3.8 Ethical Considerations

Ethics is the cornerstone for conducting effective and meaningful research. The ethical behavior of individual researchers is under unprecedented scrutiny (Best & Kahn, 2006). It is important to adhere to ethical norms in research, and this research will exert ethics especially when dealing with respondents and handling data.

For starters, respondents were fully explained to the purpose of the study and all their comments respectfully taken, ensuring no slighting of any one respondent. Confidentiality of the data was also adhered to, and assured anonymity of our respondents. There was proper

seeking of authority from the County leaders and the homesteads visited. Participation was fully on voluntary basis, with participants at liberty to withdraw any time.

For data handling, the researcher ensured no plagiarism; all secondary data was fully acknowledged, no falsification or fabrication of primary data, and data collected will be made available and retained for future use, hence no data suppression. Above all, accurate data gathering procedures were employed, for instance, avoidance of leading questions while interviewing.

3.9 Operationalization of Variables

Operationalizing a variable means finding a measurable, quantifiable, and valid index for the variables (independent and dependent variables), which can have two or more levels. Operationalization has the great advantage that it provides a clear and objective definition of even complex variables, and makes it easier for other researchers to replicate a study and check for reliability (McLeod, 2008).

Table 3.1: Operationalization of Variables

Objectives	Variable	Indicators	Scale of Measure	Tools of analysis
Citizens access to information	Dependent	- No. of citizens already on digital platform	Ordinal	Descriptive
		- No. of citizens paying monthly for access	Ordinal	Descriptive
		- Media stations accessible in various regions	Ordinal	Descriptive
		- No. of citizens educated of the necessity of the shift to digital migration	Ordinal	Descriptive
Costs of acquiring digital equipment	Independent	- Initial purchase costs	Ordinal	Descriptive
		- Upgrade or alteration costs	Ordinal	Descriptive
		- Availability of digital equipment	Ordinal	Descriptive
Technological preparedness of consumers	Independent	- Understanding the reasons for the shift	Nominal	Descriptive
		- Understanding of the equipment needed	Nominal	Descriptive
		- Benefits of DM (understanding)	Nominal	Descriptive
Monthly subscriptions	Independent	- Content creation and viewership	Nominal	Descriptive
		- Affordability of monthly packages	Nominal	Descriptive
		- Options available for monthly access	Ordinal	Descriptive
Accessibility of different broadcasters / media stations	Independent	- Equipment availability from the broadcasters	Nominal	Descriptive
		- Geographical access of broadcasters signals	Nominal	Descriptive
		- Business model of the media stations	Nominal	Descriptive
Government policy on Digital Migration	Moderating	- Compliance on digital migration	Nominal	Descriptive

CHAPTER FOUR
DATA ANALYSIS, PRESENTATIONS AND INTERPRETATIONS

4.1 Introduction

This chapter presents data analysis, results and discussion of the study findings. The study sought to assess the influence of digital migration on citizen's access to information on television, the case of Machakos Town Constituency in Kenya. The presentation of the data analysis, results and discussion is based on the sequence of questions in the questionnaire used to collect data. The data collected in the field has been analysed and then presented in tables that show frequencies and percentages. The data has then been interpreted to offer the main findings of the study.

4.2 Questionnaire Return Rate

The study targeted 381 households in Machakos Town Constituency. As shown in Table 4.1, out of the 381 questionnaires that were administered, 372 filled questionnaires were collected. This translates into 98% return rate which is satisfactory according to Babbie (2002) who argues that any response of 50% and above is adequate for analysis. The researcher used the personal, face to face interview that is quoted as the least burdensome on the respondent thus garnering a higher response rate (Bowling, 2005) and was also able to take the respondents through the areas that might have been confusing.

Table 4.1: Questionnaire Return Rate

Response	Frequency	Percentage
Responded	372	98
Not responded	9	2
Total	**381**	**100**

4.3 Background Information

To understand the socioeconomic characteristics of the sample population, the first section of the questionnaire aimed at collecting the demographic data of the respondents. Presented in this section are the respondents' gender, age bracket, marital status, highest level of education and their current area of residence or location. Table 4.2 shows a summary of the findings.

Table 4.2 Demographics analysis of the respondents

Gender	**Frequency**	**Percentage**
Female	205	55%
Male	167	45%
Total	**372**	**100%**
Age Bracket	**Frequency**	**Percentage**
21 – 29 years	184	49%
30 – 39 years	134	36%
40 – 49 years	40	11%
50 – 59 years	9	2%
60 years and above	5	1%
Total	**372**	**100%**
Marital Status	**Frequency**	**Percent**
Single	136	37%
Married	221	59%
Widowed or Divorced	15	4%
Total	**372**	**100%**
Level of Education	**Frequency**	**Percentage**
Certificate	52	14%
Diploma	95	26%
Undergraduate Degree	192	52%
Masters and above	33	9%
Total	**372**	**100%**
Location (Ward)	**Frequency**	**Percent**
Kalama Ward	26	7%
Mua Ward	56	15%
Mutituni Ward	56	15%
Machakos-Central Ward	91	24%
Mumbuni North Ward	67	18%
Mavuti\Kiima Kimwe Ward	39	10%
Kola Ward	37	10%
Total	**372**	**100%**

The findings auger well with published researches that more educated and more affluent people are more likely to participate in surveys than less educated and less affluent people (Curtin, Presser, and Singer, 2000; Goyder, Warriner, & Miller, 2002; Singer, van Hoewyk, & Maher, 2000), women are more likely to participate than men (Curtin et al 2000; Moore & Tarnai, 2002; Singer et al 2000), younger people are more likely to participate than older people (Goyder, 1986; Moore & Tarnai, 2002).

From the gender analysis, out of the 372 respondents who participated in the study 205 (55%) were female, shown by 55%, while 167 (45%) of them were male. In his article ‘Women

Viewers Continue to Rule Broadcast Timeline', Consoli presents findings that show most of the TV shows are on air because of the large number of female viewers, in comparison to men (Consoli, 2013). Ipsos Synovate Kenya reported the weekly female television viewer spends an average of 3.8 hours watching television which is about half an hour more compared to their male counterparts. Male viewers largely opt for news programmes whilst females opt for entertainment programmes, key amongst them being soap operas (Mzungu, 2013).

On the age bracket analysis, Table 4.3 shows a summary of the results where, majority 184 (49%) of the respondents were aged between 20 and 29 years, 134 (36%) respondents were aged between 30 and 39 years, 40 (11%) respondents were aged between 40 and 49 years. In addition, 9 (2%) were aged between 50 and 59 years while only 5 (1%) respondents indicated that they were at least 60 years old. This shows that the age bracket affected most by the Digital Migration is 49 years and below, forming a total of 96% of the respondents. The younger and middle generation has a higher demand for information, hence access is key. They are therefore willing to invest in infrastructure and whatever gadgets to ensure they are always updated, with various applications on these devices boasting of latest news and trends. They are the force behind the flourishing technological innovation that saw the necessity of Digital Migration.

For the marital status of the respondents, the majority 221 (59%) respondents indicated they were married, 136 (37%) were single while 15 (4%) were either widowed or divorced. Most of the residents of the sample population therefore are in family setting with heavy reliance towards digital migration. MarketingCharts in their analysis show the presence of children seems to have some impact on TV penetration, as TV viewership was higher among those living with children than those living in their own home without children (MarketingCharts, 2016).

The study thus sought to establish the highest education levels attained by the respondents. As shown in Table 4.3, 192 (52%) respondents had acquired a Bachelor's or undergraduate degrees' level of education, 95 (26%) respondents indicated that they had acquired college diplomas, while 52 (14%) of them indicated that they had certificates. Only 33 (9%) respondents had Masters. Digital Migration is all about access to information, which requires

high literacy percentages to access most information. These findings therefore show that most of the respondents were in line with the demands of Digital Migration and access to information.

The study sought to establish the respondents' area of residence in the larger Machakos Town Constituency. 26 (7%) respondents were from Kalama Ward, 56 (15%) respondents from Mua Ward, Mutituni Ward had another 56 (15%) of the respondents. Machakos-Central Ward had the bulk with 91 (24%) of the respondents, Mumbuni North had 67 (18%) of the respondents, Muvuti/Kiima-Kimwe Ward had 39 (10%) of the respondents and finally 37 (10%) respondents from Kola Ward. This shows accessibility of the Digital Migration infrastructure is well distributed, it is not only concentrated in the constituency's urban area. Though some services, like the Zuku Fiber, were only seen in smaller areas of Machakos-Central.

4.4 Cost of Acquiring Digital Infrastructure and Access to Information

This section focused on the study objective that sought to assess how cost of acquiring digital infrastructure affects citizens' access to information. The questionnaire structure though had a small bit on the background of the infrastructure before and after digital migration, as shown in the below table. The specific study question that corresponded to this objective was, "does the cost of acquisition of digital infrastructure affect access to information?"

Table 4.3: Acquisition of Digital Infrastructure

Residents owned TV before Digital Migration	**Frequency**	**Percent**
Owned a television before migration	330	89%
Did not own a television before migration	42	11%
Total	**372**	**100%**
Residents Have Digital Platforms	**Frequency**	**Percent**
Have migrated (acquired digital platforms)	355	95%
Have not acquired digital platforms	17	5%
Total	**372**	**100%**
Reasons for Not Migrating	**Frequency**	**Percent**
Finances	15	88%
Prefer another Media	2	12%
Total	**17**	**100%**

Table 4.3 shows the findings on whether respondents owned a TV before Digital Migration deadline (17th June 2015). 330 (89%) of the respondents indicated to have had a television while 42 (11%) didn't own a television before the deadline. These findings show that Digital Migration brought more people on board in regards to access of information through television, perhaps with the proliferation of more broadcast channels hence more relevant content to the masses, making them acquire a television set.

Table 4.4 Digital Vendor chosen

Type of Digital Platforms	***Frequency***	***Percent***
Digital ready TV	57	16%
Set Top Box (STB)	225	63%
Both	73	21%
Total	**355**	**100%**
STB Plans	**Frequency**	**Percent**
Free to Air (FTA) or One-off Purchase	36	16%
Monthly Subscription	156	69%
Annual Subscription	33	15%
Total	**225**	**100%**
Mode of Acquisition of Digital Platforms	**Frequency**	**Percent**
Purchased	324	91%
Gift Item	25	7%
Promotion Item	6	2%
Total	**355**	**100%**
Vendor Preferred	**Frequency**	**Percent**
DSTV	89	30%
StarTimes	64	21%
Zuku	56	19%
GoTV	55	18%
Bamba TV	21	7%
AND	7	2%
Big Box	2	1%
Other	4	1%
Total	**298**	**100%**
Reasons for Choosing a Particular Vendor		
Affordability	95	26%
Availability	53	14%
Variety of programs	106	28%
Reliability	43	12%
Internet Connection	23	6%
Did Not Respond	52	14%
Total	**372**	**100%**

The respondents were also requested to indicate whether they had acquired the digital infrastructure required for current reception of TV channels. As shown in table 4.4, 355 (95%) respondents have the digital platforms while 17 (5%) have not yet acquired. On further analysis, of the 17 (5%) respondents who had not acquired the digital equipment, 15 (88%) cited finances (or lack of) as the major reason of not having migrated, while 2 (12%) of the respondents preferred other media for accessing information. Cost, then becomes a factor to the success of the Digital Migration project. This sample population also shows that most of the Kenyans have managed to acquire the digital infrastructure that enables them access information following digital migration.

The study further sought to establish the type of digital platforms owned by the respondents. As shown in table 4.4, 225 (63%) of the residents possess a Set Top Box (STB) while 57 (16%) have Digital ready TVs. Another significant proportion, representing 21% (73) have both digital platforms. This could be attributed to the fact that STB are cheaper and affordable to most Kenyans, also relating to costs factor in the Digital Migration project.

The findings also show that 156 (69%) of the respondents who own the SBT have monthly subscription plans, 36 (16%) have made a one-off purchase or Free to Air (FTA) purchase whilst 33 (16%) have annual subscription plans – the cheapest of the plans on offer having the most basic channels. This brings out the somewhat high costs required to migrate, the FTA (Free-To-Air) Set Top Boxes would have a larger market share if only they are more affordable, and they are currently priced at a higher value than the subscription based STBs. The subscription based STBs offer most of the channel varieties, depending on the subscription plan, which is the most affordable for low and middle income earners but also preferred as it offers the widest variety of channels to subscribe for.

The study sought to establish the respondents' mode of acquisition of their digital platforms, again relating to costs and migration. The findings show 324 (91%) purchased their platforms, 25 (7%) acquired them as gift items while only 6 (2%) acquired their digital platforms as promotional items.

DSTV had 89 (30%) respondents, Startimes 64 (21%) respondents, Zuku 56 (19%) respondents and GoTV 55 (18%) which presented the common subscribed to SBTs by the residents in Machakos Town Constituency as shown in the table above. Other vendors in play were Bamba with 21 (7%) respondents, ADN with 7 (2%) respondents, Big Box with 2 (1%)

respondents and other STBs with 4 (1%) respondents. On further analysis, DSTV was seen to have been long in the market before the Digital Migration as per an earlier study by Deloitte quoting why Multichoice has the numbers (Competition Study–the broadcasting industry in Kenya, 2012) hence more respondents familiar to its channels, as well as Zuku. The rest were newer players in the market, most of them making their entry in the market once the Digital Migration was announced. Also, 106 (28%) respondents cited variety of programs as the primary reason for choosing a particular vendor, probably why the global vendors seem to have garnered a chunk of the market share, with only 23 (6%) requiring internet connectivity with their choice of vendor.

The study further sought to establish the financial implications in acquiring the digital infrastructure in relation to digital migration amongst the respondents. On a 5-point Likert Scale where 1=Strongly Disagree, 2=Disagree; 3=Neutral; 4=Agree and 5=Strongly Agree, the respondents were required to rate their level of agreement to the various aspects of acquiring the digital infrastructure in relation to digital migration. Table 4.17 shows a summary of the findings.

Table 4.5 Respondents views on acquisition of Digital Infrastructure for TV

Acquiring the Digital Infrastructure	1	2	3	4	5	DNR	Mean	Std. Dev.
The set top box or digital TV was/is quite affordable	42	121	67	98	41	3	2.49	1.223
I will be changing/upgrading my digital TV equipment soon; my current vendor doesn't meet my/our requirements.	50	150	75	65	29	3	3.34	1.149
The various options of digital infrastructure were / are readily available in the market	9	41	39	194	87	2	4.06	0.979
We have seen the various benefits with the Digital Migration and investment on digital equipment.	24	61	39	61	171	70	2.45	1.170

The respondents expressed agreement that various options of digital infrastructure are readily available in the market (mean score of 4.06). They remain neutral on the aspect of changing and upgrading their digital TV equipment soon (mean score of 3.34). Further findings show that neither set top box nor digital TV is quite affordable (mean score of 2.49).

4.5 Technological Preparedness of Citizens to Digital Migration

This study sought to determine how technological preparedness affects citizens' access to information. On a 5-point Likert Scale where 1=Strongly Disagree, 2=Disagree; 3=Neutral; 4=Agree and 5=Strongly Agree, the respondents were required to rate their level of

agreement to the various aspects regarding technological preparedness and citizens access to information during digital migration. Table 4.18 shows a summary of the findings.

Table 4.6: Technological Preparedness of Citizens to Digital Migration

Statements	1	2	3	4	5	DNR	Mean	Std. Dev.
I understand fully the reasons behind digital migration	99	110	48	51	1	63	2.4	1.34
I am familiar with the advantages of digital TV reception	10	59	55	181	67	0	2.3	1.03
I understand fully the specifications of infrastructure required for digital migration (TV and or STB)	14	79	99	141	39	0	2.7	1.04
I understand the waivers the government implemented to assist in its citizens DM	51	154	36	57	46	28	3.3	1.08
The major media / broadcasting stations played their role in ensuring the public was well educated on DM.	85	111	61	92	23	0	3.4	1.25

The results show that the respondents do not understand fully the reasons government had to push for digital migration (mean score of 2.4) and are not familiar with the advantages of digital TV reception (mean score of 2.3). In addition, they felt the major media/broadcasting stations could have played a bigger role ensuring the public was well educated on Digital Migration.

The Digital Migration has enabled entry of more TV stations, with more upcoming channels by the day. Some respondents were not aware of the newer channels and maintained viewership on the older more established channels, a lot more technological preparedness is still needed by the governing body on the (positive) effects of migration. Table 4.6 show the list of the most commonly watched channels in descending order of most watched. Most respondents (36%) choose channels because of news, 27% based on entertainment and 19% on content (local and international. Another 11% and 6% of the viewer's chose their channels based on their informative and inspirational aspects. Ipsos Synovate Kenya in their analysis of viewership patterns report that the weekly urban television viewer watches an average of 3.3 different television stations compared to the rural counterpart who watches an average of 2.8 television stations owing to penetration and level of access (Mzungu, 2013).

Table 4.7 Channel preferences

Most Commonly Watched Channels	Frequency	Percentage
Local Broadcasters (Citizen, KTN, NTV)	147	40%
Vernacular Channels (Inooro, Kyeni, Gikuyu, Njata,)	66	18%
International News Channels (CNN, Aljazeera, E-News)	52	14%
Documentaries, Education and Technology (NatGeo, Health TV)	44	12%
Entertainment Channels (Cartoon, Sports, Africa Magic)	63	17%
Total	**372**	**100%**
Reasons for having a favorite channel	**Frequency**	**Percentage**
News and Updates	135	36%
Entertainment	102	27%
Cultural Content	72	19%
Informative / Educational	41	11%
Inspirational / Religious	22	6%
Total	**372**	**100%**

4.6 Monthly Subscription Costs and Digital Migration

The third objective of the study highlighted the effect of monthly payments on citizens' access to Television in Machakos Town Constituency. On a 5-point Likert Scale where 1=Strongly Disagree, 2=Disagree; 3=Neutral; 4=Agree and 5=Strongly Agree, the respondents were required to rate their level of agreement to the various aspects regarding technological preparedness and citizens access to information during digital migration. Table 4.7 shows a summary of the findings.

Table 4.8: Monthly Subscription Costs and Digital Migration

Monthly Subscription Costs and Digital Migration	1	2	3	4	5	DNR	Mean	Std. Dev.
The TV channels / content I pay for is appealing and relevant.	18	54	82	149	35	34	3.62	1.040
I am able to pay my monthly TV subscriptions without fail	37	120	71	91	31	22	2.45	1.176
The monthly TV access subscription plans are quite affordable	74	126	61	68	22	21	2.43	1.201
I have been forced to subscribe to more than one set top box vendor because of the content / channels required in my home.	51	154	36	57	46	28	2.42	1.040

According to the findings, the TV channels and content paid for is appealing and relevant (mean score of 3.62); the monthly subscriptions plans are not quite affordable (mean score of 2.43). However, the subscribers are shown to be able to pay without fail (mean score of 2.45), which could translate to their need for information and pay for it even if it is higher than their intended budget. In addition, there was a growing pattern that a section of television viewers

are simply not satisfied with the channels content of a single vendor, and therefore needed to invest in more than one STB. The findings are consistent with those of Berger (2010); that DM offers African audiences of extra TV offerings for them to choose from because technically, more channels are available on a digital signal.

The study further sought the views of sustenance and TV watching habits with the new offerings presented in the Digital Migration environment. Below are the findings from the research.

Table 4.9: Digital Migration Consumer Patterns

Amounts Paid Monthly in KES	**Frequency**	**Percent**
Between 150 – 800	41	19%
Between 801 - 1,000	59	28%
Between 1,001 - 2,000	43	20%
Between 2,001 - 4,000	32	15%
Between 4,001 - 9,400	39	18%
Total	**214**	**100%**
TV Viewership Hours	**Frequency**	**Percent**
1 – 2	70	19%
3 – 6	166	45%
Over 6	90	24%
Irregular	44	12%
Did not respond	2	1%
Total	**372**	**100%**
Mostly utilize television for:	**Frequency**	**Percentage**
News and Updates	212	57.0%
Education and Technology	35	9.4%
Entertainment	87	23.4%
Sports	12	3.2%
Government Programs and Communications	10	2.7%
Anything Broadcasted	6	1.6%
Religion Programs	4	1.1%
International News	3	0.8%
Babysitting	2	0.5%
Business	1	0.3%
Total	**372**	100.0%

Most (28%) of the respondents indicated that they pay between Kshs. 801 to Kshs. 1,000 as monthly subscriptions to access television programs; 20% pay between Kshs. 1,001 and Kshs. 2,000 while 19% pay between Kshs.150 and Kshs.800. Further, 18% are charged between Kshs. 4,001 and Kshs. 9,400 per month while 15% pay between Kshs. 2,001 and Kshs. 4,000 per month. Table 4.16 show a summary of the results. According to the findings,

the monthly subscriptions across the constituency vary and this could be attributed to the different economic classes of the respondents.

The television seems to be viewed daily according to the respondents with 70 (45%) watching it for 3 – 6 hours and 90 (24%) respondents over 6 hours. Another 19% spent 1 – 2 hours daily watching TV. Table 4.8 shows a summary of the findings. In an earlier research by Ipsos Synovate, on average the urban television viewer spends an average of 3.6 hours watching television on a weekly basis compared to their rural counterparts who spend 3.4 hours a day; a difference of 0.2 hours. A review of television viewership trends shows that viewership across both rural and urban population peaks during prime time, between 6:30pm and 9:30 pm, a fact that can be attributed to the way of life which cuts across both rural and urban set up. News programmes during prime time are a significant driver of viewership (Mzungu, 2013).

Table 4.10 Analysis of broadcasted content

Preferred Content	**Frequency**	**Percentage**
Health	99	26.6%
Education and Technology	55	14.8%
Business	50	13.4%
Farming and Agriculture	44	11.8%
Entertainment	36	9.7%
Religion	20	5.4%
Cartoons	14	3.8%
News and Updates	13	3.5%
Documentaries	13	3.5%
Politics	11	3.0%
Entertainment	11	3.0%
Soap Operas	6	1.6%
Total	**372**	**100.0%**
Undesirable Content Category	**Frequency**	**Percentage**
Politics	106	39%
Adult-themed Programs / Adverts	81	30%
Soap Operas	41	15%
Nigerian Movies	18	7%
Music Programs	11	4%
Local Drama Series not up to Standard	8	3%
Social Media Content	5	2%
Sports	2	1%
Total	**272**	**100%**

The study attempted to establish what the respondents mostly rely and use the TV for. Table 4.10 shows a summary of the results. Most (75%) of the residents rely on TV for news, 23.4% for entertainment and 9.4% for education and technology (updates). The rest mostly use TV for sports, religion, government programs and communications.

These findings indicate that vendors must incorporate customer preference and tastes when designing their packages. Further analysis show that most residents would prefer health related content (26.6%) broadcasted on the TV stations followed by education and technology (14.8%), business (13.4% and farming and agriculture (11.8%). Other would like local TV station to offer entertainment (9.7%), religious programs (5.4%) and cartoons (3.8%).

On the other hand, the respondents indicated that some content should not aired on Television (Both local and international channels). They included; Politics (39%), adult-themed programs and adverts (30%), soap operas (15%) and Nigerian movies (7%). Table 4.10 shows a summary of the results.

4.7 Accessibility of Different Media Stations

Table 4.10 shows a rating of the vendors in terms of their services and signal strength. Most of the respondents (67%) rated the vendors' services as average followed by 21% who rated them excellent. Similarly, their signal strength was rated as stable and excellent by 74% and 17% of the respondents respectively.

Table 4.11: Vendors' Services and Signal Strength

Service of Vendor	**Frequency**	**Percent**
Excellent	79	21%
Average	249	67%
Poor	20	5%
No response	24	6%
Total	**372**	**100%**
Signal Reception Strength	**Frequency**	**Percent**
Excellent	63	17%
Stable	274	74%
Weak	24	6%
No response	11	3%
Total	**372**	**100%**

The quality of services and strength provided is therefore good. This could be attributed to the competition by the various vendors for the same customers in the constituency. The vendors therefore ensure minimal complaints by providing exceptional after sales service.
Another objective of the study was to explore accessibility to different media stations of the various broadcasters affect citizens' access to information. Several supporting questions were used to make final results.

The study sought to determine how accessibility to different media stations of the various broadcasters influences citizens' access to information. As depicted in Table 4.11, majority (74%) of the respondents indicated that the strength of the reception signal in their homes was stable, 17% excellent and 6% weak. This is as per one of the advantages of digital TV reception, the signal transmitted is much more robust to interferences hence the consumer enjoys a much clearer signal.

The emphasis for channel specialization is supported by the fact that 96% of the residents indicated that all Free-to-Air channels in the country should be available in all government approved subscription Set Top Boxes for free. African Digital Network (ADN) Consortium, an amalgamation of the three major media houses in Kenya (Royal Media Services, Standard Media Group and Nation Media Group) had indicated of plans to sell digital set-top boxes with a surety of free access for local Free-To-Air (FTA) channels. Standard Media Group however decided to acquire a 50% stake in Bamba TV, which is owned by Radio Africa Group. Nation Media Group seems to have intensified its efforts towards its online and digital platform while Royal Media Services has been launching television stations which align with its vernacular radio stations possibly using the 21 digital TV frequencies.

Table 4.12 Quest for FTA channels on all SBT's

Channel Specialization	**Frequency**	**Percent**
Yes	215	58%
No	154	41%
No response	3	1%
Total	**372**	**100%**
FTA Channels on all SBTs	**Frequency**	**Percent**
Yes	215	58%
No	154	41%
No response	3	1%
Total	**372**	**100%**

The study also sought to establish the respondents' preferred source of information, news, events and entertainment. Table 4.13 shows a summary of the findings where TV is the most preferred medium for information, news and events at 53% followed by internet (27%). The same is reflected in the most preferred medium for entertainment; TV (49%) and Internet (20%). These findings indicate a paradigm shift in the minds of the respondents from analogue to digital for information access.

Table 4.13: Reason for Channel Choice

Preferred Medium for Information, News and Events	**Frequency**	**Percentage**
Newspapers and Magazines	53	14%
Television	198	53%
Radio	12	3%
Internet	99	27%
Other	10	3%
Total	**372**	**100%**
Preferred Medium for Entertainment	**Frequency**	**Percentage**
Newspapers and Magazines	56	15%
Television	182	49%
Radio	61	16%
Internet	73	20%
Total	**372**	**100%**

Finally, the respondents had the following comments regarding digital migration in general;

i) On content, adult movies and adverts should only be aired after midnight; negative ethnicity and political content be banned; foreign language programs (South Africa, India) should not be aired on prime time.

ii) The government and all media houses should improve citizens' awareness on digital migration particularly in the rural areas. This finding is in line with that of Berger (2010) who highlighted the importance of consumer awareness and readiness for citizens to migrate to digital platforms, especially in Africa.

iii) A percentage of Kenyans are yet to acquire the Digital Infrastructure.

iv) DM was and is expensive for most Kenyans. There should be an option of people to only pay for needed channels (pay as you watch). This will ensure that many Kenyans embrace the digital migration.

v) All STBs should provide FTA channels at no cost.

vi) Digital migration has brought a wide range of choices for viewers. The media should use this opportunity to transform the society by including more educative and

informative content in their channels. Local stations can do so much more to avoid losing out to the foreign ones by including the vernacular content for free to promote local content.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter presents the summary of findings, discussions, conclusions and recommendations.

5.2 Summary of Findings

This section summarizes the study findings as per the study objectives. Overall most of the respondents felt the government would have done much more to aid in the compulsory Digital Migration, from subsidizing costs further to ensuring proper awareness of the Digital Migration project. Below are the main findings per each objective.

5.2.1 Cost of acquiring digital infrastructure

The study found that most of the respondents gave a negative correlation in regards to the investments made to acquire the digital migration platform. 17(5%) of the respondents did not migrate, 15 (88%) citing finances – or lack of as the hindrance to their Digital Migration. For those who migrated, 225 (63%) chose the STB option which was the cheapest of the Digital Migration options. Further, most (standard deviation at 1.08) were of the opinion the government or the media stations should have or should still subsidize the cost of the equipment, especially the STB (Set Top Box.)

5.2.2 Technological Preparedness and Digital Migration

Again, the study also revealed weak perception of citizens in regards to the reasons behind Digital Migration, and hence their preparedness. On a Lickert Scale of 1-5, the responses showed a standard deviation of 1.34 that they did not know the reasons behind Digital Migration or why the government had to give an ultimatum, hence most responses garnering negative feedback on their knowledge of the reasons, effects and advantages of Digital Migration.

5.2.3 Monthly Payments and Access to Information

The digital migration came with much more variety in regards to the number of stations and content being aired, of which you choose the channels to view by the financial package paid for monthly. Some respondents were not aware of these additional channels, especially the local language channels whilst the researcher was undertaking the research. Most showed promise of finding out the new channels after the questionnaire had been administered. Some vendors however, like DSTV are not airing the burgeoning Kenyan channels that have come with Digital Migration. Another notable finding as per the research was respondents are still displeased with the content, especially the mainstream channels that are airing inappropriate content for the family setting. Politics was the biggest complaint with 106 (39%) respondents wishing for it not to be aired at all, followed by adult themed programs and adverts with 81 (30%) respondents. Also, there is a growing percentage of viewers who are abandoning the local channels viewership in favor of the international channels altogether, from the research 159 (43%) respondents preferred non-local channels hence local media stations may lose out on viewership ratings in the long run.

5.2.4 Accessibility of Media / Broadcasting Stations

This study showed a positive correlation in regards to accessibility of media stations with 274 (74%) of the respondents quoting a stable signal reception, and 328 (88%) respondents citing services of the vendor between average and excellent, hence sustainable. The upsurge of various players in the market has brought a good competitive edge whereby the broadcasters are offering the best of the after sale service to garner a bigger chunk of the viewership market. This was not the case in the analogue environment where some players were monopolistic. Hence, in terms of accessibility of media stations, the Digital Migration was definitely a step forward in regards to the consumer. Another percentage (215 respondents at 58%) also feel that all Free-To-Air channels should be accessible for free in all government approved Set Top Boxes (STB)

5.3 Discussions

This section looks at the research findings in comparison with what other authors have published. The discussions are done as per the study objectives.

5.3.1 Costs of Digital Migration and Access to Information

The first objective was to assess how cost of acquiring digital infrastructure affects citizens' access to information. One of the critical success factors identified by the European Union was "low cost and widely available" set top boxes. In order to ensure that the migration to DTT is successful, the free-to-air DTT set top box should be a basic affordable set top box with the minimum specifications necessary for its purpose (Rosenberg, 2013). The findings in this research paper post coarsely the same figures, 17 (5%) respondents had not migrated, with 15(88%) quoting finances as the hindrance. Also, a larger percentage preferred the STB option, with 225 (63%) opting for it and only 57 (16%) respondents having acquired a Digital ready TV.

Infotrack in their earlier survey when the government announced Digital Migration had established that nearly half (48%) of the low income group were not ready for Digital TV Migration. Readiness for digital TV migration was highest among the wealthy and highly educated (InfoTrack COFEK survey, 2013). Most, however, even if it was an additional increment in their budget decided to go ahead and acquire the Digital infrastructure for TV despite the seemingly high costs, the standard deviation shows a high of 1.223 meaning most respondents found the digital infrastructure a bit expensive but still felt they had to acquire it. A majority of the respondents in the Infotrack survey had preferred a subsidized cost of the STB's to be priced below 1000 Kes, which did not turn out to be the case. The consumer was therefore left with a sizable chunk of the costs for Digital Migration, which locked out 1.3 million Kenyans (Business Today, 2015).

5.3.2 Technological Preparedness in Digital Migration

Technological preparedness, rather consumer awareness was critical to educate people about the migration process, how it will impact on them, and the steps they will need to take to ensure that they acquire a set top box (through government subsidies if eligible or through their own means) and are able to access DTT (Rosenberg, 2013). This depended on strong and clear market communication. However, most respondents still were not clear of the reasons behind Digital Migration, the results showed a mean of 2.4 showing most still did not understand the move, which impacted quite negatively on the success of the project. During the data collection process the researcher was able to hear from the respondents a myriad of reasons behind the digital migration process, most of which were political. This showed clearly there was very little consumer awareness to the said project. Most also were not aware

of the local mushrooming TV channels now accessible in most of the STB's and the DTV (Digital Television).

In her brief, Rosenberg (2013) showed why consumer awareness was critical, educating the public about the impending migration process, the impact it will have, and the kind of infrastructure required to ensure they have the full advantage of the Digital Migration benefits.

5.3.3 Monthly Payments and Influence on Access to Information

Similar recent researches continue to show Kenyan's hunger for local content to be broadcasted. A few of the media stations have taken up the challenge, but the demand is still huge for local content, especially from the mainstream channels. Though most will watch TV for news and updates, they end up getting only politics with very little news. Hence for more appreciation of the content aired, there is need for a thorough understanding of consumer needs (Mumero, 2015). The results showed despite respondents feeling the monthly packages were highly priced (at a mean of 2.43), they still managed to pay the monthly fee required for access (mean of 2.45) despite the content not being appealing (mean of 3.62).

The influence of social media on television has been felt and can be seen in the now familiar segments of television programmes where the audience is asked to contribute their ideas to the show through the various social media platforms. For instance, News programmes in local televisions have a segment where they ask for viewer opinions on particular topics of discussions. A few respondents (2%) were rather quick to point out, however, that the news programmes should not feature social media content, most of which has not been authenticated thoroughly and can mislead the masses.

The government, through the Communications Authority of Kenya developed a roadmap aimed at increasing the local content aired on local channels to 60% in 2018. Currently, in a report commissioned by Communications Authority of Kenya (CA) and conducted by GlobeTrack International, it was revealed that 38 per cent of programmes KTN airs are local, coming second only to State-owned national broadcaster KBC (42 per cent). K24, Citizen TV and NTV follow (Otieno, Standard Media, 2016).

The research by GlobeTrack also reported on the content aired by emerging TV channels noting that most of them lack variety in programming, with majority being inconsistent in

programming with the main content as music, news and talk shows that address current issues. A lot of repetition of these programs and the average local content for emerging stations is 54 per cent while production is mainly in house. Some of the top genres found to take up most of the local content include music at 36 per cent, followed by religious shows, comedy, movies and sports among others. Consumers on the other hand would wish that more content relating to development, education, health and proper news was aired.

5.3.4 Accessibility of Media / Broadcasters and Access to Information

With the new broadcasting technologies in Digital Migration, the reception for television in households has greatly improved, there are much fewer complains as opposed to the earlier analogue transmission. Most 328 (88%) of the respondents gave a satisfactory nod on television signal reception; it was the most notable improvement with the Digital Migration. The only hindrance now would be the type of content aired, that the media stations need to review – content that will work for the Kenyan market.

Initially there were fears Digital Migration could take much longer in developing countries than in developed countries for the entire population to purchase new television sets with digital tuners, or at least the set-top boxes needed to view digital broadcasting on conventional sets (Germano, 2007), but with the government directive Kenya is on course with the rest of the world in Digital Migration. Different station and creators of content must now be more creative, which means creating niche products for specific audience segments (MCK, 2015).

5.4 Conclusions

Having undertaken the study and collected research data, the researcher identifies the below conclusions:

Cost was a major factor in Digital Migration, upsetting the TV viewership of many and locking others out completely. Digital Migration is definitely a step in the right direction, hence the endeavor for more and more Kenyans to be brought on board. The once of purchase STB's could help in the cost factor if the initial purchase cost would be reviewed, as it is in the upper band for most Kenyans.

Consumer awareness on Digital Migration benefits remains a big improvement to the project. There should be a renewed sensitization on the benefits of Digital Migration, the reasons behind and how it affects the consumer, with more options available in the long run.

For the monthly payments required for access to information, the yardstick here is more of the content broadcasted. The Kenyan viewer wants more of local well produced content; this has been shown by the upsurge of positive reviews of some local TV channels like Inooro TV and KTN. The major broadcasters in the market also need to review their content, respondents were not comfortable with some of the content on prime time like adult themed adverts and politics (as opposed to news.)

Finally, on accessibility of different media stations, the feedback here is a big positive – unlike the analogue environment there is a huge improvement in terms of signal and clear reception. The only notable comment as regards to the Digital Migration in Kenya was for all government approved STB's should air Free to Air channels to ensure bigger penetration of Kenyan local content to the Kenyan citizens.

5.5 Recommendations of the Study

Having undertaken this study and carried out the research, below are the recommendations from the research:

1. Given the fact that significant number of TV audience in Kenya appreciate local content, there is need to further strengthen this viewership by encouraging more TV stations to increase on local films content, especially among the leading TV stations in the country.
2. The government needs to put in place mechanisms that will ensure the 60% relevant local content coverage by the media is observed by the media houses.
3. The programming is also key – most respondents in family setup were not thrilled with the timings of adult rated content that is aired on TV anytime of the day, rather they preferred late night hours or no airing at all of the said content.
4. There could also be a consideration to revise the pricing of the STB and the monthly payments required to ensure more numbers are able to access information even after the Digital Migration. Most of the respondents felt the FTA should air freely even with the non-payment of the monthly / annual TV access costs.

5.6 Suggestions for Further Research

1. The future of Television Viewership in Kenya vis-à-vis Social Media.
2. Options of Pay-As-You-Watch, where the consumer only pays for programming that is only relevant to him.
3. Quality local programming and talent development – What Kenya stands to gain.
4. Disposal avenues of old TV electronics in Kenya to avoid environmental pollution.

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APPENDICES

Appendix 1: Questionnaire

QUESTIONNAIRE FOR HOUSEHOLDS RESEARCH ON DIGITAL MIGRATION

Kindly fill in the below questionnaire, utmost professionalism is assured in handling the information and views given. You do not need to write your name on this questionnaire.

SECTION A: General Information of Respondents

1. Select your appropriate gender
   Male [ ] Female [ ]
2. Select your appropriate age bracket.
   20-29 years [ ] 30-39 years [ ] 40-49 years [ ] 50-59 years [ ] 60 and above [ ]
3. Tick your Marital Status
   Single [ ] Married [ ] Widowed/Divorced [ ]
4. State your highest level of education
   Certificate [ ] Diploma [ ] Degree [ ] Masters & above [ ]
5. Area of residence / Location
   Kalama Ward [ ] Mua Ward [ ] Mutituni Ward [ ] Machakos-Central [ ]
   Mumbuni North Ward [ ] Muvuti/Kiima-Kimwe [ ] Kola Ward [ ]

SECTION B – Financials and Digital Migration

1. Did you own a TV before Digital Migration deadline (17th June 2015)? Yes [ ] No [ ]
2. Have you migrated - do you have the digital platform required for current reception of TV channels? Yes [ ] No [ ] (If Yes please go to question 4)
3. If No, please specify reason (then proceed to section C)
   Finances [ ] Content is unappealing [ ] Prefer other media channels (eg Internet) [ ] Other [ ] …….
4. Do you own a Digital ready TV, Set Top Box (STB) or both? DTV [ ] STB [ ]
5. If Set Top Box, please tick appropriate as per below:
   Free to Air (One-off Purchase) [ ]
   Subscription based (monthly payments required) [ ]
6. Mode of acquisition of your digital platform? Purchased [ ] Gift [ ]
   Promotional item [ ] Other [ ]…..

7. If Set Top Box, state the vendor you have subscribed to:

   DsTV [ ] Zuku [ ] Startimes [ ] Bamba [ ] ADN [ ]

   The BIG Box [ ] Other (Please specify)……

8. Kindly state how much you pay monthly for your subscription plan to be able to access Television programs (if more than one indicate the amounts with +)……

9. Why did you choose this specific vendor? …..…….

   This section reviews the financial implications in acquiring the digital infrastructure in relation to digital migration. Please tick appropriate box in the scale of 1 -5, where 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree.

10	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a)	The set top box or digital TV was/is quite affordable					
b)	I will be changing / upgrading my digital TV equipment soon; my current vendor doesn't meet my/our requirements.					
c)	The various options of digital infrastructure were / are readily available in the market					
d)	We have seen the various benefits with the Digital Migration and investment on digital equipment.					

SECTION C: Technological Preparedness of citizens to Digital Migration

This section reviews the technological preparedness of citizens to the Digital Migration project. Please tick appropriate box in the scale of 1 -5, where 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree.

1.	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a)	I understand fully the reasons behind digital migration					
b)	I am familiar with the advantages of digital TV reception					
c)	I understand fully the specifications of infrastructure required for digital migration					

	(TV and or STB)					
d)	I understand the waivers the government implemented to assist in its citizens DM					
e)	The major media / broadcasting stations played their role in ensuring the public was well educated on DM.					

Section D: Monthly Subscription Costs in relation to Digital Migration

This section reviews the Monthly Payments and their influence access to information in regards to Digital Migration project. Please tick appropriate box in the scale of 1 -5, where 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree.

1.	**Statements**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a)	The TV channels / content I pay for is appealing and relevant to me / us.					
b)	I am able to pay my monthly TV subscriptions without fail					
c)	The monthly TV access subscription plans are quite affordable					
d)	I have been forced to subscribe to more than one set top box vendor because of the content / channels required in my home.					

2. Which best describes TV viewership per day for your household?

1–2 hours [ ] 3–6 hours [ ] Above 6 hours [ ] Irregular viewer [ ]

3. How would you rate the service of your current vendor?

Excellent – Minimal complaints, exceptional after sale service [ ]

Average – suffices for now [ ]

Poor management and frequent complaints [ ]

SECTION E: Accessibility of different media stations / broadcasters.

1. What are your experiences on the strength of the reception signal in your home?

Excellent [ ] Stable, most of the time [ ] Quite Weak [ ]

2. Do you support channel specialization in Free-to-Air Set Top Boxes of the different media stations? Yes [ ] No [ ]

3. Do you think all Free-to-Air channels in the country should be available in all government approved subscription Set Top Boxes for free? Yes [ ] No [ ]

4. The Digital Migration has enabled entry of more TV stations. Kindly list below the three channels in descending order of most watched, and why (entertainment, infotainment, news and updates, etc)

	Channel	Why
i)	……	…….
ii)	……	…….
iii)	……	……..…….

SECTION F: Access to Information

1. Your preferred medium for news, information and events

Newspapers and Magazines [ ] Television [ ] Radio [ ] Internet [ ]

Other [ ]…….

2. Your preferred medium for entertainment

Newspapers and Magazines [ ] Television [ ] Radio [ ] Internet [ ]

Other [ ]……..

3. We mostly rely and use the TV for (you can tick / indicate more than one option):

News and Politics [ ] Education [ ] Entertainment [ ] Sports [ ] Government Programs and Communications [ ] International News [ ] Babysitting [ ]

Anything broadcasted [ ] Other (Please indicate below)

……

……

4. Please list what more content you would like to see on broadcast of local TV stations (For instance, Health, Farming and Agriculture, Business, Politics and News, Education, Religion, Entertainment)

……..

……...

……

5. Please list the content you wish was not aired on Television (Both local and international channels)

……

……

……

6. Any other comments you would wish were noted regarding this research?

……

……

……

Thank you very much for your time and cooperation in sharing your views in this research. Once again, we assure you that the above comments will be handled with utmost professionalism.

Appendix 2: Introductory Letter

UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF CONTINUING AND DISTANCE EDUCATION
DEPARTMENT OF EXTRA-MURAL STUDIES
NAIROBI EXTRA-MURAL CENTRE

Your Ref:

Our Ref:

Telephone: 318262 Ext. 120

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
NAIROBI

31st March, 2016

REF: UON/CES/NEMC/23/166

TO WHOM IT MAY CONCERN

RE: WANGESHI NJOGU- REG NO I.50/72697/2008

This is to confirm that the above named is a student at the University of Nairobi, College of Education and External Studies, School of Continuing and Distance Education, Department of Extra- Mural Studies pursuing Masters in Project Planning and Management.

She is proceeding for research entitled "**influence of digital migration project on citizens' access to information in Kenya**" The case of Machakos town Constituency, Kenya.

Any assistance given to her will be appreciated.

14 APR 2016

CAREN AWILLY
CENTRE ORGANIZER
NAIROBI EXTRA MURAL CENTRE

Appendix 3: Krejcie And Morgan Table

N	*S*	*N*	*S*	*N*	*S*
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.

Source: Krejcie & Morgan, 1970