A COMPARATIVE STUDY OF THE ADOPTION OF INTERNET TOOLS BY AFRICAN INDEPENDENT TELEVISION-AIT AND NIGERIAN TELEVISION AUTHORITY-NTA NETWORK SERVICE

BY

GIMBA MAFO DORIS
M.Sc/Soc-Sci/42309/2012-2013

NOVEMBER, 2017

A COMPARATIVE STUDY OF THE ADOPTION OF INTERNET TOOLS BY AFRICAN INDEPENDENT TELEVISION-AIT AND NIGERIAN TELEVISION AUTHORITY-NTA NETWORK SERVICE

BY

GIMBA MAFO DORIS
M.Sc/Soc-Sci/42309/2012-2013

A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc) DEGREE IN MASS COMMUNICATION,

DEPARTMENT OF MASS COMMUNICATION,
FACULTY OF SOCIAL SCIENCES,
AHMADU BELLO UNIVERSITY,
ZARIA

NOVEMBER, 2017

DECLARATION

I, Gimba Mafo Doris hereby declare that this dissertation is a product of my research findings and has never been presented for the award of any certificate. All materials have been duly acknowledged in the bibliography.

_____ _____

GIMBA MAFO DORIS **SIGNATURE & DATE**

CERTIFICATION

This dissertation entitled "A Comparative Study of the Adoption of Internet Tools by African Independent Television-AIT and Nigerian Television Authority-NTA Network Service" meets the regulations governing the Award of Master of Science (M.Sc) Degree in Mass Communication, Ahmadu Bello University, Zaria, is approved for its contribution to knowledge and literary presentation.

LADI S ADAMU, Ph.D **Chairman, Supervisory Committee**	**SIGNATURE & DATE**
IBRAHIM JIMOH, Ph.D **Member, Supervisory Committee**	**SIGNATURE & DATE**
MAHMUD M. UMAR, Ph.D **Head of Department**	**SIGNATURE & DATE**
PROF. S. Z. ABUBAKAR **Dean, School of Postgraduate Studies**	**SIGNATURE & DATE**

DEDICATION

With deep sense of gratitude, I dedicate this dissertation to almighty God for his Grace, Inspiration and all he has done for me. This piece is also dedicated to my lovely and most wonderful parents Mr & Mrs Gimba S. Braimoh (JP) and to my sweet siblings-Sokowonci and Sokolayam. You are the best, I love you all.

ACKNOWLEDGEMENTS

My special thanks and gratitude goes to Almighty God for his guidance, faithfulness, protection and inspiration from the beginning to the end of my M.Sc degree programme. My sincere appreciation also goes to my supervisors Associate Professor Ladi S. Adamu and Ibrahim Jimoh, Ph.D for their patience, humility and constructive advice to the completion of this dissertation. My profound gratitude also goes to my M.Sc lecturers in the department of Mass Communication especially Dr. Mahmud Umar, Prof. Suleiman Salau, Prof. Arokoyo, Dr. Shola Adeyanju, Dr. Yakubu Ozohu, Dr. Cosmos Eze, Dr. John Okpoko, Mr. Usman Jimada, Dr. Ibrahim Shittu. I thank you all for the knowledge you imparted in me during my course work and to other lecturers of the department of mass communication not mentioned, I appreciate you all.

I wish to deeply acknowledge the overwhelming support, encouragement, patience, care and understanding I received generously from my lovely parents Mr & Mrs Gimba S Braimoh (JP), thank you so much Mum and Dad for being a real support system. Also to my siblings Sokowonci and Sokolayam, I cannot repay the love but you all are a great part of my world.

I also appreciate my ever supportive Boss, Professor Adamu Zoaka Hassan for the encouragement, listening ears and for believing in me.

My friends are not left out in this acknowledgement especially Tomi, Rachael, Kemi, Emmanuella, Busola, Bukola, Jemila, Malatl, Habiba, Hafsat, Lubabatu and to other friends not mentioned, you are wonderful people, I love you all.

I appreciate the endless love, counsel and prayers from my spiritual fathers, Bishop David Bakare, Apostle Joshua Selman Nimmak and Pastor Gbenga. The Lord will continue to increase you all.

Finally, I recognise all my M.Sc. course mates, it was really an exposure and an experience together, all thanks to Almighty God for the Strength to always carry on. And to all who have always wished me well in my academic pursuit. God Bless You all.

TABLE OF CONTENTS

Cover Page- - - - - - - - - - -i

Title Page - - - - - - - - - - -ii

Declaration - - - - - - - - - - -iii

Certification - - - - - - - - - - -iv

Dedication - - - - - - - - - - -v

Acknowledgements - - - - - - - - - -vi

Abstract - - - - - - - - - - viii

Table of Contents - - - - - - - - -ix

List of Tables - - - - - - - - - - -xii

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study - - - - - - - 1

1.2 Statement of the Research Problem - - - - - - 6

1.3 Research Questions - - - - - - - - - 7

1.4 Aim and Objectives of the Study - - - - - - 8

1.5 Significance of the study- - - - - - - - 8

1.6 Scope of the study - - - - - - - - - 9

1.7 Limitations of the Study-- - - - - - - - 9

1.8 Operational Definition of Terms- - - - - - - 10

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction - - - - - - - - - - 13

2.2.1 Conceptual Review- - - - - - - - - 13

2.2.2 Digitization of Newsgathering, Production and Transmission- - 13

2.2.3 The Internet and Television Broadcasting- - - - - 16

2.2.4 The Internet Protocol Used in Broadcasting- - - - - 20

2.2.5 Advantages of the Internet usage for Broadcast News Content- - 24

2.3.1 The Internet Tools Used in Broadcasting- - - - - 26

2.3.2 The Impact of the Internet on Broadcast Journalism Practice - - 32

2.3.3 Effect of Internet Usage in Television Newsgathering - - 33

2.3.4 Challenges of Internet tools in Newsgathering and production- - 38

2.4 Empirical Review- - - - - - - - 41

2.4. Gaps in Empirical Literature - - - - - - 50

2.5 Theoretical framework -- - - - - - 52

2.5.1 Diffusion of Innovation Theory- - - - - - 53

2.5.2 Media Convergence Theory- - - - - - 52

2.5.4 Critique of the Theories - - - - - - 58

2.5.3 Adaptability of the Theories - - - - - - 61

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction - - - - - - - - 63

3.2 Research Design- - - - - - - - 63

3.3 Population of the Study- - - - - - - 64

3.4 Sampling Technique- - - - - - - - 64

3.5 Sample Size- - - - - - - - - 65

3.6 Instruments of Data Collection- - - - - - 65

3.6.1 Questionnaire-- - - - - - - - 65

3.6.2 In-depth Interview- - - - - - - - 66

3.7 Validity and Reliability- - - - - - - 66

3.8 Method of Data Collection- - - - - - - 67

3.9 Method of Data Analysis- - - - - - - 67

CHAPTER FOUR: PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION

4.1 Introduction - - - - - - - - - 70

4.2 Interpretation of Data - - - - - - - - 70

4.3 Discussion of Findings - - - - - - - - 87

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction- - - - - - - - - 95

5.2 Summary of the Study - - - - - - - - 95

5.3 Conclusion - - - - - - - - - 96

5.4.1 Recommendations - - - - - - - - - 97

5.5 Contribution to Knowledge - - - - - - - 99

5.6 Suggestion for Future Research - - - - - - - 100

References - - - - - - - - - 101

Appendices - - - - - - - - - 109

Appendix I - - - - - - - - - 109

Appendix II - - - - - - - - - 115

Appendix III - - - - - - - - - 116

LIST OF TABLES

Table 1: Socio-Demographic Analysis of Respondents - - 71

Table 2: Internet Tools Used in Newsgathering and Transmission in Modern Television Broadcasting - - - - - 73

Table 3: Extent of Internet Usage in Newsgathering and Transmission in Modern Television Broadcasting - - - - - 76

Table 4: Rating on the Functionality of the Usage of Internet Tools/ Platforms for Modern Television Broadcasting - - - - 79

Table 5: The Effectiveness of the Use of Internet Tools/Platforms in Modern Television Newsgathering and Transmission - - - 81

Table 6: Challenges Faced in the Use of the Internet Tools/Platforms for Modern Television Broadcast and Transmission - - - 86

LIST OF ABBREVIATIONS AND MEANINGS

AIT	:	African Independent Television
BBC	;	British Broadcasting Corporation
BGAN	:	Broadband Global Area Network
CAPEX	:	Capital Expense
CDMA	:	Cold Division Multiple Access
CNN	:	Cable Network News
DB	:	Digital Broadcast
DSNG	:	Digital Satellite News Gathering
DVB-T	:	Digital Video Broadcast – Terrestrial
HD	:	High Definition
ICT	:	Information and Communication Technology
IP	:	Internet Protocol
IPTV	:	Internet Protocol Television
NTA	:	Nigerian Television Authority
OPEX	:	Operational Expense
PBX	:	private branch exchange
PSTN	:	Public Switched Telephone Network
TDMA	:	Time Division Multiple Access
VOIP	:	Voice over the Internet Protocol
VSAT	:	Very small aperture technology
WWW	:	Worldwideweb

Abstract

This study entitled "A Comparative Study of the Adoption of Internet Tools by African Independent Television-AIT and Nigerian Television Authority-NTA Network Service was carried out as qualitative and quantitative survey research aimed at exploring the adoption of internet tools in newsgathering and transmission in modern day mass media broadcast field with the view of assessing the extent of its adoption and effectiveness in the selected television stations. The research adopted the census survey research design for a population of the study which comprised of mostly ICT inclined journalists in NTA Network, Abuja which has a total number of 110 ICT inclined journalists and AIT, Abuja which has a total number of 74 journalists totaling 184. The close-ended and open-ended questionnaire and interview questions guide were used as instruments of data collection. From the analysis of the information and data collected it was found that Internet broadcast Technologies like IPTV Probe, Mware, Netup TV, U-Stream, and Skype are used for webcasting, streaming and Voice-Over-the Internet-VOIP for newsgathering and transmission via the online platforms by both stations, although there is more of such usage by AIT than NTA. The study also found that the adoption of Internet Protocol Television-IPTV in the two television stations namely AIT and NTA were considered significantly effective although both stations are faced with challenges of poor broadband services and IT skills of reporters, paucity of funding and erratic nature of power supply. Based on this findings, the study recommends that the stations should have better broadband facilities and infrastructure as well as employ, train and retrain media workers with new multitasking skills relevant to modern day newsgathering and transmission practices. Furthermore, the use of VoIP's like Skype and Google+, Facebook, video call, to mention a few would not only provide for the immediacy of reach to news sources but also make interview and needed actualities on topical discourse most timely and more exclusive. Thus, the study concludes that the adoption of this technology for newsgathering and transmission capacity and capability of the two Nigerian television stations is seen as a welcome development since global and continental broadcast television stations have already adopted these technologies, the country must not be seen to be lagging behind.

CHAPTER ONE

INTRODUCTION

1.2 Background to the Study

The term ‘internet’ covers the interconnected and networked technological infrastructure that supports the Worldwide-Web and the many ways in which digitally mediated communication has become domesticated and pervasive within the everyday communication usage. Internet in-road into broadcasting is seen as a new approach which recognizes that digital technologies within the broadcast environments are convergent. When technologies converge they take on and share the capacities and characteristics of other technologies alongside the core technology, this contrasts with everyday goods from pre-digital life had separate functions and separate technical characteristics. In the early days, television could not be used as a radio; a telephone could not work as a camera (Dominick, 2009).

The advent of the internet and its dynamic application that cut across almost all the field of human endeavor has brought about a more flexible, efficient and reliable way of doing things and this has also affected television stations programming, newsgathering, and transmission processes (Quinn, 2008). Keeping up-to-date with events in the news industry, tracking new stories as they emerge, interaction with stations and other journalists round the clock according to (Randall, 2005), are what made the Internet’s capacity and capability acceptable in Television stations’ content development, programming, newsgathering and transmission.

The invention of the internet has revolutionized the way things are done all over the world. The coming of the internet not only brought improvement, but also quality and speed in

the way people communicate around the globe. The application of the internet can be seen in almost every aspect of human endeavor. Virtually all the technologies of newsgathering and transmission are computerized or computer based as modern broadcast outfits adopt the technology not only for their speed, reliability and flexibility but majority for assisted journalism or reporting. The capability of the internet as explained by Cox (2000:4), is that it also enables Computer-Assisted Reporting (CAR) which allows the Television stations' newsgathering technologies with the use of computer linked with the internet protocol in the newsgathering and transmission process. With the introduction of personal computers, laptops and palmtops with internet access, the reporter can afford to carry out his beat anywhere, anytime even from the remotest part of the globe (Cox, 2000).

Furthermore, the shifting trend to internet broadcasting could be said to have been advanced by Multimedia technology. Multimedia technology used in broadcast is the development of contents consisting of the combination of different media like text, audio and video, and often the multimedia services include user interactivity. This has opened for the possibility of providing multimedia content over the Internet, making the Internet a serious competitor to the good old TV and video player. As the popularity of video streaming services is growing, people from all over the world are able to distribute their own personal media content on online web services (Cantoni and Tardini, 2006).

The growing trend of multimedia streaming on the Internet has also reached the television companies and the online news providers. To be able to maintain customer satisfaction and to stay competitive in the market, these companies have invested a lot in systems that can provide them with online multimedia services. Online news providers can today, instead of just publishing articles, also provide the users with video reports (Jacobsen, 2009). The internet which has now become a visible part of the newsgathering and

dissemination process enables surfing on the internet for research purpose on resource information and data on stories online via the information super-highway using the worldwide web (www) protocol. More so, real time online streaming of broadcast contents and materials has enhanced the universality of media programming and broadcasting from even any part of the world to viewers anywhere at any time.

According to Rosale (2006), another benefit of the Internet is the electronic-mail (e-mail) service in reporting which has replaced fax and telephone as a means whereby journalists and reporters communicate with their stations, courses and editions. The advantage lie not only in the ability to write or report stronger news and submit them electronically but in greater flexibility, effectively longer deadlines and the increased chances to undertake a commission from any spot anytime. The internet protocol (IP) can be used to web-cast in the absence of a Satellite News Gathering-SNG equipment or camera from the point-of-origin of event. A webcast which is broadcasting over the Internet uses the internet protocol and a web camera to deliver live media content or file of both audio and video using the streaming media technology to the station for transmission (Hertoghs, Kermen and Simlo, 2009).

The dramatic and dynamic opportunity provided by the internet to newsgathering, transmission, programming and content development has led to its acceptance, a new frontier to search for and pass on news to the public. News audiences around the world are fragmenting. More and more services are competing for their attention: cable television, satellite television, digital television and the internet television. To hold on to audiences, broadcasters and television stations are adopting this new platform since the audience and viewers are now no longer passive but active and interactive participants to and with the news item and agenda (Rosales, 2006).

The Internet has attracted attention as the new media that expanded the national and international frontiers of journalism. It has, by converging radio, television, the print media and information communication technology, become the latest tool through which journalists can conduct interviews, acquire news, report, write features, plan pages and edit or send/receive pictures as their respective media have also become accessible everywhere on earth, by connectivity to the net. The Internet is the new medium that allows digital information access, digital information storage and retrieval in form of newspaper, magazine and book or radio, television, film/video and web page exchange of data, text, pictures, graphics, audio, video and the email. It allows these processes of newsgathering, content production and transmission through the Internet Protocol (IP) (Rosales, 2006).

This frontier of journalism is seen in the loss of deference to the traditional newscast as reflected in an increasing appetite for live coverage - for immediacy and connectivity and for interactivity. The viewers/listeners now have an appetite to choose what they want to see or hear when they want it - and maybe to contribute to it as well. The internet platform provides the television stations with the capacity and capability to stream their news services to mobile phones, pagers, palmtops, computers, petrol pumps, supermarkets, stations and airports - anywhere there can be a screen or a digital display. It cuts cost, provides opportunities for coverage we wouldn't other-wise take and gives the journalist complete control of the production (Sambrook, 1999).

1.1.1 BRIEF HISTORY OF AFRICAN INDEPENDENT TELEVISION-AIT

African Independent Television, also known by its acronym AIT, is a Nigerian satellite television station, a subsidiary of Daar Communications plc, available throughout Africa and via Dish Network to North America. In the United Kingdom, it is available on Sky TV Channel 187, as a subscription channel (Daar Group, 2011). Its programming mix includes

more on the top entertainment, soaps, drama, lifestyle, news and sport shows. Upon its launch, AIT was the first channel to provide 24-hours television news coverage in Nigeria.

AIT News is the department of the Daar Communications Plc responsible for news and current affairs output. As Africa's second largest broadcast news organization, it generates each day about 120 hours of radio and television, as well as online news coverage. AIT beams quality programmes round the clock (24/7) and its in-depth coverage is aimed to keep viewers fully in tune with the soul of African broadcasters offering quality services (Daar Group, 2015). In order to keep abreast with modern day news and programmes production and transmission, AIT adopted the use of the multi-platform for news and programme alongside the common hardware like Digital Satellite News Gathering-DSNG, the Vertical Satellite Aperture Technology-VSAT and Microwave Earth equipment in 2002 for both terrestrial and satellite transmission and reception of television broadcast and signals in real time.

The success of the adoption of the internet tools further led to the creation of the AIT's internet streaming channels for the accessibility of users on the internet as well as provide them with the chance to retrieve digital files, interact with news and programme contents actively by the way of effective communication or completing the cycle of communication. This is now more flexible with the station's app that can now be downloaded from google stores into the mobile phone and watched on the go.

1.1.2 BRIEF HISTORY OF NIGERIAN TELEVISION AUTHORITY-NTA

Nigerian Television Authority also known as NTA is a government-owned body in charge of public service and television broadcasting in the country. It was inaugurated in 1977 with stations in all the 36 states of the federation, but also in major towns and cities across the states of the federation. The Nigeria Television Authority, (NTA) is arguably the largest of its type in Africa (Adegoju, 2011; and NTA, 2015). Against this background, the study's main

focus revolves around a comparative study of the adoption of internet tools by television stations and particularly on AIT and NTA stations in Nigeria.

The Nigeria Television Authority has equally adopted the use of the Internet platforms for news gathering, programme broadcast and transmission. The adoption of this platform for news and programme broadcast in the NTA occurred in late 2014 with live streaming on its website. The station equally now has mobile app which can be downloaded from the requisite application stores online. The application alongside other internet platform television technologies adoption by the station provides the users using the mobile phones, Ipad and personal computers to interact and participate actively with news features and programmes.

The two stations would formed the bedrock of this research into the comparative study on the adoption of Internet tools in television broadcasting.

1.2 Statement of the Problem

The dramatic and dynamic opportunity provided by the internet to news gathering, transmission, programming and content development has led to its acceptance as new frontier to search for and pass on news to the public. The internet platform provides the television stations with the capacity and capability to stream their news services to mobile phones, pagers, palmtop, computers, petrol pumps, supermarkets, stations and airports - anywhere there can be a screen or a digital display through webcasting and podcasting of media contents. This new frontier has become common with leading international broadcast media in Europe, Asia, America and some part of Africa. However, this is still novel to the Nigerian broadcast industry in the area of adaptability, capacity and capability of these in both public and private television news content and programme development as well as newsgathering, transmission and broadcast.

Researches have demonstrated that new technologies essentially aid the quality of news production (Sambrook, 1999; Straubhaar, and Larose, 2004; Ogbe, 2008; and Adamu, 2009). Also the exploration of the adoption of Internet tools in television newsgathering, transmission and content development and distribution is a valid field in media and communication research (Erdal, 2007). Much of this kind of scholarship has been done in Western countries like the United States, United Kingdom and Germany. Thus, availing various empirical data on the dynamic and diverse mode in which the Internet could be deployed and employed as a newsgathering and transmission platform in Africa especially in Nigeria.

In fact, researchers have noticed the plausibility and how embracing this Internet platforms, software and hardware can be applied in today's newsrooms and television stations. However, little research has been conducted in Nigeria in the area of adaptability, capacity and capability of these in both public and private television news content and programme development as well as newsgathering, transmission and broadcast (Amaraebiugwu, 2006, and Matthew, Ogedebe and Abaya, 2013).

1.3 Aim and Objectives of the Study

The study explores the adoption of internet tools in newsgathering and transmission in modern day broadcasting field with the view of assessing the extent of its adoption and effectiveness in the selected television stations.

The following are the research objectives of this study:

1. To examine Internet tools used in newsgathering and transmission in modern television broadcasting by AIT and NTA.
2. To determine the extent of Internet tools usage in newsgathering and transmission in modern television broadcasting by AIT and NTA.

3. To assess the effectiveness of Internet tools usage in newsgathering and transmission in modern television broadcasting by AIT and NTA.
4. To find out the challenges faced by AIT and NTA in the adoption of internet tools in newsgathering and transmission in modern television broadcasting.

1.4 Research Questions

The following were the research questions:

1. What are the Internet tools used in newsgathering and transmission in AIT and NTA network stations?
2. What is the extent of Internet tools usage in newsgathering and transmission in AIT and NTA?
3. How effective are the Internet tools used in newsgathering and transmission in AIT and NTA?
4. What are the challenges faced by AIT and NTA in the adoption of the internet tools?

1.5 Significance of the Study

Dramatic changes in reporting news have occurred at local television stations with the addition of social media and Internet websites. The advent of Internet media platform through streamcasting, webcasting and the social media channels like YouTube and Google+ in television newsrooms has opened up a dynamic process of broadcast journalism which made a study of this nature significant.

This study provides us with empirical results on the extent to which certain aspects of the Internet protocol has been adopted by the Nigerian Television stations especially the Nigerian Television Authority, a publicly owned broadcaster and African Independent

Television, a privately owned broadcaster which hitherto have not been carried out. The findings from this research would go a long way in making researchers in the field of broadcast technological innovation and diffusion understand the impact of the paradigm in modern day television operations and how it affect the adoption and usage of the Internet in this regard. The outcome of the study will be handed over to the television stations to provide them with a guide on the impact of these tools so as to aid management in policy decision making on how to make the technology efficient and effective.

It would also be of immense benefit to the Nigerian Television Authority-NTA, African Independent Television-AIT and other public and private television stations who could use it to understand the effect of the internet protocol before the country goes completely digital. The results and findings of the research would serve as baseline research material for students researching on internet protocol usage in television stations and the impact of the internet on programme and transmission quality. The study would eventually become an added body of knowledge to literature on Internet usage in broadcast journalistic work in Nigeria as well as a reference material to other researchers in this field.

1.6 Scope of the Study

The study is a research on the internet platforms and protocols available in news content and programme development, news gathering, transmission and service delivery. The study also investigates the extent of the adoption of the platform, its effectiveness and the extent to which it has enhanced journalistic work in television stations in Nigeria.

The study is specifically delimited to African Independent Television-AIT and Nigerian Television Authority-NTA Network Service, Abuja. The location of these stations were chosen because they serve as the operational headquarters where most of their news technologies are kept. The two stations were also chosen to empirically verify the role internet

plays comparatively in the news content development, newsgathering and transmission activities of private and publicly owned television broadcast stations in Nigeria.

1.7 Limitations of the Study

The study is limited to only two television stations, NTA which is publicly owned and AIT, privately owned although there are other television station like Channels which uses the internet platform. The research find it difficult to get direct access to the internet technologies and tools adopted by the stations in order to verify their make and version. Being a fledging aspect of television transmission and broadcast, only a handful of workers were knowledgeable about the capability and capacity of the internet platform in news gathering and transmission. Furthermore, only a handful of empirical researches have been conducted locally with the general use of the internet on news gathering and transmission with no single research on the adoption of the internet platform protocols for modern day transmission. However the limitations, the study was able to gather necessary data and information from other clime needed to provide the research with valid literatures in line with the research objectives.

1.8 Operational Definition of Terms

Adoption: The process of getting a new form of communication technology for content production, source interviewing, news transmission and broadcast. In this regard, it is about the use of internet related software and hardware for real time news source gathering, news and television programme streaming and the entire broadcast interactivity and content retrieval.

AIT: The acronym for African Independent Television which is the first privately owned television stations. It is one of the first station to have embraced the use of the Internet

Protocols and tools for television content production, source interviewing and news gathering and transmission.

Broadcast: is a communication technique, where the data is transferred from the host to every device in the broadcast domain in the network at the same time. The broadcasting technique can potentially consume a lot of unnecessary resources as the host delivers packets to receivers that might not be interested in receiving data.

Comparative Analysis: The process in research whereby two or more entities are studied in order to determine the comparativeness and competitive edge that one has over the other. Sometime, this kind of research is undertaken to also determine the level of usage of certain technologies, tools and platforms in the broadcast industry. For this study, the comparative analysis was undertaken to compare the adoption of Internet Protocols or Platforms for television newsgathering, production and transmission.

Diffusion of Innovation: The transfer of communication technology and the stages of its adoption for use in this regard by television stations.

Hypertext: This is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web.

Interactivity: The process of interacting with news contents as well as a platform for feedback which the communication process not only complete but effect.

Internet Protocol-IP: This is the principal communications protocol in the Internet protocol suite for relaying datagram across network boundaries. It is a special dedicated address in which routine function of broadcasters' on-the-point of event could be routed to the news hub.

Internet: The gateway to information gathering and sharing enabled by a high network of computers that are interconnected and accessed through the hypertext hatch tag (http://) and the worldwide web (www).

Internet Tools: These are the combination of software and hardware that serve the purpose of television content production, transmission and broadcast over the Internet Protocols-IPs. The use of these software and hardware has encourage the convergence of broadcast technologies mainframe and the internet servers to make television broadcast to become interactive, enable reporters and anchor persons to interview source and broadcast news in real time as well as provide viewers with the chance to log in and watch live streaming of contents and give feedback which hitherto has been lacking with the other forms of television broadcast.

NTA Network: The acronym for the Nigerian Television Authority which is the only publicly television station owned by the Federal Government of Nigeria. It is headquartered in Abuja with a network of television stations with stations in the thirty-six (6) states capital and one each in each senatorial zones as well as nine (9) zonal stations for real time and live news coverage and reportage. The Zonal stations are located at Lagos, Ibadan, Enugu, Kaduna, Markurdi, Jos, Minna, Maiduguri and Port Harcourt.

Streaming: This is the process of sending live video and audio files of event from the point-of-event through the Internet Protocol to the television hub or station for broadcasting.

Television (TV): This is a telecommunication medium that is used for transmitting and receiving moving images and sound. Television can transmit images that are monochrome (black-and-white), in color or in three dimensions.

Higher Definition (HD): The acronym for the new format of television production and transmission that replaces Standard Television-ST which format presents blurry television

picture. Digital transmission over the internet protocol equally transmits picture quality using this mode.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In order to provide an assessment of internet tools used in television news gathering and production, there is the need to examine previous works to give the research the necessary literature which the study hopes to build on. Thus, this chapter therefore reviews related literature on the subject matter of this research work. The thematic approach is hereby adopted.

2.2.1 Conceptual Review

This chapter reviews the following concept such as; Digitization of newsgathering, production and transmission, internet and television broadcasting, the internet protocol used in broadcasting, advantages of the internet adoption for broadcast news content, the internet tools used in broadcasting, the impact of the internet on broadcast journalism practice, challenges of internet tools in newsgathering and production, effect of internet usage in television newsgathering, empirical review and the theoretical framework.

2.2.2 Digitization of Newsgathering, Production and Transmission

Digitization of production in media organizations has facilitated changes in the organization and practices of journalism. Technological convergence, media convergence and organizational convergence have all changed the way in which news is made. Over the past decade or so, fundamental changes have taken place in broadcast newsrooms. Seen from the outside, the news output of many broadcasters has expanded rapidly since the early 1990s, and covers a wide range of media platforms from television and radio to tele-text, web and mobile phones. Subsequently, broadcasters have undergone changes in the organization and practices of production (Erdal, 2007).

Traditional forms of media are struggling to infuse innovation into their practices in the digital age. As audiences migrate online and become increasingly fragmented, media outlets are finding that simply shoveling the printed newspaper or news broadcast onto a web site is not enough to retain an audience----Source. The interactive nature of the Internet is placing increasing demands on journalists to innovate their practices by engaging more with readers and allowing them to create their own content; going deep into communities to cover news on a hyper local level; becoming more transparent in the reporting process; utilizing social media to promote and gather news stories; and, presenting stories in multimedia formats. The new media landscape also requires news organizations to create new sustainable business models online either through advertising, donations, subscriptions or a combination (Quinn, 2004).-----

There is a transformation taking place in the way in which people interact with television. Those with broadband connections use the internet more than they watch television, while young people familiar with sophisticated mobile phones are much more receptive to the possibility of watching television on the phone in the future (Sparrow, 2007). The arrival of the digital revolution, the evolution of the Internet, the emergence of new forms of media, and the rise of online social networks has reshaped the media landscape especially the art and act of news gathering, transmission and reception (Kaul, 2013).

The shift in this trend is not only because of the different media that are evolving, but the new dynamics of work which the media perform. Everyday new devices and tools are added in exponential growth that sometimes appears to cause an excess of choices and opportunities that journalists and audience are availing themselves. This new frontiers of media have enriched news and information resources and reshaped what has been in the traditional realm of media. The internet revolution have charted changes in journalism and

fundamentally altered the nature and function of media in our society, reinventing age-old practices of public communication and at times circumventing traditional media and challenging its privileged role as gatekeepers of news and entertainment. There are myriad ways in which digital technologies have impacted on the practice of journalism, from the way reporters gather information and present news stories to how news organizations structure themselves and do business as well as how audience receive and react to the news item.

The Internet technology has expanded quickly, permeating society with new formats and possibilities of communication. Hypertext, multimedia, hypermedia have become part of the routine of the vast majority of media professionals. This has manifested in a media landscape that is constantly and consciously dominated by a highly fragmented, though active audience, intense media competition, and scarce advertising dollars. By embracing new technologies, professional journalism and media can hold on to their role as a vital information lifeline and continue to operate as the tool of a successful democracy (Kaul, 2013).

The era of mass media is giving way to one of personal and participatory media that will profoundly change both the media industry and society as a whole (*The Economist*, 2006)". The Age of Participation goes beyond the so-called Era of the Internet and requires a new way of thinking about the worldwide network of computers, whose initial structure did not anticipate and does not involve the user on a large scale. Classical theories of mass communication are being reworked for the new media, because of its structural differences.

The new media has also removed passivity among the media audience by enabling simultaneous reception, alteration and redistribution of cultural objects. It dislocates communicative action from the post of the nations, provides instantaneous global contact and inserts the late modern subject into a machine apparatus that is networked. Marshal McLuhan had first associated technology with content in his celebrated treatise. He outlined four

different media cultures. The first was the ancient culture of oral communication, exemplified by many of the old Sanskrit texts followed by a literature culture using the phonetic alphabet and a handwritten script which coexisted with the oral culture. The third progression, according to McLuhan described as 'The Gutenberg Galaxy' was that of mass-produced mechanical printing. Finally we are in the midst of what is known as the culture of the 'electronic media'- radio, television and computers.

But as we have seen earlier, computer mediated communication provides a separate media culture altogether. The important characteristics of the new media are that media texts are dematerialized in the sense that they are separated from their physical-newsprint-form. The data can be compressed into very small spaces and it can be accessed at very high speeds in non-linear ways. Through this process and technology we now arrived at the threshold of digitization of the broadcast landscape as enabled by the Internet.

2.2.3 The Internet and Television Broadcasting

The internet is the fastest growing medium in history. The digitalization, convergence of computer and telephony technologies - which are the linchpin of the internet, have greatly influenced the way news and information are produced and disseminated. Times and things have indeed changed, globalization has since become a buzz word, and has brought with it change and competition. People's lives have been variously affected either for the better or for worse, depending on the side of the divide one finds himself. The rapid adoption of internet by journalist is a global phenomenon. The process by which computerization or digitalization impacted upon the media of the 21th Century has moved on many fronts and at different speeds.

Agba (2007:83), notes that "with desktop publishing and word processing packages, particularly the page maker, the production of newspapers, magazines, journals etc has become an interesting business more so with the use of video display terminals (VDTS)" Desktop publisher which is the use of a computer and specialized software to combine text and graphics to create a document that can be printed on either a laser printer or a typesetting machine has lessen the burden of typesetting on the old manual typewriter. The use of computer in lay out and printing enhances accuracy, helping to control newspaper and magazine costs.

Electronic editing; proofreading, formatting, spellchecking tools, calculator and other software tools now facilitate the speed and ease of newsgathering and dissemination. Also, the use of electronic publishing which involves the process through which print media disseminate printed messages using electronic media has closed the wide gap between print and electronic media as a result of convergence in technology. Bittner (1989:277), merely mention the power of teletext but today, teletext transmits text between tele-printers and teleprompter via computer with a television transmission system sending data to various media houses as well as home receivers equipped with compatible decoder.

A good example of this is demonstrated in the way The Nation Newspaper in Nigeria typesets in Lagos but prints its hardcopy simultaneously in Lagos, Port Harcourt and Abuja; no doubt a new era in the history of media technology is here with us. Electronic editions of newspapers have also been delivered to various homes through this system. Another landmark in the era of internet journalism has been the ability of the media to harness the potentials of World Wide Web (www) among other services provided by the net. The www which is a system for accessing, manipulating, and downloading a very large set of hypertext linked documents and other files located on computers connected through the internet has afforded

both the source and receiver to send and receive messages as well as advertise goods and services

It is now clear that the advent of internet has made everybody a journalist just as Gutenberg made everybody a printer with the invention of printing press and Marconi made everybody a broadcaster by giving us radio, everyone is now a journalist. Citizen journalism has made it a reality for everybody to be media creator, owner and actor instead of passive user (Ezeibe and Nwagwu; 2009). They add that citizen journalism gradually debases the conventional journalism hence information role that professional journalism does dissolve into public domain.

It appears that there is no clear distinction between the role played by the conventional journalism and citizen journalism. Conventional journalism which is the mainstream profession of journalism requires one form of training or the other, either through education or on the job training for them to discharge their social responsibility role. However, citizen journalism is usurping the role of conventional journalism. Looking at the issue, citizen journalism spells negative effects to the trained journalists because most times journalists feel threatened by the increase participation in newsgathering and dissemination despite the society approval which described such as plus to participatory democracy. With the use of internet and the involvement of citizen journalism journalists have tips available to them in which further investigation can be carried out. Internet has removed the barriers of space and time on human interactions hence information can easily be obtained at a relatively low cost. Nwajinka (2003:118), contends that journalists in the digital age have no excuse but to make use of online libraries to enrich their performance. It cannot be an overstatement to describe the convergence of computer and telecommunications as the material forces in the new

technology of mass communication. The internet has virtually revolutionized the process of news and information gathering, processing, publishing, distribution of products and services.

Traditionally, news is information about events that are currently happening or that have happened recently, new technologies now allow news to be more current as audience are virtually transported to the scene of the event. Rodman (2009), explains that the presence of google news, twitter, Facebook and other social networking media are also changing the phase of journalism. Now it is possible to build customized news report from all the articles being read in the morning to the reader social network. Internet Protocol contribution, large stadiums and arenas can be connected to an IP contribution network. For example, broadcasters have recently utilized IP for contribution from the Beijing Olympics.

As far as requirements and performance, occasional IP contribution networks are essentially the same as permanent contribution. One clear advantage with IP for occasional contribution is that the broadcasters demands to bandwidth can be met, because transmission technologies in IP links can provide excellent bandwidth (in the case of Sport, 300 Mbit/s IP contribution network was used). As a result, the content can be transported in very high quality avoiding quality degradation prior to the distribution phase. Remote production, i.e. transmitting of multiple camera angles, is also possible **(**Alexander, Markman, and Tokheim, 2012).

Broadband Global Area Network (BGAN): A BGAN terminal is about the size of a laptop and can easily be carried and operated by one person. A satellite network, the Inmarsat I-4 network, provides almost global coverage for the BGAN terminals. This is a telephony and broadband network allowing bandwidths up to 0.5 Mbit/s. Therefore, this solution is mostly used for news coverage with low quality and high freshness demands. NRK often use BGAN for such purposes. Mobile network contribution: in Norway, 3G coverage for mobile terminals

is quite good especially near cities. This allows for contribution over 3G. A clear advantage is high availability and fast deployment, as a cell phone with an embedded camera that may function both as a capturing and contribution transmitting device. An example here is Streambox Live, which is used by broadcasters such as NRK, CNN and FOX for some news coverage missions. Depending on the compression algorithm, this technology can deliver satisfying quality but it exclusively used for news coverage. With the introduction of 4G, such solutions is expected to be even more viable in the future.

2.2.4 Internet Protocol and Broadcasting

According to Baran (2004), once information is digitized, it can be handled in consistent and effective ways which allow a blurring of functions and the emergence of hybrid technologies. For example, early computers had started as number crunchers, but became word processors as well as calculators. Increasingly, new media technologies can perform more functions in more varied contexts; such as accessing the internet from a mobile phone to post digital pictures to a social network profile, even as the event recorded is still happening.

In addition to recognizing convergence in the functions of end-user technologies, new media perspectives acknowledge that formerly distinct industries also converge, partly to position themselves strongly as competitors in emerging markets. The internet itself is sometimes positioned against a background of 'old media': print culture, which started in about 1439 with Johannes Gutenberg's invention of printing using movable type; and broadcast culture, which is a little over a century old. While old media do offer starting points for understanding the internet and the World Wide Web (WWW), these perspectives are more relevant to 'Web 1.0' than they are to 'Web 2.0', or than they will be for 'Web 3.0' (Green, 2010).

It might be worth noting here that the internet is not the WWW, although it provides the technological structure which makes the WWW possible. Web 1.0 refers to a stage in its evolution when the internet could be used to access information and relatively static web pages, while Web 2.0 recognizes that online environment now offers opportunities for social connection and interactivity for example, through blogs, wikis and social networking systems and technologies. For people in western countries, Web 2.0 has become increasingly prominent since the new millennium, although the organizing principles of both print and broadcasting culture dominate many aspects of corporate content production. As well as including aspects of both print and broadcasting culture, the internet marks a major development in the fields of information technology (IT) and telecommunications.

One of the reasons for this huge growth in hybrid and convergent products, services and markets has been the impact of the digitization of information in comparison to older analogue broadcasting technologies. When audio, video, data, graphic and multimedia applications are designed to process digital information then those audio, video and data services can also be manipulated, stored and communicated via computers and telecommunications.

The underlying digital structure of these different applications allows the outputs to be delivered through a variety of channels including cable, satellite, microwave and other telecommunication systems, with the platform of delivery being less relevant in terms of access and use than the bandwidth capacity of the delivery channel. New media are digital media, they tend to be information and communication technologies (ICTs) and they are hybrid to their core. The relevance of their digital nature lies in differences between the characteristics of digital goods and services, and material goods (Green, 2010).

It may not be out of sense to say that the future of communications is now being transformed by the emergence of the Internet Protocol (IP). Originally regarded as an IT-only transport technology suitable for data and email traffic, IP has quickly become the dominant standard for all types of communications. This change is largely due to the inherent flexibility of IP transport, its cost efficiencies, and the ubiquitous availability of IP networks. Despite these advantages, however, until recently broadcasters have not considered IP ready to support "mission critical" real-time video services. While IP networks have played a role in the contribution and production processes, they typically were reserved for non-real-time applications. Today, IP network technology has evolved, and concerns about its ability to support the stringent quality and resiliency demands of real-time video have been addressed (Gil, 2013; Green, 2010; Baran 2004; Muciiano and Kenned, 2002)

As a result, IP is emerging as an increasingly important technology for broadcasters and service providers, and IP-based transport networks and media nets are now used by broadcasters around the globe. The advantages of IP extend beyond operational expense (OPEX) and capital expense (CAPEX) cost reductions. Once broadcast services can be managed within the IP domain, broadcasters have the opportunity to transform production, post-production, contribution, and distribution of core video and audio assets. The ability to share video assets quickly and efficiently on a shared IP network infrastructure can unleash unprecedented collaboration, efficiency, and agility throughout the entire broadcast value chain.

These in the view of Hertoghs, Kernen, and Simlo, (2009) includes:

1. **Production:** Many broadcasters still rely on production systems that are managed as independent applications, supported by dedicated infrastructures and physical tapes. The result is a production workflow that is fragmented and fraught with delays and

duplicated efforts. An IP environment supports an end-to-end digital workflow that dynamically moves media through the production process, breaks down operational silos, and supports company-wide collaboration. As a result, digital workflows can reduce OPEX, allow editing functions to be easily shared among different teams, and significantly reduce "time to air" – especially important for news applications.

2. **Contribution:** The same innovative approaches that are transforming media production can also be applied to the delivery of video between studio locations and among broadcast partners. Highly flexible and cost-effective IP networks let broadcasters reduce operational expense and rapidly introduce new services, such as High-Definition (HD) video.
3. **Distribution:** Distribution of national and local Digital Video Broadcast – Terrestrial (DVB-T) services to transmitter sites can also benefit from the CAPEX and OPEX saving of an IP-based network. And, once DVB-T services are managed within the IP domain, they can easily be delivered over fiber, copper, or microwave networks, and within systems encompassing all three.
4. **Consumption:** Broadcasters need to deliver TV services to consumers over multiple platforms and multiple screens (TV, PC, and mobile device), both in the home and on the go. They need solutions that can accommodate diverse video formats, quality levels, and compression standards, and deliver the highest quality for the lowest cost. IP provides a common framework for easily adapting and distributing TV services for any platform or device.

Originally, IP was designed for communication across the Internet. In recent years, however, it has become the de facto communication protocol for all types of traffic in private and public networks. In today's enterprises, nearly all communication is IP based, allowing

enterprise networks to support data, voice, video, storage, and other services on a common, standards-based infrastructure. Service Providers have also adopted the Internet Protocol suite almost universally, allowing them to converge their various services across a common IP-based backbone.

Services such as Internet access, voice (both private branch exchange [PBX] interconnects and Public Switched Telephone Network [PSTN] services), business interconnect services (typically via virtual private networks [VPNs]) and increasingly, video, are now delivered over IP networks. For all organizations relying on IP, the common driver is the flexibility and cost savings afforded by converging services across a common, cost-efficient, standards-based infrastructure.

IP is also becoming the preferred protocol for delivering broadcast video services. Broadcasters are using IP transport not only in secondary distribution networks (i.e. IP television [IPTV] over residential broadband systems), but also increasingly for Primary Distribution and Contribution networks. While some broadcasters previously questioned whether IP could support video services (Smith and Davis, 2008).

The latest achievements in quality of service, resilience, fast repair, switching speeds, and scalability have made IP networks reliable enough to become a viable option for video contribution networks. Consequently, broadcasters can now converge services and technologies over a common IP infrastructure, and enjoy the same OPEX and CAPEX advantages that enterprises and service providers have enjoyed for many years (Hertoghs, Kernen, and Simlo, 2009).

2.2.5 Advantages of the Internet usage for Broadcast News Content

What are the main advantages information websites offer when compared to other mass media? We can single out four areas where online information presents a clear added value:

1. **Multimedia:** online information sources can offer information coded through different media: texts, audio, pictures, photos, animations, movies; they can, for instance, integrate radio programmes with images and movies, and TV programmes with written texts.
2. **Interaction:** information websites can offer a higher level of interactivity than any other mass medium, allowing users to interact both with the website's system and with other people through the website. The internet allows for interactivity that is two-way or multiple-way communication in that users can connect and interact on an issue especially with social networking sites, chat groups, blogs etc. Paulussen (2004), defines interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in real time". In the same vein, Paulussen (2004), assert that interactivity is "the extent to which communication reflects back on itself, feeds on and responds to the past". Persistence: online information can be easily archived, re-used and left continuously accessible to readers. With the internet, there is something known as cross talk, where people in two different environments are brought together. For example, on CNN, a reporter from another part of the world can be linked to the main studio for discussion without any difficulty and this could look like they are in the same place.
3. **Immediacy:** online information can be easily updated at any time and can be used just-in-time (Cantoni and Tardini, 2006). There are some dimensions of interactivity as identified by Massey and Levy (1999 p. 527) and (cited in Paulussen, 2004), where

they say that with the internet, there is the ‘immediacy of content'. They posit that “the technological ability to instantly report an unfolding news event may be the one characteristic of online journalism that most clearly distinguishes it from traditional journalism (Paulussen, 2004). Internet usage in news production helps to bridge the gap between one place and another; one does not need to travel a long distance to know what is happening far, with just a click on the web, there is a huge flow of information.

4. **In-depth studies/Sources:** the ease of online publishing makes it possible also to provide in-depth analyses and studies of given information, and to make them always available to readers. The internet can be used for research to investigate a topic of interest. In media practice, it can also be used for investigative journalism. In doing investigative journalism, a reporter deeply investigates a topic maybe on crime; corruption etc. to get in-depth information and this could go on for months or years.

2.3.1 Internet Tools and Broadcasting

Broadcasting over the Internet is usually done in the following ways. These are podcasting, Streamcasting or Webcasting and Voice over the Internet Protocol-VoIP.

1. **Podcasting**

Merriam Webster (2012), defines Podcast as a program (as of music or talk) made available in digital format for automatic download over the Internet. A list of all the audio or video files associated with a given series is maintained centrally on the distributor's server as a web feed, and the listener or viewer employs special client application software, known as a pod catcher, that can access this web feed, check it for updates, and download any new files in the series. This process can be automated so that new files are downloaded automatically, which may seem to the user as if the content is being broadcast or "pushed" to them. Files are

stored locally on the user's computer or other device ready for offline use, giving simple and convenient access to the content (Gil, 2013).

One of the latest and fastest growing technological additions to the Internet is podcasting, a Web feed of audio or video files placed on the Internet by a podcaster. With podcasting, listeners can tune in with an Internet connection and an MP3 player found on most personal computers. Anyone can subscribe to podcasts using a feed aggregator, some of which are free and others, for purchase. Once listeners subscribe, they are automatically notified when new content is available. In addition to downloading the shows to a personal computer, a listener can transfer them to an iPod or any other MP3 player for convenient listening (Smith and Davis, 2008). Podcasting according to Gil (2013), enables you to download the latest version of a selected radio program or segment to your own computer. This high quality audio can then be played directly from that computer at your leisure, or transferred to a portable player such as (but not only) an iPod. A podcast is a digital medium consisting of an episodic series of audio, video, radio, PDF, or pub files subscribed to and downloaded through web syndication or streamed online to a computer or mobile device. The word is a neologism and portmanteau derived from "broadcast" and "pod" from the success of the iPod, as audio podcasts are often listened to on portable media players (Schulzrinne, Casner, Frederick and Jacobson, 2003).

Podcasting as explained by (Shiao, 2012), is an offline broadcasting over the internet contrasts with webcasting (Internet streaming), which generally isn't designed for offline listening to user-selected content. As discussed by Richard Berry, podcasting is both a converged medium bringing together audio, the web and portable media player, and a disruptive technology that has caused some in the radio business to reconsider some of the established practices and preconceptions about audiences, consumption, production and

distribution. This idea of disruptiveness is largely because no one person owns the technology; it is free to listen and create content, which departs from the traditional model of "gate-kept" media and production tools. It is very much a horizontal media form: producers are consumers and consumers become producers and engage in conversations with each other (Berry, 2006). The following are some common software or podcast tools, they are: the Soundboard, Podcaster, Downcast, Podcast Producer 2, ePodcast Producer, Filezilla, Audacity, WinLAME, Paint.Net, Mp3 Tag.

2. Webcasting

A webcast is a media presentation distributed over the Internet using streaming media technology to distribute a single content source to many simultaneous listeners/viewers. A webcast may either be distributed live or on demand. Essentially, webcasting is “broadcasting” over the Internet. The largest "webcasters" include existing radio and TV stations, who "simulcast" their output through online TV or online radio streaming, as well as a multitude of Internet only "stations". The term webcasting usually refers to non-interactive linear streams or events. Rights and licensing bodies offer specific "webcasting licenses" to those wishing to carry out Internet broadcasting using copyrighted material (Smith and Davis, 2008).

Webcasting is also used extensively in the commercial sector for investor relations presentations (such as annual general meetings), in e-learning (to transmit seminars), and for related communications activities. However, webcasting does not bear much, if any, relationship to web conferencing, which is designed for many-to-many interaction (Shiao, 2012). The ability to webcast using cheap/accessible technology has allowed independent media to flourish. There are many notable independent shows that broadcast regularly online. Often produced by average citizens in their homes they cover many interests and topics.

Webcasts relating to computers, technology and news are particularly popular and many new shows are added regularly. Some of the tools for webcasting are: Telestream Wirecast 6, Wirecast Pro, Matrox VS4, Easystream Webcast Manger, Intermedia Solution, Webcaster, Richmedia Enterprise and Media Platform Webinar.

3. Voice over Internet Protocol (VoIP)

Video call establishment over IP and voice call establishment over IP have great similarity, so when understanding Voice-over-IP, we can understand Video-over-IP. Therefore in order to understand the basic concepts of Voice over Internet Protocol (VoIP), a step-by-step approach is adopted and gradually adding other functional elements needed for establishing a fully developed IP-based communication network. Voice over Internet Protocol-VoIP communication takes place between two end users (peers), i.e. peer-to-peer communication. The exchange of media packets between two parties having IP connectivity requires that the two parties must have beforehand informed each other about their respective IP addresses, coding details as well as port numbers on which they will be listening for media of agreed type. The two parties install a listener on the indicated port (and have opened the port for incoming UDP traffic), with the said listener being able to receive and decode IP packets containing the agreed media stream. The listener is further configured to provide the decoded media from a Digital to Analogue converter, for producing the voice. The media is transported over IP using Real-Time Transport protocol (RTP) (Schulzrinne, Casner, Frederick and Jacobson, 2003).

This is done without any form of flow or congestion control, hence, the quality of the voice is not guaranteed. Real-Time Control Protocol (RTCP) may be used by the communicating parties to control the flow of media between them. Real-time transport

protocol (RTP), provides delivery services to transport real-time multimedia traffic including video and audio over unreliable transport mediums such as User Datagram Protocol (UDP). Those services include payload type identification, sequence numbering, time stamping and delivery monitoring. RTP may be used with other suitable underlying network or transport protocols. RTP contains the necessary attributes to ensure correct media buffering and jitter management by providing a timing relationship between source and sink of the media session.

A very good number of that media houses such as CNN, BBC, Aljazeera and even local stations like Channels, NTA and AIT in Nigeria have adopted in getting attribution from reporters and sources on a given news item and discourse. The combination of these forms of broadcast over the Internet has given rise to new dimension of television broadcast through the use of the Internet known as the Internet protocol Television-IPTV (Schulzrinne, Casner, Frederick and Jacobson, 2003). Clearly from the discourse reviewed here, the Voice over Internet Protocol (VoIP) are predominantly used for the gathering of news actualities as well as videos.

Some of the internet tools adopting the VoIP platform for newsgathering are:

i. Skype,

ii. Facebook Messenger,

iii. Yahoo messenger,

iv. Google+ and

v. Whatsapps

4. Internet Protocol Television (IPTV)

The Internet Protocol Television or IPTV is the delivery of digital television and other audio or video services over broadband data networks using the same basic protocols that support the internet. With faster broadband access speeds and improved digital video

compression it is possible to deliver high quality video services over the telephone line. A small decoder box can connect a television to a telephone or network point, rather than an aerial socket, cable or satellite feed, and the picture quality is high. The advent of IPTV opens up the television market to telephone companies and other service providers with lower barriers to entry than existing digital platforms (Shiao, 2012; Smith and Davis, 2008; Schulzrinne, Casner, Frederick and Jacobson, 2003).

However, such providers still need to comply with the proposed Audiovisual Services Directive. Traditional telecommunication companies are keen to augment their diminishing call revenues with new services. They have the opportunity to offer a new, albeit familiar, popular consumer service over their broadband network. One of their main objectives is a triple play of voice, video and data services on a single bill. Although service providers may attempt to bundle television channels and compete directly with cable and satellite companies, once a broadband connection is hooked up to the television, programmes could potentially come from anywhere. The attraction of IPTV is the fact that it has the ability to completely alter the way that information, communications and media services are consumed inside the home (Smith and Davis, 2008).

IPTV moves the television experience from a passive model to an active, two-way communication where every subscriber experience has the potential to be unique. A subscriber can choose to receive only the channels and programmes desired and pay for the content consumed. In addition the user can, perhaps, send an instant message to a friend about the latest developments on a favorite show while both are watching it in their respective homes. Alternatively, they might be able to change the camera angle while watching alive concert or sporting event. IPTV allows the provider to offer personalized content, targeted information and shopping experiences and more targeted advertising.

There are opportunities for media content owners and companies as the telecommunication companies have little experience in dealing with media companies and content aggregators who own the distribution rights. Film companies may be able to demand minimum levels of subscribers as part of any deal and an attractive royalty split. As with all other new media opportunities discussed in this book, the potential for IPTV is yet unknown, but many in the new media industry believe that strong content is the key to success. This will enable the IPTV service provider to set a price and bundle services which are attractive to subscribers and pro-table to the provider. It will also ensure that advertisers are attracted to the medium.

IPTV will allow normally unserviceable niche audiences to be reached by media companies. Entertainment will now be the preserve of the broadcaster and Internet Service Providers will be able to commission, produce and distribute entertainment media. IPTV is not simply viewed on PCs but also on mobile phones. IPTV can also be used for non-commercial home monitoring and localized news services. For any company that considers establishing its own IPTV service, all the issues addressed in this book will impact on the service to varying degrees and comprehensive new media legal advice should be taken (Sparrow, 2007).

Some of the internet tools adopting the IPTV tools used for news and broadcast transmission are:

i. IPTV Player Simple TV 0.4.6,

ii. Hibox Aura,

iii. IPTV 3500 Satellite,

iv. Mware IPTV,

v. NetUp TV and

vi. IPTV Probe.

2.3.2 Impact of Internet on Broadcast Journalism

The advent of the internet has offered opportunities to the media profession. Reporters now have new ways of gathering information and making their reports relevant. Citizens or news consumers have also become like reporters in that they can cover reports in their locality for people to know about and this underscores the essence of interactivity and feedback. Pavlik, (2001), was of the opinion that "changes brought about by the Internet is enriching." They further add that with the Internet, "every journalist can consult various sources faster and more easily, as a result of which reports become more varied and gain more contextual depth."

Accordingly, the current technologies of new media makes newsgathering and production more efficient, faster and cost-effective." Pavlik (2001), opine that these technologies also enhance producer creativity and encourage new approaches to old tasks." The job of gathering news has been made a little easier with the use of internet tools. Reporters do not necessarily have to be everywhere to get eye-catching reports, they can surf the net and also subscribe to big news agencies to keep their reports fresh. When there is an international event, the media house must not necessarily send a reporter to that location to get the report, they can view it live on the net, they can have a freelance journalist over there willing to tender the report or they could also have a correspondent in that location to cover the report and send to the headquarters for dissemination. While the report can be introduced in the news bulletin, the reporter at that location could be linked to let the audience have a feel of what is going on at that place through cross talk. The internet allows for localization of content, in that when stories break maybe on the international scene, they find an angle to it that will be relevant to the audience they feed.

With the internet, there is a high level of interactivity and also feedback from audiences. Before now, it was difficult to find out what the audience of a media organization thinks about their services but with the internet, there are online platforms for audiences to fill our survey forms as regards the station or media organization. Also, news can get to people in real time. Most media organizations- print and electronic now have online versions that readers or viewers can log on to, to listen and view. Interviewing can also be made easy instead of going to where the potential interviewee is, the reporter and the person can connect online.

2.3.3 Effect of Internet in Television Newsgathering

The newsgathering and distribution process is undergoing deep changes. In many developed countries both the number of physical newspaper titles, their circulation and newspaper readership are in decline. After a period of healthy growth for the newspaper industry, newspaper circulation and readership numbers and advertising revenues are mostly falling. In addition to competition from traditional sources such as television, radio, cable and others, today younger readers are mostly attracted to the Internet as a source of news and information. While the newspaper industry is experimenting with new distribution models, the economic crisis and related fall in advertising revenues have accentuated the downward spiral of many forms of printed news. The economic foundations of journalism have to be rethought (Organization for Economic Co-operation and Development-OECD, 2012).

At the same time, it has never been easier, quicker and cheaper to access news. The Internet and related online media sources are offering users instant access to news, often associated with "rich" media such as video. And often this news can be accessed for free. The traffic on the websites of traditional newspapers, wire agencies and traditional public

broadcasters such as the BBC is growing rapidly, while all these entities are reinventing their value chains and business models. Innovative news services and content distribution models are emerging which offer minute-by-minute updates, personalization, improved functionalities and the delivery of customized information to various technology platforms (e.g. Smartphones, e-readers). And it is not only the distribution of news which is changing.

Readers can now actively participate in the news creation, editing and dissemination process, either by acting as citizen journalists, having their own blog, writing comments or forwarding their preferred article via e-mail. Arguably the diversity of voices and news sources has increased with a more participative web. Today information and news are much more accessible than in the past. Hiding cases of corruption, other scandals or any type of information from the public has become very difficult in contemporary, networked societies. The Internet and other technologies have proven to be a powerful tool to quickly uncover and diffuse information. With this, the role of journalism and news organizations is changing. Future research in this area will be needed to re-evaluate the impact of this shift in news distribution on both the consumer and the industry.

Basically, internet usage in television newsgathering and transmission has the following effects.

1. **Influencing factors for Video Quality**

Besides compression and properties like resolution, frame rate and interlacing, a number of things might influence the quality of the video. Additive noise may be introduced in the process of capturing the video, as may blurring and loss of detail. Color bleeding is a form of blurring that happens in the color channels. The colors will appear to flow into each other. This is to name a few. When video is transported over a network, packet loss may introduce

errors in the video. The effect of a packet loss depends on the way packet loss is handled by the receiver, for example: A black frame is inserted for the missing frame, the previous frame is repeated or a frame is estimated based on past and future frames.

2. Transport of Uncompressed Video

The video signal also needs to be transported from the camera into the video compression device, e.g. video gateway, and from the decoder to a display. Because the video will be uncompressed, and thus have high bitrate, standards that supports high bandwidths have been developed. Most infamous is perhaps the HDMI standard. The bandwidth of the latest version of the HDMI standard is 10.2 GBit/s, making it suitable even for 4K video. In the broadcasting industry, the Serial digital interface (SDI), and advances of the SDI standard, HD-SDI and 3G-SDI, are much used. They are backward compatible, so that video outputted on an SDI or HD-SDI interface may be inputted on a 3G-SDI interface.

3. **Real-time video over Internet Protocol**

In computer science terms, 'real-time' refers to the concept of delivering data with timing constraints. That is, data must arrive at the receiver before a deadline or, equivalently, within a delay budget. Real-time delivery of video allows end users to watch the content while it is created at the content creation site. This is essential for contents like news programs and sporting events because the freshness of the content is very valuable to end users.

It is important to clarify the difference between pull-based and push-based real-time delivery of video. Internet media streaming is generally pull-based. The receiver pulls, i.e. requests, content from the server in the desired quality/sending rate. The overall aim is a smooth video service; the video receiver (PC, TV, Smartphone, etc.) pulls video quality according to receiver characteristics (screen, processing power, etc.) and network throughput. Smoothness is ensured by relaxing the delay requirements allowing the receiver to buffer seconds of content to avoid frame freezing in periods with low throughput. Also, retransmission of lost media packets is possible due to low delay requirements. Examples of pull-based services are Youtube, TV2Sumo, NFL Game Pass and so forth. We did a simple test with the "NFL Game Pass" service delivered by www.nfl.com - it showed that the receiver (our PC) buffered around one minute of content. In effect, the receiver could playback content even if the network throughput is zero for up to one minute.

In push-based real-time video delivery, the video content is pushed from the server to the listening clients. Compared to pull-based, push-based delivery gives more immediate video viewing experience because the delay is much lower. This requires, however, a reliable network and that virtually no packet loss occur. Retransmission is generally not possible due to low delay requirements-hence, lost media packets directly degrades the end user viewing experience. Therefore, push-based video delivery is most used in reliable IP networks like

IPTV networks. IP contribution is a push-based real-time delivery system (Alexander, Markman, and Tokheim, 2012).

3. E-Mail

Millions of people are connected to the internet and you can send mail to one of them or many of them. E-mail works on client/server arrangements. To send and read e-mail, users must access another computer, where their mailbox resides. E-mail messages are not limited to text, attachments, such as graphics, sound or spreadsheets can also be sent. E-mail is usually fast, cheap and reliable. It is the most widely used internet resources. In 2006, more than 10 trillion e-mail messages moved through the net (Dominick, 2009). Thus, this provide the broadcast with the opportunity of sharing textual, audio and videos files from correspondents anywhere, anytime.

4. Newsgroups

These are collections of electronic bulletin boards, arranged according to topic; where people can read and post messages. Some newsgroups are devoted to current events, but the news in newsgroups refers to topical discussion groups, not news in the traditional sense. The resources and information in the articles that make-up the news are written by people interested in the topic. Others can read the articles and comment on them. The newsgroup exists on a special network called Usenet, a component of the internet. There are more than 40,000 different newsgroups which serves as a good source for topics generation and discussions as well as providing highly intellectual analysis on topics that could set the agenda for public discourse (Dominick, 2009).

2.3.4 Challenges of Internet tools in Newsgathering and Production

In today's fast-paced society, more and more people are turning to their computers, cell phones, and Bluetooth devices for updates ranging from Facebook to weather predictions. Especially with the explosion of social networking and the development of smart phones, internet technologies are quickly becoming the primary way of receiving information. New technological dependence for information does have benefits- instant notifications of news and emails allows society members to be aware of what is going on in the world in only a few seconds. With communication being an important part of any culture, the way in which information is spread has to adapt to fit the way people live. Journalism was once largely print based when the majority of people wanted to take time to read newspapers.

Now as people are turning to the internet for their information needs, print journalism is slowly being cast aside and some even consider print journalism a dying art, as shown by the steady decline of print newspaper sales. Journalism departments all over the world have to rethink the way journalism is being taught, as techniques of fifteen years ago are not applicable today. The journalism landscape is constantly changing, with new technologies and mediums re-defining the relationship between the news media and the public. Human nature being what it is, some people fear change while others eagerly embrace it. Some are excited by the opportunity to profit from changing circumstances. Others are inclined to follow the rule of the "dangerous precedent," which states that absolutely nothing should ever be done for the first time. In today's world, however, it is impossible for anyone to escape the relentless process of change. This is especially true for those working in journalism and communications.

In McLuhan's work, we learn that every medium presents a different sensory experience to extend the self into the world. It comes as no surprise then that journalism's

foundation has begun to change with the latest medium – the Internet. The unique Internet attributes of interactivity and multimedia are forcing significant evolutions in journalistic culture as the basic mission of the reporter has evolved for the digital world. Web technology has provided opportunities for sources and audiences to participate in news production.

Scholars have begun calling reporters "gatewatchers" (Bruns, 2005) and information "monitors" (Deuze, 2003), insisting that they share authority willingly and embrace "citizen media" (Gillmor, 2004). Buzz words such as "networked journalism" (Jarvis, 2006) and "communal media" (Jenkins, 2006), demonstrate how some people are thinking about the Web technology as an opportunity for a journalistic revolution (Bruns & Jacobs, 2006) where citizens have a responsibility to speak up, create content, and counter mainstream media in virtual venues (Kline & Burnstein, 2005).

Media as an institution is shocked by its weakened authority and influence, victimized by the desecration of information and is lost in the digital noise. It's faced with a revolution on all fronts: the upheaval of information production, distribution, and consumption. It appears like professional journalism is attacked on all sides – and seems less necessary and useful. However, yet the solution to the "information overload" that overwhelms us daily is journalism. Bear in mind the answer is a new form of journalism-an "augmented journalism," enriched with new possibilities of the digital age. Journalism with added value, which mainly exists on digital platforms but can be transferred to others as well.

The transformational crisis will sweep away those do not have any added value services to offer the public. Now as a digital reporter (not print reporter,) you have to go out and sometimes you need to shoot pictures, you need to shoot video, you need to get the story and you need to ask the right questions. But you have to get it on some sort of digital recording device as well and you have to bring that back into the office and process it. So to be

a journalist in the digital age, you have to be able to be an editor, a photographer, a videographer, a reporter, a layout designer and a writer all in one. Those who do survive will offer individuals and communities a better way to understand and participate in civic life, along with enrichment and simplification of people lives.

Journalism in the digital age faces one overwhelming fact - a shortage of human skills digit to input all those ones and zeros, a crisis that threatens global discourse over every other crisis a headline writer might care to sub. The digital narrative allows us to better comprehend world events (global warming, migration issues, the economic crisis) through graphics, enrichment of experts and victims' testimonies, conversations taking place over various locations, and collaboration with other media. Data journalism permits for visual information to be transformed into knowledge, and knowledge constitutes an enormous developmental potential. These multiple interconnections and broad guidelines render the process more proactively cumbersome. This does not even include the imminent changes from "augmented reality" and how that will enrich information.

The internet is information technology-based and so its thriving requires ample availability of relevant information technology hardware infrastructure and software. This is basically what is here referred to as ICT infrastructure. The precise ICT infrastructure primarily required here is Internet infrastructure which unfortunately is yet to be satisfactorily developed in Nigeria. Thus, Banda, Mudhai and Tettey (2009), observe that the problem of infrastructure in African has continued to undermine her quest to join the global train of information superhighway. This infrastructure problem, the authors argue, relates, among others, to poor telecommunication networks which results in low levels of Internet usage. Oduche (2013), observes that in Nigeria, Internet bandwidth is still so small that Internet use in the country is still hampered significantly. Thus, when one is need of data-consuming social

media services such as video streaming, a whole lot of troubles are experienced. Furthermore, the bandwidth deficiency also results in high cost of Internet access. Oduche, therefore, hopes that the Nigerian government's pledge of achieving the much needed bandwidth sufficiency by 2018 becomes a reality. The foregoing shows how Nigeria might be lagging behind in terms of harnessing the economic potentials of the social media.

2.4.1 Empirical Review

Adamu (2011) in a research carried out on the 'Role of Convergence Journalism in News Production' explained that media practice in modern time is evolving. The evolution according to the paper hinges more on convergence of media and communication technologies. This according to the research, has completely transformed the mode of news gathering, production and transmission which hitherto were done or carried by different media workers separately. The convergence media platform which is more dependents on the Internet Protocol or Platform-IP permits a newer form of journalism like Integrated News Production which uses both audio, video and news scripting software for news and programme production.

Convergence technologies allows newsroom multimedia integration that is having studio with multimedia components and functionalities which combine print, broadcast and web platforms. The researcher further explained that convergence technologies also make the media worker to become multitasking and multi-skilled professional because of the multiple role that he/she need to perform. Again, convergence presents broadcast media with a multiple platform delivery opportunity and capability that is beyond broadcasting to that which now includes webcasting, streaming and podcasting. On the aspect of feedback, the convergence media technology make the audience and viewer to become 'Active Audience' who uses the

Voice-over-the-Internet Platform-VoIP like Skpe, Facebook MessengerVideo, Google+ and Yahoo Messenger call to participate in news production.

This explanatory study is important to this research in the sense that it explained one of the theoretical perspective that was used in this study that is the Media Convergence Theory. It also briefly highlighted some of the Internet Protocol-IP tools used by todays' media newsgathering, production and transmission. However, it is not an in-depth empirical research that considered specific media television stations' uses of the convergence platform. Another difference between and this research is choice of methodology, where the paper adopted explanatory research which does not qualify as an empirical research, the current study used the mixed method of both quantitative and qualitative approach to the research.

In their study on the use of Internet by American media, Middleberg and Ross (2000) found that the percentage of print journalists searching for information online has increased from 23 percent in 1995 to 81 percent in 2000. Nearly all respondents to the 2000 survey (98 percent) said that they went online at least daily to check e-mail, and spent about 15 hours a week reading and sending e-mail. Of all journalists surveyed, 53 percent say they're online 'continuously – defined as at least two or three times a day or more-and another 29 percent said they were online frequently – meaning up to two times a day (Middleberg and Ross, 2000).

Holmes (2008), research on Television Broadcasts Adoption of Digital Multicast and Ancillary Services: An Analysis of the Primary Core, supporting, and Environmental Drivers. The study considered multicasting capacities and capabilities of television networks in the United State of America and how it has aided the digital transformation of programming and broadcasting. The study adopted both the quantitative and qualitative method of research in the gathering of primary data and information. The study found that multicasting on a network

enhances news content and programming reduces the cost implication of using several technologies and drivers to develop, produce and distribute contents as well as meets the transition requirements to High Definition (HD) broadcasting.

This study relates with the current research in the sense that this research is about an emerging trend of adoption of internet technological platform used in broadcasting content and programme production and distribution. Moreso, the choice of quantitative and qualitative research using the questionnaire and interview correspond with the intended instrument that will be used in this study. However, the gap lies squarely in the platform, whereas the research is majorly on multicasting, the current research majors on the internet platform which has the ability to also perform multicasting capacities and capability.

Asif, Farid, Lal, Qayyum and Gul (2012), studied "Internet protocol Television's (IPTV): Key Broadcast Building Blocks." In the study, they advanced that the key building blocks on IPTV are video encoding in both High Definition (HD) and Standard definition (SD). Their study did not adopt any methodology but was just an explanatory research that gave detailed background on the building blocks like MPEG-4 Advanced Video Coding (AVC), Universal Variables Length Code (UVLC), Context Adaptive Variable Length Codes (CAVLC) and the context-based Adaptive Binary Arithmetic coding (CABAC).

While their study largely centered on explaining the technological procedures and processes in newsgathering and broadcasting of programmes and content, this study seeks to understudy how the IPTV is being deployed in aiding reporters and producers in the process of gathering news, editing the contents and uploading it to the station through the protocol for eventual broadcasting. Another point of divergence between their study and this research is also in the methodology while this is an explanatory research, this study is a comparative study which uses both the quantitative and qualitative approaches.

Ajagbe (2010), undertook a study on Video over Internet (VOI): Analysis using SIP-(Session Initiation), RTP (Real-Time Protocol) and RTCP (Real-Time Transport Control Protocol). The study revealed that all these channel provides the broadcast industry with the ability to deploy and use the multimedia system over the internet protocol-IP. The journalist or reporter in this regard may not necessarily need a camera pack and cameraman to do the job of covering the event and reporting it. All the journalist or reporter's needs, is just a cell phone or mini personal computers, with internet capability.

The cellphone according to Ajagbe (2010), should operate on fixed or Mobile General Packet Radio System (GPRS), Universal Mobile Telephony System (UMTS), High Speed Packet Access (HSPA) and long Term Evolution (LTE), in order to have an efficient VOIP system. Although, the study is much on the technical aspect, it really explains rationale, processes and procedures in the use of VOIP for newsgathering and programme broadcast by the media, hence, the point of convergence with this study. The difference between the study and this present research lies in the methodology, whereas Ajagbe (2010), adopted an experimental research to ascertain the effectiveness of certain VOIP channels and softwares, this study is a survey research that would use the quantitative and qualitative tools to assess the various internet platforms, channels and software's being used by the selected media houses.

Musvibe (2012), in his research titled "A customizable, Incentive Driven Video on Demand Framework for Low-Cost IPTV Services opine that in view of the increasingly congestion of Internet traffic by Internet Television Service providers, there is the need to seek for ways to encourage increase network capacity to reduce such congestion in traffic by providing low cost bandwidth. The solution to this according to Musvibe (2012), in COIN which is the acronym for customizable, incentive, Driven Video on Demand Framework.

This according to the researcher would go a long way in aiding broadcast media in not only adopting the platform but effectively and efficiently making their reporters and station have an edge in newsgathering and broadcasting over the IP. Using standardize formats such as open IPTV Forum, Digital Video Broadcasting-DVB the SIP, RTSP, and RTP, the media house could have a minimal cost implication in the adoption of the IPTV for their uses. The study was basically on explanatory and experimental research that did not use any media house as a case study. The explication of the video on Demand process and procedures of the IPTV protocol is one of the areas that this research seek to assess in the selected television network and station in the country. However, this study again is a comparative study and not an experimental or explanatory research.

Qayyum, Rizwan, Rashid, Sattar, Usman, Lal, Hameed, Azim and Malook (2011), who researched on the overview and analysis of Internet Protocol Television opined that the Internet Protocol Television (IPTV) is a rapid technology for the delivery of broadcast television. They revealed that IPTV provide the media with services over a secure, end-to-end broadband and that it can enable acquisition, encoding, decoding, access and management of video contents among others. Their study showed the transmission pattern and architectural framework of the IPTV process and technology. They explained that the IPTV is advantageous for newsgathering and broadcast in the sense that it allows live transmission and viewing of stored programmes alongside interactive and multimedia services which the traditional media uses less often.

The analysis of the tools here is of paramount importance to the study in the sense that it highlight the core advantage of the IPTV which this study will assess.

Talabi (2011), researched on the internet and journalism practice in Nigeria. This study focused on the implication of the internet technology on the practice of journalism in Nigeria.

He opined that the internet has change the face of communication and that journalism is not left out. The study further revealed that the internet has provided journalism with a new frontier for communication i.e. citizen journalism, blogging and IPTV. According to Talabi (2011), the internet platform encourages the journalist to source for news, publish and broadcast news content with the use of several internet enabled multimedia softwares with the Video Display Units alongside online editing consoles and tools. Being a new platform that is being deployed in newsgathering, transmission and broadcast, he revealed that upholding, professionalism, socio-political and cultural standards becomes a challenge.

More so, he argued that the issue of the content control and regulation becomes very difficult for regulatory agency such as the Nigerian National Broadcasting Commission-NBC. The onus of the research on this study is that it explained how the journalists benefits from the adoption of the interest and the challenges being faced. All these are important in the sense that this research seeks to assess the important role the internet is playing in encouraging sourcing, producing, transmitting and broadcasting capabilities of media houses and their workers. The challenges as revealed in Talabi (2010) research will be considered in developing questions for this study.

Uwom, Ajaegbu, Oloyede and Sowemimo-Coker (2014), did their research on the prospect of Internet Technology in News Production: A Study of Voice of Nigeria and Nigeria Television Authority. In their Study, they opined that the internet technology has made information gathering and processing fast and rapid. This according to them provide the media men and women with another platform in newsgathering and file-sharing. Their study adopted the uses and gratification theory by Katz, Blumler and Gureritch (1974) and the technological determinism theory by McLuhan (1962).

Their research adopted a survey research that was basically quantitative using the questionnaire and focused on media men and women access and usage of the internet in NTA and VON. In the study, they found that both the media houses and their workers are making use of the internet as a source of newsgathering and distribution of news files. Their study is similar to this research in the sense that it undertakes a study on the continual prospect of the Internet basically the worldwide web (www), its newsgathering search engines, interactive platform and intermediary technologies. Although their study is a descriptive survey research that made use of the questionnaire, which is likely similar to the instrument that this study will use of both the quantitative and qualitative tools that is the combination of the questionnaire and in-depth interview as data gathering instrument.

Adegbilero-Iwari and Ikenwe (2014), undertook their research on New Media in Old Media: The Nigeria Case. The primary objective of their research was to report the use of the internet and especially social media in traditional media. They posited that media are the emerging digital communication channels which create a user information sharing ground where anybody can generate or subscribe information content both information provider and consumer. In order to fully understand the integration of the New Media within, two media houses were investigated. The media houses selected were Channels Television and The Punch Newspaper (Punch).

Their study adopted the qualitative survey research using observation as the tool for data gathering. The study found that they equally deploy handful degree of new media in their news broadcast. Apart from having social media accounts Channels on most Fridays of the week discuss serious of trending national issues. Channels also has mobile applications on which its programmes can be watched on IOS been i-Witness, a feature for the report/upload pictures and videos of events real time. i-Punch explained above with Twitter, YouTube,

Google+, Facebook, engages audience through Hangout on Google+ to iOS, Android devices and Blackberry with the latest addition of the afore mentioned mobile devices that enable the general public to Facebook and others.

The link between this study and the Adegbilero-Iwari and Ikenwe (2014), is the study of the internet tools being explored and their capability in stimulating real time mass media messages and feedback. Their study differs with this study in the sense that it is investigating both the print and broadcast media respectively. Most of the internet protocols used in television news gathering, programming and transmission are quite different from the ones used in the print media. Another point of divergence is the use of only qualitative research whereas this study uses a mixed method research using both quantitatively and qualitative research. Furthermore, their research made use of observation as against the use of questionnaire used in this study.

Mathew, Ogedebe and Abaya (2013), studied on Internet Usage among Broadcast Media Practitioners in Nigeria. They opined that internet usage among broadcast houses and practitioners in Nigeria is on the increase. The study observes that media houses and practitioners mainly use the internet for newsgathering or sourcing as well as in the delivery of news report. Platform such as the e-mail and search engineers such as Google, Aol and Yahoo dominated their search. Their study which was a survey research, adopted a purposive sampling of respondents form NTA, Peace FM and Ray Power Stations in Maiduguri. The study found that the slow nature of Internet Skill of most practitioners impede their effective usage of the internet. The study is similar to this study in the sense that it studies the internet capacity and capability in newsgathering. The point of convergence of their study with this study is that it is a survey research with a focus on some stations as case studies.

Radojico, Bakmaz, and Markovic (2011), worked on Diffusion of Internet Protocol Television (IPTV) Service within the Serbian Market. They opine that the television distribution is now undergoing a similar digital evolution. Internet Protocol Television (IPTV) is one of the promising technologies, which takes a step further in distribution of video stream over communication networks. Their study which investigates the subscription level of broadcast stations in the market using a research model to test the availability and usability of IPTV. Their research found that IPTV is a complex interplay of a number of technology which distinguishes itself with full interactivity, high personalization and flexibility. Their finding is of essence to this research as one of the objectives of this research is aimed at determining the impact of the technologies.

Adigwe (2012), researched on the impact of Information and Communication Technology (ICT) on News Processing, Reporting and Dissemination on Broadcast stations in Lagos, Nigeria. The study tends to investigate the challenges faced by media organizations with a view to finding out the effect of the use of Information and Communication Technology in news processing and reporting. Also, this study will identify the constraints to the use of ICTs in news processing. The study made use of descriptive survey through a field survey research on three broadcast stations in Lagos namely Nigeria television Authority (NTA), Lagos television (LTV) and Africa Independent Television (AIT). Their study found that news immediacy has been greatly enhanced as a result of the deployment of ICT in news processing and this make news gathering, delivery, programming, and transmission timely.

The point of convergence with this study are (i) the use of the ICT which the internet is said to be a component of Information and Communication Technology, (ii) the use of the technologies in newsgathering and processing and (iii) the choice of private and public

television stations as case studies of the research. More so, the use of descriptive quantitative survey is also applicable to this study.

Arjona (2005), undertook a research on Internet Protocol (IP), Data casting and how it affect Transparent Interactivity Using Different Communication Channels. The research was aimed at investigating how full transparent interactivity can be obtained in IP data casting using different communication channels. In the study, Arjona opine that IP data casting has taken the idea of digital television further, in addition to digital video, IP content can be sent in the broadcasting system. He stressed that Internet Protocol used in broadcast contrasts with the traditional Internet in the sense that content is not requested individually but instead broadcasted to multiple receivers simultaneously.

Arjona's research was an experimental research to comparatively interpret the differences between two Information and Communication Technologies the Global Positioning and Retrieval System-GPRS and Wireless Cold Division Multiple Access-W-CDMA rather than Podcasting, Webcasting and IPTV platforms that this research is investigating. Another area of difference between the Arjona's study and this present research is in the research methodology. Whereas the study is an experimental research, this research is a descriptive survey research adopting quantitative and qualitative tools for data gathering and analysis.

Pisharody (2013), did a research on the Future of Television and the Survival of Broadcast and Cable Television Networks in view of the Emergence of Online Streaming. He opine that the landscape of broadcasting has virtually changed with online streaming of broadcast content through Netflix, Hulu and others. The other main form of online streaming is known as electronic sell-through (EST) through platform that is typically referred to as Video-on-Demand (VOD) operated by major broadcast media like Time Warner and Comcast.

2.4.2 Gaps in Empirical Literature

The gaps in the empirical literatures show that Arjona (2005) research considered the differences between two Information and Communication Technologies the GPRS and W-CDMA rather than Podcasting, Webcasting and IPTV platforms that this research is investigating. Whereas the study is an experimental research, this research is a descriptive survey research adopting quantitative and qualitative methods for data gathering and analysis.

The research of Pisharody (2013) dwells largely on explaining the in-road of online streaming platforms to broadcasting. The point of convergence with this study is the use of online platform for streaming broadcast contents in the media. The study however differs with this one because the present is a study that goes beyond just the use of VOD but using IPTV and other related processes like podcasting and webcasting.

Adigwe (2012) research differs with this in the following ways (i) the current study is about internet protocols like podcasting, webcasting and IPTV's and not on information and communication technologies like the computers, mobile phones etc. (ii) the current research use of mix-method research that is the combination of quantitative and qualitative research using both questionnaire and interview as against the former used in the reviewed work. Finally (iii), the choice of only two television stations located in Abuja that is AIT and NTA differentiated the research from this one.

Radojico, Bakmaz, and Markovic (2011) study differs from this research because while their study made use of a model to test for usability, the present study will make use of a mixed-methods research instrument to gather data and information for this work. Mathew, Ogedebe and Abaya (2013), differs with this study in that it is only limited to newsgathering and not programme content development, transmission and real time broadcast. Furthermore,

their study choice of using a quantitative tool like the questionnaire became another gap which this study will further resolve using a qualitative tool like the in-depth interview to support.

Uwom, Ajaegbu, Oloyede and Sowemimo-Coker (2014) difference with this study lies first in its choice of the platform being investigated which is just the generic use of internet tools like the search engines and the email platforms for news sourcing and file sharing while this study considered the transmission, newsgathering and broadcast capacity and capability enabled by the Internet protocol quantitatively and qualitatively.

Talabi (2010), research differs from this study in the choice of research type, which was explanatory as against the survey research and his theoretical framework which centers on McLuhan's Technological as explained by Chandler (2000). Determination theory as against the Diffusion of Innovation and Media convergence paradigms which this study used. Finally, Talabi study generally explains internet impact on journalism while this study specifically focuses on internet newsgathering, transmission and broadcasting capabilities of television stations.

Another gap found in the empirical review was found in Qayyum, Rizwan, Rashid, Sattar, Usman, Lal, Hameed, Azim and Malook (2011) whose research concentrated largely on the explanatory aspect without any real time practical evaluation of the components of the IPTV platform. Having seen this gap, this study assesses the efficiency and effectiveness of the IPTV platform and components being used in newsgathering, broadcast programming and transmission in Nigeria especially in NTA and AIT.

2.5.1 Theoretical Framework

There are different theories which seeks to explain different aspect of life be it political, economic, scientific, social, religious and cultural. According to Kothari (2004), the

general role of theory is to summarize existing knowledge, to provide an explanation for observed events and relationships on the basis of the explanatory principles embodied in the theory. That is theory helps to explain what happened around us and produce what is yet to happen around us and predict what is yet to happen. It serves as a guide for the researcher while carrying out its study. Thus, this study looked into the diffusion of innovation and convergence paradigm to clearly understand the notion behind the adoption and deployment of the Internet as new frontiers in broadcasting.

2.5.2 Diffusion of Innovation Theory

Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in 1962, is one of the oldest social science theories. Diffusion is the "process by which an innovation is communicated through certain channels over a period of time among the members of a social system". An innovation is "an idea, practice, or object that is perceived to be new by an individual or other unit of adoption". "Communication is a process in which participants create and share information with one another to reach a mutual understanding (Rogers, 1995)."

It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product (i.e., innovation) does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation

early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation. There are five major assumptions of this theory which are referred to the adoption stages: they are:

1. **Innovators** - These are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population.
2. **Early Adopters** - These are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change. In the context of internet television broadcasting in Nigeria, it could be said that AIT as a news broadcast falls within this category.
3. **Early Majority** - These people are rarely leaders, but they do adopt new ideas before the average person. That said, they typically need to see evidence that the innovation works before they are willing to adopt it. Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness.
4. **Late Majority** - These people are skeptical of change, and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully.

5. **Laggards -** These people are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups. NTA falls within this category of adopter in using internet for television broadcast.

Rogers (1986:117-120) in his theory of Diffusion of innovation of new communication technologies states that, "a critical mass of adopters and interactive communication technologies are necessary for the utility of the new technology." The suggestion here of an interactive communication technology could be said to have made the introduction of Internet enabled broadcast formats and platforms more plausible.

The Diffusion of Innovation according to Rogers (1986:120-121) as regard television broadcast newsgathering and transmission differs from the general held idea of Diffusion of Innovation which applies to the field of agriculture. As such he states "The new communication media technologies are tools representing techniques that could be used in a variety of ways to diverse situation in the field and in the studio". The need for re-invention of the technologies to a certain degree by the adopters to suit and meet their standard needs the dependent variable of the use of such technologies.

Again to Rogers (1986), it is the degree of use of the innovation rather than just the decision to adopt the technology that could actually measure the impact of such technology. The modern broadcast technologies are designed for instrumental action that reduces the uncertainties in the cause – effect relationship in achieving a desired outcome Rogers (1986:12). The technologies in broadcast newsgathering are many-to-many information

exchanges. Their interconnectivity and interactive nature is made possible by a computer element that is contained in these neo-technologies.

2.5.3 Media Convergence Theory

Convergence is the erosion of boundaries among previously separate services, networks, and business practices in the ICT sector. Media convergence is the interlinking of computing and other information technologies, media content, media companies and communication networks that have arisen as the result of the evolution and popularization of the Internet as well as the activities, products and services that have emerged in the digital media space----source. The convergence technologies paradigm into the main stream media's operations was formally promoted by Castells (2004), Bradley (2005), Domingo (2007), and Singh & Raja, (2010).

The assumptions of the convergence technology paradigm are summed as:

- **Integrated Production.** Digitization of the production processes has been the technological innovation that has supported the multi-transmision and production capability and capacity which the combination of mainframe broadcast equipment and internet software, tools and hardware provides. This can actually help in the acceleration of production cycles and the consolidation of a professional culture of immediacy that broadcasting news started but online journalism has reinforced (Kansas and Gitlin, 1999; Domingo, 2006). Online journalism is also leading another convergence trend that can have implications in integrated newsrooms: the development of a multimedia news language (Salaverría, 2005) that combines textual, audiovisual and graphic news genres into a new set of production practices that is still on the initial phases of its configuration. The basic parameters we have set up to

analyze this dimension of convergence are the degree of integration and the number and kind of newsrooms involved. The use of audio and visual software as well as the ripping off of news items from both hard newspapers and online version by news organization like NTA and AIT for news story writing, editing, online and offline production best describe the integration of production of the convergence theory.

- **Newsroom integration**. Multimedia groups (with print, web and broadcast ventures) and, again, broadcasters, are the ones that have explored stable coordination of different newsrooms. In the case of integrated newsrooms, The editors aim to have a coherent news strategy for both the paper and the web and want the journalists to start developing new content, such as mobile alerts, video and animated graphics, avoiding duplicated tasks and improving the overall quality of the products.
- **Multi-skilled professional Journalistic convergence**- This can be also analyzed from the standpoint of the redefinition of professional roles and skills of reporters and editors. Scholars suggest that current trends can basically be summarize in the idea of flexibility (Veseling, 2000). They would be able to adapt the stories to the language of each medium and develop the whole production process. Besides this, journalists also may need to be flexible in the topics they are to be ready to cover. It is a case where every journalist covers a small territory and shoots video, audio and photos, writes the texts and voice-overs on-site using a laptop, edits the stories and sends them online to the agency website. At the central newsroom, the editors check each piece before distributing it through the online database.
- **Multiplatform delivery**- In the posits of Domingo----- Distribution of content has been the dimension of convergence that more visibly has developed in recent years,

even though journalism research has seldom paid attention to the implications of this trend. The maturity of the Internet and mobile communications, as well as the data-enabled digital television systems, has broadened the range of options for the citizens to access the news. The use of Webcast, Voice-over-the Internet Protocol-VoIP like Skpe, Facebook Messenger Video, Google+ and Yahoo Messenger call channels to report and gather actualities by NTA and AIT today is true of this function.

- **Active Audience** - Current media trends do not only seem to blur the differences among the media, but also the distance between producers and audiences (Jenkins, 2004). The origin of this redefinition of the relationship between journalists and citizens can be found in the qualitative changes in the audience habits and attitudes (Livingstone, 1999), namely fragmentation, specialization and active participation. Digital distribution technologies discussed in section 4 allow for the customization of content and ease the production of news that is highly targeted to specific niche audiences (Tewksbury, 2005). But it is active participation what may have a greater influence in the redefinition of professional journalism. The allowance of audience feedback through emails, and Voice-over-the Internet Protocol-VoIP by NTA and AIT though at a fairly significant level signifies that plausibility and possibility of the function of audience activeness.

2.5.4 Critique of the Theories

Straubhaar and La Rose (2004:55), revealed that there is a general rule of diffusion as all technologies follows same pattern or stages of adoption i.e. the innovators, early adopters, early majority, late majority and the Laggers. The diffusion of innovation has been studied since the 1960s. Rogers states that diffusion of innovation is ‘the process by which an

innovation is communicated through certain channels over time' (Rogers, 1995). Grants and Meadoms (2006), explained in clear terms that innovations diffusion depends on other factor aside those ones identified by Rogers

According to Grant and Meadoms (2006), the innovation-decision process has five main steps: knowledge, persuasion, decision, implementation and confirmation (p.20). Most studies conducted on the adoption of Internet by the general public and by specific communities, like journalists, have relied on the description of the process done by this author (Garrison, 2001).

Rogers also classified the adopters of innovations in five different categories: The innovators (the first 2.5 percent who adhere to the innovation); the early adopters (the following 13.5 percent); the early majority (the next 34 percent); the late majority (the following 34 percent), and, finally, the laggards (the remaining 16 percent). These categories have also been used to describe the state of adoption of particular innovations, like the Internet, by different communities (Mahler and Rogers, 1999).

The impact of broadcast technology could be summarized to Desirable, Direct and Anticipated impact.

i. Desirable impacts according Rogers (1986:162), are the functional effect of an innovation on a system that helps it function more effectively.
ii. Direct impacts are the changes in the system that occur in immediate response to an innovation
iii. Anticipated impacts are the changes caused by an innovation that are recognized and intended by adoption of such systems.

Grants and Meadoms (2006:3), in their analysis of the factors that enables the adoption of new technologies especially in television broadcast states that "there exist four outstanding

factors “Enabling”, “Limiting”, “Motivating and “Inhibiting” factors. Thus, the enabling factors are those that make an innovation application possible, the Limiting are the opposite of the enabling factor, the motivating factors are those that provide a reason for the adoption of the technology as it is not just adopted because it exist. While “the Limiting factor is the opposite of the motivating ones and provides a disincentive for adoption of use of such communication technology.

Diffusion of innovation according to McQuail (2005:553), should go beyond mere adoption of a particular or peculiar information technology to the process of spreading any kind of new technical device, idea or useful information. The expectation of technological revolution comes mainly from the availability of communication technologies that are capable of dispensing with key features of mass communication. Again McQuail (2005:544), said that despite the successful efforts by the established media at appropriating new broadcast technologies, there still remain other areas yet untapped as the broadcast technologies opens up new channels of access and new path with the advent of more digitized and sophisticated newsgathering and transmission capabilities.

Communication networks were historically designed to carry different types of information created separately by different organizations. News media that had their own professional characteristics and separate franchises disseminated news and information in the separate realms of printing or broadcasting. The most relevant signs of convergence in this dimension are to be found in the reorganization of newsrooms, but obviously this is closely linked to the redefinition of professional roles, technological innovation and the development of new news formats and languages. This would ideally foster a more efficient production that would give every medium the strength to offer the most useful information in each of them at

the right moment. Media groups may use these coordinated strategy to promote audience loyalty (Salaverría, 2003).

The near absence of media convergence in this part of the globe is a clear assertion to the fact that it remains in the late majority classification of new media convergence in all aspect especially in news production. Interactive communication technology diffuse in diverse ways until in the postulation of Lin (2003), it catches up with a critical mass of adopters which is necessary for it to become useful enough for most people to tag along.

Digitization, again, has facilitated the development of multiplatform delivery strategies that aim to make news distribution as efficient as possible, ideally using the work of one reporter on an issue as the common source for any version of the story in the different outlets of the media company. There seems to be a virtuous circle accelerating the development of multiplatform delivery technologies. All the actors seem to benefit: telecommunication companies and software developers foster new content services as a way to find new revenue opportunities; the media perceive multiplatform strategies as a way to reach new audiences and increase the visibility of their content; and the users may be attracted by the easy anywhere-anytime access to news.

2.5.5 Applicability of the Theories to the Study

Media industry observers predict an important shift from an offer-focused production to a demand-focused production (OPTI, 2003: 20). In the demand-focused model, users have more control over the content that they want to consume, as well as the way and time to do it. Podcasts, video on demand and web 2.0 services are specific technical solutions used to develop this new delivery model (O'Reilly, 2005).

Whatever are the consequences of citizen content production, professional media have started to explore the possibilities of engaging their audiences not only in news commentary but also in news production somehow, with sections devoted to publish newsworthy user contributions (stories, photos, videos). Our analysis of this convergence dimension is a catalogue of the options offered by the media to promote their involvement. The implications of these strategies for the quality of the news in today's news media practice cannot be overemphasised. Like the Diffusion of Innovation paradigm which distinguish the stages of adoption and usage of communication technologies, the convergence media perspective clearly explained the relevance of the combination of several communication technologies transformed from hardware into software that could be used through the Internet to serve same purpose. In this sphere, the two paradigms become apt for this study and thus, serve as the theoretical nexus of the study of internet capacity and journalistic capability in modern day newsgathering, news productions, and news transmission or broadcast that is seen to have converged technologically more than ever before.

The adoption of this technologies for newsgathering and transmission capacity and capability of the two Nigerian television stations is seen as a welcome development since global and continental broadcast television stations have already adopted these technologies, the country must not be seen to be lagging behind. Thus, the study concludes that the adoption of the Internet Protocol Television-IPTV platforms for television newsgathering and transmission is one that is being incorporated into both the traditional broadcast transmission processes and the online gateway which the Internet television sites of AIT and NTA provides. The extent of adoption and usage of the platform is considered important notwithstanding the stage of adoption and convergence.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The process of data gathering is consequently the most vital aspect in the research process. Methodology is therefore central to answering the research question or solving the research problem. Therefore this chapter presents and discusses the various procedures adopted in conducting this research including the various steps adopted during the field work. It presents the type of research, population of the study, sampling and sampling technique, method of data collection and method of data analysis.

3.2 Research Method

The study employed the survey research method. The justification for this is because the study has to do with getting data from major stakeholders in the organizations of study. Comparative research design is a study which continues to expand on what have been carried out in a case study. This nature of research is aimed at analyzing and comparing two or multiple case scenarios as well as combines both the qualitative and quantitative process of undertaking a study. For the goal of comparative analysis is to explain those 'puzzles', which cannot be studied without comparing and which are derived from logical reasoning.

Thus, comparative research is interested in identifying the similarities and differences among the adoption of Internet tools by the selected television stations. Based on the importance attached to content development, it is needful to further carry out analytical and empirical research that would qualitatively and quantitatively present us with a clearer picture on the extent of the adoption. Hence the survey research method was employed to obtain relevant data.

3.3 Population of the Study

The procedure in the instance of this research took sample population which is a subset of the population that is reprehensive of the entire population. The population of the study comprised of mostly journalists in NTA Network, Abuja which has a total number of 110 ICT related journalists and AIT, Abuja which has a total of ICT related journalists staff strength of 74 (NTA, 2015; AIT, 2015).

3.4 Sampling Technique

The study employed the census study which occurs if the entire population is very small or it is reasonable to include the entire population (for other reasons). It is called a census sample because data is gathered on every member of the population. According to Lavrakas (2012), a census is an attempt to list all elements in a group and to measure one or more characteristics of those elements. The group is often an actual national population, but it can also be all houses, businesses, farms, books in a library, cars from an assembly line, and so on. A census can provide detailed information on all or most elements in the population, thereby enabling totals for rare population groups in a small geographic area. It also provide a higher degree of accuracy of data and information collection from a small universe (Farooq, 2013). Hence, the census survey research was used in this study to collect quantitative data and information from the sample frame within each selected groups, that is, journalists from NTA and AIT. For the qualitative sampling, the purposeful sampling was adopted. This means that they purposefully choose data that fit the parameters of the project's research questions, goals, and purposes. Hence, only journalists with requisite skills and responsibility relevant to the use of Internet Protocol for television broadcast and transmission were interview using the qualitative instrument.

3.5 Sample Size

The total sample frame or population for this study was made up of the news and current affairs, production, editing and transmission, website, and ICT network media journalists of the two network television stations in Nigeria. Noting that the population of NTA is more than that of AIT, the sample population size of 184 was divided between the two stations which made the sample size for NTA to be 110 journalists while that of AIT to be 74 journalists.

3.6.1` Instruments of Data Collection

Basically the instrument employed in this study was the questionnaire to investigate the phenomenon quantitatively and in-depth or key informant interview to review qualitatively**.**

3.6.2 Questionnaire

The questionnaire in this study was structured into four sections. Section A consisted of the bio-data of respondents, Section B consisted of questions aimed at answering the first research question while Section C was made up of questions set up to answer the second research question. Similarly section D was a construct of questions targeted at answering research question three while the last section E focused on questions that would elicit data and information that answered research question four.

The questionnaire was designed largely in close ended question format and given to respondents in order to form the basis for the primary findings of this research and elicit response from them. Since sections of the questionnaire Liker scales comprised of five-response ratings of Strongly Agree, Agree, Disagree, Strongly Disagree and Undecided; Excellent, good, fair, poor and very poor as well as Very effective, Effective, Fairly effective, Ineffective and Very Ineffective for section B to E.

3.6.3 In-depth Interview

The adoption of in-depth interview in this study was geared at validating and adding credence to the data gathered through the structured questionnaire so that the Interviewee can help to generate further questions that would be raised about the variables in this study. The structured interview was conducted among two (2) key informants from NTA Abuja and three (3) key informants from AIT. The reason for this disparity was that NTA as a network, was just adopting the internet tools while the adoption have been in use at AIT for a period of more than five (5) years before its adoption by NTA in its newsgathering and transmission activities. Because of this, there more journalists who are skilled in internet newsgathering and transmission capability in AIT than there is in NTA. The informants were sourced from the ICT & Network Units, News and Current Affairs as well as the Outside broadcast crews, reporters and programme producers at the two (2) selected stations which is relevant to this comparative study on the adoption of internet tools in television news gathering, production and transmission.

3.7 Validity and Reliability of the Instrument

In order to ensure validity of the instrument for this study, the original questionnaire that was drafted by the researcher was reviewed by her supervisors. Their instructions, experts' feedback and suggestions provided the study face validity of the questionnaire. To establish content validity, the questionnaire was also submitted to the supervisors who reviewed the sections of the instrument and made recommendations concerning clarity, relevance and readability of items. Corrections were made and based on their recommendations, the contents in the questionnaire were restructured. A Pilot Study was also carried out. The Statistical Package for Social Sciences (SPSS) v.20 was used to calculate the reliability coefficient of the pilot study using Cronbach Alpha. The Scores yielded a reliability

coefficient of 0.671 which was approximated to 0.7.

An instrument is only reliable to a degree that it measures accurately and consistently what it is supposed to measure, yielding comparative results when administered a number of times (Akwezuilo and Agu, 2003). In determining the reliability of the instrument, data from the pilot study were tested the result was calculated using Cronbach alpha. The Cronbach alpha is simply a way of approximating the degree of correlation among items on a test. The closer it is to 1 the more reliable is the instrument. These are considered adequate, according to Stevens and Spegel (1999), cited in Guar and Guar (2009). They asserted that an instrument is considered reliable if its coefficient lies between 0 and 1. The test yielded a result of 0.712 reliability coefficient which was approximated to 0.700. This reliability result was considered as satisfactory seeing that it is closer to 1. Hence, the result according to Guar and Guar (2009), is reliable enough for the instrument to be used for gathering primary data for this study.

3.8 Method of Data Collection

The collection of data and information was obtained through the administration of structured instruments that is the questionnaire and IDI or KII from the sampled population and interviewees from the selected television stations. The questionnaire was administered to the sample population through a simple random process by the researcher where all the universe had equal chance of being picked to answer the questions on the instrument. The in-depth interview was conducted face-to-face, subsequent interview was conducted using the Whataspp voice recording app and the recording was downloaded on a Laptop and played using the Microsoft Media Player after which it was listened to and eventually transcribed and typed.

3.9 Method of Data Analysis

Data analysis for this research was the descriptive and inferential statistics. Descriptive statistics deals with methods and techniques of summarizing while the inferential analysis deals with the statistical results and model formulated in this study. It applies mostly in qualitative data analysis. On the other hand, inferential statistics is concerned with gaining knowledge of the population (Kothari, 2004). It is mostly adopted in quantitative data analysis. The descriptive method was employed in analyzing data in this study for easy comprehension.

In analyzing the data the SPSS version 20 was used to establish the nexus between variables. Furthermore, composite index/mark-off points below was used to make deductive remark on each of the Likert items result that were provided by the quantitative data. A theoretical mean of 3.0 according to Davies (2005), was used as a criterion to judge the mean for the items in the structured questionnaire having five Liker rated format. Therefore any item in sections of the instrument which have a mean equal to or higher than 3.0 was regarded to be significant and agreeable or effective while items with less than 2.5 was regarded as not significant and disagreeable or ineffective. The theoretical mean will be derived using formula [1+2+3+4+5/5] = 3.0.

Composite Index/Mark-off Points for Likert Scale

1. 1.00 – 1.49 Never
2. 1.50 – 2.49 Seldom
3. 2.50 – 3.49 Sometimes
4. 3.50 – 4.49 Often
5. 4.50 and above Always

---

1. 1.00 – 1.49 Very poor
2. 1.50 – 2.49 Poor

3. 2.50 – 3.49 Fair
4. 3.50 – 4.49 Good
5. 4.50 and above Excellent

---

1. 1.00 – 1.49 Very ineffective
2. 1.50 – 2.49 Ineffective
3. 2.50 – 3.49 Fair
4. 3.50 – 4.49 Effective
5. 4.50 and above Very effective

---

1. 1.00 – 1.49 Strongly Disagree
2. 1.50 – 2.49 Disagree
3. 2.50 – 3.49 Undecided
4. 3.50 – 4.49 Agree
5. 4.50 and above Strongly Agree

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis of the data and information gathered from the two television stations used in this study namely African Independent Television – AIT Abuja and the Nigerian Television Authority NTA, Network Service, Abuja. The data gathered or obtained was one hundred and seventy-three (173) copies of questionnaire out of 184. The total response rate from the returned, completed copies of the questionnaire was approximately 94%. A further breakdown of the returned copies of the questionnaire shows that 101 copies was returned from NTA accounting for 91.8% of the copies administered while 72 copies was returned from AIT representing approximately 96% response rate. In the overall analysis of the returned response rate, it was considered statistically significant and therefore used for the presentation and subsequent interpretation of data of this research.

4.2 Interpretation of Data

Data presented in simple descriptive statistical table with frequencies, percentages and mean value had their deductive interpretation based on the theoretical mean value benchmark of 3.0. Where the respondents mean value falls below 3.0, the interpretative inferences for their answers would not be significant in accordance with the Likert format adopted. Similarly, where the respondents mean value is above 3.0, the interpretative inference for their answer was considered significant. The data on the table was presented taking into consideration the research objectives and further supported with information obtained from the key informants using the in-depth interview guide.

Table 1: Socio-Demographic Analysis of Respondents

	Stations	AIT		NTA	
S/N		**Variable**	**Frequency (%)**	**Variables**	**Frequency (%)**
1.	**Distribution of Sex**	Male	51(70.8)	Male	80 (79.2.0)
		Female	21 (29.2)	Female	21 (20.8)
		Total	**72(100.0)**	**Total**	**101 (100.0)**
2	**Distribution of Age**	21-30 years	33 (45.8)	21-30 years	62 (61.4)
		31-40 years	14 (19.4)	31-40 years	14 (13.9)
		41-50 years	19 (26.4)	41-50 years	19 (18.8)
		51-60 years	6 (8.3)	51-60 years	6 (5.9)
		Total	**72 (100.0)**	**Total**	**101 (100.0%)**
3	**Distribution of Marital status**	Single	27 (37.5)	Single	27 (26.7)
		Married	43 (59.7)	Married	72 (71.3)
		Widowed	2 (2.8)	Widowed	2 (2.0)
		Total	**72 (100.0)**	**Total**	**101 (100.0%)**
4	**Educational qualification**	Primary education	0 (0.0)	Primary education	0 (0.0)
		Secondary education	0 (0.0)	Secondary education	0 (0.0)
		Tertiary education	72 (100.0)	Tertiary education	101 (100.0)
		Total	**72 (100.0)**	**Total**	**100 (100.0%)**
5	**Occupation**	Computer engineering	6 (28.6)	Computer engineering	7(29.2)
		News Director	1 (4.8)	News Director	1(4.2)
		Senior reporter	3 (14.3)	Senior reporter	3(12.5)
		Total	**72 (100.0)**	**Total**	**100.0 (100.0)**
6	**Commencement of IPTV**	Less than a year	2 (2.8)	Less than a year	2 (2.0)
		2-3 years	16 (22.2)	2-3 years	32 (31.7)
		4-5 years	31 (43.1)	4-5 years	44 (43.6)
		6 years and above	23 (31.9)	6 years and above	23 (22.8)
		Total	**72 (100.0)**	**Total**	**101 (100.0%)**

In the table above, majority of the respondents were between the ages of 21-30 years while the least were between the ages of 51-60 years. The demographic characteristics of the ages here imply that most of the respondents were young adult, an age considered in broadcast terms as digital natives meaning that they are more likely to be associated with modern trend of internet television capacity and capability than old adults. From the table also, majority of the respondents are male while the rest are female. This shows that there are more male broadcast workers in these stations than there are female a fact that is in line with findings from other researchers like Byerly (2011), Muhammad (2014) and the Gender Equality in Media (2003), Reports. Majority of the respondents were married with a significant proportion of the workers in both stations indicated being single. Being an occupation that is time demanding especially where news items are sourced, produced and disseminated 24/7, having the majority of the workers as married could create a burden on the staff who now needs to combine both office duty alongside home responsibilities (Willis and Dex, 2003).

Also presented in this table is the educational attainment of the respondents. Here all the respondents from both stations had one level of tertiary education and another. Their level of education translated into the roles given to them to perform in the station as shown here in this table. Finally in this table, most of the respondents have had number of years working in the stations and this has the tendency of the providing the research with answers on the adoption, usage and impact of the internet television platform in modern day newsgathering, production and broadcast. An Interviewee from AIT was able to state the duration of IPTV broadcast in the station.

> I would say that the Internet Protocol Television (IPTV) broadcast has been in place in the station for roughly the past five (5) years as the station commenced the adoption of the protocol by mid-2011.

The response from the interview further justified the classification of adoption as described by Rogers Diffusion of Innovation of Communication technologies in this regards as being Early Majority.

Table 2: Internet Tools Used in Newsgathering and Transmission by AIT and NTA by the Stations

S/N	Stations	AIT Variable	Frequency (%)	NTA Variables	Frequency (%)
1.	**Tools used for IPTV broadcast**	Streaming server	20 (27.8)	Streaming server	20 (58.4)
		IPTV Probe	30 (41.7)	IPTV Probe	41 (40.6)
		Mware	12 (16.7)	Mware	20 (19.8)
		Netup TV	10 (13.9)	Netup TV	20 (19.8)
		Total	**72 (100.0)**	**Total**	**101 (100.0%)**
2.	**Tools used for live streaming**	WireCast Pro	31 (43.1)	WireCast Pro	60 (59.4)
		TV-U System	20 (27.8)	TV-U System	20 (19.8)
		U-Stream	21 (29.2)	U-Stream	21 (20.8)
		Total	**72 (100.1)**	**Total**	**101 (100.0)**
3.	**Tools used for VoIP**	Adobe Soundbooth	22 (30.6)	Adobe Soundbooth	42 (31.7)
		Skype	19 (26.4)	Skype	28 (29.7)
		Facebook Video Call	15 (20.8)	Facebook Video Call	15 (22.8)
		Yahoo Messenger Video	16 (22.2)	Yahoo Messenger Video	16 (15.8)
		Total	**72 (100.0)**	**Total**	**101 (100.0%)**

The digitization of modern broadcast media systems and processes of news content development, final transmission and dissemination had hitherto opened new vista in broadcast technologies and tools which could be hardware and software altogether. The ability to converge the systems or tools together on the platform has completely drive the ambiguous nature of the broadcast media being that which made the world a global village. In this table, the two television stations show the various internet tools, specifically the software, which they have adopted to gather and transmit broadcast content via the internet. Here in this table, a significant number of the respondents were able to indicate that stream server, IPTV probe, Mware and Netup TV were the common softwares used by the stations for their internet protocol broadcast on http://www.nta.ng/live and www.aitonline.tv/live.

The Interviewee from AIT has this to say;

> AIT as one of the major private network broadcast stations with footprint all over the country on terrestrial and Digital Satellite Broadcast –DSB was able to adopt and deploy the IPTV platforms such as the VSAT for internet television signal transmission. When we started the IPTV newsgathering, content programming and real-time television transmission on the Internet channel, we made use of Router Satellite delivery server and the TV-U stream system. Today our IPTV broadcast is more dependent on the TV-U stream for live streaming and a host of other numerous software to achieve this type of television broadcasting.

The internet tools or softwares used for broadcast content transmission as indicated here by the respondents were some of the IPTV tools commonly used for webcasting, which is the term used for broadcasting over the internet as identified by Smith and Davis (2008), Sparrow (2007), and Shiao (2012). Another very important aspect of modern broadcast over the internet is how to get active voice across the platform alongside video feeds. This aspects has become the most frequently used platform to get news events and interview personality to the news hub from a distant location where the cameras outside broadcast van are not readily available. In the view of the respondents from both of the television stations as shown in this

table, the commonly used Voice over the Internet Protocol softwares' or tools are Adobe Soundbooth, Skype, Facebook and Yahoo messenger video call. It could be deduced here that the ability to use these tools has the tendency to encourage more VoIP capacity and capability of the two television stations in modern television broadcasting using the internet as a medium.

On the part of NTA according to an interviewee;

> The need to keep up with the pace of modern television broadcasting technologies is really a daunting task. After agreeing and adopting the IPTV platform as another way of television, we began to experiment with hardware and software that would make TV transmission easy and flexible especially the File Transfer Protocol-FTP which the IPTV allowed. In the first instance we made use of the dominant Voice over the Internet Protocol-VoIP software or package which is the Skype. For IPTV broadcast and live streaming on our internet channels we made use of the streaming server and Wirecast Pro and others depending on the network infrastructure available at the location of event.

Aside Webcasting and Voice over the Internet Protocol, one main function of the modern broadcast media adoption of the internet for news content and programme development, is its ability to also perform the function of live broadcast, in this regard "Streaming" live streaming of news contents and events is one aspect where the internet technology comes handy. Previous live coverage and broadcast mode would make use of the satellite Newsgathering SNG's machine connected to a camera or outside broadcast vans to undertake such duty. But with the internet only a very small aperture stands- VSAT, a laptop installed with the basic and standard webcasting tools is needed alongside the feed from the camera. From the table, a significant proportion of the respondents were able to identify WireCast Pro, TV-U system, U-Stream as some of the common internet tools used for live streaming of events over the internet. These tools were also stated by Shiao (2012), Smith and Davis (2008), as some commonly used tools for live streaming. Corroborating the above data,

interviewees from both stations gave more insight into the tools being used by the stations as part of their Internet Protocols.

Table 3: Extent of Internet Usage in Newsgathering and Transmission by AIT and NTA among the Two Stations

S/N	Stations	AIT Variable	Frequency (%)	Mean score	Remark	NTA Variables	Frequency (%)	Mean score	Remark
1.	**The use of IPTV platform for broadcasting over the internet**	Never	2 (2.8)			Never	4 (4.0)		
		Seldom	2 (2.8)			Seldom	4 (4.0)		
		Sometimes	9 (12.5)			Sometimes	18 (17.8)		
		Often	25 (34.7)			Often	41 (40.6)		
		Always	34 (47.2)			Always	34 (33.7)		
		Total	**72 (100.0)**	**4.21**	**Often**	**Total**	**101 (100.0)**	**3.96**	**Often**
2.	**The use of VoIP for newsgathering**	Never	3 (4.2)			Never	6 (5.9)		
		Seldom	5 (6.9)			Seldom	10 (9.9)		
		Sometimes	10 (13.9)			Sometimes	18 (17.8)		
		Often	30 (41.7%)			Often	41 (40.6)		
		Always	24 (33.3)			Always	34 (33.7)		
		Total	**72 (100.0)**	**3.93**	**Often**	**Total**	**101 (100.0)**	**3.66**	**Often**
3.	**Live streaming over the Internet**	Never	**0 (0.0)**			Never	**0 (0.0)**		
		Seldom	**3 (4.2)**			Seldom	**3 (3.0)**		
		Sometimes	**8 (11.1)**			Sometimes	**8 (7.9)**		
		Often	**32 (44.4)**			Often	**32 (31.7)**		
		Always	**29 (40.3)**			Always	**58 (57.4)**		
		Total	**72 (100.0)**	**4.21**	**Often**	**Total**	**101 (100.0)**	**4.44**	**Often**

The utilization of any newly adopted technology in the broadcast media industry as well as the capacity and capability of the station's crew and facilities available to it in this regard have the tendency to shore up its effectiveness and efficiency. This means that since the internet platform is an all-day timeliness in demand and service, how frequent is it being used is very crucial to its rating as being the needed platform for modern broadcast. Here in this table, 40.6% and 33.7% of the respondents indicated that NTA often and always employs the IPTV platform for broadcast over the internet.

Similarly, 34.7% and 47.2% of the respondents from AIT also indicated that the IPTV platform is often and always for internet broadcast respectively. Both views from NTA and AIT had an approximately mean value of 4.0 which is very significant a response and implies that these station often make use of the platform for their broadcasting over the internet. Here in this table also, 40.6% and 23.8% of the respondents from NTA, 41.7% and 33.3% of the respondents from AIT indicated that the stations often and always uses the Voice over the Internet Protocol – VoIP in the newsgathering and interview actuality linkages as part of the news content broadcast. The above response had the mean values of approximately 3.7 for NTA and approximately 4.0 for AIT. Based on these mean values, which are above the theoretical mean score of 3.0, it could be inferred here that the stations often made use of the VoIP tools and capability in news content development and broadcasting of the Internet.

Supporting the above analysis, the network engineer and administrator from AIT has this to say,

> The usage of the IPTV process for online TV newsgathering and transmission is one platform that the station has made use of for quite some time now. Especially for international news event coverage where the station would not be able to transport its Digital Satellite Newsgathering-DSNG vehicle. This way the station did not only avoid the rigor of transporting the equipment but achieve timeliness in news coverage and broadcast. I would say that the usage of this platform is almost nearing 60% in the station.

This implies that the internet platform has become a part of the daily newsgathering and transmission activity of the station. It is one which has made the station meet the digital standard required for modern newsgathering and transmission capability by today's news media. Finally on this table, 44.4% and 40.3% respondents from NTA, 31.7% and 57.4% respondents from AIT indicated that live coverage and streaming of event over the internet is one aspect of modern television broadcast is often and always carried out through the internet by the stations. Their responses obtained a mean values of 4.4 for NTA and 4.2 for AIT. Based on this mean value which is again above the theoretical mean, it could be deduced that this platform is often used by the stations for transmitting real event live in the absence of the DSNG and outside broadcast vans.

Table 4: Rating on the Functionality of the Usage of Internet Tools/ Platforms by AIT and NTA by NTA and AIT

S/N	Stations	AIT Variable	Frequency (%)	Mean score	Remark	NTA Variables	Frequency (%)	Mean score	Remark
1.	**The use of IPTV platform for broadcasting over the internet**	Very poor	3 (4.2)			Very poor	3 (3.0)		
		Poor	4 (5.6)			Poor	4 (4.0)		
		Fair	10 (13.9)			Fair	10 (9.9)		
		Good	25 (34.7)			Good	25 (24.8)		
		Excellent	30 (41.7)			Excellent	59 (58.4)		
		Total	**72 (100.0)**	**4.04**	**Good**	**Total**	**101 (100.1)**	**2.86**	**Fair**
2.	**The use of VoIP for newsgathering**	Very poor	12 (16.7)			Very poor	24 (23.8)		
		Poor	10 (13.9)			Poor	21 (20.8)		
		Fair	15 (20.8)			Fair	21 (20.8)		
		Good	15 (20.8)			Good	15 (14.9)		
		Excellent	20 (27.8)			Excellent	20 (19.8)		
		Total	**72 (100.0)**	**3.29**	**Fair**	**Total**	**101 (100.0)**	**4.25**	**Good**
3.	**Live streaming over the Internet**	Very poor	7 (9.7)			Very poor	7 (6.9)		
		Poor	6 (8.3)			Poor	6 (5.9)		
		Fair	6 (8.3)			Fair	18 (17.8)		
		Good	18 (25.0)			Good	32 (31.7)		
		Excellent	35 (48.6)			Excellent	64 (63.4)		
		Total	**72 (100.0)**	**3.94**	**Good**	**Total**	**101 (100.0)**	**3.35**	**Good**

Respondents from AIT and NTA were asked to rate the functionality of the various internet tools or platforms used for modern television broadcasting over the internet in their respective television stations. Here in table 4, 24.8% and 58.4% of the respondents from NTA rated the usage and IPTV functionality as good and excellent respectively. Similarly, 34.7% and 41.7% of the respondents from AIT also rated its usage and functionality as good and excellent. The mean value for NTA is 4.4 while the mean score for AIT is 4.0.

Based on the mean value which are above the theoretical mean, it could be said here that the usage and functionality of IPTV platform for broadcasting is good. Also in this table, 23.8% and 20.8% of respondents from NTA rated the use of Voice over the Internet Protocol process as very poor and poor while 14.9% and 19.8% of respondents in the same station rated it as good and excellent. This rating had a mean score of approximately 2.9 which in the overall analysis is fair enough. In the same vein, 20.8% and 27.8% of the respondents rate the usage and functionality of the platform in AIT as good and excellent while 20.8% and 16.7% of the respondents rated it as fair and very poor respectively. Their rating in this regard had a mean value of approximately 3.3 and considered as significant from the rating based on the fact that the mean value is above the theoretical mean set at 3.0. Finally on this table, 63.4% and 17.8% of respondents from NTA noted the use of the internet tools for live streaming of events as excellent and good thereby obtaining a mean score of approximately 4.3%. This could be deduced to mean that the usage of the internet platform for live coverage and streaming of events is good based on the overall rating from the composite index table. Similarly, 48.6% and 25.0% of respondents from AIT rated the usage and functionality of this same platform as excellent and good respectively. The mean value obtained for this was approximately 4.0 which also implies same as was deduced for NTA.

Table 5: The Effectiveness of the Use of Internet Tools by AIT and NTA

	Stations	AIT				NTA			
S/N		**Variable**	**Frequency (%)**	**Mean score**	**Remark**	**Variables**	**Frequency (%)**	**Mean score**	**Remark**
1.	**The use of IPTV platform for broadcasting over the internet**	Very ineffective	10 (13.9)			Very ineffective	20 (19.8)		
		Ineffective	6 (8.3)			Ineffective	12 (11.9)		
		Fairly ineffective	6 (8.3)			Fairly ineffective	13 (12.9)		
		Effective	19 (26.4)			Effective	25 (24.8)		
		Very effective	31 (43.1)			Very effective	31 (30.7)		
		Total	**72 (100.0)**	**3.76**	**Effective**	**Total**	**101 (100.1)**	**3.59**	**Effective**
2.	**The use of VoIP for newsgathering**	Very ineffective	6 (8.3)			Very ineffective	12 (11.9)		
		Ineffective	6 (8.3)			Ineffective	12 (11.9)		
		Fairly ineffective	7 (9.7)			Fairly ineffective	14 (13.9)		
		Effective	20 (27.8)			Effective	30 (29.7)		
		Very effective	33 (45.8)			Very effective	33 (32.7)		
		Total	**72 (100.0)**	**3.94**	**Effective**	**Total**	**101 (100.0)**	**3.64**	**Effective**
3.	**Live streaming over the Internet**	Very ineffective	5 (6.9)			Very ineffective	10 (9.9)		
		Ineffective	5 (6.9)			Ineffective	10 (9.9)		
		Fairly ineffective	6 (8.3)			Fairly ineffective	12 (11.9)		
		Effective	30 (41.7)			Effective	43 (42.6)		
		Very effective	26 (36.1)			Very effective	26 (25.7)		
		Total	**72 (100.0)**	**3.93**	**Effective**	**Total**	**101 (100.0)**	**3.40**	**Fairly effective**

The table shows how effective the internet tools as used by both AIT and NTA was considered by the respondents from both stations. Here in this table, 30.7% and 24.8% of the respondents from NTA considered the usage of IPTV platforms for broadcast as being very effective and effective since its adoption by the station. A mean score of approximately 3.4 was obtained for their rating. This was considered significant since it was above the theoretical mean of 3.0 and in the overall analysis. It could be deduced here that the use of the platform in NTA is fairly effective (see composite index table in chapter three). Similarly, 43.1% and 26.4% of the respondents from AIT considered the same platform as very effective and effective respectively.

Interviewee responses provided by broadcast engineers from AIT and NTA, Abuja further provided information on the extent of the effectiveness of adoption of the IPTV platform for their newsgathering and programme transmission.

> The IPTV platform has brought with a new revolution and dynamism in the gathering of news, interviewing of sources and live feed on any topical issue and event in real time thereby making the news media meet its core goal of immediacy and timeliness. Today, rather than wait endlessly to interview sources and add their views to a news story, all the reporter needs to do is to deploy the internet tools such as Skype and Facebook video call linked up with source communication facilities like the laptop, palmtop and mobile whether android, window or smartphones and interview would be conducted and streamed live. This aspect of news reportage and transmission has completely transformed media broadcast activity. Today, this type of broadcast platform has engendered the sharing of visual and audio images with the reporter and the news hub (stations) as well as makes the station's news presentation more objective and dependable.

The respondents from AIT obtained a mean value of appropriately 3.8, thus it could be said that the usage of the platform on the part of AIT is effective when compared with the way it was used in NTA. The table also shows the extent of effectiveness in the use of VoIP processes and tools in newsgathering and linkage of interview personality to the news hub. From the data presented, 32.7% and 29.7% of the respondents from NTA revealed that it was

very effective and effective while 45.8% and 27.8% of respondents from AIT indicated that it was very effective and effective respectively. Having obtained a main score of approximately 3.6 for NTA and approximately 4.0 for AIT, it could be deduced here that the usage of VoIP is considered significantly effective in all the two stations.

In corroborating this information, an interviewee summarized the impact of IPTV this way;

> The impact of IPTV platform on newsgathering and transmission is that it has further expanded the medium for news broadcast, granted news reporters more flexibility in accessing news sources who are mostly mobile and travelling as well as almost negate the bureaucratic bottleneck experience in getting access to key news sources. With the IPTV, a broader base of news sources and broadcast is achieved. Here, news events could be viewed by the public with the mobile phones either directly from the station's online channels or through the station's news app downloaded and activated on their mobile devices.

Finally on this table, respondents also considered how effective the tools were and technologies being used over the internet to transmit live coverage and streaming of events. In this regard, 42.6% and 25.7% of the respondents from NTA indicated that it was effective and very effective while 41.7% and 36.1% of respondents from AIT indicate a similar trend of effectiveness. Furthermore, on the scale of mean value, 3.6 was the mean score obtained for NTA while AIT had a mean value of approximately 4.0. It could be inferred here that the deployment of the internet facilities for line coverage in the instances where the SNG's and OB van could not be used is also an effective way of live coverage and streaming of events from locations to the news hub.

Table 6: Challenges Faced by AIT and NTA in the Use of the Internet Tools/Platforms

S/N	Stations	AIT				NTA			
		Variable	**Frequency (%)**	**Mean score**	**Remark**	**Variables**	**Frequency (%)**	**Mean score**	**Remark**
1.	**Poor Internet/Broadband Infrastructure**	Undecided	5 (6.9)			Undecided	10 (9.9)		
		Strongly disagreed	7 (9.7)			Strongly disagreed	14 (13.9)		
		Disagreed	8 (11.1)			Disagreed	16 (15.8)		
		Agree	29 (40.3)			Agree	38 (37.5)		
		Strongly agree	23 (31.9)			Strongly agree	23 (22.8)		
		Total	**72 (100.0)**	**3.81**	**Agreed**	**Total**	**101 (100.1)**	**3.49**	**Agreed**
2.	**Low ICT skills**	Undecided	5 (6.9)			Undecided	12 (13.9)		
		Strongly disagreed	10 (13.9)			Strongly disagreed	10 (9.9)		
		Disagreed	12 (16.7)			Disagreed	5 (5.0)		
		Agree	15 (20.8)			Agree	15 (14.9)		
		Strongly agree	30 (41.7)			Strongly agree	59 (58.4)		
		Total	**72 (100.0)**	**3.76**	**Agreed**	**Total**	**101 (100.0)**	**4.12**	**Agreed**
3.	**Poor power supply**	Undecided	2 (2.8)			Undecided	6 (5.9)		
		Strongly disagreed	6 (8.3)			Strongly disagreed	2 (9.9)		
		Disagreed	6 (8.3)			Disagreed	6 (5.9)		
		Agree	30 (41.7)			Agree	59 (58.4)		
		Strongly agree	28 (38.9)			Strongly agree	28 (27.7)		
		Total	**72 (100.0)**	**4.06**	**Agreed**	**Total**	**101 (100.0)**	**4.04**	**Agreed**
4.	**Low level funding**	Undecided	8 (11.1)			Undecided	10 (9.9)		
		Strongly disagreed	4 (5.6)			Strongly disagreed	4 (4.0)		
		Disagreed	10 (13.9)			Disagreed	8 (7.9)		
		Agree	24 (33.3)			Agree	24 (23.8)		
		Strongly agree	26 (36.1)			Strongly agree	54 (54.5)		
		Total	**72 (100.0)**	**3.78**	**Agreed**	**Total**	**101 (100.0)**	**4.13**	**Agreed**

The internet platforms being used for today's broadcast and transmission activities is also faced with some challenges that limits its usage in Nigeria even as we move towards the stage of a complete digitized broadcast transmission and activities. These factors were considered in the course of this research. In this table, 37.6% and 22.8% of the respondents from NTA agreed and strongly agreed that low end servers and broadband capacity of most of the service providers', telecommunication service providers hinders the effective utilization of the internet platform for modern day broadcast and transmission. In the same vein, 40.3% and 31.9% of respondents from AIT agreed and strongly agreed with the above mentioned challenge. With mean score of approximately 3.5 for NTA and 3.8 for AIT, it could be said that there is a significant level of agreement that low end telecommunication infrastructure, server and broadband services hinders the optimal utilization of the internet platform for television transmission and broadcast over the internet.

In support of the analysis above, interviewees from AIT and NTA provided further explanation on the challenges being faced with the adoption of the IPTV platform for TV news gathering and transmission.

> The slow adoption and lateness in the switch over to a robust digital frame of newsgathering and transmission by NTA is one factor that has placed the station's use of the IPTV platform at a disadvantage. Also, high cost of independent ICT infrastructure which NTA opted for in the face of the poor nature of Internet network services by existing telecommunication service providers has been the bane of the effectiveness of the platform. Again, the IPTV platform is a 24 hours, 7 days a week platform that need to be powered uninterruptedly. Even with backup batteries, the servers need for constant power is not sustainable with the nature of power situation in the country. Consequently, this has made the NTA online TV to be experiencing difficulty with its transmission through this protocol.

Another challenge militating against the optimal utilization of the internet tools according to 58.4% and 14.9% of respondents from NTA as well as 41.7% and 20.8% of respondents from

AIT were strongly agree and agree, is the low level of IT skills and professionalism of reporters and broadcast engineering crew who should have reached the stage of multitasking capacity and capability to use the platform effectively. With the mean score of 4.1 obtained for NTA and approximately 3.8 obtained for AIT, it could be deduced here that there is a significant level of agreement that this factor discussed in a challenge militating against internet platform usage.

According to an interviewee from AIT,

> The challenges being experienced with the adoption of this platform in AIT is that most of the reporters in the station although computer literate do not know how to use the tools needed by the platform. This is largely due to lack of practical experiences which affects most graduates from our institutions teaching journalism and mass communication in the country. What we have been doing in this regard, is to train or send them for short courses on how to deploy and use this tools in carrying out their reporting assignment. Through the training, the reporters that are in our employ becomes multitasking that is taking on more than one role. They become the news reporter, news editor, news camera men/women as well as on-the-site broadcast transmitter armed with their camera and laptops only.

In table 6 again, 58.4% and 27.7% of respondents from NTA as well as 41.7% and 38.9% of respondents from AIT strongly agreed and agreed respectively that the erratic nature of power supply which consequently land to intermittent interruption in transmission equally affects the optimization of the internet platform. With mean score of 4.0 obtained for NTA and approximately 4.1 obtained for AIT which were all above the theoretical mean framework, it could be stated that there is a significant level of agreement that this factor again affects the effectiveness of the internet platform as a viable way of modern day television broadcast and transmission. Finally on this table, 54.5% and 23.8% of respondents from NTA as well as 36.1% and 33.8% of respondents from AIT strongly agreed and agreed respectively that low level of funding for the acquisition of standardized internet technologies for modern television newsgathering, content development, and transmission capabilities affects the optimization of the platform in the country. The mean value for NTA is 4.1 which AIT of AIT is approximately 3.8.

Based on the mean scores, it could be inferred here that respondents significantly agreed that poor funding and the acquisition of cutting edge internet technologies used for internet television broadcast affects its utilization by these statistics.

4.3 Discussion of Findings

The discussion of findings in this research was done in line with the research objectives and answers provided to the research questions from the analysis of data and information.

Research Question 1: What are the Internet Tools Used in Newsgathering and Transmission in AIT and NTA Network Stations?

Modern television broadcasting is one that could be seen to be expanding the horizon and task of newsgathering and dissemination. From the time, newsgathering and transmission achieved the 24 hours a day, seven days a week transmission and broadcast capability as well as equally enhancing the immediacy in news and event coverage and transmission, the need to embrace new media technologies especially the array of opportunities provided by internet in serving as an avenue for news source online, exchange of files via the email and the news copy editing and non-linear editing tools either online and offline became the precursor of real time broadcast.

Today, the role which the internet plays in news content development has gone beyond the purview of news sourcing, edifying, sending and retrieval of files to that which also combines the traditional role of newsgathering and transmission alongside the modern convergence media technologies and applications. This new innovation in television newsgathering, development and transmission has given rise to newer broadcasting terminologies like streaming, webcasting, Internet Protocol Television-IPTV and Voice over the

Internet Protocol – VOIP services. These newer platform in television news sourcing, gathering, content development and transmission have not in any way relegated traditional broadcasting technologies and process to the background rather it has added up the impetus to real time broadcasting, viewership inclusiveness and feedback which completes the cycle of an effective communication. These innovative internet technologies and application have become adopted and used by major broadcast organizations like Cable Network News-CNN, British Broadcasting Corporation BBC, Aljazeera, China Global Television Network – CGTN, Dwele-DW of Germany and even South African Broadcasting Corporation – SABC as not only the new frontier but an added tool for television news transmission and broadcasting.

Common among the Internet technologies and application being adopted and used for television newsgathering and transmission are streaming server, IPTV Mware and Netup TV which 27.8%, 41.7%, 16.75 and 13.9% of respondents from AIT identified as common internet applications being used for Internet Protocol Television – IPTV broadcast. In the same way, 19.8%, 40.6%, 19.8% and another 19.85 of respondents from NTA indicated the internet applications as identified by AIT respondents were also adopted for use for NTA's IPTV.

Furthermore, 59.4%, 19.85 and 20.8% of respondents from NTA identified Wirecast Pro, TV-U system and U-Stream as internet applications used for live streaming of events while 43.1%, 27.8% and 29.2% of respondents in AIT indicated that U-Stream alongside TV-U stream, and Wirecast Pro were the major internet tools used for streaming over the internet. Another very dynamic application available to broadcasting stations which is also being used by both NTA and AIT is the Voice over the Internet Protocol applications – VOIP. These tools namely Adobe Soundbooth, Skype, Facebook, Video call and Yahoo Messenger video chat were

acknowledged by 31.7%, 29.7%, 22.8% and 15.8% of the respondents from NTA while 30.6%, 26.4% 20.8% and 22.2% did also acknowledge the usability of the VOIP tools in AIT.

This internet tools identified by this study as innovative tools that are being used in television news broadcast is further supported by the findings of Kaul (2013), Agba (2007), and Erdal (2007) where they all agreed that the adoption of these tools have completely revolutionized news gathering capacities and capacities of most modern television broadcast.

Research Question 2: What is the extent of Internet Tools Usage in Newsgathering and Transmission in AIT and NTA?

The dynamism which broadcast news contents are now being developed and transmitted has equally proved the way for the growing dependence on the internet platform as another way in which real time broadcast could be achieved. The adoption of the internet broadcast applications transcend both the online and offline broadcasting. In this regard, viewers can view streaming of programmes where there is no terrestrial or satellite coverage live on the internet view recorded version online anytime anywhere from the station's websites.

Being a new innovation that was only adopted by NTA in 2015 and by AIT in 2014, these two stations have equally moved up the frequency of the usage of the internet platforms as the way of generating additional news contents, source and broadcast especially through the featuring of reporters and interviewees stand up's and actualities from distant locations where the broadcast cameraman could not be deployed on time. The need to also fully become complaint with the global broadcast digitization demands that makes media convergence of broadcast technologies alongside internet platform more realistic has been viewed on the factor that motivated broadcast television stations and organizations to further adopt and make use of the opportunities provided by the internet platform, content development and transmission.

The level to which this is being used regularly invariably go a long way in determining the extent of usage. From table 4.3, 40.6% and 33.7% respondents from NTA while 34.7 and 47.2% respondents from AIT indicated that the two stations made use of IPTV platform from the transmission and broadcasting of news content on their online sites respectively. This findings here further support the fact that IPTV has become formidable for broadcast contents transmission over the internet although with a new term which is webcasting (Rodman, 2009; Baran, 2004; Green, 2010). Further analysis again revealed that another 40.6% and 23.8% respondents from NTA and 41.7% and 33.3% respondent from AIT confirmed that the applications that allows for Voice over the Internet Protocol-VOIP processes in news content gathering, development and transmission were often as well as always used by the two stations as part of complementary news source in their respective broadcast.

Similarly, 57.4% respondents from NTA and 44.4% from AIT stations also indicated the use of the internet platform for live streaming of broadcast online. The findings presented in Table 4.3 greatly shows that internet platform were being significantly used for broadcast by both the NTA and AIT and this is supported by the views of Smith and Davis (2008), Shiao (2012); Schulzrine et al (2003) and Sparrow (2007) that these present the broadcast media with such dynamic ways of developing news content and needing viewers real time whether online or offline as well as make the cycle of communication not only complete but more responsive, interactive and effective.

Research Question 3: How Effective are the Internet Tools in Newsgathering and Transmission in AIT and NTA?

The Internet platform for television newsgathering and transmission has today become one of the preferred platform being used by most modern mega broadcast stations as discussed

earlier here. The reason for this, is connected with the speed, resilience and scalability of switch broadband wave as well as the reliability and dependability of the platform as the best option for video and audio transport to news hubs or television stations. Another area which the internet platform has had more significant impact has been in the convergence of the media – newspapers, audio (podcast) and broadcast (webcast) in a manner in which news development and transmission are synergized for the optimal benefit of the viewer or audience as the case may be.

Consequently, the adoption of the internet platform in whatever stage it might be today in any broadcast media is seen as a veritable way of erasing passivity and encouraging more interactivity, feedback and inclusiveness. One significant application that has greatly aided in the delivery of this aspect in today's broadcast is the Voice over the Internet Protocol application which by, and large, are mostly found in the domain of social media – Skype, Facebook, twitter, yahoo messenger and so on. This has enhanced the need to news source or interviewee without necessarily bringing them to the news hub or station, dispatching a DSNG for video uplink etc.

The station adopting these application only needs to acknowledge or attribute the source of the application being used in getting and transmitting the feed or signal as observed by Cantoni et al (2006). In carrying out this study, this aspect of impact was also investigated by the researcher in order to know the significant contribution of the varied internet platforms on the two stations internet television transmission. From the analysis of result presented in Table 4.5, 30.7% and 24.8% of respondents from NTA as well as 43.1% and 26.4% respondents from AIT affirmed that the adoption of the tools so far in its Internet Television broadcast is very effective and effective.

Similarly, 32.7% and 29.7% respondents from NTA as well as 45.8% and 27.8% respondents in Table 4.4 from AIT appraised the use of the Voice over the Internet Protocol component of Internet Television broadcast as very effective and effective respectively. Finally from the table also, 42.6% and 25.7% of respondents from NTA affirmed the ability of the station to live stream event via the internet platform are effective and very effective while 41.7% and 36.1% of respondents from AIT affirmed the significant effectiveness of live streaming of events via the online platform in like manner. The interviewee responses also corroborated the significant contribution of the Internet television tool in this regard.

These findings here is in line with the study carried out by Holmes (2002), Asif et al (2012), Ajagbe (2010), and Musvibe (2012) where they all submitted that the internet platform is an effective way of carrying out modern day television news gathering, content development and transmission. They also agreed that it has the capacity and capability to significantly render broadcast activities more effective.

Research Question 4: What are the Challenges Faced by AIT and NTA in the adoption of Internet Tools in their newsgathering and transmission?

Internet technologies being adopted and used for television broadcast is making newsgathering production more efficient, faster and cost-effective. Reporters through this process do not necessarily need to be everywhere to source for news items and actualities. The unique attribute of interactivity, immediacy, real time processing of files alongside multimedia capabilities of internet ancillary media or application like the android, window and smart phones, smart palm tops and laptops are all forcing significant evolution that is shifting and expanding journalistic culture beyond the threshold of traditional journalism. Although, internet platform being adopted have not obliterate traditional journalistic practices, it does present it with a series

of challenges of which the common has been the credibility of online sources, objectivity and ethical considerations.

With the adoption of the internet platform also, journalists tend to grapple with the growing dynamism of tools and applications that hitherto requires the building of skill to apply and use them effectively. Here, 40.35 and 31.9% of respondents from NTA as well as 37.6% and 22.8% from AIT agreed that this is a significant challenge facing internet television in the stations as shown in table 4.6. The adoption of the internet platform also would further expand the concept of broadcast to include datacasting, webcasting, podcasting, narrowcasting and multicasting. All these terms requires broadcast equipment supply and system upgrade where they exist already, effective telecommunication infrastructure and internet backbone and where there is none, funding becomes cost intensive, this has been an area of great challenge in Nigeria.

The aspect of funding as an area of challenge was confirmed by 54.5% and 23.8% of respondents from NTA as well as 41.7% and 20.8% respondents from AIT significantly agreed that poor of funding and system interruption and transmission signal seizures have been traced to the problem of efficient energy supply. The optimization of the internet as a channel for television broadcast is possible in a climate where stable energy is supplied and conserved for usage and to keep batteries running 24 hours through the day and the week. Poor energy supply in this case electricity has been a Herculean task and resolving it nationally is seen as the proverbial “Head Carmel passing through the eye of a needle, literally meaning impossible due to the lack of political will as well as sabotage from those already benefiting from the importation of power generating sets and equipment.

The inability of the state to make adequate power supply which broadcast television shifting to internet television platform depends on to be online real time according to 58.4% and 27.7% respondents from NTA as well as 41.7% and 38.9% of respondents from AIT is a challenge that they all significantly agreed militates against the effectiveness of the platform in television production, newsgathering and transmission in Nigeria. The findings of these challenges as discussed in this research was supported by researchers such as Onyejelem, Akpeh and Uduma (2015), Umom, Oloyade, Ayaegbu and Sowemimo-cooker (2014), and Ikpe and Olise (2010) where they all observed these challenges as discussed. They further submit that lack of expertise in IT skills, poor funding, poor energy supply as well as telecommunication infrastructure backbone limits efficient and effective utilization.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the concluding part of the research on "An Assessment of the Adoption of Internet Tools by AIT and NTA Network Service." The chapter presented the summary of the research, and findings, conclusion of the research and its implication on diffusion of innovation and technological determinism theories being the theoretical perspectives used. Finally, the research would make some recommendations drawn largely from the findings of the data and information gotten from the instrument used.

5.2 Summary of the Study

With the growth of the Nigerian broadcast industry vis-à-vis its popularity, widest reach across Africa and the rest of the world comes with a mixed reaction and blessing. The study understands that technology and application such as the Internet Protocol Television-IPTV and the Voice over the Internet Protocol-VoIP are today adding up to the quality and speed of newsgathering and transmission globally. However, this aspect of news technologies are still being cautiously adopted by Nigerian broadcast television stations lately.

The study was mixed method survey research design that sought to quantitatively and qualitatively gather data and information from 184 respondents divided among AIT and NTA that is 110 for NTA and 74 for AIT respectively using a structured questionnaire mostly in Likert scale format. In-depth interviews with key informants from AIT and NTA was also conducted. From the analysis of the data and information from the in-depth interviews, the study was able to find that:

1. The following Internet Technologies like IPTV Probe, Mware, Netup TV, U-Stream, and Skype for webcasting, streaming and voice over the internet for newsgathering and transmission via the online platforms for both AIT and NTA as Table 4.2.2
2. These Internet Protocol Television tools and application were significantly often being used by AIT and NTA as part of the newsgathering and transmission function in order to reach a more wider audience and viewers through their various online platforms and apps as shown in Table 4.2.3
3. The effectiveness of the adoption of Internet Protocol Television-IPTV in the two television stations namely AIT and NTA was considered significantly good as shown in Table 4.2.5 and this means that there is room for improvement.
4. There exist some level of challenges like poor broadband services and IT skills of reporters, paucity of funding and erratic nature of power supply being faced in the adoption of the IPTV as an additional process of newsgathering and transmission which negatively affects the effective utilization of these Internet platforms as presented in Table 4.2.6.

5.3 Conclusion

The use of internet in newsrooms across the globe and here in Nigeria especially with television stations like AIT, NTA, Channels, Silverbird e.t.c is fast becoming a common practice. With most stations now having their applications downloaded from google, apple and window stores to their mobile phones, desktops and laptops, newsgathering process especially the eye witness and amateur video content sources have increased the richness and reach of news sources to news stories and events as they develop. Furthermore, the adoption of Internet Protocol

Television–IPTV for broadcasting which in this case is termed webcasting and Voice Over the Internet Protocol platform for news reporters and interviewee sources reporting and being interviewed live from the field of event has equally opened up a new vista for newsgathering and transmission capacity and capability of Nigerian broadcast television stations and thus placed stations like AIT and NTA within the fourth stage of broadcast innovation adoption. These means that AIT and NTA were only able to adopt this new process in television broadcast after it has been adopted by majority of leading global broadcast media like CNN, BBC and Aljazeera.

The internet platforms being adopted plays a vital role in today's newsgathering, content development, production and transmission on news items and events to the public especially through the online platform which the Internet provides. Besides the opportunities provided by the use of Information and Communication Technologies-ICT's to modern journalists who are now multitasked, that is combining the roles of news camera men, writing, editing, design, transmission, distribution and production, the Internet Platform becomes the frontier for the convergence of media technologies which completes the cycle of message communication through interactivity, immediacy of feedback and reportage, more eye witness accounts and real time delivery of news content anytime anywhere.

5.5 Recommendations

Based on the findings of this study, the discussion and conclusion, the following recommendations were made:

1. Internet Protocol Television-IPTV is now the emerging phenomenon in newsgathering and transmission that has now made the news information, dissemination and broadcast

more ubiquitous. The adoption of this platform into the newsgathering and broadcast processes by Nigerian public and private broadcast television station is seen as a welcome development. However in the adoption stage, there are evident challenges of underutilization of this process in the Nigerian Television Authority-NTA largely due to poor broadband services, Internet Infrastructure as well as low level information and communication technological skills of reporters. Based on this, it is pertinent for the NTA Network need to get better broadband facilities and infrastructure as well as employ, train and retrain media workers with new multitasking skills relevant to modern day newsgathering and transmission practices.

2. The present age of newsgathering and transmission is one that has seen most globally inclined media houses having interactive newsrooms and studios especially during newscast. The interactive nature of newsrooms are further impacted by the deployment and usage of certain Internet Protocol Television platforms such as the Voice over the Internet Protocol-VoIP platform. This VoIP's like Skype and Google+ to mention a few not only provide for the immediacy of reach to news sources but also make interview and needed actualities on topical discourse most timely. In this regard, both AIT and NTA television stations need to increase the frequency of adoption and usage of this platform in newsgathering and television transmission. This would not only save time but reduce the cost of transporting Outside Broadcast vans for news coverage and production and the risk involved in travelling longer distance to meet interviewees.
3. The adoption of the IPTV platforms in newsgathering and transmission would not be a success or complete without truly making broadcasters of news and event interactive. Programmes that would lead to this as found in other globally inclined media like

Aljazeera, BBC, CNN, Channels and TVC News should be developed. Here the stations' would not only increase the level of viewers participation, feedback and interactions by adopting this platform but should make it part of their daily newscast as well as develop independent segment that would fully utilize the platform in order to improve and sustain the Internet platform.

4. The adoption of the Internet Platform for television newsgathering and transmission is being faced with the problem of fluctuating electricity power supply. The owners of these television stations should adequately invest in the provision of cutting edge Internet infrastructures and applications as well as to ensure that these systems are powered with either solar powered batteries as a backup power source to address the problem of the erratic nature of power supply as using diesel power generating sets would not be cost effective.

5.6 Contribution to Knowledge

This research entitled 'An Assessment of the Adoption of Internet Tools by African Independent Television-AIT and Nigerian Television Authority-NTA Network Service has been able to establish that:

i. Nigerian broadcast media especially the television stations are now adopting convergence media technologies enabled by the Internet Protocol in newsgathering and production as well as broadcast activities.

ii. There is a fairly effective usage of convergence media technologies both NTA and AIT thereby subscribing their adoption rate or level to laggard stage of the diffusion of innovation theory by Everest Rogers.

iii. Finally, the study was able to present empirical research and findings on the use of Internet Protocols by both NTA and AIT which supported by other research reviewed.

5.6 Suggestion for Future Research

This research was carried out on AIT and NTA which are both publicly and privately owned television stations in Nigeria. A further comparative research on the adoption and usage of the Internet Protocol Television in private stations like Channels and TVC News in order to understand the dimension of its applications in their newsgathering and transmission capacities and capabilities is hereby suggested for further and future research.

REFERENCES

Adamu, L. S. (2011). *The Role of Convergence Journalism in News Production* in Biakolo, E., Tam-George, A., Tsaaior, J.T., and Aina, A. (Eds.) *Journalism and News Media Technologies in Africa*. Lagos: School of Media and Communication, Pan-African University.

Adegbilero-Iwari, I., and Ikenwe, J. I. (2004). New Media in Old Media: The Nigeria Case. Retrieved from http://www.ifla.org/files/assets/newspapers/SLC/2014_ifla_slc_adegbilero-iwari_ikenwe_-_new_media_in_old_media.pdf

Adegoju, A. (2011). *Strengthening African Language Pedagogy via the Nigerian Television Authority*," Itupale Online Journal of African Studies 3 Retrieved from http://www.cambridgetoafrica.or/resources/Adegoju_2011.pdf accessed on 28/02/2012

Adigwe, I. (2012). The Impact of Information and Communication Technology (ICT) on News Processing, Reporting and Dissemination on Broadcast Stations in Lagos, *Nigeria. Library Philosophy and Practice* (e-journal), 861.

Agba, P. C. (2001). *Electronic Reporting: Heart of the New Communication Age*. Enugu: Snaap Press Ltd.

Agbenson, V. (2012). *Broadcasting in Nigeria in the Digital Age*. Retrieved from http://www.digicastmagagine.com

Ajagbe, A.O. (2010). *Video over Internet: Analysis Using Sip, RTP/RTCP Protocols*. Netherland: Faculty of Electrical Engineering, Mathematics and Computer Science: Delft University of Technology.

Akinfeleye, R. S. (2011). *Essentials of Journalism: An Introductory Text*. Lagos: Malthouse Press. 58 -59.

Akuezuilo, O.E. & Agu, N. (2003). *Research & Statistics in Education & Social Sciences*. Awka: Nuel Anka Centi Publishers & Academic Press Ltd.

Aririguzoh S. A. (2006). Electronic News Gathering: Impact, Implications and Challenges in Television News Reporting," International journal of Communication, *An Interdisciplinary Journal of Communication Studies University of Nigeria, Nsukka 4:158-171.*

Arjona, A. (2005). *Internet Protocol Datacasting: Transparent Interactivity Using Different Communication Channels*. Helsinki: Helsinki University of Technology, Department of Computer Science and Engineering.

Asemah, E. S. (2011). *Mass Media in Contemporary Society*. Jos: Jos University Press.

Asif, M., Farid, Z., Lal, M., Qayyum, J., and Gul, F. (2012). Internet protocol Television's (IPTV): Key Broadcast Building Blocks. *International Journal of Computer Science* 9(1): 402-410.

Banda, F., Mudhai, O. F., and Tettey, W. J. (2009). *New Media and Democracy in Africa – A Critical Interjection*. Retrieved from http://www.gsdrc.org/go/display&type=Document&id=3766

Baran, S. J. (2004). *Introduction to Mass Communication: Media Literacy and Culture*. 3rd ed. Boston: McGraw-Hill 300-301.

Belch, G. E. & Belch, M. A. (2001). *Advertising and Promotion: An Integrated Marketing Communication Perspective*. 5th ed. Boston; McGraw-Hill. 495-519.

Berry, R. (2006). *Will the iPod Kill the Radio Star? Profiling Podcasting as Radio*. Convergence: the International Journal of Research into New Media Technologies 12 (2): 143–162.

Biag, S. (2003). *Media Impact: An Introduction to Mass Media*. Canada: Thomson Wadsworth

Bradley, G. (2005). The Convergence Theory on Information and Communication Technology (ICT) and the Psychosocial Life Environment – The Connected Home. In G. Salvendy, (Ed.). Proceedings of the HCI International 2005 conference, 22–27 July 2005, Las Vegas, Mahwah: Lawrence Erlbaum Associates.

Bradley, G. (2006). Social and Community Informatics - Humans on the Net. London: RoutledgeCambridge Encyclopaedia (2000).*The Cambridge Encyclopaedia*. Cambridge: Cambridge University Press.

Cantoni, L., and Tardini, S. (2006). *Internet*. Abingdon, Oxon: Routledge.

Castells, M. (2004). Galáxia Internet, Lisbon: Calouste Gulbenkian Foundation

Chandler, D. (2000). *Technological or Media Determinism*. Retrieved from www.aber.ac.uk/media/Documents/tecdet/tdet02.html.

Channel News, (2014). Channels Television Information. Retrieved from http://www.channelstv.com/

Cox, M. (2000). *The Development of Computer Assisted Reporting*. Coral Gables: University of Miami.

Cumming, N. M. (2008). The Uses and Gratifications of Communication in Virtual Spaces: Media Depictions of Second Life, 2002-2008. Oregon: School of Journalism and Communication College of the University of Oregon.

Davis, R. S. (2005*). Designing a Useful Likert Scale to Measure Average Group Response*. Retrieved from**http:**//statistika21.files.wordpress.com/2013/03/6-**useful-likert-scale**.pdf

Deuze, M. (2005). What is Journalism? Professional Identity and Ideology of Journalists. Journalism, 6: 442

Deuze, M. (2006). Participation, Remediation, Bricolage: Considering Principal Components of A Digital Culture. *The Information Society*, 22(2), 63-75.

Domingo, D. (2005). Four Dimensions of Journalistic Convergence: A Preliminary Approach to Current Media Trends at Spain. Retrieved from http://dadun.unav.edu/bitstream/10171/5114/1/Four_dimensions_of_journalistic_convergence.pdf

Dominick, J.R. (2009). *Dynamics of Mass Communication; Media in the digital age*. Boston, USA: McGraw Hill.

Dumlao, R. and S. Duke (2003). The Web and E-mail in Science Communication. *Science Communication* 24(3): 283-308.

Enahoro, A. B. (2009). The role of stakeholders in promoting safe internet environment among youths *in Journal of Communication and Media Research*. Abraka, Delta State: *Rapid Research & Communications* 1 (2):48-60.

Erdal, I. J. (2007). Researching Media Convergence and Crossmedia News Production: *Mapping the Field* in *Nordicom Review* 28(2):51-61 http://www.*robertoigarza.files.wordpress.com/.../art-researching-media-convergencecross-media-production-erdal-2007.pdf*

Ezeibe, C. C and Nwagwu, E. J (2009). Media Imperialism and Crisis of Development. *International Journal of Communication*, 10:65-6.

Farooq, U. (2013). *What is Census Method of Data Collection: Advantages and Disadvantages*? Retrieved from http://www.studylecturenotes.com/social-research-methodology/what-is-census-method-of-data-collection-advantages-disadvantages

Garrison, B. (2004). Newspaper Journalists Use E-mail to Gather News. *Newspaper Research Journal* 25(2): 58-69.

Gaur, A. S., & Gaur, S. S. (2009). *Statistical Methods for Practice & Research: A Guide to Data Analysis Using SPSS. 2nd edition*. Los Angeles: Response Books from Sage.

Gil, P. (2013).*Internet for beginners: what-is-the internet*. Retrieved from http://netforbeginners.about.com/od/i/f/What-Is-The-Internet.htm

Grant, A. E., Meadoms, J. H. (eds) (2006). Communication Technology Update 10th edition. Amsterdam: Elsevier Focal Press.

Green, L. (2010). *The Internet: An Introduction to New Media*. Oxford: Berg Publishers.

Harvard Graduate of Multimedia Education (2009). *Podcast Production*. President and Fellows of Harvard College. Retrieved from http://isites.harvard.edu/icb/icb.do?keyword=k1967&pageid=icb.page23750.

Hertoghs, Y., Kernen, T., and Simlo, S (2009). *IP Networks for Broadcaster Applications*. San Jose: Cisco Systems.

Holliman, R. M., B. Trench, et al. (2002). *Science in the News: A Cross-cultural Study of Newspapers in Five European Countries*. Cape Town, South Africa: PCST Conference.

Holmes, T.A. (2008). *Television Broadcasters' Adoption of Digital Multicast and Ancillary Services: An Analysis of the Primary Core, supporting and Environment Drivers*. Florida: University of Florida (Master of Arts in Mass Communication).

Ibemesi, D. (2007). The Relevance of the New Information Technologies to the 21st Century broadcasting in Nigeria in Intern. *Journal of Comm.: an interdisciplinary journal of communication studies* (7):254-255.

Ifeduba, E. (2009). Use and Citation of Internet Sources in Nigerian Research and Scholarly papers, in Journal of Communication & media Research. Abraka, Delta State: *Rapid Research & Communications.* 1 (2):71-80.

Ikpe, E. H., and Olise, F. P. (The Era of New Media Technologies and the Challenges of Media Relations Practice in Nigeria. Kamla-Raj, Journal of Communication, 1(2): 59-68.

Jacobsen, E. (2010). *Investigating the Limitations of Video Stream Scheduling In the Internet*. Oslo: University of Oslo, Department of Informatics.

Jagboro, K. O. (2003). *A Study of Internet Usage in Nigerian Universities: A Case-Study of Obafemi Awolowo University, Ile-Ife, Nigeria*. Ile-Ife: Obafemi Awolowo University Press.

Jenkins, H. (2004). The Cultural Logics of Media Convergence. *International Journal of Cultural Studies*, 7(1), 33-43.

Kaka, M. D. S. (2014). *The Changing Trend in the Role of Women in the Broadcast Media: A Study of NTA, Abuja and AIT*. Abuja. Zaria: Department of Mass Communication, Faculty of Social Science, Ahmadu Bello University.

Kansas, D., & Gitlin, T. (1999). What's the rush? *Media Studies Journal*, 13(2), 72-76.

Katz, E., Blumler, J., and Gurevitch, M. (1974). Utilization of Mass Communication by the Individual, in J. Blumler and E. Katz (eds), *The Uses of Mass Communications: Current Perspectives on Gratifications Research*, Beverly Hills andLondon: Sage.

Kaul, V. (2013). Journalism in the Age of Digital Technology, *Online Journal of Communication and Media Technologies*, 3(1):125-143 January.

Kothari, C. R. (2004). *Research Methodology and Techniques*. New Delhi, India: New Age International (P) limited, Publishers.

Lavrakas, P. J. (2012). *Encyclopedia of Survey Research Methods*. Retrieved from www.*hbanaszak.mjr.uw.edu.pl/TempTxt/RasslerRubin_Imputation.pdf*

Lin, C. (2003). An Interactive Communication Technology Adoption Model. Thousand Oaks, CA: Sage

Livingstone, S. (1999). New Media, New Audiences? *New Media and Society*. 1(1), 59-66.

Loosen, W. (2002). The Second-Level Digital Divide of the Web and Its Impact on Journalism. 7 (8). Retrieved from http://www.firstmonday.dk/issues/issue7_8/loosen/index.html

Maier, S. R. (2000). Digital Diffusion in Newsrooms: The Uneven Advance of Computer-Assisted Reporting. *Newspaper Research Journal*, 21(2): 95-109.

Mathew, J., Ogedebe, P. M., & F. N. Abaya (2013). Internet Usage among Broadcast Media Practitioners in Nigeria. *New Media and Mass Communication Journal*, 17:42-48.

McBride, K. (2006). The problem with citizen journalism. *Poynter Online*. Retrieved from http://poynter.org/column.asp?id=67&aid=97418.

Mcluhan, M. (1962). *The Gutenberg Galaxy: The Making of Typograhic Man*. Toronto: University of Toronto Press.

McQuail, D. (2005). *Mass Communication Theory* 5th ed. London: Sage Publications. pp. 558

Merriam Webster (2012). *"Podcast - Definition and More from the Free Merriam-Webster Dictionary"*. Retrieved from http://www.merriam-webster.com/dictionary/podcast

Middleberg, D., & Ross, S. S (2000). *Seventh annual Middleberg/Ross Survey of Media in the Wired World*. New York: Middleberg Euro RSCG.

Muciiano, C. & Kenned, B. (2002). *Html and Thml: The Definitive Guide*. California: O' Really.

Musvibe, R. (2012). *A Customizable, Incentive Driven Video on Demand Framework: For Low-Cost IPTV Services*. Grahamstown: Rhodes University (Master of Science in Computer Science).

Nigerian Television Authority-(NTA), (2014). Watch NTA live on the Internet. Retrieved from http://www.nta.ng/live/

O'Reilly, T. (2005). What Is Web 2.0. Design Patterns and Business Models for the Next Generation of Software". *O'Reilly Media*. http://oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html

Oduche, A. A. (2013). *Readership Base for the Nigeria Online News Sites* in Oyebanjo, B. C. (Ed.), *New Media in Nigeria.* Lagos: Joja Educational Foundation.

Ogbe, S. J. (2008).*The Impact of Broadcast Technologies in Newsgathering and Transmission: A Case Study of NTA, Kaduna Network Centre.* Zaria: Department of Mass Communication, Ahmadu Bello University (Unpublished Undergraduate Thesis).

Olorede, J., and Oyewole, A. (2013). Level of Internet Compliance and Usage in The Newsrooms of Broadcast Media in Nigeria, in *New Media and Mass Communication*, 9 www.iiste.org

Organisation for Economic Co-operation and Development-OECD (2012). *The Evolution of News and the Internet*. Directorate for Science, Technology and Industry Committee for Information, Computer and Communications Policy.

Osteopathic Postdoctoral Training Institution-OPTI, (2003). The Future of the Media In The Face Of the Impact of New Technologies. Madrid: OPTI Foundation, EOI Foundation.

Panna, K. (2006). *Mass Media Research.* Mumbai, India: Himalaya Publishing House.

Paulussen, S. (2004). Online News Production in Flanders: How Flemish Online Journalists Perceive and Explore the Internet's Potential, In *Journal of Computer-Mediated Communication.* 9:

Pisharody, A. (2013). *The Future of Television: Will Broadcast and Cable Television Networks Survive the Emergence of Online Streaming?* New York: New York University.

Qayyum, D., Ralwan, S. Zubair, R., Sattar, A., Lal, M., Hammeed, S., Azim, R., & Malook, A. (2011). Overview and Analysis of Internet Protocol Television. *International Journal of Multidisciplinary Sciences and Engineering* 2(9): 14-17.

Quinn, S. (2004). An Intersection of Ideals: Journalism, Profits, Technology and Convergence', *Convergence. The International Journal of Research into New Media and Technologies,* 10 (4):109-124.

Quinn, S., Lamble, S. (2008). *Online Newsgathering: Research and Reporting for Journalism*: Elservier Focal Press.

Radojico, V., Bakmaz, B., & Markovic, G. (2011). Diffusion of Internet Protocol Television (IPTV) Service: An Empirical Study of in the Serbian Market. African Journal of Business Management, 5(17):7224-7231.

Randall, C. (2005). *Online Journalism Reporting: Writing and editing for News Media.* New York: Wadsworth/Thomson Learning.

Rodman, G. (2009). *In a Changing World-history Industry Controversy (3rd ed)*. New York: McGraw Hill.

Rogers, E. M. (1986). *Diffusion of Innovations*, 3rd edition. New York: The Free Press.

Rosales, R. G. (2006). The Element of Online Journalism. *iUniverse* March 14th 6:1059.

Ruggiero, T. E. (2000). Uses and Gratifications Theory in the 21st Century. *Mass Communication &Society* Winter, 3(1): 3-37.

Salaverría, R. (2003). Convergence of the Media. Chasqui. Latin American Journal of Communication, 81: 32-39.

Sambrook, R. (1999). *Newsgathering and future technology*. Retrieved from https://tech.ebu.ch/docs/techreview/trev_281-sambrook.pdf

Schulzrinne, H., Casner, S., Frederick, R., and V. Jacobson, (2003). *RTP: A Transport Protocol for Real-Time Applications*, IETF, RFC 3550. Retrieved from http://tools.ietf.org/html/rfc3550

Shiao, D (2012). Webcasting 101: Planning and Executing High Quality Webcasts. Retrieved from http://web.inxpo.com/casting-calls/bid/112104/Webcasting-101-Planning-and-Executing-High-Quality-Webcasts

Singh, R., & Raja, S. (2010). Convergence in Information and Communication Technology: Strategic and Regulatory Considerations. Washington, D.C.: The International Bank for Reconstruction and Development /The World Bank.

Smith, S., and D. Davis, (2008). The Use of Radio Broadcast, Internet, and Podcasting in A Family Life Education Program, *Journal of Extension April 46(2).*Retrieved from http://www.joe.org/joe/2008april/iw1.php

Sparrow, A. (2007). *Film and Television Distribution and the Internet: A Legal Guide for the Media Industry*. Burlington, USA**:** Ashgate Publishing Company.

Straubhaar, J., & Larose, R. (2004). *Media Now: Understanding Media, Culture and technology (4th edition).* Belmont: Wadsworth/Thomson Learning.

Talabi, F.O. (2011). The Internet and Journalism Practices in Nigeria. *Global Journal of Human Social Science*. 11(10): 15-20.

Tewksbury, D. (2005). The Seeds of Audience Fragmentation: Specialization in the Use of Online News Sites. *Journal of Broadcasting and Electronic Media*, 49(3), 332-348.

The Editors Weblog (2006). Citizen Journalism vs Professional Journalism. *The Editors Weblog Analysis*. Retrieved from http://www.editorsweblog.org/analysis/2006/04/citizen_journalism_vs_professional_journ.php

Trumbo, C. W., & Sprecker, K. J. (2001). Use of E-mail and the Web by Science Writers. *Science Communication* 22(4): 347-378.

Umom, O.O., Ajaegbu, C., & Oloyede, D.B. (2014). The Prospect of Internet Technology in News Production: A study of Voice of Niger and Nigerian Television Authority. *Global Journal of Arts Humanities and Social Sciences* 2(1):55-66, March.

Uwakwe, O. (2007). Analysis of the use of new media and access to information in Nigeria. In Oko *Journal of Communication and Information Science. A biannual journal of Information Technology. Federal Polytechnic, Oko, Anambra State, Nigeria*. 1(2):59-71.

Veseling, B. (2000). Flexibility the Key in the Multi-media World". *FANFA Bulletin*, November, p.20-23.

Vivian, J. (2002). *The Media of Mass Communication*. 6th ed. Boston: McGraw-Hill pp.222-223 Wadsworth/Thomson Learning.

Wimmer, R.D., and Dominick, J.R. (2011). *Mass Media Research: An Introduction*. 9th Edition. Wadsworth Publishing Company: Belmont.

APPENDICES

Appendix I

DEPARTMENT OF MASS COMMUNICATION
FACULTY OF SOCIAL SCIENCES
AHMADU BELLO UNIVERSITY, ZARIA-NIGERIA

QUESTIONNAIRE

Dear Respondent,

I am a researcher working on **A COMPARATIVE STUDY OF THE ADOPTION OF INTERNET TOOLS BY AIT AND NTA NETWORK SERVICE** as part of the requirement for the Awards of Master of Science (M.Sc.) in Mass Communication. The researcher therefore attaches a high level of confidentiality to you. Your response is solely meant for research purpose only. Please respond objectively.

Thank you

GIMBA MAFO DORIS
M.Sc/Soc-Sci/42309/2012-2013

Instruction: Please tick one [√] appropriately.

Section A: Bio Data of Respondents

1. As at your last birthday, you were between
   a. 21-30 years old [ ]
   b. 31-40 years old [ ]
   c. 41-50 years old [ ]
   d. 51-60 years old [ ]
   e. 61 years and Above [ ]
2. Sex of Respondents
   a. Male [ ]

b. Female [ ]

3. Marital Status

   a. Single [ ]

   b. Married [ ]

   c. Divorced [ ]

   d. Widow [ ]

   e. Widower [ ]

4. Academic Qualification

   a. Primary [ ]

   b. Secondary [ ]

   c. Tertiary [ ]

5. Occupational Status

   a. Computer Engineer [ ]

   b. News Director [ ]

   c. Senior Reporter [ ]

   d. Others specify [ ]

6. How long has the station been operating Internet Protocol Television (IPTV) Broadcasting?

   a. Less than 1 year [ ]

   b. 2-3 years [ ]

   c. 4-5 years [ ]

   d. 6 years and Above [ ]

Section B: Internet Tools used in Newsgathering and Transmission in Modern Television Broadcasting by AIT and NTA Network Service.

1. What are the Internet Tools used in your station's Internet Protocol Television (IPTV) broadcast?
   (a) _____
   (b) _____
   (c) _____
   (d) _____
2. What are the Multimedia Tools used in online editing of contents in your Newsgathering process?
   (a) _____
   (b) _____
   (c) _____
   (d) _____
3. What are the Tools used for your Voice over the Internet Protocol (VoIP)?
   (a) _____
   (b) _____
   (c) _____
   (d) _____
4. What are the tools used in your station's Live Streaming of events over the Internet?
   (a) _____
   (b) _____
   (c) _____
   (d) _____
5. What are the Technologies used in your Station's Webcasting?
   (a) _____
   (b) _____
   (c) _____
   (d) _____
6. What are the Technologies used by your Reporters in Podcasting?
   (a) _____
   (b) _____
   (c) _____

(d) _____

Section C: Extent of Internet Tools usage in Newsgathering and Transmission in Modern Television Broadcasting by AIT and NTA.

Instruction: Please indicate by ticking your agreement with the following statement on the Extent of Internet usage in Newsgathering and Transmission in Modern Television Broadcasting by AIT and NTA Network Service.

Keys:

Ne-Never = 1
Se-Seldom = 2
So-Sometimes = 3
Often-Of = 4
A-Always = 5

S/no	Statement	Ne	Se	So	Of	A
		1	2	3	4	5
1.	The station uses the Internet Protocol Television (IPTV) platform for broadcasting over the internet.					
2.	The station uses Real-time technologies in its Voice over the Internet Protocol (VoIP) process of newsgathering and interviews.					
3.	The station uses Real-time Technologies for Live Streaming of events over the Internet.					

Rate the Functionality of your Stations' usage of the following Internet Tools/Platforms:

E-Excellent = 5
G-Good = 4
F-Fair = 3
P-Poor = 2
VP-Very poor = 1

S/no	Statement	VP	P	F	G	E
		1	2	3	4	5
1.	The Internet Protocol Television (IPTV) platform for Broadcasting over the Internet.					
2.	The Voice over the Internet Protocol (VoIP) process of Newsgathering and Interviews.					
3.	The station uses Real-time Technologies for Live Streaming of events over the Internet.					

Section D: Effectiveness of the Internet tools usage in Newsgathering and Transmission in Modern Television Broadcasting by AIT and NTA.

Instruction: Please indicate by ticking your agreement with the following statement on the effect of the use of Internet in Newsgathering and Transmission in Modern Television Broadcasting by AIT and NTA Network Service.

Keys:

Very Ineffective-VI = 1
Ineffective-I = 2
Fairly effective-FI = 3
Effective-E = 4
Very effective-VE = 5

S/no	Statement	VI	I	FI	E	VE
		1	2	3	4	5
1.	The Internet Protocol Television (IPTV) platform for Broadcasting over the Internet.					
2.	Voice over the Internet Protocol (VoIP) process of Newsgathering and Interviews.					
3.	Live Streaming of events over the Internet.					

Section E: The challenges faced by AIT and NTA in the adoption of internet tools in newsgathering and transmission in modern television broadcasting.

Instruction: Please indicate your agreement with the following statement on the Challenges faced by AIT and NTA in the adoption of Internet tools in Modern Television Broadcasting.

Keys:

UD-Undecided = 1
SD-Strongly disagree = 2
D-Disagree = 3
A-Agree = 4
SA-Strongly Agree = 5

S/no	Statement	UD	SD	D	A	SA
		1	2	3	4	5
1.	The inability to have a secured server with high broadband capacity hinders effective utilization of the Internet Protocol (IP) for broadcasting over the Internet.					
2.	Low level of funding for the acquisition of more Advanced Technologies also affects the effective utilization of the IP for broadcasting over the Internet.					
3.	The poor nature of power supply and the intermittent interruption in transmission during					

	changeover also affects the effective utilization of the IP for broadcasting over the Internet.					

Appendix II

IN-DEPTH INTERVIEW GUIDE

Dear Interviewee,

You will be interviewed on the topic "**A COMPARATIVE STUDY OF THE ADOPTION OF INTERNET TOOLS BY AIT AND NTA NETWORK SERVICE**. The purpose of this interview is to elucidate explicit response on the above subject in line with the goals of the research. The information you will provide will be used to report the qualitative primary findings on the objective of the study. You can chose to remain anonymous or give your demographic details.

Interview Questions

1. What are the Internet tools used in news gathering and transmission in modern television broadcasting by your station?
2. What is the extent of Internet usage in news gathering and transmission in modern television broadcasting by your station?
3. What is the impact of Internet usage in news gathering and transmission in modern television broadcasting by your station?
4. What are the challenges faced by broadcast media practitioners in the adoption of internet tools in modern television broadcasting by your station?
5. What are the major hardware, software and engineering tools used in the adoption of the IPTV platforms?

Appendix III

COMPUTIONAL CALCULATION ON THE RELIABILITY OF THE INSTRUMENT

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.712	100