TECHNOLOGY AND NEWS PRODUCTION:

THE CASE OF GHANA TELEVISION AND TV3 LIMITED

BY

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DECLARATION

I declare that except for references to other people's work that have been duly acknowledged, this thesis is the result of my research conducted at the Department of Theatre Arts, University of Ghana, Legon. I take sole responsibility for any shortcomings that the work may have.

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ABSTRACT

The invention of new media technologies is always a catalyst for change in the broadcast industry. This change facilitates and enhances the creation, processing, sharing and dissemination of information in the industry. With the introduction of new technologies such as the internet, satellite cable system and fibre optics in broadcasting, media practice across national boundaries has taken a turn for the better. The advancement in technology has radically changed and transformed the delivery of news footage to the newsroom in terms of immediacy and timeliness of news for broadcast. This study employs a comparative and phenomenological qualitative research methods with participatory observation and in-depth interview of respondents of two television stations in Ghana - GTV and TV3 to ascertain how they are responding to the advantages of this era of digital technology using diffusion of innovation theory. The study concludes that whereas TV3 is adopting quite a considerable number of new media technologies to ensure news footage is transmitted fast to the news room, GTV, even though is also using some of the new technology, sometimes, experience delays in their news delivery as a result of human factors. More so, lack of logistics like inadequate funds, infrastructure, unstable internet connectivity, consistent training and ability to manage large-sized data are some of the challenges that confronts both television stations thereby limiting their effective and efficient use of the new technology.

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LIST OF ABBREVIATIONS

BBC – British Broadcasting Corporation

CNN – Cable News Network

DAT – Digital Audiotapes

DW TV – Deutsche Welle Television

FTP – File Transfer Protocol

GBC – Ghana Broadcasting Corporation

GFIC – Ghana Film Industry Corporation

GH ONE TV – Ghana One Television

GTV – Ghana Television

GSM PHONES – Global System for Mobile Communications phones

HD – High Definition

HRT-'Hrvatska Radiotelevizija' (Croatian Public Broadcaster)

ICT – Information Communication Technology

IT – Information Technology

METRO TV – Metropolitan Television

MTV – Music Television

NAFTI – National Film and Television Institute

NCA – National Communication Authority

OB VAN – Outside broadcasting van

TV3 – TV3 Network Ghana Limited

UTV –United-Television

VHS –Video Home Systems

DEFINITION OF TERMS

ARD- German TV: Consortium of public broadcasters in Germany, is a joint organization of Germany's regional public-service broadcasters**.**

3G: Stands for third generation, is the third generation of wireless mobile telecommunications technology. This is based on a set of standards used for mobile devices and mobile telecommunications use services and networks that comply with the international mobile telecommunications

4G: The fourth generation of mobile telecommunications technology, succeeding 3g.

MTN: Formerly m-cell is a south Africa-based multinational mobile telecommunications company, operating in many African, European and Asian countries. Its head office is in Johannesburg.

New Media: The internet and the digitization of the traditional media forms such as the newspapers, radio, television and the like.

Broadcast: This is the act of sending out radio and television signals over a distance to a large heterogeneous audience by means of airwaves.

Broadcast Media: This is that electronic medium or channel that uses the airwaves which enables signals and information to be transmitted to a large and diverse audience.

Digital: A system of receiving and sending information as a series of the numbers, numbers one to zero, showing that an electronic signal is there or is not there.

Mobile Reporting: It is the use of a mobile phone as a reporting tool. The user creates text, photo and video that combined and produces a multimedia based report. The content is edited on a mobile device (phone, android tablet, iPad) before being uploaded to the internet via a mobile network or Internet connection.

Social Media: Forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content.

File Transfer Protocol (**FTP**): A standard network protocol used for the transfer of computer files between a client and server on a computer network. It is a way of transferring files between computers. As a noun, FTP is the name for a method of sending files, but also the name of the programm that actually sends the files.

Television (TV): Television is a telecommunication medium used for transmitting moving images in monochrome (black-and-white), or in color, and in two or three dimensions and sound.

XDcam: It is a series of products for digital recording using random access solid-state memory media, introduced by Sony in 2003.

'**Okyeame**': A word in Akan, a language spoken in Ghana, literary means the linguist or spokesperson.

Stringers: They are independent self-employed journalists, they also include freelance camera people who are paid only when their footage is used.

TVUPack or LiveView: Family of portable transmission solutions enables broadcasters to deliver video of live news and events to audiences from any location.

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CHAPTER ONE

INTRODUCTION

1.1 Background and Rationale of the Study

Experiencing and witnessing certain occurrences in my line of work as a freelance broadcaster explains the interest in the role of technology in television news production. In 2008, when the Africa Union held its 48th summit in Accra, Ghana, I was then working as a stringer, among hundreds of media personnel who covered that event. A cameraman from the National Television of Mauritania approached me. He asked for help to upload his video footage to his station server using FTP-(File Transfer Protocol). No television station in Ghana at the time was using such a technology. The questions that baffled me were; is Ghana not a developing country like Mauritania? If so is the case, then how come practitioners there were using a technology which was not known in Ghana to facilitate their news delivery? I have worked as stringer for two major international news networks; Reuters News Agency in the UK and ARD television in Germany. I have been using FTP technology over the years to send video footage to these outfits. Television stations in Ghana during the same period could only send video footage to their newsroom either courier services or through the telecommunication microwave or live telecast with the OB van (Outside Broadcasting Van). That is to say, a common application that was being used by other television networks globally to send video footages to their newsrooms was not used by any of the television stations in Ghana at the time.

If television stations in Ghana want to gain national and international recognition and further compete with others in any part of the world, then digital technology is partly essential to attaining this in their operations. Digital Technology seems to be influencing every field of endeavor in the twenty first century and the impact of technology on television news production is no exception. The advancement in technology has radically changed and transformed the

delivery of news footage to the newsroom making it possible for the immediacy and timeliness of news for broadcast.

This observation has created in me, the need to investigate the role of media after a near decade of my practice, how televisions stations in Ghana are currently making use of the new technology to ensure a more efficient and effective means of delivering news footage to their respective stations for broadcast.

According to Mato Brautović 2009), the role of technological innovations directing changes in news creation processes is the least researched field within media studies. Brautović submits, there is insufficient literature despite the inroads technology is making in the media industry. Therefore technological innovations and the changes with which it brings in the operations of newsroom has necessitated the study in specific areas in news making among television broadcast stations. More so, the uptake of technology within the television industry raises questions about how television stations in Ghana, are leveraging on these opportunities, how it is affecting work culture and how it is translating on work output among others things. These are the concerns this study intends to investigate.

1.1.1 Importance of News

Newsgathering is an important component of news broadcast. As a result, it plays a crucial role in a nation's development through the news it generates. Nations depend on news for their day to day functioning. The forgoing view as Steve Coffman (2002), revealed, is echoed by Thomas Jefferson when he points out that, 'When the people are well informed, they can be trusted with their own government'

When the citizenry is enlightened, the nation progresses and for the people to be able to exercise outright responsibilities and participate critically in the development discourse, they have to be well informed. Through news, the people are informed as to what is happening

within the nation and around the world. News is, thus, powerful and influential in a nation's quest for progress. The gathering and processing of news for the television audience has evolved since its inception.

1.1.2 The Advent of Film used for Newsreels

In the early 1900s, the celluloid film camera was used to cover news worthy events at distant locations and shown in movie theatres as newsreels. The newsreels and news features were usually not longer than 10 minutes with running commentary. This was updated every week. Processing of the celluloid film took time and so audience were only able to watch it in about a week's times after the event took place. The newsreel was all about serious news; Hollywood celebrities, and about foreign countries, sports and feature stories. They were usually aired before the movie was screened in the movie theatres. (Biagi,2012).That was the only means then, that audience could watch visuals of events from other parts of the world.

As affirmed by Norman Medolf & Tom Tanquary (1986), the Celluloid film was the medium used to visually illustrate events or news stories. It started by developing from black and white to color postures films. The 16mm camera was the equipment used to capture the news reel. The 8mm and the Super-8 were then used by home users to capture private events. Then with time, there was a transition from film to a much easy to process format for television.

1.1.3 The Introduction of the Video Camera and Expansion of News channels

Medolf & Tanquary (1986), hints, from the 1970's the video tape cameras gradually replaced the film. Televisions stations switched from film to video to give them an edge over other competing stations. The advantage in the use of the video camera was the processing time; they enabled the news stories to be broadcasted as soon as the tape comes in from the field. The use of video also cut down cost. More stories could be done and more breaking news stories could still be aired.

The desire to watch visuals created the need for the expansion of local television news operations. In the 1970's and 1980's, many local networks merged to become larger corporations. For instance, in 1980, Ted Turner established the cable news network, offering twenty-four-hour (24 hrs.) news cable. CNN increase its viewership by opening overseas bureau around the globe.

1.1.4 The Commercialization of Television

Televisions became more commercially available in the early 1940's, providing a new medium for people to receive news, entertainment and advertisement. The introduction of television brought fulfillment to many because they did not have to visit the theater before they could see what was happening around them.

In the view of Shirley Biagi (2012), the first television newscast was in the 1950's with a short duration of about 10mins. This was extended to about half an hour from the 1960's. The extension in terms of duration continued from 1961 onwards. A period which was termed the Golden Age of Television. By this time television news grew to become major medium through which people could witness major happenings around the world. The airwave was dominated by the three major networks; ABC, CBS and NBC. It was also the period television viewers were disappointed and dissatisfied with the medium because they continuously highlighted violence like the civil rights movements, the Vietnam War among others. Despite the misgivings, television made an impact as it was a means by which significant development were witnessed around the globe. This has been as a result of the evolution of technology which continues to revolutionize the media industry.

Hence, technology has developed over the years. That has made it possible for news to be transmitted almost instantaneously once it happens. It became possible for many developing

countries like Ghana to have access to the new technology and using it to advance the hitherto traditional forms of news delivery that was practiced.

1.1.4.1 Advent of Television in Ghana

In 1965, Ghana Television (GTV), a public service television station was the first station to be established in Ghana under the Ghana Broadcasting Corporation (GBC). According to the GBC 60th anniversary written document, "Ghana's first President, Kwame Nkrumah saw television as the '*Okyeame*' of Ghana's development, a medium to be used largely for educating the people" (GBC, n.d, p.42). '*Okyeame*', in Akan, a language spoken in Ghana, literary means the linguist or spokesperson of a chief a king or any person of their category. Kwame Nkrumah realized that television could be used as a tool for his developmental agenda. The Television service was inaugurated by Nkrumah, and his idea of having the Television service built was for the purpose of education, edification, enjoyment and entertainment of Ghanaians. In his address to parliament in 1963, Nkrumah tabled a proposal to establish the television service and spelt out its mandate as:

> Ghana's Television will be used to supplement our educational programme and to foster a lively interest in the world around us. It will not cater for cheap entertainment nor commercialism. Its paramount objective will be education in the broadest and purest sense. Television must assist in the socialist transformation of Ghana (GBC,1985,p.39).

The premier television in the country was positioned to be a medium through which Ghana could communicate with other nations. Television news could therefore be one of the means by which Ghana could disseminate issues of international interest.

Before the establishment of the state television service at the time, the erstwhile Ghana Film Industry Corporation (GFIC) was already in existence. The colonialists established the Gold

Coast Film Unit in 1948. Its primary role was to be a tool for development, so the film Unit produced mainly newsreels. As stated by Maria Baaz and Mai Palmberg (2001):

The first president of independent Ghana, Dr. Kwame Nkrumah who was in power from 1957–66, was highly aware of the potential role of the mass media in nation building. He took control of an already well established infrastructure of the audio-visual media, but that was not enough. New facilities were built for the Ghana Film Industry Corporation (p. 212).

Kwame Nkrumah ensured that the core mandate of producing newsreels was continued together with the production of documentaries and feature films. Chris Hesse (2017), a personal cameraman of Kwame Nkrumah and one time Managing Director of the erstwhile GFIC revealed that, the newsreels produced by the GFIC were screened in the cinemas, aside that, the Information Service Department also screened them in the rural communities using mobile vans. Hesse also added, the sound tracks of the newsreels were usually muted and replaced with live commentaries in the dialects of the local communities which made them effective in achieving the desired results (Personal Interview).

The procedure of spreading information through the audio-visual medium was to bring it to the level of the ordinary Ghanaian. Until the state television started broadcasting nationwide, the Information Service Department was still using the mobile vans to disseminate information in the form of newsreels and documentaries. Production format and techniques went through several transformations to match with the changing technologies. “Ghana television started the process of changing from black and white to color transmission in 1985 and completed the process in 1986” (GBC, nd). Then in 1997, TV3 Network Company Limited a joint venture between TV3 of Malaysia and local partners in Ghana came into existence. The television station occupied the premises of the then GFIC, after an initial agreement between the government and the Malaysian company to own majority shares of the film corporation.

The liberalization of the airwaves and the migration from analogue to digital transmission made room for the establishment of several television networks today. From the past to the present, the programming content among the Ghanaian television networks usually include health, entertainment, sport, politics, news, and current affairs. Recently, there is also a heavy presence of foreign content in television programming. Some of these include soap operas and movies, sports among others. What also appears to be a trend is the allocation of partial airtime by some local stations to foreign services which includes the subscription to programmes on CNN, BBC, Aljazeera, World Sports, MTV, and DW TV among others. This happens during the late hours of broadcast.

1.1.4.2 Current Trend in News Delivery

According to the National Communication Authority website, the total number of authorized television broadcasting stations in Ghana as at the last quarter of 2016 is ninety-three. A total of fifty-one (51) are on air (NCA, 2016). Twelve of them have been identified as television news channels which are situated in Accra and has regional representatives in parts of the country. These are GTV, Multi TV-Joy News, and First Digital TV, TV3 network limited, Metro Television, Gh One, Net 2 TV, ETV, Atinka TV, UTV, TV Africa and Crystal TV.

Notwithstanding the numbers, and the opportunities for inclusive coverage and production that technology offers, the rural segment of the country still do not find sufficient space in the national news discourse. This observation was noted by Paul.V. Ansah (1985) about two and a half decades ago. He noted that,

> […] Conditions in the rural areas cannot reach the vast majority of the people. But this neglected majority lives with the problems and need no reminders; it is the urban who need to graphically and visually reminded of how the other half lives … their consciences need to be regularly pricked by the potent visual medium of television (p.49).

This observation was made when GTV had monopoly within the television broadcast space. Production equipment was limited, but today there are multiple television stations privately owned and commercially operated. It may also well be that this was the era when there was only a couple of production equipment, so availability was limited. Despite these speculation, it must be noted that the proliferation of production technologies increasingly makes the argument about limitation less important. This being the case, has the impact of the television production technologies reflected in greater inclusiveness or greater attention to rural and marginalized communities issues within the news bulletins of TV stations in Ghana? In other words, are the increasing numbers of television stations and technological advancement making it possible for television stations to extend their coverage of news items to the rural communities? This is a question that the research findings could share light on.

1.2 Statement of Interest

News is often dependent on technology to be meaningful. Therefore, modern technology could be leveraged to enhance news gathering and distribution. The availability of technology affords the media practitioner an opportunity and an easy way to process news for early broadcast. There is value in finding out how Ghanaian television stations are responding to the advantages that the new technologies are offering to enable more efficient, cost effective and timely way of delivering news footage to the television newsroom. This is because, various nations belonging to the International Telecommunication Union including Ghana are preparing for total digital migration. It also calls for the attention and assessment of how prepared television stations are for the technological opportunities and challenges in television news production as they move forward into the future. The interest here is also to understand the application and impact of the new technology on the delivery processes.

Ladi Adamu (2011) in his view, argues,

> […]The market theory of news production suggests that the probability of an event or issue becoming news is directly proportional to the expected consequence of the story and the size of the audience viz-a-viz the media technology in use (p.156)

In essence, the chances of an issue receiving news attention or a population receiving news depends upon its commercial viability and the extent to which technology enables it to be carried to the people. There is a relationship between the story size, the audience size or quality and the media technology that is used. In the light of the current availability of technologies by multiple television stations, what impact are these technologies making to the extent of enabling greater inclusiveness in news coverage? It is therefore necessary to investigate what technologies are being used by television channels in Ghana and what additional tools can be adopted for use to ensure news are available swiftly for broadcast.

1.3 Objectives

For the reasons mentioned above, it is therefore necessary for me to set the following objectives to enable me maintain a focus in my quest to find answers to the research question (s). The research therefore sought to;

a. Investigate what technologies are available for news transmission purpose.
b. Find out what technologies are used for news transmission purposes by GTV and TV3.
c. Find out the impact of technologies on news transmission by the two television stations.
d. Examine the constraints in the use of available technology for news transmission by the two television newsrooms.

1.4 Research Questions

The research, having set itself the objectives as indicated in section 1.3, it is therefore necessary to ask questions that enabled me to achieve the set objectives. Therefore, the following research questions were posed:

a. What technologies are available for transmitting video footages?

b. What are the technologies that are used for transmitting news footage by GTV and TV3?

c. How are these technologies influencing the delivery of news footage to the newsroom by the two selected television stations?

d. What are the constraints in the use of the technology?

1.5 Significance of the Study

Existing technologies in news production when exploited will facilitate easy gathering and delivery of news. This research would explore the various technologies that are used by the television stations and other available technologies that can be adopted for news transmission purposes. Therefore the significance of the study is established in the fact that successful completion of the work could potentially:

a. Contribute empirical evidence about the role these new technologies are playing in current news practices.

b. Provide empirical evidence about the challenges which should guide industry practice for efficiency.

c. Provide a Ghanaian perspective to the available literature on television news production.

1.6 Scope of Study

This study focuses mainly on two major television; GTV and TV3 Company limited because, the two television stations are deploying the highest number of software applications and social media platforms in transmitting news footage to their newsrooms. Another reason that informed why GTV was purposively selected is partly because, it is the premier television in Ghana and would have over the years used various forms of technological innovations. TV3 apart from being one of the most popular in terms of coverage for which reason it was also selected, it also the second oldest television station in Ghana. These television stations were

selected to investigate the impact of technology on news gathering, processing and transmission of news footage to the newsroom. The scope and focus of the research does not concern itself with other aspect of productions like documentaries, television series, commercials, feature films, among others.

1.7 Organization of the Study

The chapter one introduced the subject matter. It covers the background and rationale of the study, the importance of news, the historical development of television, the advent of television in Ghana, current trends in news delivery in the country, the statement of problem, objectives of the study, research questions, significance of study, scope of the study, and organization of the study.

Chapter two reviewed related literature on the historical development of technology and media production. It also looked at experts definition of news, digital technology and news, timeliness of news delivery to the news room, television news, its relevance and the importance of visuals, the trends in technology used in the advanced media industries; new media and mobile reporting, technology and social media, mobile reporting and challenges, proliferation of fake news and the role technological developments have played in the area of news production in West Africa and Ghana in particular. It also examined the theory that is pertinent to the study.

Chapter three provides details of the methodology. It described the various procedures used for the data gathering process and data analysis. The first part of the research design discussed the research approaches adopted for this study, which are the pretest survey and a comparative and phenomenological qualitative research methods of GTV and TV3 broadcast stations. The second part is the sampling process. Then the third part is the data collection process which included both primary and secondary sources. The primary data outlined two procedures used:

in-depth interviews and observations. The secondary data included, already existing material related to the topic that were consulted, such as magazines, newspapers, articles, books, among others.

Chapter four presents the data analysis and discussion of results. It covers the news gathering process GTV and TV3 Network Limited use, the technologies for news production purposes, the impact of technologies, and the constraints in the use of technologies in the two broadcast stations and suggestions on measures to improve on television news gathering and transmission processes. Under the analysis on the technologies for news production purposes, the following are discussed; the changes digital technology has brought in the newsroom, the digital software applications in gathering and transmitting television news footage, affordability and ease of usage of software applications, the available software used for uploading files, the appropriate ones for sending video files, social media and their significance in news gathering and transmission processes. On the impact of technologies, the packaging and distributing of video footage are discussed. Furthermore, with reference to the constraints in the use of technologies; the issue of inadequate funding, the challenges with transmission of video data, unreliability of internet services, availability of logistics, the lack of consistent training and the issue of copyright with the usage of certain software applications form the core of the discussion.

Chapter five is the summary, conclusion and recommendations for the study. The summary of the findings enumerated are the technologies available for news production purposes in the two stations, the impact of the technology used, constraints in the use of available technology and the measures to overcome the challenges in television news gathering and transmission in the two Ghanaian television stations studied.

CHAPTER TWO

REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews related literature in order to identify and address points of scholarly synergy and difference in how technology has influenced news production. It discusses proponents definition of news, the historical developments in technology and media production, digital technology and news, timeliness of news, television news, its relevance and the importance of visuals, the trends in technology used in the advanced media industries; new media and mobile reporting, technology and social media, mobile reporting and challenges, proliferation of fake news and the role technological developments have played in the area of news production in West Africa and Ghana in particular. It also examines the theory that is pertinent to the study. I am synthetizing arguments within these topics to help provide inside on how technology has impacted on television news production processes.

2.1.1 Definition of News According to Experts

There are different definitions of news as postulated by scholars and media experts. KM Shrivastava (1991), suggests that there is a symbolic meaning of news when he states that "the four letters of the word of news have been described as representing the four directions-North, East, West and South" (p.2). News can therefore come from anywhere and travel to anywhere at any time. Christ Frost (2010), views news as information we were unaware of until we read, heard or saw in the media. News ought to be fresh and not stale in order attract attention. There must also be a certain amount of appeal for the news event to attract the audience interest.

There has always been a competition among news channels concerning who is the first to break the news. News ought to be current, and in the view of Shrivastava (1991), "the immediacy of news in today's world makes respect matter in news delivery and broadcast" (p.5). The significance and the attractiveness of an event make it newsworthy either locally or internationally. When an event is significant or fascinating then it becomes news. Shrivastava (1991) and George Rodman (2012), are also of the view that a news story ought to be interesting and at the same time important to audiences or viewers.

Morris as cited by Andrew Boyd (2001), "News is the immediate, the important, and the things that have impact on our lives" (p.18). Apart from news being instant and important it should have a direct bearing on the individual. It was of interest to find out from news editors from the selected Ghanaian television stations their own description of news and if their perception of it has any influence in the way they cover news items.

2.1.2 News Editors' Definition of News

According to the findings from the data I collected, respondents had different opinions regarding news adding that it was too broad to have a specific definition. They, however, indicated that the definition was dependent on the angle from which it was looked at. From the responses gathered from the interviewees, the word news comes from the word 'new', implying a message that is fresh, appealing and capable of conveying a sense of urgency for an appropriate feedback that can actually transform lives or get a reaction that can recover or remedy a situation. In addition, in the view of some respondents, the act of promoting a company, its products or projecting the corporate image of that institution could also be news. In that case, where a corporate organization request for a coverage of their event for the purpose of advertising or rebranding, then that can also be classified as news. This is a clear indication that the definition of news has moved from what was learnt in school to a more

complicated way of doing things as specified by a news producer of TV3, Eward Kwabi (2017), in a personal interview.

A television News channel can be described as a network that regularly air timely and interesting news that is relevant and in some cases accompanied by visuals that inform, educate and entertain its viewers.

2.1.3 Historical Developments in Technology and Media Production

In Ghana, traditional modes of information dissemination relied on word of mouth in which a town crier or in the local Akan context for example, the "*Okyeame*" conveyed the chief's announcement using the gong-gong. According to Kwasi Ansu-Kyeremeh (2005), "the *Okyeame* or spokesperson, gong gong and the Atumpan or talking drum have been adopted for various listeners by which messages are forwarded or distributed" (p.244). These orthodox forms of mediation were confronted by challenges of distance, reach or impact and feedback. Advances in technology enabled the amplification of those voices as well as conveying the message across geographical spans. In providing insight on message transmission using advanced technology in the contemporary world, scholarship has mapped out the historical development of technology and technologically mediated news.

With the inception of early technological devices and applications, message from source to receiver, for instance, has been transmitted through mass media such as newspapers, books, magazines, radio, and television. It was not until the 1400 BC that the first book was written, a medium through which information was spread. According to Stanley Baran (2009), books were reproduced for the masses, after the invention of the printing press by Gutenberg in 1456. Then, the oldest mass medium, newspapers were printed in 1620. The first post news sheet appeared in the 100B.C. in Rome as political tracts and pamphlets, that is why, newspapers are considered the oldest mass medium. It was in 1920s that the first electronic medium, the radio

emerged. Baran (2009), further states, the technological advancement in telegraph, telephone and wireless in the 20th century paved the way for the invention of television. News at this point could be transmitted from one person or a group of persons through a technologically mediated device to a large audience.

According to Sajid Umair (2016), it is now possible for news stories, either photos or videos to be transmitted straight from the field, making the news production process faster and more efficient. As Brautovic (2009) concurs, television news production process is becoming accelerated and more effective, which is characteristic of all other media companies worldwide accepting similar work methods. Indeed, it is easier and faster for all forms of news to be broadcasted as a result of technological innovation. The different media forms are using the available technology to enhance their efficiency. Also, new media has over the years brought about a lot of transformation in the media landscape. In the light of the above, it will be of interest to examine if the available technologies in Ghana are in any way influencing easy broadcast of news in the selected television stations under study.

2.1.4 Digital Technology and News

As revealed by Joseph Dominick (2011), digital technology can be described as an innovation that converts information like sound, text, graphics, video or any form of data into language computers can interpret, that are usually denoted as zeroes and ones (binary codes). In other words, it is the changing of an analogue (something comparable to the original) data into a digitized (computer codes or language) format. An information which is digitized can easily be replicated or transported at a very low cost. In terms of distribution, digital technology converts analogue data to a digital or binary data which is distributed as a code to be converted to the receiving equipment without loss of quality.

Furthermore, digital technology enables immense amounts of information to be compressed on small storage devices that can be easily preserved and transported.

In light of the above, Ifeanyi Adigwe (2012), notes that, the use of Information Technology in the broadcast industry has not only enhanced but has also improved news delivery as timely as possible. So it is much easier for news channels to broadcast news at the earliest possible time. The new media has made it possible for news to be broadcasted or narrowcast fast and through different forms of media. Dominick (2011), argues that with the advent of social media, information about events is provided almost instantly after the event has occurred or as the event occurs. Hence, the 'Shelf Life': 'for news to be newsworthy is' shorter than before. And so, newscast has to be instant or else loses its value of news. In the midst of these technological developments, it will be of interest to investigate how the selected television stations under study are leveraging on available tools to keep pace with changing practices and conditions in news production.

2.1.5 News and its Relevance

News has to affect its audience, so the greater the number of people it affects the livelier it becomes news. According to Rodman (2012), "there are many ways to make information interesting, and a professional with good nose for news will find a peg, or angle, to make important, timely information interesting to the audience" (p. 314). News become important because of the consequence it will have on the audience, thus, it must be useful to them. News must grab the audience's attention. The nature and location of an event also determines whether an event or incident is news or not. News as already suggested is a recent important and interesting event, appealing enough to grab the attention of its targeted audience and should impact on them directly or indirectly. For a television station news segment to be able to stimulate the interests of diverse groupings and expectations of its viewers, the station must have wide coverage in its approach to news coverage.

In view of the foregoing, this study finds it important to investigate how the selected television stations in Accra have an all-inclusive coverage of news items in order to satisfy

their viewers. Of equal interest to the study was looking at the question, are news items centralized in only Accra or special attention is also given to coverage of news in the various regions of Ghana? Closely linked to the preceding views is finding out the type of technologies deployed in transmitting news footage from the regions to the newsroom in Accra.

2.1.6 Timeliness of News

What makes news is its timeliness in broadcasting it, according to Dominick (2011), news is perishable and news that has lost its freshness is not interesting. The need to broadcast news speedily makes it much more challenging for television news channels because processing television news involves filming, editing and transmission of the visual, especially from a distant location to the newsroom of the television station. Rena Bivens (2015), defines the immediacy of news in terms of the live coverage of events, the audience feedback or participatory audience and the speedy delivery of news events. For Bivens (2015), live immediacy, is when the reporter or journalist is at the scene and reports in real time as the event unfolds. This form of reporting is usually done during breaking news. Bivens (2015), further states that feedback immediacy is when the audience has the opportunity to interact with the station as the news is transmitted.

Lastly, on the speed immediacy, Bivens (2015), defines it as the use of software, satellite or social media technologies to package and deliver news footage speedily after the event has happened. Hence, the "time lag" from the time the event occurs to the time the news is broadcast is of essence. The need for the news to be filmed, edited and transmitted swiftly and quickly gives the news crew the freehand to exhibit their creativity and journalistic skills. They have the freedom to edit and package the story bearing in mind the need for news sense, accuracy, clarity, fairness and objectivity of the story. In Chapter four, I will discuss in greater detail the various methods that are used by the selected stations to transport news footage from

place of event to the newsroom, whether they are live immediacy, feedback immediacy, or speedy immediacy.

2.1.7 Medium Specificity: Television News and the Importance of Visuals

Depending on the type of media, priority is given to certain components in the news production. For instance, a television news may place emphasizes on visuals in telling a story._One important component of news is the actuality apart from the sound bites and narration. Newspapers use photography, and radio uses the ambient sound recorded at the scene. Radio prints the picture of the event to the listeners by voice description, whereas television uses real video footage of the event. In terms of television news, the choice of visuals has to be visually appealing and interesting to attract the viewer's attention. An important or interesting news item without the accompanying appealing visuals may not catch the viewer's attention. As expressed by Boyd (2001), that attractive visuals and interesting actuality breathe life into the coverage of news" (pp.48- 49). The ability to use appropriate visuals to illustrate a story in television news is a necessity. Visuals add to the emotion and authenticity of a television news story. Adams, a pioneer videographer with CNN in the early 1980s, as cited by Cecilia Friend, Don Challenger, and Katherine McAdams (2005), revealed that the best visuals take viewers into the heart of the action by focusing on details-facial expressing, gestures and body language as well as environmental details (p.334).

Visuals help to give details and at the same time help clarify and identify the elements involved in a story. A news story with the appropriate visuals like facial expressions, gestures, among others is able to add more meaning and strength to the story. In the view of Frost (2010), "TV relies heavily on visual approaches to news, and a news bulletin will select stories for their appeal as much as for any other reason" (p.36).

According to Shrivastava (1991) "dry stories (stories without visuals) are like radio news item with newscaster in view" (p.23). A television news story without the appropriate visuals

could as well be presented as a radio news story. A news story without visuals cannot give the audience the full benefits of television news. Lance Bennett (2012), suggests that visuals make a story more real and believable. The use of visuals is the best way to engage the 'senses of your audience'. Bennett (2012), further argues that people learn from television more than all the other news media because, television provides multiple sensory inputs unlike other news media. The audio-visual medium gives words, sounds and sight that enrich our understanding knowing more about an event.

A television station that does not realize the essence of visuals in telling a story might not see the need to deploy the appropriate technology to ensure that news footage is transported from the place of event to the newsroom for re-broadcast. While it is of essence to consider in this study how the selected stations transmit footage to the newsroom, it is useful to understand what some technologically advanced nations use to ensure that news footage are transmitted to the newsroom.

2.1.8 Trends in Technology use in Advanced Media Industries

Technology has revolutionized the operation of the entire media landscape, particularly within western systems. Brautovic's (2009), study on the impact of a computerized system in the Croatian public broadcaster, 'Hrvatska radiotelevizija' (HRT) newsroom revealed that technological innovation has improved on the management and operation of the newsroom and also transformed the 'employee-management relationship'.

Even though there was a form of resistance by journalist when the new technology was introduced in the news making process, the computerized system, according to Brautovic (2009), also created room for the multi-skilled professionals in the newsroom. It is worth noting however that the introduction of the new system did not make provision for the older journalists and editors to train the subordinate journalists, who only saw the end results of their superior's

editorial work. In a sense, the computerized system does not make room for one on one verbal interactions between the experienced and the less experienced for a direct knowledge transfer.

In Brautovic's (2009) study, journalists recommended the need for an around-the-clock support system to ensure that editors, journalists and other news programme personnel receive continuing skilled assistance in system usage, and to offset potential training deficiencies.

In his article, "The Convergence's Fundamental Question," Stephen Quinn (2005) indicates that advancement in technology makes it possible for a media organization to publish in multiple platforms otherwise known as the media convergence. Quinn's (2005) work, supports Brautovic's (2009) findings when he notes that for new technologies in newsrooms to be successful, media organizations need to train journalists to make their transition into using the new technology effectively. He further added that the main challenge is the readiness of journalists to embrace change by availing themselves to acquire multi-media storytelling skills.

According to Quinn (2005), for media organizations to be able to compete favorably for viewership and attract more advertisers, there is the need to ensure they are continuously advanced in technology which creates the room for convergence. While this argument seems logical, it may perhaps pertain to western cultures where the structural factors that support technology are in place. In the context of a developing country such as Ghana, it is worth examining how technology impacts on the news gathering and delivery processes from the field to the newsroom.

In a study of some United States newspapers and the division of labor in the newsroom, Kevin Barnhurst and John Nerone (2015), note that even though journalists envisage the newsroom as the heart of operations, various technologies like the telephone, the fax machine and the computer have reduced the need to situate news production entirely in the newsroom. The study unravels the historical development and explores the impact of the current technology and media convergence among other changes in the newsroom operations.

According to Barnhurst and Nerone (2015), of all aspects of journalism that can be shaped and reshaped by new technologies, news reporting is of special interest as the first link in the news chain and the core of journalistic activity.

Barnhurst and Nerone (2015), further states that in recent times convergence is paving the way for the synergies of all the different media forms. Although the study looked at the impact of technology and media convergence on newspaper reporting, the evidence is useful because newspapers like television are mass media and their advancement in technology has tended to have influence in their content. Since these are linked to the advancement in technology, it will be of interest to examine the ways in which the available technology the two stations use to influence the news content they produce.

2.1.8.1 The New Media and Mobile Reporting

According to Terry Flew (2005),

> The new media is a digital media which encompasses all forms of media content that combine and integrate data, text, sound and images of all kinds; stored in digital formats and are increasingly distributed through networks such as those base upon broadband fibre-optic cables, satellites, and microwave transmission systems (p. 2).

The emergence of the internet and the digitization of the traditional media such as the newspapers, radio, television and the like, is known as the new media. It is this new media that has brought about innovations such as mobile reporting in news reportage. Umair (2016), defines mobile reporting as, "the process of generating reports using mobile phone cameras and digital cameras" (p.1). This form of reporting is mostly done by amateurs and in some cases citizen journalists who are either trained or untrained. It is therefore common for any incident or event to be captured live and uploaded on social media like Twitter, Facebook, and You tube.

In the current dispensation, the internet has become the main source of information rather than the traditional media that used to have monopoly. For media houses to remain relevant in

the midst of these technological advancements, they need to catch up with the changing technological trends. Available literature demonstrates that Western media organizations are harnessing these technological opportunities in the ways they engage in media work.

According to Umair (2016), a toolkit developed by Reuters in the late 2007 which contains wireless keyboard, smartphone Nokia N95, microphone and solar battery charger was used for live field reporting and published on a website established for their project. The U.S. also deployed mobile journalism kits, commonly referred to as Mojo to give coverage to the Beijing Olympics in 2008. This is an example of how technology has simplified the means of transmitting news footages in developed countries.

There is more information and news circulating in the world than ever before. The digital revolution has improved significantly on news reporting in contemporary times. It is in view of this that this study investigates how the selected networks in Ghana are appropriating similar technology in their transmission of news footage to the newsroom.

2.1.8.2 Technology and Social Media

For media houses in Ghana to remain relevant in the midst of these technological advancements, they need to catch up with the changing technological trends. In their study, *Social Media as Beat,* Marcel Broersma and Todd Graham (2012), explore how Twitter was used as a source of news during the 2010 elections in the U.K and the Netherlands. The study focused on eight British and Dutch newspapers which were selected for analysis. Broersma and Graham (2012) note that news professionals were continuously relying on Twitter as their main source of news while politicians and celebrities among others also used the medium to market themselves. Broersma and Graham (2012), further observed that, Twitter has also become a medium for news organization to broadcast news, market their stories, means of reporting and creating of relationship with news consumers. According to Broersma and Graham (2012), few years ago live coverage of events was the reserve of audiovisual media,

but now it is possible for reporters to do live reporting via Twitter and Facebook. Technology, according to Broersma and Graham (2012), has had a great impact on news reporting by making it more fluid and less observable as information flows inside and outside the newsroom owing to an increasing number of platforms. The study also looked at the influence of technology on the operations of the U.K and the Netherlands media organizations. This study will help provide understanding on how the Ghanaian television stations are tapping into the technological advancement in news production.

2.1.8.3 Mobile Reporting and Challenges

The advancement in technology has come along with its negative impact to news transmission. The portable devices for mobile reporting has become a valuable tool. However, the reliability of sources of news has become a major concern. The use of photo and video sharing sites and blogs and social platform has maximized the unauthenticity of incidents and content. Immediate transmission has increased the competition between professional reporters and amateur eyewitnesses capturing events using their personal devices.

As expressed by William Hachtten and James Scotton (2012), “any event happening in remote and distant areas now becomes global news instantly. In this age of information, communications systems are at the leading edge of social, economic and political change (p.xi)”. Innovation on news transmission has increased as a result of technology. One does not need any form of orientation to be a news producer. In fact, the consumers of news have also become the producers of news. It is difficult to authenticate a source of news and as a matter of fact to determine the objectivity of online news.

In the view of Hachtten and Scotton (2012), there is no sufficient, verified, confirmed, and reliable news for the public consumption. It is not every news and information in the public domain that can be depended upon as genuine and factual.

Could social media pose similar challenges to the news production process in the selected local television networks? This is precisely what this study also sets out to examine, looking at the role of social media in the two major television stations in Ghana.

2.1.8.4 The Proliferation of Fake News

In today's era of technologically mediated news, one pressing challenge found in the literature is fake news. The spread of fake news in the online and print media is becoming rampant both locally and internationally. Dan Merica, (2016), revealed that Hillary Clinton, a former Secretary of States and a flag bearer of the Democrats in the American 2016 elections, called fake news an "epidemic". The shooting in the pizza restaurant in the United States of America by a gunman claiming to be investigating a false story by the Guardian News that Hillary Clinton and John Podesta, her campaign Chief in the U.S. elections were running a child sex ring in the backroom of the restaurant is an example of the menace of fake news. Fake news is deliberate false news spread online as the truth.

According to Kwami Ahiabenu (2017), "in its true form, fake news is completely generated, manipulated and published to look like and feel like credible content with the sole intention of attracting maximum attention for a cause or generate advertising revenue" (p.55). Fake news is twisted, publicized and made to look like it is from a credible source. It is the misrepresentation of facts with the aim to deceive the public. In Ghana, fake news has become common in the social media. It is an undeniable fact that fake news sometimes set the agenda for discussion in the media landscape. Once an online site broadcast a news story other media channels sometimes pick it up without verifying the source or checking on the credibility of the source.

For instance, in the year 2016, there was a fake news story online that the former President, John Agyekum Kuffuor was dead. The story was broadcasted by many online sites.[1]

[1] http://www.vanguardngr.com/2016/11/ghanas-ex-president-kufuor-dead/

The story was, however, later retracted by some of the online sites. Such fake news stories are usually done for financial or political gains. On the one hand, digital technology, the internet has come along with it challenges, especially with social media, and the prevalence of fake news. On the other hand, digital technology is making it possible for television news stories to be delivered and broadcast faster than before. With the availability of the internet, it is much easier for television news footage to be transmitted from distant location to the newsroom. Compared to the situation before internet became very popular for journalistic purposes, television news footage was carried physically from location to the newsroom or through the use of expensive OB van or telecommunication microwaves.

2.1.9 The Role of Developments in Technology on News Production in Ghana and West Africa

In a study on the influence of new media technologies in television broadcasting in Nigeria, Nyekwere Ogedi (2009), acknowledged the role of new technologies in enabling the approach, accuracy, and speed of production and transfer of news particularly in the global west. He sought to find out whether similar experiences were observable in the Nigerian context. The research was focused on television stations situated in the city of Port Harcourt. In the specific case of Nigeria, Ogedi (2009), found no evidence that the new technology was influencing news productions positively. The study adopted the survey research method to elicit answers from the sample respondents in the specified television stations.

Ogedi (2009) notes that,

> Even in the face of technological advancement in other countries and the applications of these new technologies in the broadcast media, the acquisition and use in Nigeria is rather slow. Nigerian broadcasters are yet to catch up with the trend in modern technologies (p.15).

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http://meganews360.com/breaking-news-ex-president-of-ghana-john-agyekum-kufuor-dies-at-78-in-south-africa/
http://pulse.ng/world/john-kufuor-former-president-of-ghana-reported-dead-id5763911.html

For any media organizations to strive and to perform efficiently there is the need for them to adopt the appropriate technology to function. Technology is evolving continuously and the inability to be current in new technologies will render such media setups ineffective. According to Defleur and Dennis (2009) as cited by Ogedi,

> Technology has always been a metaphor for change in media industry. As far back as Gutenberg, it was technology: the movable type that spurred change. Later, fast printing presses, the telegraph, zinc engraving, modern photography, radio, television, fiber optics, and other technologies heralded new developments for media and their audience (p.11).

Similarly, in the study on the impact of Information Communication Technology (ICT) on news processing, reporting and dissemination among broadcast stations in Nigeria, Adigwe (2012) sought to investigate the challenges and limitations in the application of ICT in news processing in Lagos. This study focused mainly on three broadcast stations in Lagos, namely, one Federal, one State-owned and one Private broadcast station. From the findings of Adigwe's (2012) study, the following observations were made as contributing to, a large extent, the drawbacks of the use of ICT in news processing among the three stations in Lagos: Inadequate manpower, news professionals not familiar with the use of the technology in news processing, inconsistent power, maintenance cost, lack of infrastructural development, high cost of acquiring the technology.

This finding concurs with Nwakerendu Ike's (2011) study on *Broadcast Journalism in the Age of Globalization: Prospects and Challenges,* when he alluded that the challenges that the Nigeria media has been confronted with is that most Nigerian graduates are not computer-literates. There is lack of adequate financial resources for media organization to acquire modern technological devices and to train media personnel on the use of these modern devices.

Even though Ghana like Nigeria is a developing country, their broadcast regimes are substantially different so it is not likely that findings in the two countries could be the same. Secondly, the above studies, were done a few years ago and so the technological realities would

have advanced to catch up with what the west is doing. Is it possible that Ghana also lags behind as have been demonstrated in previous studies or might the evidence about technological use and update suggest otherwise?

A more recent study in Ghana examined the possible influence of new technologies on television news gathering, production and delivery. *Charles* Gomez-mensah (2016), employed the case study method and examined, in particular, the experiences and uses of the technology in the state own GTV. The study sought to find out how legislation and funding structure impact on the influence of new technologies in news gathering, production and delivery at the public broadcasting station. The study examined the role of financing and resource constraints in relation to the extent to which the state broadcaster was able to keep pace with the ever-growing technological changes in the industry.

The research used purposive sampling to identify respondents whose particular roles and responsibilities entail the use of technology in the new production processes. Respondents also had worked within the organization for at least eight years. The interviewees included the Director of Television, Channel Manager for GBC 24, three broadcast journalists, a sound operator, video editors, cameramen, Graphics designers, the senior ICT Manager, a technician at the Master Control Room, and the Director of Technical Production.

According to the Gomez-Mensah's (2016) findings, news professionals consider the various technologies introduced as very useful to their individual and collective work output. Besides, the new technologies have made it possible for news professionals to produce more stories within the same timeframe. Gomez-Mensah's (2016) findings also revealed that news professionals who have acquired additional skills in new technologies like the use of personal cameras and smartphones to shoot stories is not a traditional practice in the state television station. The findings also revealed that the state broadcaster has not been able to keep up to pace with the advancement in technology because of lack of adequate funding.

Gomez-Mensah's (2016) study was limited in a number of respects. First, it focused exclusively on the state broadcaster which raises questions about whether private broadcasters were more or less progressive in their use of technology especially within the competitive broadcast regime. The deployment in technology may well provide the competitive advantage over the other. Secondly, the study did not consider across board how the workers in the newsroom generally are adopting to the technology. The research's focus was on workers with experience between eight to twelve years and therefore excluded workers who were outside the brackets. The study could have included people who have just been introduced to the technology or others who have been exposed to different technologies over a long span of period or people with longer service experience.

Thirdly, the research was limited to participants who contribute to news production in the newsroom in Accra but excluded those in the other regions of Ghana who also contribute to news production. Their experiences with technology could be different from those working in Accra. Therefore this study cannot be said to be the total reflection of how technology is affecting news gathering, production and delivery at the state broadcasting station.

Lastly, even though Gomez-Mensah (2016) examined how technology has influenced the operations of the state television station, however, the study mainly focused on technological advancement with the equipment used in news gathering and processing which involves the process of production and post-production in television productions. His study excludes the technology deployed in news footage transmission from the place of the event to the newsroom.

My research goes beyond the newsroom confines that Gomez-Mensah's (2016) study was focused on. I examine the influence of technology on news footage transmission from the place of events to the newsroom to ensure the timelessness and immediacy of news broadcast. This is an important research inquiry given that contemporary news habits rely on live coverage in a twenty-four hour cycle.

Whereas Gomez-Mensah's study focused exclusively on the state broadcaster, this study attempts to do a comparative study between the state broadcaster and a private television station. Gomez-Mensah's (2016) study was also limited to a specific age bracket; this study includes respondents of a wider diversity.

Similar to the Gomez-Mensah's (2016) study, Samuel Benagr (2012), also researched on the impact of technology in film productions. In the study on the links between technology and cinema development in West Africa, Benagr (2012) signaled a number of issues, notably, the challenges in the development of filmmaking in West Africa in the wake of the proliferation of digital video technological tools in the industry. The study looked at the economic, social and political context of the development of film making in Ghana, Burkina- Faso and within the West African Diaspora community in the UK. Benagr (2012), also identified that there is lack of strategic direction to ensure an effective development of the film industry in the region. He observed that the digital technology is offering many people the opportunity to produce more films but there are much more technologies that could be used for film making.

From the review of the above studies, there seems to be consensus that despite the availability of new technologies it has not been used to achieve the desired impact to ensure more efficient and effective deployment of the technology. Could this be in consonance with the situation among the television stations in Ghana in terms of available technology used in transmission of news footage to the newsroom? This study investigates whether the available technology is really making the desired impact in television news footage delivery from the location to the newsroom for broadcast in the two television stations.

Gomez-Mensah's (2016), study which is similar in pursuit to this research study on *How New Technologies are Affecting News Gathering, Production and Delivery, a Case of Ghana Television,* adopted the qualitative method of inquiry. According to Gomez-Mensah (2016), qualitative research methods ensure understanding and explain why a phenomena occur, from the view point of those who take active part in the process (p.26).

As Benagr (2012), indicated, there was no readily available credible literature on film making in the region so he adopted the qualitative method of inquiry which is multi-method in focus. All though his study is on *Cinema and New Technology, the Development of Digital Video Film Making*, the methodologies are useful because cinema like television are mass media formats and their content could be tied to advancement in technology. I am wondering if the conclusion on the study on cinema is only peculiar to cinema or is universal to all mass media.

2.1.10 Television News Production and Equipment

There is a dearth in literature on the evolution of equipment used for television news production in Ghana. There was the need therefore to speak to Ghanaian professionals and academicians in the media on the progression in television equipment and software over the years through to the digital era.

2.1.10.1 Advancement with Camera Equipment

According to Hesse (2017) , the Arriflex 16mm film cameras were used by GBC and GFIC news coverage while the Arriflex 35mm film cameras were used for documentary and feature film productions. The 16mm camera is light in weight and can easily be carried and run with, unlike the 35mm which is heavy, and cannot be carried by one person (Personal interview). GBC television service first started using video cameras, the U-matic ¾ format in 1984 and later the Beta ½ format in 1991 (GBC, nd). GFIC also started using the ¾-inch U-matic tape made of magnetic oxide coating, Super-VHS (Video Home Systems) and the Beta ½ video cameras at the same time.

Working as a cameraman in the then GFIC in the early 1990s I also had the experience of using all the various formats enumerated above. The film or celluloid camera could record only motion pictures without audio. The nagra was used to record the audio separately and the two components were synchronized during post production. The Kinescope was used to record the film programme for later broadcast. The U-matic camera head was linked to the audio recorder

via cable connection. While the cameraman carried the camera, the soundman carried the audio recorder. The Super-VHS, the Beta cameras and their recording devices came as one unit, which also recorded on the magnetic video tape. The Beta cameras had much higher resolution and better picture quality. Then from the early 2003 there was the concurrent use of the mini-DV and later the HD cameras that could record digitized images on tapes. Presently a few television stations still record on the digital mini-DV and HD tapes while majority records on the file format, that is the images are digitized directly into storage devices that stores it as files or folders. Some television stations use small camcorders and some of them use GSM phones or video phones to record and send footage from their locations to their various stations.

2.1.10.2 Advancement with Audio Equipment

There have equally been changes, in terms of microphones, when it comes to recording systems. A personal interview with Doria Danour (2017), a Sound lecturer and Registrar of the National Film and Television Institute (NAFTI), revealed that microphones that have been use over the years have been the cardioids, super cardioids, uni-directional and the omni-direction among others. The type of microphones used will depend on the circumstances under which the soundman is recording the audio.

The introductions of lapel microphones and wireless microphones have been the major boost in technological advancement in audio recording. From the nagra, then was the graduation to DAT (Digital Audiotapes) recorder, this record on digital format. This has been upgraded to recording on either external drive or a small disk. With the video analogue equipment, sound and picture are synchronized during the recording, unlike the celluloid that they were recorded separately.

However, with the introduction of digital technology, audio can still be synchronized directly with the video on camera but the audio can still be recorded separately through an audio mixer unto a storage device at the same time. This can easily be synchronized with the

already recorded audio-visual during post-production using special software. On the digital format, it is much easier to select and play back or delete files which are much more difficult with the nagra. Noise on audio recording is reduced drastically in the digital domain. With the celluloid and analogue video editing, the sound tracks were limited to two.

Danour (2017), reiterates that the digital revolution came along with audio workstations, which have many audio tracks to deal with, from twenty to thirty audio tracks. This makes it easy and flexible for audio mixing and creating of sound effects. The ability to mix several sound sources, like the sound bites, voice overs and ambient has thus improved with television news gathering for broadcast. In the analogue and celluloid era you could only listen to the sound to monitor audio levels but with the digital era, it is now possible to also see the sound waves and make judgment appropriately. There has equally been advancement in technology with the equipment use for post-production.

2.1.10.3 Advancement in Editing Equipment

Charles Nartey (2017), a former editing tutor at NAFTI, in a personal conversation, details, editing systems used in Ghana in the 1960s was the Steinbeck and the Kim film editing systems. Films were edited after processing the film into a positive image. It was then black and white and later color film. Ghana television mainly used the Steinbeck editing machine. The reversal film stock was used and processing was done using the small black and white processing machine and later changed to colour (GBC, n.d).

Nartey (2017), further states, that the analogue video edit systems were introduced in Ghana around the 1980s. The earlier machines included the U-matic and the super-VHS edit system. A normal edit system has two playback machines and a recorder; in some cases a character generator for graphics is attached. The editing involved playing and cutting directly onto the recorder deck. The early 1990s was the introduction of the beta edit system. Unlike the U-matic and the Super-VHS which could be used for straight cutting of images, the beta edit system

came along with it, the ability to create special effects and more enhance graphics (Personal interview). Then the late 1990s was when television stations in Ghana started using non-linear editing systems, where images could be digitized unto computers, and edit using editing software like Avid, Final-cut Pro, Final Pro-x, Vegas, Vegas Pro, Adobe Premier Pro, Media 100, among others. Richard Delali (2017), Head of Television Training at GBC, Ghana Television hints, he used the Steinbeck editing machine during the celluloid era, then U-matic, Beta and the XD cam edit systems during the analogue era and now in the digital era use the Vegas Pro and Adobe Premier (Personal interview).

With the advent of technology, files are copied directly onto the computer or laptop edit system software. Nartey (2017), further states, with the celluloid and analogue video, there was always the possibility of losing your footage because the film or tape could tear or wear out during storage. (Personal interview). Aside of the advantages, technology has come along with its associated challenges.

2.1.10.4 Impact of Technology on news production: views from Academy and Industry.

A number of media experts and academicians agree that technology has made it much easier and faster to gather and process television news production but there are also issues to be concerned about. Digital technology to some extent can guarantee safety of video footage after filming. Whereas with the analogue system there is a possibility of wear and tear of your recorded tape, with the digital format you can create a copy and also have your backups as you edit.

Adjoa Prah (2017), an editing lecturer at NAFTI indicates that when you finish your shoot, all you need to do is back up several times, so that if your machine crashes, you still have the backup. (Personal interview). The digital era has made it possible for footage to be stored in storage devices so that the possibility of losing footage is minimal. Technology has also created room for multitasking but nevertheless there are associated drawbacks, keeping up with

technology. Nartey (2017), explicates, it is now possible for an editor to edit, work on the sound and at the same time create graphics and visual effects at a go (Personal interview). As supported by Prah (2017), the digital era, has made it quicker and easier to edit, and it is possible to undo an action, but with the analogue the edit process is irreversible, so time needed to be taken and so the editing process could be slow (Personal interview). Therefore the digital revolutions have made production much faster than before. It is also possible to edit on location unlike before where footage had to be transported to the studio before editing could be done. John Passah (2017), head of Camera Department at TV3 broadcast station and Danuor (2017), share in the view that downloading of audio and video footage directly onto your computer takes a much shorter time instead of the real time transfer in the case of the analogue (Personal interview). Technology has succeeded in reducing the time period for capturing and editing and therefore the processing time. A number of hours of video can now be uploaded into the computer in a matter of minutes and edited right on time for broadcast. As Passah (2017), puts it, there are situations and times in the news room that some colleagues will come from location almost to the news time, (time news will start), they will be editing, by the time they finish the news, the story is ready (Personal interview). This was not possible in the analogue days. So digital technology has really contributed in terms of time and then saving cost. However, according to Nartey (2017), the digital era has created the problem of space for storage because, higher quality videos like the HDs and 4Ks need more storage space (Personal interview).The digital technology from the views expressed above, has come along with it faster means of gathering and processing news footage but at the same time cost.

2.2 Theoretical Framework

A review of the literature revealed that other studies that have researched on the media and technology have used different theories to explain and support their work. However, similar to earlier studies (Ogedi, 2009; Gomez-Mensah, 2016), this study also adopts the diffusion of

innovation theory as the theoretical framework. This theory contextualized my study which is guided by the objectives of this study, as stated in the introduction. Hence, this study using the theory, diffusion of innovation investigated to what extent technology is adopted among the television stations in Ghana to influence the immediate broadcast of news.

2.2.1 Diffusion of Innovation Theory

According to Everett Rogers (2003), "diffusing is the process in which an innovation is communicated through certain channels over time among the members of a social system" (p.5). There have been a series of technological innovations made by the global society. The quest of society to find less tiring and cumbersome ways to doing things has led them to be innovative. The dissemination of information through the gong-gong beater in early Ghana, has taken a new dimension. The gong-gong which was enviably a channel through which information of urgency was disseminated has partly been pushed aside first by the radio then television and now the internet.

June Kaminski (2013), says, "Diffusion of innovation refers to the process that occurs as people adopt a new idea, product, practice, philosophy, and so on". (p.1). Kaminski (2013) further, added that the "Diffusion of Innovation theory is often regarded as a valuable change model for guiding technological innovation where the innovation itself is modified and presented in ways that meet the needs across all levels of adopters"(p.1). The adopters are the users of the technology across the world. Seeing media software as a product of innovation, the study focused on the ways through which these media innovation be it hardware or software has influenced the ways news is gathered and transmitted in GTV and TV3 television stations.

Rogers (2003) further opined that "diffusion of innovation is special type of communication, in that the messages are concerned with new ideas" (p. 5). The quest to communicate or transmit information in forms that is convenient, timely, and cost effective has led to many

people employing and or creating various applications to aid them achieve this. This, however, has been made easy with the internet.

2.2.2 Diffusion of Innovation Theory and Digital News Production (DNP)

Rogers (2003), also revealed that,

> We often think of technology mainly in terms of hardware. […] but in other cases, a technology may almost entirely be composed of information; examples are a political philosophy such as Marxism, a religious idea such as Christianity, a news event […] (p. 13).

Rogers (2013), further explains that in every form of innovation, there is the hardware component and the software component. He indicated that the, "hard ware component is purchased first so that the software component can be utilized". The equipment of news production has been modified over a period of time and this has affected the process of news production and dissemination. As various cameras, sound microphones and editing suits were invented, appropriate software were equally later developed to enable the various media practitioners do their work with ease. In this digital era of news production, equipment that are user friendly are made to ease the work of the news producer. The accompanying software are later developed to facilitate quick and easy delivery of news. As it exists now, there are a lot of software which enable the news producers, to work with ease, gather and transmit news content at a given period.

Understanding diffusion of innovation is said to have first started in Peru when in the village of Los Molinas, a local health worker, Nelida tried to convince the village on the need to boil contaminated water for domestic use. This was to solve the many diseases that were associated with the use of contaminated water in the village of Los Molinas (Rogers, 2003, pp. 1-2). Nelida, however, failed and this was attributed to the fact that Nelida did not fully understand the culture of the people, the local environment and the individuals who inhabit the village of Los Molinas.

The three elements of diffusion; culture, the local environment and the individual influence how an innovation works and gets accepted. This could be applied in the area of digital news gathering but this time, with a slight variation since the subject of study is entirely not the same in its initial application. One may have to identify the culture of news gathering in Ghana, the local environment through which news is produced and transmitted and finally the individual who is using the technology to produce and transmit the news items for re-broadcast.

2.2.3 An illustration of diffusion with relation to Digital News Production

For the purpose of the study, the culture as indicated here refers to the daily practice of news production within the selected television stations in Ghana. I have considered what has changed in the area of news production over the years within the selected TV stations, however the main focus would be the culture of news gathering; the daily activities involved from the gathering of news to transmission.

The local environment of the digital news content producer may influence and dictate the ways news items are gotten and transmitted. In a local environment where there is less competition for news, news gatherers would be lukewarm in their approach. This may not be the same with other media houses found in areas where competition is high among various channels to deliver the latest news. Aside this the local environment has certain determinants; the existing technology, skilled personnel and both software and hard ware components and facilities that aid in news gathering and delivery. The local situation in TV stations in Ghana may not be the same in Germany, United States of America, Britain, France and China amongst others. Even among the television stations in Ghana, there could be variation in approach to the adoption of technologies in the television news footage transmission as indicated in fig. 1 in the next page.

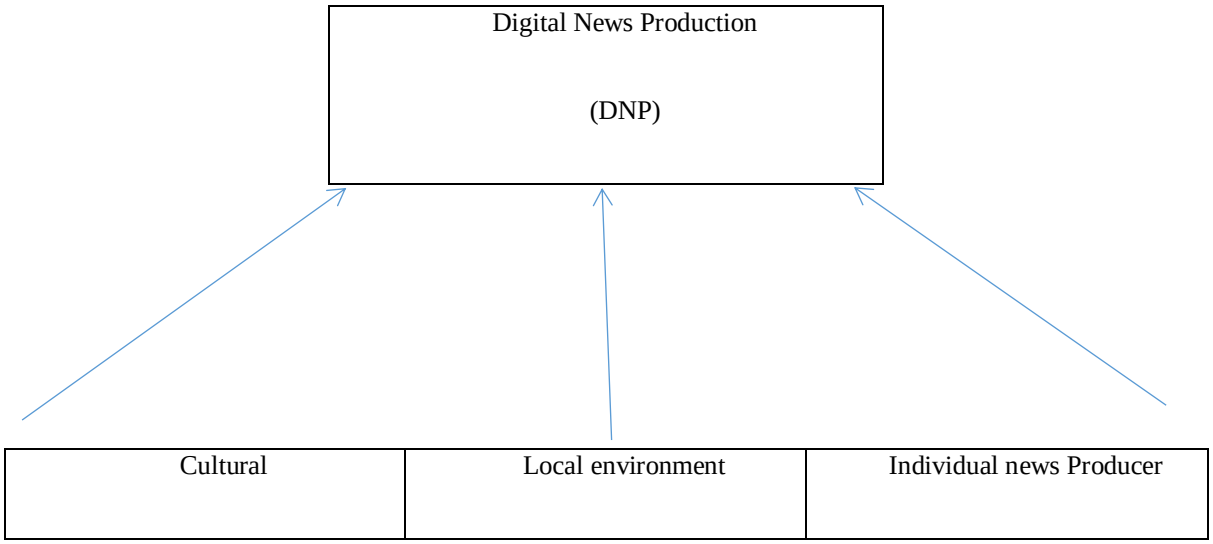

Fig. 1: A diagram illustrating diffusion with relation to digital news production.
Source: Researcher

Rogers (2003), identified five characteristics that are important in the Diffusion of an Innovation theory. In his view, "innovations that are perceived by individuals as having greater relative advantage, compatibility, trial ability and observability and less complexity will be adopted more rapidly than other innovations" (p.16). The individual as a news producer is very important in this regard. The individual ability to adopt to the use of a new innovation contribute significantly to the success of the technology. Also the individual accepting and using the new innovation without reservation is paramount to the effectiveness of it. Hence, using the diffusion of innovation theory I will be able to find out the extent to which the new technology is adopted for the transmission of television news footage from the place of event to the newsroom in the two selected television stations.

In this chapter, relevant literature has been discussed. The study broadly reviewed literature on the historical developments in technology and media production, experts definition of news, digital technology and news, timeliness of news, television news, its relevance and the importance of visuals, the trends in technology used in the advanced media industries; new media and mobile reporting, technology and social media, mobile reporting and challenges,

proliferation of fake news and the role technological developments have played in the area of news production in West Africa and Ghana in particular. The diffusion of innovation theory was also examined, thereby bringing together arguments within these topics to help provide insight on how technology has impacted on television news production processes.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the systematic account of the process of gathering data for the research. In order to gather the required data and to analyse it efficiently, I employed the protocols and procedures that were considered appropriate for qualitative research. Specifically, the chapter explains and justifies the choice of the sampling approach and sampling process, research design, the data collection, data analysis strategies and steps, and ethical considerations.

As indicated in chapter one, the National Communication Authority report of the last quarter of 2016 captures that there are fifty-three television broadcasting stations on air in Ghana. Twelve of these have been identified as television news channels which are situated in Accra and have regional representatives in parts of the country. In view of the study's interest in examining technologies that are used to transfer news footage and audio files to the newsroom from afar, the twelve news transmitting television stations which covers areas outside the capital, Accra affords the opportunity for such evaluation. The distance of the reporters allows for an evaluation of technologies deployed by the respective stations to transmit news footage to the newsroom. Since the TV stations are many, two procedures were adopted to select the sample size: a pre-test survey and purposive sampling were used.

3.1.1 Pretest Survey

Pre-test survey, as the name implies, is a type of survey where a questionnaire is used to test a small sample of respondents before doing a full-scale study. This enables me to select the most appropriate sample for the study based on the responses given. In this case, a close-ended questionnaire was administered to all twelve television news channel. Considering the number

of television news channels, it was appropriate to administer questionnaire in order to collect the data quickly.

A pre-test survey approach was adopted at this stage in order to find out which technology was deployed by each of the television news channels. It was also to find out which of these used the highest number of technological applications in their news footage transmissions. This lead to the selection of two news channels for the research.

A survey research design provides a numerical description of the study population sample (Ebenezer Ashley, Harriet Takyi, Bernard Obeng, 2016). By using the survey design it helped to elicit responses from the sample respondents. The respondents were either news editors or the head of the IT departments of the televisions news channels. It enabled me to know how many software applications and social media platforms the television news channels used. Out of the twelve questionnaires administered, responses from ten stations were received. Based on the preliminary data gathered through the pre-test survey, all ten used a form of technology in transmitting their news footage to the newsroom. Table 1 and graph 1 in the next page illustrate the responses on what type of technology is used in sending news footage from a distant location to the newsroom in Accra.

TELEVISION CHANNEL	TYPE OF SOFTWARE APPLICATION OR SOCIAL MEDIA PLATFORM USE	TOTAL NUMBER OF SOFTWARE APPLICATION OR SOCIAL MEDIA PLATFORM USE
GTV	Backpack or Live-View OB Van FTP We transfer You-tube Dropbox Facebook By road or Air	8
TV3	Backpack or Live-View OB Van FTP We transfer You-tube Dropbox Facebook WhatsApp Google Drive By road or Air	10
ATINKA TV	Backpack or Live-View FTP We transfer, , Dropbox Facebook By road or Air	6
eTV	Backpack or Live-View FTP, Dropbox, WhatsApp. By road or Air	5
U-TV	Backpack or Live-View OB Van FTP Dropbox System Network By road or Air	6
NET 2	Backpack or Live-View, FTP We transfer Dropbox WhatsApp. By road or Air	6
GH ONE TV	Backpack or Live-View FTP We transfer Dropbox WhatsApp By road or Air	6
MULTI TV	Backpack or Live-View FTP We transfer By road or Air Dropbox WhatsApp.	6
METRO TV	Backpack or Live-View, FTP WhatsApp, By road or Air	4
FIRST DIGITAL TV	WhatsApp Backback FTP By road or Air	4

Table 1: Pretest Survey of 10 Television News Channels indicating the various technologies deployed for news transmission.
Source: Researcher

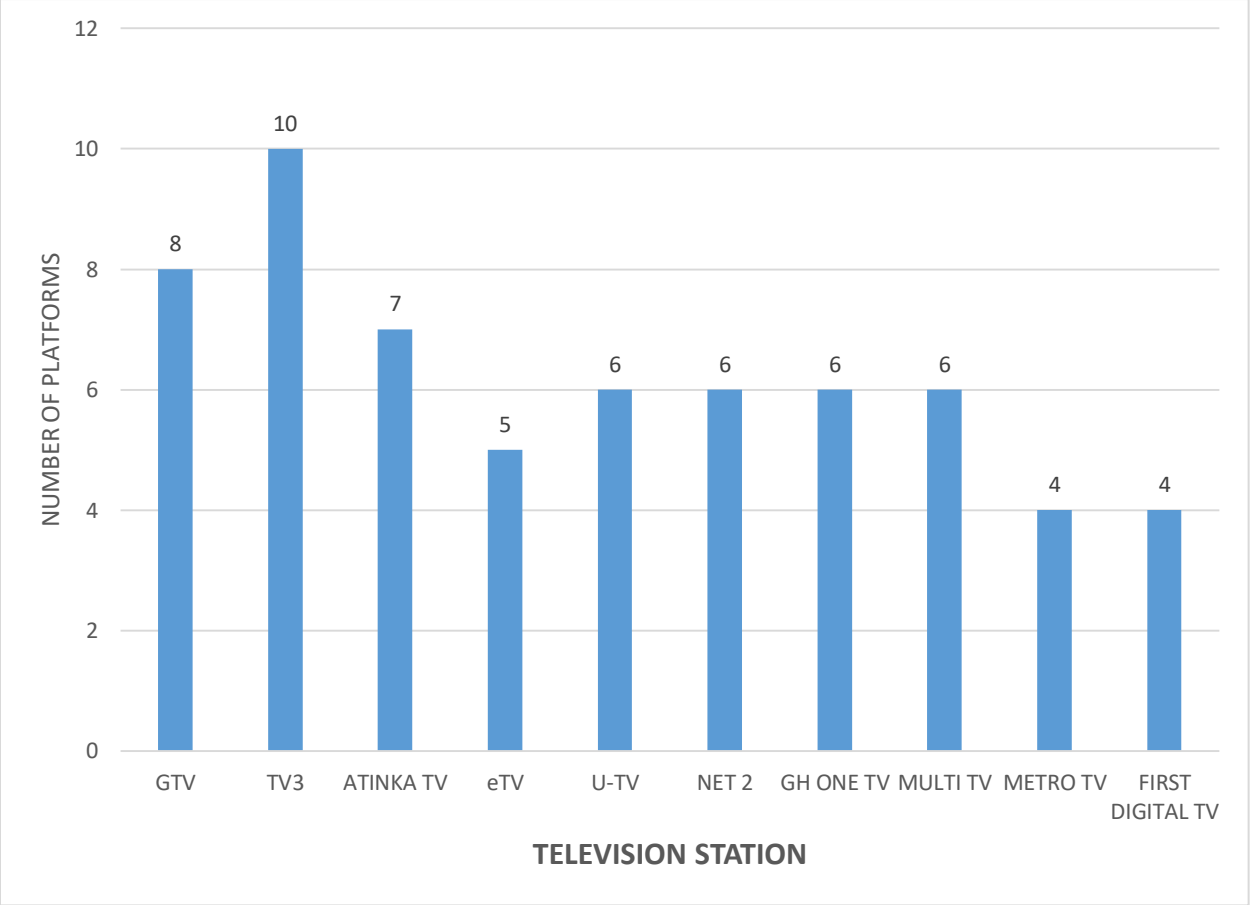

Figure 2: Graphical presentation of Pretest Survey of 10 Television News Channels indicating the various technologies deployed for news transmission.
Source: Researcher

From the above diagram, it appears the extent to which each of the television news channels use technology for news footage transmission varies slightly and they almost use similar technologies. GTV and TV3 Company Limited deploy the highest number of software applications and social media platforms in transmitting news footage to their newsrooms; hence the two stations were purposively selected for a qualitative and comparative study to give a much wider understanding of the technologies that are employed. Since the research is looking also at the trajectory of technical transformation of technology, another reason that informed why GTV was purposively selected is partly because, it is the premier television in Ghana and would have over the years used various forms of technological innovations. TV3 apart from being one of the most popular in terms of coverage for which reason it was also selected, it is

also the second oldest television station in Ghana. It is worth noting that the two networks represent, arguably, the archetypes of the spectrum of public service and private commercial television stations, respectively, in Ghana.

3.1.2 Qualitative Research Method

I adopted the qualitative research was to enable me examine the respondents' experiences in details. By using in-depth interviews and observation I was able to document the details and also gathered an understanding of how the television news transmit news footage to the newsroom in the two television stations. According to Monique Henninh, Inge Hutter, and Ajay Bailey (2011), qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. Hence this research is a phenomenological study of how the two selected broadcast stations adopt the available technology in transmitting news footage to the newsroom.

Even though I had planned to include focus group discussion, participants were generally busy, throughout the study period. It was therefore difficult to secure mutually agreeable schedules for focus group sessions. The focus groups discussion would have enabled me to gain more information more economically than the individual interviews. Accordingly, the interview, rather than group discussions and decisions, provided the responses for the findings of the study.

One advantage with the qualitative research, according to Roger Wimmer and Joseph Dominick (2006), is that the method allows the researcher to view behavior in a natural setting without the artificiality that sometimes surrounds experimental or survey research (p. 46). This aspect of the research gave me much insight and depth of understanding of the subject under investigation. I explored the process involved in news gathering and delivery in the newsrooms. This was done by observing and conducting semi-structured interviews with open-ended

questions. Through this means, I was able to assess the entire chain of processes adopted for news footage production and transmission to the newsroom and their challenges and suggestions from participants. In order to understand issues from the perspectives and experiences of the study respondents and to be able to understand the meaning and interpretations they give to events, I used the interpretive approach.

3.1.2.1 Purposive Sampling

Through the pretest, I had the information for the television stations. Then I used the purposive sampling, as already indicated, in selecting the two stations: GTV and TV3 from the ten television news channels that responded to the questionnaires during the pretest survey. I also chose the purposive sampling design because, it is compliance to studies in which inquirers seek to focus on a small sample and provide an in-depth description (Ashle, Takyi, & Obeng, 2016), in this case, technologies used and how they are used by the two stations.

To collect data for the study, the two broadcast stations were further investigated using qualitative research methods such as the interviews and participant observation to determine how the software applications and social media platforms were frequently used as indicated in the pre-test survey.

3.2 Data Collection

The sources, nature, and collection of data for this study included both primary and secondary as discussed below.

3.2.1 Primary Sources

According to Gill Branston and Roy Stanfford (2006), primary research implies that the researcher is the first agent to collect and collate the material (p.332). The data is collected from the original source, which is having firsthand experience with the data collected. In this

study, gathering of the primary data involved two key processes: in-depth interviews and participant observations.

3.2.2. In-Depth Interviews

The interviews were conducted with presidential correspondents, regional technicians and stringers and show editors of the two broadcast stations and media technology experts. I used a semi-structured interview guide in order to solicit responses from the respondents,[2] and verify and compare information gathered.

I asked the media technology experts questions to gain insight in to what the appropriate technologies available and commonly used for transmitting video footages are. Similarly, I interviewed the show editors in the news rooms to gain an understanding of how the news footages from the various regions and outside the country are received in the newsroom. I also interviewed the presidential correspondents who had travelled with former and current presidents outside the country and in some cases had had to transmit their news footage to their host newsrooms in Accra.

I then engaged in telephone discussions with regional technicians and stringers who contribute to the news productions and are responsible for, or involved in, transporting the news footages to their newsrooms in Accra. Firstly, selection was done in a way as to enable a representation across all the nine regions of Ghana (with the exception of Greater Accra) and secondly to produce sufficient diversity in the destinations of respondents. So one person was interviewed per region with the exception of the Greater Accra Region where all the two stations are situated. The interviews with regional representatives were to gather understanding of the various technologies they used and any peculiar challenges they are confronted with.

[2] Refer to Appendix for the different set of questions that were asked.

For the purpose of responding to the objectives of this study, two media technology experts were interviewed to find out the tools that can be adopted for use to ensure the availability of news for swift broadcast. Twenty-eight (28) participants from both GTV and TV3 were also interviewed to help answer the research questions, focused on technologies used by the two televisions. Most of the respondents were males and in relation to their educational background, majority of those interviewed in Accra were first and second degree holders, whereas, the regional technicians and stringers were mostly below the first degree level. GTV maintain permanent television crews in all ten regions of Ghana, while TV3 also relies on permanent staff in few of the regions and stringers in most of the regions. Also, information was gathered on the position of respondents in their various institutions and from the results, the positions included media technology experts, head of IT departments, show editors, Presidential correspondents, librarians, Regional technicians and stringers of the two television stations. With regards to length of service, 13 out of the 28 respondents had been with their respective media houses for 10-16 years while 12 had been working with their institutions for 5-9 years. That aside, one respondent had been working as a show editor for GTV for 25 years and one other Regional technician has been working for the same station for 40 years. One Regional stringer has also been working for TV3 for barely 3 months.

Moreover, in the chapter four, the above issues are explored one after the other through an analysis of data collected. Following that, I will look at other themes that came up during the interview process which the respondents deemed important.

3.2.3 Participant Observation

Participant observations were done to discover at first-hand, the operations in the newsroom in the two selected broadcast stations. Three days each was spent in the GTV and the TV3 newsrooms to examine and to understand the various means news footages are received. The head of the IT departments of the two stations took the researcher through a tour of the

newsroom and explained the various means through which footages are transmitted and uploaded for broadcast. Short notes were taken and expanded after each day's session in the newsrooms. This formed part of my analysis and interpretation in chapter four.

3.2.4 Secondary Sources

Secondary research implies that someone other than the researcher has collected and organized material and made them available for research usually in the library or archive (Branston & Stanfford, 2006, p. 333). Data from reference books or previously published or unpublished sources usually constitute the database for secondary research. I relied on research done by scholars on the application of technology in major news rooms around the globe. I also relied on magazines, online data and documents in the holdings of different organizations. By this, I was able to gather more knowledge on the available software and applications that are used by players among the international network and the two local networks.

3.3 Data Analysis

The interviews were both manually recorded in notebooks as well as in audio formats with the consent of the interviewees. The transcripts were read through to understand the views of the respondents and how these were situated within the topic of the study. According to Arthur Berger (2000), one approach to analyzing your data is by looking for patterns, classifications, themes and categories in the transcript. From the data, coding was done and the common themes from the transcripts were categorized. I used the cutting and sorting techniques to tease out the major themes and subthemes from the transcribed data. From the data, recurring themes and ideas on what technology the respondents are using in transmitting news footage to the newsroom, impact of the usage of new technology and what constraints they are confronted with were categorized. Themes were then developed from the responses to help in the analysis. In the next page is a table chart of the responses.

	GTV	TV3
TECHNOLOGY USED	Backpack or Live-View OB Van FTP We transfer You-tube Dropbox Facebook By road or by air	Backpack or Live-View OB Van FTP We transfer You-tube Dropbox Facebook WhatsApp Google Drive By road or by air
IMPACT OF DIGITAL TECHNOLOGY IN THE NEWSROOM		
SIMILARITIES	1. Wider reach with the limitless possibilities 2. Tapeless newsroom 3. Centralized computerized system 4. Challenge of digitizing archival footage and storage	
DIFFERENCES	1. Delivery of news slower 2. Personnel slow to adopt to the new technology. 3. Limited options used for news delivery. 4. It is not a common practice to use mobile or tablets phones for news gathering and delivery	1. Delivery of news is faster 2. Personnel adoptable to new technology 3. More options used for news delivery. 4. Use mobile phones or tablets for news gathering and delivery
CONSTRAINTS		
SIMILAR ITIES	1. Inadequate funds 2. Lack of infrastructure 3. Unstable internet connectivity 4. Large size of data which delays transmission: Policy of the station which does not permit regional reporters to edit stories to precise duration for fast delivery. Only the news editor in Accra has editorial discretional powers. 5. Lack of consistent training 6. Logistics 7. Issue of copyright.	
DIFFRENCES	1. Lack of coordination in the newsroom that sometimes result in footage from the regions getting lost. 2. No urgency attached to delivery of news	1. Better coordination in the newsroom. 2. Attached urgency in the news delivery.

Table 2: Coded responses in thematic groupings to aid in analysis of data gathered.

3.4 Ethical clearance

All interviews were recorded with permission from respondents; however, where respondents pleaded anonymity their names were not disclosed in the analysis of the research findings. Again, where respondents raised ethical issues that extended beyond formal consent to the research, they were not included in the findings. In the case where respondents discussed certain sensitive issues that could implicate them, but the researcher found such information useful to the study, identities of respondents were not disclosed in respect for their request of anonymity and to safeguard their confidentiality.

3.5 Chapter Summary

In this chapter, I discussed pre-test a survey, a qualitative analysis procedures that were used and then the primary and secondary data sources that were collected. Under the primary sources, I discussed the in-depth interviews and observation during the data gathering. Then lastly, the ethical issues that pertain to the study were also discussed. The next chapter is the analysis of the coded data as tabulated in table 2 in the previous page.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter provides the results that emanated from the data collected. It presents also, an analysis and discussion of the results concurrently. The study is aimed at investigating technologies used by GTV and TV3 television stations and additional tools that can be adopted for use to ensure the availability of news for swift broadcast. In view of this, the objectives that guided the study is as indicated in the chapter one.

In this chapter, the responses to the questions by the respondents are explored one after the other through an analysis of data collected. Following that, I looked at other themes that came up during the interview process which the respondents deemed important and which are also crucial to the study. The themes discussed in this chapter include: Technology used by GTV and TV3 for news transmission, appropriate software for storage, transmitting of news footage and their affordability, the impact of digital technology in the newsroom, social media significance and their role in news delivery, digital technology with its challenge of storage, work ethics, their reflection on output and the constraints in the use of technologies.

4.2 Technology used by GTV and TV3 for News Transmission

Similar to the argument that technological innovation aids in a faster and efficient transfer of news footage from the field to the newsroom (Umair 2016, Brautovic 2009), technology used by GTV and TV3 for news transmission enables the broadcasters to deliver video of live news and events to audiences from any location. In getting news easily and quickly to the newsroom in Accra technologies mostly used by GTV and TV3 television stations include File villa, Wetransfer, Youtube, Facebook, Drop box and TVUPack, a portable transmission unit which enables broadcasters to deliver video of live news and events to audience from any location

and in some cases OB van using microwave link. The alternative to any of the above is to put the information on a storage device and then given to an operator of transport services to be delivered to the appropriate recipient. However, the team at TV3 is advanced in the technologies it uses which are Google Drive and WhatsApp. Despite this observation, interviews with some media technology experts in Ghana reveal that television stations in Ghana can do more with the number of technologies that they use since there are other alternatives that can be employed in transmitting news footages. Moreover, media technology experts are of the view that there are more available services much more convenient for storing and accessing video footages. From the findings, the most effective ones are the cloud system. Many companies cannot afford getting their own fiber servers because of cost and maintenance therefore the cloud service has come to make the processes better. For the cloud system there is about 15 gigabytes free space for the television station, however, if the network wants more space, they would have to pay a minimum amount of about 5 dollars per month on the average. Beside this, to store videos, one requires up to 5 dollars for about 30gigabytes space for the data, according to the experts. With more applications available for television storage and transmission of video footages, like OneDrive and Google drive, there is the need for television stations to invest in the necessary infrastructure in order to take advantage of these opportunities. As stated by George Arthur (2017), a media technology expert:

> The software is installed onto a PC with a folder created for storage and whenever there is internet connection, files in the folder are uploaded onto the cloud which can later be accessed remotely, regardless of one's location with the aid of internet connection. Also, there is the 'mega sink' which allows one to send data across the world. Another is 'Hay vision' which gives room for streaming as an attachment to the cloud system (Personal Interview).

These available technologies are accessible by television networks once they have trusted internet services. Most of these software applications have trial versions which can be used to test their efficiency. From the findings, almost all the software are affordable owing to the fact that quite a number of people are getting hooked on to them, therefore developers and vendors

are compelled to beat down their prices. Today, Facebook is becoming very popular because it allows for streaming even though the difficulty is that it is made public. However, there are other applications like YouTube and DaCast, which are much better and also allows for streaming. Fiador-Agbodaze (2017), a media technology expert however, opined that, "it would be ideal for television stations to have their own fiber optic servers for full control over everything" (Personal Interview). If broadcasters rely on other organizations as backbone, then confidentiality issues and security of sensitive footage among others become issues of grave concern. A television station can rely on another organizations with the storage capacity to host their data for easy accessibility however, they cannot ensure the secrecy of their data and confidentiality is therefore not guaranteed.

From the research conducted in GTV and TV3 none of the above technologies is being used which shows a deficiency in the technologies being employed in the two television stations. Because of unreliability of the internet, both GTV and TV3 are yet to adopt software applications like, mega drive, send space, open load, mega share which are used by other networks globally. Even though they both have servers for storing files, their memory are not big enough to receive large volumes of data. Therefore they do not have enough capacity to take delivery of footages that are being sent from the location to the newsroom.

4.3 Appropriate Software for Storage, Transmitting of News Footage and Their Affordability

I sought to find out from media experts what were the most appropriate and affordable technologies for uploading files for television station to deploy.

Arthur (2017), indicated

> The type of software was dependent on one's location. In Ghana, Wetransfer is very common however when you travel to other parts of the world, Google Drive, Wetransfer, Dropbox, Frame io, and Wasey app, which is another version of WhatsApp is very common and mostly used (Personal Interview).

The internet has created the platform for the immediacy and timeliness of television news broadcast and television broadcast stations that are able to explore and invest in these technological advancements are more likely to go ahead of the pack in news footage delivery to the newsroom for swift broadcast. Arthur(2017) added,

> Also in recent times, some reporters in Ghana and different parts of the world resort to TVUPacks and smart phones with 3G or 4G, which is easiest way out, very affordable and require internet to get started and report live from any location(Personal Interview).

That notwithstanding, Kwabi (2017) added that to send visuals, there was the need to sometimes go with the TVUPacks to ensure that after recording, the information is channeled through the TVUPack. According to Kwabi (2017), the TVUPack is used for live transmission more especially when there is breaking news or for emergencies. The TVUPack and liveView are new technologies where one can send visuals of videos from anywhere directly into a receiver in the newsroom, which is then used for live broadcast from regions with breaking news. However, there must be internet connectivity for it to be able to function.

Image 1: TV3 Crew doing Live Interview with the Chief Justice of Ghana – Sophia Akuffo

Image 2: TV3 TVUPack showing Live Interview of the Chief Justice of Ghana - Sophia Akuffo

Given the different types of news immediacy that Bivens outlines as discussed in chapter 2, I observed that some of the practices of the television stations considered for this research fall within those typologies. For instance, it emerged that immediacy of news as live coverage of events was practiced by both GTV and TV3 using different devices. For instance, during the 2016 Presidential and parliamentary elections at the collation results centers, both GTV and TV3 Network were broadcasting live from some of the regions during the announcements of the results. Again during the inaugural ceremony at the Independent Square, the major event of the swearing-in of President Nana Akuffo Addo was carried live with a periodic cross over concurrently to the Ashanti and the Eastern Regions, the strong holds of the ruling party, the New Patriotic Party. Both GTV and TV3 mostly used the TVUPack or liveView, and in some cases OB vans for live transmission of events. This confirmed Broersma and Graham (2012) assertion that technology has had a great impact on news reporting by making it more fluid and less observable as information flows inside and outside the newsroom owing to an increasing number of platforms. Both television stations have found it easier now than about a

decade ago when it was almost impossible to deploy several OB vans in different regions of the country at the same time for live coverage of events. That will have been too expensive for television station to bear.

Another form of immediacy is the feedback immediacy; this is when audience has the opportunity to interact with the station as the news is transmitted. Whereas TV3 used telephone phone-in, skype, TVUPack, GTV mainly use telephone phone-in. Lastly is the speed immediacy, the technology mostly used by TV3 Presidential correspondents and their Regional stringers are FTP, Google Drive, Youtube, Facebook, WhatsApp, Wetransfer, Dropbox and TVUPack and road transport while GTV Regional correspondents mostly used the TVUPack, Dropbox and road transport as alternative. The GTV Presidential correspondents mostly used dropbox, YouTube and Facebook.

On this note, other respondents also explained that digital media is the audio-visual content that has been digitized, encoded or compressed and can be played back or rendered by the computer. Speaking to a regional technician for GTV on what available software and social media applications they use for uploading video files to the newsroom, the respondent,

Theodore Bensah (2017), states

> We use the data bank from MTN so you render the video on a pen drive and you pass it through the system. We also sometimes burn it on a CD and we send it by a car or either by express service to the news room. When we come back from assignment we edit the video. There is this software we use, the Vergas pro to do editing then we render it into a package and put it on a pen drive. All the regions have their folders and your folder would be received in Accra so when you open the net, you drop your news footage to the region that your report from and they open it (Personal Interview).

Even though GTV have made available some of the latest technological devices in some of the regional bureau, cases are that there are challenges confronted with the personnel being able to adopt and use the new technology. In a personal interview with Napoleon Ato- Kittoe (2017), the show editor of GTV,

> What delays the news regionally is the fact that they have not gotten the technological insight or the knowhow on how to send their stories through technology. May be those who have the knowhow may not have state of the art technology to pipe the stories. When this happens they have to go the traditional way by mailing the material.

In comparison with the method of news footage delivery to the newsroom in TV3, they have additional process of ensuring news footage are delivered on time for broadcast. As stated by Matilda Haynes (2017), head of TV3 newsroom,

> Taking the visuals now is not a problem and so if I have a phone or a tablet and can take still pictures and motion pictures so now it is much easier than it used to be unless you want it specifically for certain purposes you have to take certain measures for that (Personal Interview).

With the mobile phone or tablets, TV3 correspondents and stringers are able to send news footage to the newsroom using WhatsApp platform. This makes delivery of news faster than their counterpart, GTV who most at times rely on the liveView for transmitting news footage and in some cases by road transport. In responding to what the available software and social media applications can be used for uploading video files to their respective newsrooms, Christsopher Loliga (2017), Regional technician of GTV, states.

> So we send the footage and the script to Accra and moreover it depends on the importance of the story. If the story is important and urgent we have what we call live-view. We just send it to Accra by live transmission. The others that are not urgent we send them through Fedex (Phone interview).

From the interviews, I also discovered that these days in place of the traditional satellite connection for news delivery, TVUPack or liveView has become the preferred technology for news delivery. That is what most of those in the industry are using. According to a respondent with TV3, lately what the media houses do is to put up four chips of the different kinds of mobile networks so that while one is going low, the others picks it up just to maintain the bandwidth to transmit on the 4G.

There is no doubt that the invention of new media technologies has always been a catalyst for change in the broadcast industry. This change has not only facilitated but has also enhanced

the production, processing, transmission and dissemination of information in the broadcasting industry. Digital technology has therefore has influenced on how fast television news is broadcasted.

From what was gathered from the study, the best practice is to digitize the video footage and transmit it through the internet. This technology according to the findings is more prevalent in the western world due to availability and consistent internet access. However, in the Sub-Saharan region, it is quite arduous to attain because of lack of strong and constant internet connection. Nevertheless, if the internet connection is good, one can send videos through an Internet Protocol (IP) and in no time, footage will be received unlike piping them to the telecoms in times past, which was associated with difficulties and delays. Satellites according to findings are equally good but are however becoming a faded technology. Having acknowledged that flaw, with very good IP it is very easy to connect, encode and decode within real time. This in the worst situation according to respondents, however, it is still acceptable since it sometimes comes with only three seconds or four seconds delay hence about 7 or 10 times cheaper than the satellite. Apart from various technological applications available for transmitting of footages, social media platforms are equally handy tools that can be used for transmission of news footage.

4.4 The Impact of Digital Technology in the Newsroom

Digital technology is influencing every field of endeavor in the twenty first century and the impact of technology in television news production is no exception. Indeed, the advancement in technology has radically changed and transformed the delivery of news footage to the newsroom making it possible for the immediacy and timeliness of news for broadcast.

In responding to the research question on how digital technology has impacted on operations in the television newsroom, Kwabi (2017) stated:

> I think it has impacted rapidly especially in the last four to five years. Rapidly because when we came to TV3, it was basically moving the tapes from the regions to the transport yard and one had to pick and process it. Then we moved to use the FTP and then getting to the 2012 election, TV3 introduced the TVUPack. Then last year for the 2016 elections, we added the live-view and so it has been more instantaneous and spontaneous. We have more online channels to use. We have YouTube, Wetransfer, WhatsApp and a lot of them. Therefore, it has become easier getting the footage so long as the reporter is trained to take stable visuals. In some instances, you would want to get the news and for camera people, stable visuals. (Personal Interview).

It is much easier with modern technology to transmit video visuals or still pictures by phones or even a tablet from location to the newsroom than it used to be in the past decade. Similar to the argument by Barnhurst and Nerone (2015), that various technologies like the telephone, the fax machine and the computer have reduced the need to situate news production entirely in the newsroom. Available technology has reduced the cumbersome nature of having to transport news footage physical to the newsroom before news can be broadcast.

This means that with the advent of technology, journalists' work has a wider reach with the limitless possibilities such as the use of TVUPack, the use of social media and mobile phones aided by the internet. As indicated by Ato-Kittoe (2017), in a personal interview, Ghana as a country has progressed in terms of technology and in the field of television news production. In the past, people used the common typewriter in which case they could not afford to make mistakes right, but currently, the personal computer has come to replace typewriters making cancellations and corrections less tedious. Tapes were used to shoot stories after which they are arranged physically and labeled to help play them according to a preferred order. With that system, bulky tapes were carried in baskets to the VTR (Video Tape Recorder). Now with the digital technology, it is commonly tapeless or the use of chips. According to Ato-Kittoe (2017),

> In recent times, everything is centralized affording us the luxury of editing videos which are run in a computerized system hence, saving us the burden of carrying physical tapes. What now happens is that, because of the social media and the internet, I do things differently. When I listen to BBC for stories, I follow up on YouTube for the videos to use hence, making my work much easier (Personal Interview).

The work of journalists has been made much easier in the newsroom than before in both television stations. Now with advancement in technology news footage are deposited in a central server which is network with other computers and journalists are able to access it easily in the newsroom. Also journalists are able to download news footage online at no cost, once there is internet service.

It was also of interest to find out from media technologies if the digital technology has made impact in the way video footage is transported to the newsroom. In the words of Fiador-Agbodaze (2017),

> The digital idea is really phenomenal. Those days when we had VHS tape, it was difficult and when you had video, you had to post it to whichever channel that needed footage. But now because of digitization, you can just take a video with a phone and capture video with the help of the internet transmit to the television station (Personal Interview).

Of all aspects of journalism that can be shaped and reshaped by new technologies, news reporting is of special interest as the first link in the news chain and the core of journalistic activity (Nerone & Barnhurst, 2003). The newsroom being the centre of operation, journalists are always challenged to strive to make that news is delivered on time. Journalists who are efficient in this digital age are those who have acquired the required skills in the new technology but these are just a selected few in the newsroom in both television stations.

4.4.1 Social Media Significance and Role in News Delivery

Social media plays an important role in television news broadcast and a television station that does not give premium to the use of social media will be left out in their quest to remain relevant in this current dispensation. However, journalist have to be cautious in their usage of the technology. According to media technology experts, social media has significantly changed the manner in which content of news items are received and broadcast. In other words, social media helps in spreading news items easily and quickly across the globe. Some of these social media

tools include Sendspace, Wetransfer, drop box, Google drive, WhatsApp, Skype among others, that are used based on the situation at hand.

The social media however, has both positive and negative sides which affect the work of reporters in many ways. There have been cases when unauthorized people had put the wrong news or information on social media and before the right news was received and aired, the wrong one had already taken over. Arthur (2017), states, although the use of social media has positive sides, many at times, the negative outweighs the positive in terms of cost and availability of internet connectivity aside the negative news items spreading at a fast rate compared to the positive ones. Additionally, the challenge of copyright issue has a negative impact on the use of social media. As Arthur (2017) further revealed that YouTube for instance has a problem with copyright. Once a video you upload has material that has been patented, it is immediately flagged. The study also revealed that both GTV and TV3 sometimes rely on the social media platforms to source news and video footages uploaded by citizen journalists. The two television stations broadcast video footages and still pictures of the Kintampo waterfalls disaster in the Brong Ahanfo Region of Ghana on the 19th March, 2017 where twenty Wenchi senior high students lost their lives. This as well as footages of the lynching of captain Maxwell Mahama, a military officer, by some youth at Denkyira-Obuasi, in the Central Region of Ghana on the 29th May, 20017. These initial visuals according to the respondents were sourced from social media platforms, they were uploaded by citizen journalists. This is in consonance with Broersma and Graham (2012), findings that news professionals continously rely on the social media as their main source of news.

4.5 Digital Technology and the Challenge of Storage

A major issue of concern for both television stations is the issue of format compatibility in the newsroom. What this means is, the challenge of working with archival footage which are still

in the traditional format. Television stations need to convert archival footage that are still stored in physical forms in the libraries to the digital format.

With regards to the format currently used by GTV for storage, a librarian at GTV explained that though digitization has begun in their organization, the process has been gradual and the current format used is the XD cam. By this, most of the programmes are transferred from XD cam onto computers and then stored on drives. This is because information must be stored on drives while productions are on-going, to be able to release the XD cam for new productions. According to the librarian, though there is the need to digitize this huge collection inadequate finance is a great challenge (Personal Interview, 2017). Just like GTV, TV3 library is yet to digitize their tapes on U-matic, Beta cam and Mini-DV format. It is obvious that television stations are confronted with the challenge of converting their library footage on the analogue format to the digital format since most of the machines used for play out are now obsolete. This is a confirmation to what Nartey (2017) and Delali (2017) referred to in a personal interview that despite the advantages with digital technology, it has come along with cost and the challenge of securing large storage capacity devices. Both GTV and TV3 are yet to adopt the appropriate technology to preserve major historical landmarks in the country like archival video footages of the end of Ghana colonial role and the dawn of independent among other events from then till date.

Image 3: TV3 library showing tapes of archival footages in shelves. (Personal photograph)

Image 4: TV3 library assistant arranging tapes in the shelves. (Personal photograph)

Meanwhile according to media technology experts, there are applications like Microsoft OneDrive and Mega Backup that can be used for storing of digital footage. These applications

allow the television station to store huge data and digital footage in a cloud. As a matter of fact, according to Arthur (2017), people behind YouTube and Google are able to store information in the clouds despite the large size of their videos. Even though applications like OneDrive and Mega Backup are available for storage and broadcast purposes, as indicated by the librarians in the two television stations, there is a challenge of cost in digitizing their library footage that are still in the physical format. Besides, television stations need to have reliable internet service to be able to access these footages from the cloud system which also comes with cost.

4.6 Work Ethics and Reflection on Output

One other reason, as indicated by the respondent of GTV is, as a public broadcasting station, they are more interested in getting their facts rights than broadcasting the news first. According to Addo Boateng (2017), the head of IT (Information Technology) at GTV, he states,

> We, as a national television have our own ethics. Some others do not research when the news items comes to the newsroom, they just air it but we hardly say sorry and we never say sorry because we cross check to find out if our observation is authentic before we transmit it. So sometimes we delay but come out with the correct information (Personal Interview).

By safeguarding accuracy and consistency, GTV cross-check their facts before broadcasting their news items. This can be said to be align to their mandate to continue to be a dependable source of information as public broadcaster.

Image 5: GTV studio during live transmission of news (Personal photograph)

Whereas GTV slogan says they are the "Authentic and Trusted Voice of Ghana", responses from the TV3 respondents seem to reflect their tagline, which is 'First in News, Best in Entertainment. The mantra 'First in News' perhaps reflect their values and principles that drives them as television stations and this somewhat a reflection in their work ethics. That is, they are always aiming at being the first to broadcast the news before any other network.

Image 6: TV3 news anchor reading the midday news (Personal photograph)

Image 7: TV3 news master control room showing news crew working during live transmission of news (Personal photograph)

4.7 Constraints in the Use of Technologies

As stated by Brautovic (2009), in chapter two, the process of digitalization leaves no room for explaining or corrections made to a journalist's work. This makes it difficult for younger journalists to learn on the job from editors and experienced colleagues. Again, journalists also lose exclusive right to assignment material. That aside, digitalization takes away the previously held domain to material from a particular assignment by the individual journalist who covered it. This is because all journalists are expected to upload files from assignment onto a central server, to which all other journalists and editors have access.

Despite the advancement in technology as a result of new media, televisions stations in Ghana are still sometimes unable to broadcast news as early as it should be as a results of associated challenges. These challenges are inadequate funding, infrastructure, unstable

internet connectivity, transmission of data, logistics, and lack of consistent training and issues of copyright.

4.7.1 Inadequate Funding

Both GTV and TV3 have not been able to maintain their own fiber servers to ensure the reliability of internet service because of service charges and maintenance cost. For a television station to be able to provide an all-inclusive coverage of events, they have to acquire the appropriate equipment for their journalists in all the regions across the country. This however comes with equipment and maintenance cost which is sometimes too expensive to incur in addition to cost of internet connection.

According to a respondent at GTV, the state broadcaster used to have a fiber optic link connecting their main server to all the regional bureaus in the country which provided continuous internet connectivity at a fast speed. However, the station could not sustain the service charges of the Internet Service Provider (ISP) and therefore had to suspend it. TV3 broadcast station likewise has no fiber optic link. As stated by Arthur (2017), a normal internet service provides about 1.5 megabytes per seconds speed while a dedicated fibre optic service can provide about 40 - 60 megabytes per seconds which provides a faster speed for upload and download of video files. A television station will need to pay a monthly subscription between Five Hundred (Gh¢ 500) to One Thousand Ghana Cedis (Gh¢ 1000) to maintain a fiber optic link, however with time it is hoped that server charges by internet service providers for fiber links will be less expensive with more of them providing the service. Then, it is hoped more television stations will be able to maintain their own fiber optic link.

4.7.2 Transmission of Large Data Size

With regards to challenges encountered as Ghana tries to go digital, the most difficult is the transmission of data, specifically High Definition (HD) format. Large data will need wide

bandwidth of internet to transmit footages fast enough from the place of the event to the server in the newsroom. In this case, if a television station does not have the means to transport large files from source to the newsroom for them to be aired, it becomes a challenge. The issue of storage for large file size is another challenge confronted by television stations. Fiador-Agbodaze (2017) stated, "Digital we know always comes with good HD pictures" (Personal Interview). Both GTV and TV shoot on HD format and therefore have to continuously expand the storage capacity of their servers which comes at a cost. Therefore, important video footages are sometimes deleted to create space in the server and as a result losing important historical footages that could have been documented. In this sense, both stations are not enjoying the full benefits of the digital technology due to limited resources at their disposal.

4.7.3 Unreliable Internet Services and Human Impediments

According to Kwabi (2017), internet stability is fast enough in the capital of the country however in other regions, internet services are not reliable and stable hence, posing a great challenge to the smooth operation of reporters. This is because many a time, they have to depend on the speed and stability of the internet connectivity to ensure that news items are transmitted as and when they happen thereby, avoiding the situation where information broadcast or telecast as news is untimely or out-of-date. The alternative then is by road but that also comes with its associated challenges.

As indicated by, Victoriah Vandapuis (2017), a GTV regional correspondent,

> Sometimes you send the news footage and call to find out if it has been received and they say no and you just can't understand when you have paid for it to be delivered. When you go to the people who you asked to send your footage, they would say they have delivered it, but because of the shift system in the news room they would not know the person who received it. (Phone interview).

Just like the operations in most newsrooms, there are often different people working at the news desk for the morning and the afternoon sections. So if one person fails to properly handover the daily intakes of the news footage that have been brought in when he was on duty,

it gets lost in the system. As indicated by the regional respondent, the problem of reception of footage as a result of the shift system has an impact on the immediacy and timeliness of news at the state broadcast station. Besides, there are also challenges of picking these footages from the transport station because the television station sometimes do not have a vehicle readily available to pick footages from the lorry station that has been sent from the regions. The problem associated with the delivery of footages in the newsroom among other challenges thus affect the place of GTV in the competitive media environment.

A regional technician for GTV, Osman Seidu (2017), hints, the challenges are enormous; whichever means one opts to send video footage from the region to the newsroom in Accra, can sometimes be very frustrating,

> If I want the station to go live, they will tell you wait for a while which may take a considerable long time and sometimes after transmitting the footage they will tell you there is no picture or audio because of the internet connection. Those are the little challenges. I believe we have to get a dedicated IT person to handle all regional stories (Phone Interview).

From the evidence gathered from these respondents, despite the technological advancement, GTV still has a slow pace for the process of their news delivery to the newsroom and the ultimate outcome is the delays in the broadcast of news events. Respondents explained that this account for the reason some news stories being broadcast often take place long after the event has occurred or sometimes without visuals.

4.7.4 Logistics

From the findings from GTV respondents, sometimes reporters lack certain key devices and equipment aside reliable internet services, to ensure smooth, quality, consistent and timely delivery. These included upgraded mobile devices and vans or vehicles among other challenges. From the findings, a vehicle transporting a GTV regional correspondent to an illegal mining site for news coverage broke down half way through, for lack of proper

maintenance or replacement compelling the reporter to walk on foot to the site, to ensure news coverage. "…we should have individual machines for the respective regions" (Phone Interview, 2017).

This is further stressed by Robin Tanko (2017), a TV3 Regional correspondent,

> For us we need equipment. If we have enough gadgets to work with, with modern technology whereby we do our own visual editing so that the producer would not have any cause to touch the story or visuals then we would say that we will be able to work smoothly and also work within the frame of time that would meet the demands of not only the reporter but the demands of the viewer as well (Phone Interview).

Journalists in the regions are handicapped in terms of the availability of the necessary equipment for news footage to be processed and delivered to the newsroom. Large size footages are transmitted to the producer in the newsroom in Accra who then edit and synchronize with the script and this takes a longer time to upload and download. The newsroom policy by both GTV and TV3 does not permit stringers and regional correspondence to make editorial judgement by themselves. Raw footages are usually sent to the newsroom and the scripts are edited by the show editors before the story is transmitted. In the case where the journalists in the regions are given the necessary equipment and with the necessary guidance from the newsrooms, stories could be edited right from location and sent in smaller sizes. Delivery of news stories will therefore be faster. This is a confirmation to Quinn (2005) findings that, for media organizations to be able to compete favorably for viewership and attract more advertisers, they need to ensure they are continuously advanced in the usage of the technology.

4.7.5 Lack of Consistent Training

There is the need for the journalist to be able to adapt to the use of the new innovation and contribute significantly to the success of the technology. However, provision must be made for such a person to be trained in order to be relevant to the changing technology. This is a

confirmation to Brautovic's (2009) findings that journalists needs to be trained in the required skilled to offset potential training deficiencies.

Speaking to a Presidential correspondent whether reporters in their outfit receive training in the use of software applications and social media platforms, the respondent, Edward Nyarko (2017) states:

> Yes, we have scheduled training for staff but we also have special effect which means that we need to do refresher courses in updating the needs of the reporters. For instance, throughout the year, we receive different kinds of training from the IT experts online at the beginning or end of the year, which is not enough. For a public media house like ours for example, we had two training sessions with the Voice of America last year. They came to train us on how to use the social media platforms and all the other platforms. (Personal Interview).

GTV, as a public television has the benefits of receiving these internal training programmes which are sometimes organized by foreign partners and the embassies. Nyarko (2017), added that they are sometimes invited by the Chinese to China for training but added that the training received was not enough since they were not consistent and regular. This as further stressed by Ato-Kittoe (2017), showed clearly in the way some reporters or staff discharged their duties. He states,

> They come from field and you would realize that they are not up to the task. Even I am not familiar with some of the software or applications used; I have attended a training session which did not bridge on all of them. The trainers sometimes scratch or go through the surfaces of some of the software with you but it is not an in-depth training for you to emerge as well trained and be sure of yourself that you are capable in that regard. The training should be well planned and if it is about two months, then we know it would be good and make you come out as a well-trained performer. (Personal Interview).

Even with the opportunities to attend sponsored workshops and short courses abroad some of the staff are still handicraft in their performance at work after they return from such training. Ato-Kittoe added that,

> Sometimes people go out, train and come back but we see no difference nevertheless, some come back very refined. There is one of our reporters in the Brong Ahafo region who attended a training programme in India, sponsored by

> the Indian embassy. She came back a much better journalist, refined and writes so well." (Personal Interview).

It is evident from the GTV respondents that a form of training is organized occasionally for a number of the personnel in the newsroom but that does not seem sufficient with the ever changing technologies in the media industry. Training sessions are given to the GTV news crew on how to use the required and appropriate technology for particular situations as well as social media tools but these training sessions according to the respondents, are usually organized on a yearly basis. The situation is however different for TV3, As Haynes (2017), points out,

> We have schedule training for staff but we also have special effects, it means that we need to do refresher courses in updating the needs of the reporters. For instance throughout the year, we have different kinds of training on line, coming close to the beginning or ending of the year and IT comes to do the training. If it is a special events training, everybody is taken through the training. (Personal Interview).

In the case of TV3, training are done periodically and more especially prior to a major national assignments like covering of the national elections and other equally important national events. The technologies for which trainings are received according to the respondents include how to use the TVU pack, Google drive, FTP and Wetransfer. Whereas TV3 organizes training for most of their reporters, for GTV, it is usually for a selected few.

This is a confirmation in Brautovic (2009) and Quinn (2005) findings, when they suggested continuous training for journalist to make their transition into using the new technology effective and also to ensure success of the digitalization process. There must be a deliberate programmes to train news professionals so they can function within the new environment and also to avert resistance from the news team.

4.8 Measures

Based on the challenges encountered, respondents suggested some measures to a country like Ghana, towards improving television news gathering and transmission service. In the view of

respondents, it is high time digital technology was fully employed and operationalized by media houses in the country, both public and private. From the findings, it is very important for management of media houses to make available fiber connections at their various stations. Fiber, which is a connection of live-wires linking distant places, at speed equivalent to that of light [very fast] enables the reception of footage in real time.

Furthermore, management of media houses must ensure reporters to use all available technologies for uploading video files while working on their internet speed and constant access. In addition to that, the best and simplest technology to ensure delivery must be employed. Lastly, there is the need for consistent and regular training.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the entire study and draws some conclusions based on a careful analysis of the findings that emerged as a result of processing the data gathered to respond to the questions the research set out to answer. Based on the findings of the study and the conclusions drawn, some recommendations have been made with regard to technologies used by television channels in Ghana and, additional tools that can be adopted for use to ensure the availability of news for swift broadcast.

5.2 Summary of Findings

The study sought to assess technologies used by GTV and TV3 television news channels and additional tools that can be adopted for use to ensure the availability of news for swift broadcast. The specific objectives is as indicated in chapter one of the study.

In order to address the objectives, research questions were raised and answered using two television stations as case examples for the study. This involved interviewing twenty-eight (28) respondents from both GTV and TV3 broadcast stations. The interviews recordings were then transcribed and analyzed according to the approach recommended by Berger (2000), which are; looking for patterns, classifications, themes, and categories. The interviews gave the respondent the opportunity to assess technologies used by television channels in Ghana and additional tools that can be adopted for use to ensure the availability of news for swift broadcast.

5.2.1 Technologies for News Production Purposes

With regards to means and format currently used by respondents for storage, the findings revealed specific digital software applications such as the DaCast, Mega Backup, Mega share, Open load among which permit the storage of huge data and digital footage in a cloud. Other technologies included the TVU pack back which is used in place of traditional satellite connection. That aside, some of the social media tools used by respondents included File villa, SendSpace, Drop box, Google Drive, WhatsApp and Skype among others. The preceding applications are used based on the situation at hand. According to the findings, almost all the software are affordable owing to the fact that quite a number of people are getting hooked on to them therefore, developers and vendors are compelled to beat down their prices. That notwithstanding, among the software used by respondents, the ones more appropriate for uploading files were dependent on one's location. Meanwhile, Wetransfer, was the most commonly used. Whereas the cloud system was the most convenient since it could be accessed anywhere regardless of one's location, the two television stations, GTV and TV3 are yet to adopt the technology. Most reporters and crew involved in television news production in Ghana received minimal training and so were not able to use these technologies as efficiently as might be expected. In effect, while the technologies were available, their potential was under exploited.

5.2.2 Impact of Technologies

Technology has had a positive impact on television news production in Ghana especially in the last four to five years because it has become easier getting digitized video footages through the internet across the world so long as a reporter is trained to take stable visuals, for instance. The findings also revealed that regardless of the constraints in the use of technology, the advantages outweigh the challenges. Therefore, with a very good Internet Protocol it is very easy to connect, encode and decode footages within real time.

5.2.3 Constraints in the Use of Technologies

Despite advancement in technology with the emergence of new media as a results of the internet, television footage transmissions were still encumbered with a number of challenges. These included inadequate funds, infrastructure, unstable internet connectivity, transmission of large sized-data, logistical constraints, and lack of consistent training and issue of copyright.

5.3 Measures to Overcome Challenges

Based on the challenges like inadequate funds, lack of infrastructure, unstable internet connectivity, transmission of large sized-data, logistics challenges, lack of consistent training and issue of copyright, respondents suggested some measures in improving upon television news gathering and transmission service. According to the interviewees, management of media houses should make available fiber optic connections at their various stations since it is very fast and enables the reception of footage in real time. That aside, management must ensure to organize consistent and regular training programmes as well as encourage reporters to use all available technologies while working on their internet speed and constant access. A re-orientation of the altitudes and sense of appreciation of support staff about the urgency and money value of news will also be important to the contest of the successful operation of the work of these journalists.

5.4 Implication for Practice

Considering the findings of the study and the conclusions drawn from there, I found it prudent to offer a number of recommendations. It is hoped that these recommendations, if implemented, will be useful to stakeholders of the TV industry, which include: the Government of Ghana, the National Communications Authority, Ghana Journalists Association, and the National Media Commission. Among the recommendations for intervention as presented below are the

following: Training media personnel, providing reliable internet access, provision of required logistics, managerial commitment and interest, and building a culture of breaking news.

5.4.1 Training Media Personnel

The data gathered shows that training is important for staff of TV stations in Ghana. The inadequacy of training amongst staff greatly affects television news production. Television stations must also invest more resources in building the capacity of their technical and operational staff to be able to fully function in the new digital and competitive news production environment. This is even more pertinent if they are to be able to compete with other international broadcasting industries in Africa and beyond, training is a necessity.

Training sessions organized for media staff and experts must be more consistent and regular, given the dynamic and fast-changing nature of technological innovations in the field. At the time of conducting the research, there were no institutionally-driven plans for reporters and all who play a role in broadcasting or telecasting news items to receive the requisite training and orientation that would make them abreast with and functional within the digital technology space; notwithstanding the general awareness of steps at the national and policy levels for Ghana to migrate into the digital television broadcasting era.

Training is also very important because it was evident in the results of the study that what delays timely delivery of news items regionally is partly because, some reporters or personnel involved in television news production have not had the technological insight or know-how to send stories using technology. Furthermore, those who have the know-how may not have state of the art technology to send the stories. When this happens, reporters have to go the traditional way by mailing the material and the fact that this is done by sending it through courier services or intercity bus parcel delivery services means that when the road transport system delays, the story delays. Again, it is also evident that sometimes, the urgency attached the delivery of news is below expectations. There is the need for an overhaul of the operation in newsrooms –

including a reorientation of the newsroom culture to appreciate the time value of news, in order to maximize the technology, aside motivating staff to give off their best.

5.4.2 Reliable Internet Access

Today, the role of technology (internet) in television news production cannot be under-estimated. In this study, interviewees opined that Ghana as a country or nation, has come far in terms of news production and technology, by moving from tapes and more cumbersome ways of doing things to much more upgraded internet-based tools and applications such as Google Drive, Wetransfer, Dropbox, YouTube among others. Unfortunately, the majority of interviewees expressed the challenge of unreliable internet accessibility affecting the television news production.

Through robust internet, TV news reporting can be more fluid and less observable. This is because the existing platforms can easily relay information from inside to outside the newsrooms. Again, reliable internet harnesses innovations within the industry, which in turn brings dynamisms and improved standards of news production. Management of the selected TV stations and all the stations in Ghana must rely on stable internet service from the internet service providers. More especially, the rise of the audio-video-enabled internet heightens more competition between television and digital media vis-à-vis viewers (younger and older generation). Unlike the older generation who support pre-digital media, the situation is more pressing as younger generations who seek for the digital media are lost due to unreliable internet services form the service providers. Television, as a platform may face disruption if internet accessibility is poor.

There is therefore the need to build the capacity of the necessary technical and infrastructural support systems since there is the tendency of technology to influence media work with the advancement in technology. Moreover, the findings revealed that social media does not always allow reporters to keep up to a certain amount of information or data, as a result of capped

bandwidth. However, the stability of the internet is the key issue hence, the need to ensure its reliability and constant access.

5.4.3 Provision of Required Logistics

By this, management must ensure that news reporters are equipped with logistics to enable them to deliver news footage well and on time. The findings revealed that reporters lacked certain key devices and equipment, aside the lack of reliable internet services, to ensure smooth, quality, consistent and timely delivery. Some of the devices and equipment include editing machines in the Regional bureaus, mobile devices and vans or vehicles. Proper maintenance or replacement equipment should be a priority for television stations to ensure the efficiency news coverage and transmission.

5.4.4 Managerial Commitment and Interest

The study strongly encourages managerial commitment and interest in the operational work of reporters, news coordinators and staff in the news room. According to respondents, though it is necessary that management stay away sometimes, to give staff the leverage and liberty needed to perform their duties as professionals, it is equally important for management to put a step forward and show interest in how they want things to run as an organization. This according to interviewees would show management support for the good course.

5.4.5 Building a Culture of Breaking News

Though internet service plays a part, reporters ought to cultivate the habit or build the culture of breaking news reporting. Elsewhere there are incentives for that but if reporters know what to do and appreciate the worth of doing so, they would not have to wait for an incentive before they cultivate a greater practice of reporting breaking news.

5.5 Limitations and Future Recommendations

Using two dominant television stations in Accra, the study sought to examine how the television news production is impacted by technology in Ghana. All research reports are not devoid of study limitations. In that case, few limitations are identified in respect of the study. The study examined two TV stations; the State-owned GTV and private station, namely; TV3 qualitatively.

Specifically, out of the media channels in Ghana which include radio, newspaper and TV, the study was limited to only the GTV and TV3. This clearly limits the degree of generalizability for the present study. For generalizability of the study, it is recommended that in the future, a larger sample can be used. The larger sample may result in findings to confirm the current findings and inform management on better decision making.

To expand the current study, a mixed method approach can be adopted in subsequent studies. The study could be expanded to include all television news channels in Accra. Both the qualitative and quantitative research data will be collected at the same time and results synthesized and analyzed to render a complete understanding of the problem. This can bring out revealing findings that can better inform stakeholders of the TV stations on television news production and technology.

5.6 Conclusion

Technology has over the years influenced the operation in the newsroom especially in the areas of news television gathering and transmission. As a result of the advancement in technology, television news delivery is much more instantaneous than before. There is a tough competition among television stations in Ghana now because of digital migration that has made it possible for more television stations to be set up. The digital platform provides all television channels with nationwide coverage. The competition will no more be based on the range of transmission

but rather in the content, speed and efficiency of programme delivery. To that extent, the chances of a segment of a population receiving news attention will depend more on its commercial viability and the extent to which the technology is carried to those locations. News is therefore increasingly technologically dependent. Thus, a station's technical efficiency and commercial competitiveness within the new broadcasting ecosystem will depend on the extent to which it is able to leverage the available technologies to enhance television news gathering and transmission. The findings show that while both television stations are aware of, and responding to, these opportunities and challenges, the private commercial operator seems keener in their appropriation and application of the technologies. At the same time, both stations fall short of fully exploiting the vast range of possibilities that are available for improving their competitive edge.

From the analysis and discussion of the research data, it emerged that technologies employed by the two television channels for news production included, TVU packs or live-view, as well as other social media tools such as File villa, Send space, Dropbox, Google drive, WhatsApp, Skype among others. Also, the findings showed that technology has had a generally positive impact on television news production in Ghana especially in the last four to five years. Significantly, it was clear from the data gathered that TV3, had been able to adopt the technology to some extent while GTV tended to lag behind, and most of the times still used the traditional means, that is by road, to send their news footage to the newsroom in Accra.

Technology availability and appropriateness as a tool is a condition but it is not sufficient guarantee of efficiency, unless the structural factors that must enable the deployment of the technology are also in place. Newsroom should take advantage of these technologies for efficiency, speed and the like but at the same time, they must provide the logistic and support systems such as training, efficient internet, the infrastructure, among others that will enable the technology to function optimally.

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APPENDIX A

QUESTIONNAIRE

RESEARCH TOPIC:

TECHNOLOGY AND NEWS PRODUCTION, THE CASE OF GHANA TELEVISION AND TV3 LIMITED.

INVESTIGATOR: KPELLE GUBA ISAAC.

PRETEST SURVEY INTERVIEW GUIDE

This is to investigate the impact of digital technology on television news gathering and transmission to the newsroom among television stations in Ghana.

The procedure involves filling a survey that will take approximately 15 minutes. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared among the University community. Your participation is completely voluntary but I will be grateful if you participate.

PRETEST SURVEY:

1. Demography of respondent

A. Name: …….

B. Sex: Male or Female

C. Education,

Below first degree

First Degree

Above first Degree

2. How many years have you worked in this organization?

Few months to 4 years

5 to 10 years.

10 to 20 years

Above 20 years

3. By what means do you transport news footage from location to the newsroom.

Road transport/Air transport

Outside Broadcast station Van (OB van)

TVUPack/LiveView

Backback

FTP (File Transfer Protocol)

Social media

Any other: name them…….

None

4. What type of Social Media do you use to transport news footage to the news room?

WhatsApp

We transfer.com

Send Space.com

Y-tube

Facebook

Drop box.

None

Any other: name them…….

5. Why do you use these particular software or applications?

……

……

6. Do you have any particular reasons for using those platforms?

……

……

7. What are the positives of using these means of transporting news to the newsroom?

……

……..

8. Do you think by these means you are able to transport the news to the newsroom fast enough? YES or NO.

9. Do you have any form of official training in relation to how to use the software or application? YES or NO

10. Enumerate the challenges you encounter in transporting news footage from the different locations to Accra?

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11. What are your general comments, observations and advice on the gathering and transmission of television news footage?

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12. What is your advice on news gathering and transmission of television news footage?

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INTERVIEW GUIDE FOR MEDIA TECHNOLOGY EXPERTS

Have digital media made impact on the way video footage is transported these days?

What in your view are the most effective way of packaging and distributing video footage?

Do think you think the social media has any significant role in television news gathering and transmission to the newsroom?

1. Name any specific digital soft-ware application and its role in the gathering and transmission of television news footage?
2. Which of these are more affordable and easy to us?
3. Which of these soft-wares are more appropriate for uploading files?
4. What measures would you recommend that countries like Ghana use to improve upon their television news gathering and transmission service?
5. Ghana currently migrating from analogue to digital television transmission, what challenges comes with news gathering in a digital world?
6. How best can these challenges be overcome?
7. What are your general comments, observations and advice on the gathering and transmission video footage?

INTERVIEW GUIDE FOR SHOW EDITORS

Demography of respondent

a. Name

b. sex,

c. education

d. work experience,

What is your definition of News?

What is your definition of digital media?

What is your view on the assertion that the digital media has revolutionized the area of television news footage gathering and transmission from early days of television till date?

Tell me about the significant changes in television news gathering (filming, editing, transporting footages to the news room) over the years in your organization?

What in your view are the most effective ways of packaging and distributing television news footage to the newsroom?

Do you think social media has any significant role in television news gathering and transmission to the newsroom?

Does your organization use any form of social media such as we transfer, drop box, send space, google drive, frame IO, in news footage transmission? Give reason(s) for your answer.

1. How will you assess your mode of television news gathering and delivery from location to the newsroom at your station to that of other television stations in Ghana?

2. What things make your television station stand out in terms of news gathering and transmission to the newsroom?

3. What measures would you recommend to your TV station and others in order to facilitate quick and easy delivery of news?
4. Ghana is currently migrating from analogue to digital television transmission, what challenges come with news gathering in a digital world?

5. What are your general comments and observations on the gathering and transmission of television news footage?

6. What is your advice on news gathering and transmission of television news footage?

7. Will your station readily welcome the idea of subscribing news footage from a news portal that will make the news footage readily available from the different locations of Ghana?

INTERVIEW GUIDE FOR REGIONAL

STRINGERS/TECHNICIANS/PRESIDENTIAL CORRESPONDENTS

1. Demography of respondent

a. Name

b. sex,

c. education

d. work experience,

2. How long have you been working with GTV?

3. Take me through the various processes you use to send news footage to your newsroom in Accra.

4. Which of these processes do you commonly use?

5. Currently, would you say the stories that you send are received early enough?

6. What challenges do you face in transmitting the video footage?

7. What do you think can be done to make it easier for you to send the new footage to your newsroom in Accra?