An Analysis of the Effect of Social and New Media on Elections' Outcomes: Interactive Communication among Diverse African Communities

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1. Introduction

Political analysis in recent decades indicates that democratic politics, practices, and policy implementation in sub-Saharan African have taken a significant leap in the last five decades, especially since a good number of African countries gained independence. Significantly, political systems in the continent are striving consistently toward achieving a level of political sophistication that will ensure global recognition and respect. Fundamentally, campaigns, political parties and structures, elections, and voting process are being reconstructed to promote democracy, good governance, peace, and stability. Several countries in the sub-Saharan region have adopted or implemented constitutional measures and reforms that support political stability as well as strengthen democratic growth, checks and balances, and accountability in governance.

In the twenty-first century, achieving democratic ideals and sustainable political development is the primary goal of African countries, especially in the sub-Saharan region. The Sustainable Development Report on Africa (2008) explains that African leaders have made irrevocable commitments to human rights and the rule of law. The leadership of these countries has embraced a significant measure of international and regional human rights norms and standards, and has continued to improve human conditions in the continent. While total application of human rights and the principles of good governance are still being improved in the sub-Saharan region, there appears to be an expanded and renewed interest to uphold and ensure respect for human rights, political accountability, and administrative transparency.

As explained in ECA's African Governance Report (2005), political communication, freedom of the news media, and citizen awareness and participation in the democratic process must be encouraged during campaigns and elections. Furthermore, competitive multiparty democracy, free and fair elections, civil society associations and independent groups must be allowed to contribute to the political process. Therefore, in order to sustain a commitment to transparent and inclusive governance, social media channels and internet radio must be vigorously engaged during elections.

As African countries continue to strive toward sustainable political ideals, a guiding element must be the effective use of radio to inform and engage the rural communities in order to increase both awareness of issues and participation in civic duties. Studies by a number of indigenous scholars have recognized the role of mass media in ensuring that citizens are adequately informed and included in the democratic process. Recent elections in sub-Saharan Africa, such as the 2011 and 2015 Presidential elections in Nigeria resulted in a range of issues and challenges, which bordered on election apathy, unawareness of critical economic and social issues, sectionalism, and tribalism, occurred as a result of lack of information available to grass-root. Studies of past decades (Dia, 2002; Nokoko, 2013; Okoro, 2013) explained the significance of radio, television, newspapers, and the new media in creating awareness and activating citizens to action. Importantly, radio is the most common source for information about election campaigns in local and rural communities because of its availability and accessibility. The importance of radio as a critical channel for disseminating information during elections cannot be overemphasized. While citizens in the cities depend on television and newspapers for election information, the rural communities listen to radio channels for information and election updates.

Radio and Political Development in sub-Saharan Africa

Over the years, radio channel has contributed immensely to political, social, and economic progress in the rural areas, and it has been quite effective as a result of its broad reach to a wide audience of people in the villages and other rural settings where television set is unavailable or too expensive to obtain. Historically, radio has been the most inexpensive and accessible medium to rural population in the sub-Saharan region for disseminating development and political information. Evaluating the effectiveness of radio broadcasting in rural development in Nigeria, Akosa (2012) noted that radio is the single most important far-reaching channel for communicating to the rural communities in Saharan Africa. While studies indicate that awareness and development cannot occur without communication, radio broadcasting has been the most effective mode for conveying news and information in rural communities of Africa. Furthermore, radio plays a significant function in achieving many objectives of development communication in sub-Saharan African because of its availability and expensiveness.

As scholars noted in recent studies, development communication has been the primary focus of the mass media in Africa, primarily because of the rural nature of communities in the countries. Therefore, role of radio in achieving the objectives of development communication distinguishes it from the functions of other channels of communication in the African context. As explained by scholars (Okorie, 2006; Nwokeafor, 2006; Okoro, 2009), development communication is much needed in Africa because it involves reporting and promoting messages associated with development needs and activities of rural communities. Additionally, radio accessibility to citizens in the rural areas and villages increases its value, and the channel explains issues and activities in various languages and dialects, and it is used to encourage the citizens to understand the development goal and process.

By understanding the objectives of rural development, citizens in the local areas become more willing to participate in various development-related activities, including elections, independent and collective contributions, and engagement in agricultural efforts. Furthermore, Ekwelie (1992) together with other scholars (Moemeka, 1980; Hendy, 2000; Ndolo, 2015) emphasized that the fundamental feature of development communication is that it contributes significantly to sustainable growth, empowerment, and sophistication of rural dwelling. Community development involves economic change for the improvement of living conditions of people in rural areas of African continent, and evidently, radio broadcasting and content are designed with development needs of the inhabitants. Through radio messages, local citizens are made aware of information about agriculture (farming), health education, socialization, and environmental issues.

Social Media Communication: Effective Use of Internet Radio

As eloquently stated over five decades ago by the "Father of Communication Studies" Schramm (1964), by making one section, tribe, or race of a country aware of other parts, their people, culture, traditions, and political process; by allowing and engaging the political leaders to communicate with the citizens, and citizens communicate with political leaders and with each other; by making possible a nation-wide discussions and debate on national policy or political issues; by explaining national objectives and goals as well as sharing political agenda and accomplishments with citizens—thus communication channels (radio, television, and social media), widely used, can help to connect diverse communities, disparate subcultures, races, self-centered individuals and groups, and separate units into a cohesive national and political entity.

Certainly, the quality of independent radio station has a positive impact on societies, particularly in rural areas of Africa that depend on radio broadcasting for information and directions to participate in political activities.   A number of studies by African and Western scholars respectively (Casmir, 1991; Diamond, 2004; Megwa, 2009; Okoro, 2010) attest to the fact that social media and radio channel have a transformative impact on elections' outcomes in developing nations. The effective role of radio and new media for sustainable democracy cannot be overstressed as it evidently ensures and contributes to accurate election results. Over the past few years, there has been a disconcerting national concern about the low level of voter turnout in elections conducted in the countries in sub-Saharan Africa. This voter apathy was traced to a lack of awareness and information to citizens in local communities. Research findings and conclusions clearly indicate that the mass media operationalize issues, analyze their implications, and ultimately set community agenda. As a result, it is critically important that citizens in the rural communities are adequately informed, their interest aroused, and their engagement engendered through a channel that has a wider reach to both rural and urban dwellers. In a recent study entitled "Media power in elections:

Evidence of the role of agenda-setting theory in political communication in Nigeria evolving democracy," Nwoeafor and Okunoye (2013) echoed and supported the role of radio and other forms of mass communication. These researchers noted that the television innovation swept Nigerian communities with amazement in 1959, which expanded the use of television and radio broadcasting simultaneously in political campaigns. Ever since then, these news sources have become an irresistible dynamic source of reporting news and conveying information about political issues and initiatives as well as on various party candidates. Consequently, television in collaboration with newspapers and radio significantly cover political campaigns, leading to increased participation of voters. The authors noted that radio and the new media have gradually become very influential and effective in disseminating campaign updates, party platforms, and other election-related issues to the knowledge of citizens. Through this awareness, voter participation and engagement has consistently increased and election outcomes reflect the opinions of a large proportion of the population.

Additionally, studies have been noted that access to information during elections is significant to the success of democracy, especially in the sub-Saharan region, where voter participation is extremely minimal or discouraging. It is critically important that citizens have adequate information to make knowledgeable decisions and independent choices. While radio and televisions are owned by governments in African countries, radio is more affordable to the citizens and can be carried to various locations and can be used at different times. Twenty-four television broadcasting is not available to citizens in many rural areas of the sub-Saharan Africa; therefore, knowledge level and the degree of involvement of people are limited hence their poor turnout and consequent election outcomes. Although the role of mass media continues to be of paramount importance in a democratic process in developed countries, radio broadcasting is of immense value in developing nations of Africa because of access and location of people in rural communities where development is much needed.

Nokoko (2013) and other scholars noted the role of radio and new information technologies in the lives of local citizens involved in violent conflicts in Zimbabwe and South Africa in 2008. The author explained that radio and new information technologies, particularly radio and cell phones, are by far the most widely used means of communication in African political and social environments, both in rural and urban communities. The radio trend has continued to contribute to citizens' level of awareness, knowledge of current affairs, and high their level of involvement in social, cultural, and political activities. Using Internet radio to transform elections' outcomes and to establish interactive communication among diverse African communities is an important objective of this chapter, because studies of the past few years strongly determined that radio broadcasting is most pervasive medium to Africans in the rural areas (Brinkman, 2009; Bsch, 2011; Gunner, Ligaga and Moyo, 2012).

Rural and Community Radio Channels and Forums -

Evaluating historical and contemporary roles of radio and its use in rural communities in sub-Saharan Africa requires an analysis of the evolution of radio broadcasting in Africa and its contributions to political and development. Given the pluralist nature of the African continent and proliferation of contemporary broadcasting environment, it is an enormous undertaking to make a comprehensive assessment of the role of rural or public radio in political communication. Prior to independence of many of the countries in the sub-Saharan Africa, radio broadcasting was designed to provide information on health, financial education to farmers, and information for political awareness and participation. In some of the countries, radio was the source for promoting economic development enlightenment. Ilboudo (1989) identified specific examples of the role and use of rural radio in civic engagement, raising political awareness, and health civic education (Cameron in 1956, Mali in 1957, Nigeria in 1962, and Ghana in 1956).

Ilboudo's research noted that Radio Accra dissemination news and development information in Ghanaian languages and had programs for rural activities, Nigerian radio stations broadcast news in different dialects to inform and empower citizens in the villages on political development matters. Radio Kano established programs for encouraging farmers to adopt agricultural mechanization and to improve seed varieties. Similarly, Kenya in 1962 produced educational training and programs through radio to advice rural farmers on improving agricultural productivity. Furthermore, in the early 1960, Radio Dahomey designed special programs in Fon language for encouraging and engaging rural citizens of the Benin Republic. Over several years, before gaining independence, the role of rural and community radio was instrumental to the results of development effort, political activities, and sophisticated educational reforms in African countries. Citizens in rural areas depended largely on radio for information regarding general lifestyle trend and current affairs.

This was largely the case because of the affordability and accessibility to radio broadcasting in the rural communities. A number of studies (Bosch, 2011; Aker, &Mbiti, 2010, Nokoko, 2013) emphasized that radio played a fundamental role for dissemination of critical political, social, and economic information in Africa countries. The authors further noted that it was of paramount importance to establish information and media policy that could enhance or increase citizens' access to radio and other news channels, especially during elections, in order to engender adequate participation in the political process. In addition to increasing political participation, radio played critical informative role in times of violence, tribal conflict, and regional wars. Additionally, because of the availability, affordability, and accessibility of radio broadcasting in rural and local communities, there was increased interaction among the villagers, effective and efficient news-gathering process as well as promotion of participatory/collective culture, and local engagement among local citizens. Emphasizing the unique role of radio in conflict situations, Nokoko (2013) pointed out that radio broadcasting has been expanded and adopted to appropriating new media to broaden its functional scope as well as to sustain the interest and focus of rural residents. This aspect of radio function is significant in the development a collective culture and for the promotion of traditional African communal cultural environment. Studies noted that a large group of African communities did not have much access to other forms of advanced mode of communication, which made radio broadcasting indispensable to the increasing political and development needs of the rural communities. Therefore, community and local radio remains a vital source of information essentially for mobilizing, informing, and engaging grass-root participation and support for all forms of development activities and programs.

Studies by Ekwelie (1992) and Okorie (2006), and Mboho (2005) identified the specific role and functions of community radio in both development and political communications. The authors noted the characteristics of radio as pervasiveness, immediacy, economic medium, portability, and presence. These characteristics distinguish radio among forms of news sources as uniquely designed for rural development, and they emphasized its usefulness in community outreach programs. Therefore, effective use of radio in disseminating and engaging citizens in rural areas can transform or improve elections' outcomes through constant reminders of events and programs. The preceding studies also explained that television and newspapers are important sources of information in Africa, but they lack the basic attributes associated with radio broadcasting in rural areas in terms pervasiveness and immediacy. Additional functions of radio include promoting of economic knowledge, creating an understanding and wisdom among villagers, propagating and dissemination of economic programs and policies, facilitating the national integration for economic progress, teaching the use of modern approaches, strategies, and standards for farming and agricultural development, and making citizens responsive, responsible, and accountable during elections.

Social Media Communications: The Role of Rural Radio in Sub-Saharan Africa

Communication scholars have continued to evaluate the role and use of rural radio in Africa, and their assessments of radio broadcasting in political elections have been consistent. Their evaluation of the role channels transcended political context and have touched upon various aspects of national development. Other researchers extended their analysis of radio broadcasting and examined the agenda-setting role of news-sources and radio in rural development (Nwokeafor, 1992; Ndolo, 1990); Okoro (1993) evaluated newspapers and their agenda-setting function in political environment. In an earlier study, Moemeka (1989) identified and analyzed the role of seven different media sources (social forums, town crier, village market, village school, newspapers, radio, and television) in determining the interest level in rural community programs (Operation Feed the Nation, Local Government Reforms, and the Universal Freed Primary Education). The study determined that 80% of respondents attributed their knowledge of the programs to radio broadcasting, 15% indicated traditional media as a significant source, and 5% cited newspapers as a primary channel. In other words, accessibility of radio channels to rural dwellers in Africa differentiates radio as largely instrumental to knowledge and interest in community programs. This finding clearly supports the use of Internet radio to promote elections and election-related activities in Africa.

Building Interactive Communication among Diverse African Communities: Radio and Social Media Communication

The Center for Democracy and Governance (1999) in an analysis of the role of media in democracy stressed that access to information is critically essential to the development of democracy both in developed and developing nations.

Information allows the citizens to make authoritative decisions, and it also ensures that voters make responsible and objective choices based on knowledge provided by news channels. Further, it was noted that information provides "a checking function" that makes elected representatives accountable and transparent, which ultimately establishes a trusting relationship between voters and elected officials in democratic governance. The Center for Democracy and Governance pointed out that the media, specifically radio, is an integral part of a civil society, and free and fair elections must be conducted through objective and transparent processes that allow the citizens to make their choices. Increasingly, voter turnout, public engagement, and citizens' participation in electioneering campaigns usually would lead to better election outcomes. Collectively, the mass media play an indispensable role in democratic elections.

However, in developing nations of Africa, specific news channels, such as radio, must be identified to support election process because of the rural nature of much of the continent. For example, in many African countries, governments maintain exclusive control or monopoly over the media channels, indirectly or directly, and government officials determine the coverage of events, information that should be provided, and the scope of news that will be shared with the public. The Center for Democracy and Governance (1999) noted that although the content of radio stations are equally controlled by governments, citizens in the rural areas listen to radio more than they watch television and read newspapers.

Consistent with the preceding view, Nwokeafor and Okunoye (2013) in their analysis of media power in elections (evidence of the role of agenda-setting theory in political communication in Nigeria's evolving democracy) noted that the media (radio, television, newspapers, the new media, etc.) are significant to sustainability of any democracy, and they cautioned that democratic elections and citizens' engagement would be impossible without the empowering and informative functions of the mass media. Moreover, elections' outcomes (free and fair elections) is not necessarily about the freedom to vote and the knowledge of how to cast a vote, but it is significantly about the citizens' participation in elections in which candidates engage in open debates in order to allow voters to vote according to their impression and conscience. The researchers concluded that the crucial watchdog role of the news media, specifically radio broadcasting in providing adequate and timely information, explaining policies, and operationalizing guidelines to citizens in remote communities contribute immensely to voter confidence.

Rural Broadcasting, Political Development, and Rural Development in Africa

Consistent with the notion of using Internet radio to improve elections' outcomes and build interactive communication among diverse African communities in the twenty-first century, radio broadcasting can be used effectively to transform agricultural and cultural programs in sub-Saharan African. For the most part, Africans depend on agriculture for their wellbeing, but agricultural activities have been largely agrarian in nature for decades, lacking the sophisticated knowledge to improve farming activities. There is no doubt that citizens' access to radio broadcasting plays significant role in mobilizing people for elections, which also improves elections' outcome because of more grass-root presence in democratic elections. Empirical studies (Bates, 1981; ACARSTSOD, 1991; Adedeji, 1993; Obasanjo & d'Orville, 1992; Okigbo, 1992) explained that radio broadcasting contributes much in medical and economic awareness as it is expected to contribute in the democratic process.

Evidently, the African continent has faced increased insecurity of food for decades, and has faced other unfavorable or hostile circumstances such as famine, drought, conflict, and irresponsible governments for decades. Although Africa has a vast land mass with a relatively sparse population, it has not been well harnessed or cultivated as a result of irresponsible governance or lack of political sophistication to elected respectable and accountable leaders. Additionally, the fragility of soils and unreliability of water system for agricultural purposes clearly indicate that the management of land and rights in land were determined by selfish colonial masters of pre-independence years as well as by indigenous leaders who inherited corrupt and dishonest governance. It is noted that shifting and pastoralism constituted major problems for colonial rulers. Vague or unexplained rights and privileges in land ownership were addressed by appropriation or establishment of individual ownership in colonial African environment. These challenges were some of the issues that African continent faced, which contributed to political apathy and shortsighted economic planning. Importantly, radio broadcasting is the main medium of communication in distant places of the continent to stay informed, empowered, and engaged.

Expanded Literature and Conceptual Framework:

The role of radio and social medial communication in sub-Saharan Africa has attracted a significant amount of scholarly interest over the past few years, primarily because of election apathy, exclusion, and misinformation which occurred during elections. Authors Ronning (1995) and Nyamnjoh (2005) drew the attention of scholars to evaluate the role of radio and new media in promoting democracy, political process, and development agenda in many parts of Africa because of their wide reaches of these channels of communication to rural areas of the continent. While television and newspapers are equally important in promoting democratic efforts and activities, they are not easily and readily accessible to citizens in the villages. In addition to creating awareness and participation in democracy, radio broadcasting plays an important part in conflict and war situations. For example, Ronning and Nyamnjoh (1995, 2005) identified the critical part played by radio channels during the 1994 genocide in Rwanda in which radio broadcasting consistently exposed and analyzed the nature of the conflict as well as public reactions. Consequently, radio messages and reporters' analysis of political issues in democracy and conflict situation raised public awareness thereby mobilizing support and sympathy.

An extensive literature review was conducted focusing on the cultivation of Internet radio technological convergence to assess the capability of using social media global network communities to generate revenue and to improve local and national communication connections. Furthermore, the review examined the technological phenomenon advancement of Internet radio, streaming programs and information, and how this new media technological innovation is revolutionizing democracy and social equality which is essential to people in the sub-Saharan African as well as to people in other parts of Africa.

Integration of Radio and Social Media in Contemporary Politics

It is widely acknowledged in past and recent communication literature (The World Bank, 2014; Graber, 1990; Schramm, 1964) that integration of radio and social media networks is a highly effective tools to inform and connect political citizenry about public policy agenda as well as development initiatives in the quest for democratic governance and national unity. Fundamentally, radio broadcasting empowers people in a way that is faster, rapid, and more pervasive than other forms of communication. It is noteworthy that elections' outcome has been controversial in some sub-Saharan African countries because of people's limited access to television in the rural areas of the countries. Radio channel is readily available and information can reach voters in the rural areas, and it reduces dependency on television and other sophisticated news sources. Moreover, regular and constant access to radio channels encourages pluralism, simultaneous communication to young and older citizens in the rural communities, and timeliness in information dissemination.

Conceptual Framework: Radio-Social Media Based Integrative Model

The concept of radio-social media based integrative model was developed in this chapter as a balance of for achieving sustainable political development and governance in sub-Saharan Africa. Drawing selectively from democratic governance in Nigeria and research evidence from The World Bank reports (1989 & 2009) as well as findings from studies (Entman, 1989; Diamond, 2004; McCombs and Reynolds, 2009), the chapter focuses on the critical importance of using Internet Radio to improve or enhance elections' outcomes and to establish interactive communication among diverse African communities. The strategic advantage of the radio-based integrative model is grounded on political empowerment and participation. The model suggests that (a) establishing independent ownership of radio stations in African countries will be useful in order to encourage more elaborate and constructive dissemination of news and development initiatives and activities; and (b) discouraging exclusive government-ownership of radio stations, which affect interactive communication among diverse communities.

Potentially, the radio-based integrative model, which derives substantially from general system theory concept, is a constructive model that enhances democratic ideals and practice, which fosters the realization of better election outcomes as a consequence of grass-root/voter participation in general elections. Implicit in the radio-based model is the idea that radio broadcasting and related news sources should be considered an integral part of sustainable development objectives in Africa. The concept is not only concerned with the integration of under-utilized radio channel in African political development agenda, but it is also concerned with the integration of all other news sources in mobilizing African citizenry in political campaigns, and elections toward the overall goal of sustainable democratic governance.

Internet Radio and Communication Effectiveness

General speaking, the social media technological processes provide its users in rural and urban communities of Africa adequate access to broadcasting networks, which can lead to community improvement and rural development awareness. As an example, the impact of convergent media can present mobile phone listeners numerous radio broadcast programs ranging from news, talk, music, entertainment, government, political, educational, and specialized formats. Significantly, the power of Internet radio reaches various global audiences simultaneously, making development political efforts achievable and sustainable. A more specific example is that new digital audio delivers sounds and images that are formatted through customized streaming media systems which would improve the quality of messages in African countries. Furthermore, radio audiences are able to access programs around the world in seconds and within rural communities. Bloomberg News (as cited in Biagi, 2017, p. 119) reported that Internet radio corporation providers like Pandora and iHeart Radio are providing broadcasting opportunities for advertisers, music producers, radio station programmers, and political candidates to reach millions of listeners both nationally and internationally through live local broadcast programming. Through these digital distribution channels, data is collected, analyzed, and stored for marketing by companies and media organizations. These advanced digital services are able to track, engage, respond, and resonate with Internet radio consumers through innovative new terrestrial broadcasting cyberspace technology (Biagi, 2017, p. 119).

Both academic and action research findings provide a closer look into the world of terrestrial digital media platforms with ubiquitous network transmission services. A report by EBU Technology and Development (2011) points out those terrestrial Internet digital broadcasting systems incorporate a number of technological Internet features, which utilize multiple services. The growth of mobile cell phone users and broadband networks give subscribers shared information online and in real time. Additionally, this pooled data furnishes mobile listeners historical opportunities to connect with larger communities and engage in discussions essential to their social, political, and cultural views and interactions. As a result, Internet radio technological and transformational broadcasting digital systems are historically significant to communities' individualization and fundamental relationships amid challenges facing independent, political, and social democracies.

Radio Power in Elections: Agenda-Setting Functions in Democracy

In evaluating the role and effectiveness of mass media in political campaigns and elections, scholars (Graber, 1990; Okigbo, 1992; Kaid, Negrine & James, 2007; Okoro, 2010) recognized the significant position of various communication channels in defining the salience of issues by establishing public agenda. This unique role of determining and guiding citizens worldwide during elections is consistent with the functions of radio broadcasting in reaching the rural communities in Africa to make informed decisions. Fundamentally, by expanding the knowledge and awareness of citizens in rural and urban areas, they are politically empowered to vote in elections with the result that elections' outcome will be grossly impacted. The "intellectual godfathers" of agenda-setting studies McCombs and Shaw (1972)demonstrated that by stressing the critical nature of election issues, candidates' credibility, and candidates' positions on various issues, the news sources (radio, television, and newspapers) have the capacity to establish the importance of issues and topics to the listening and voting audience.
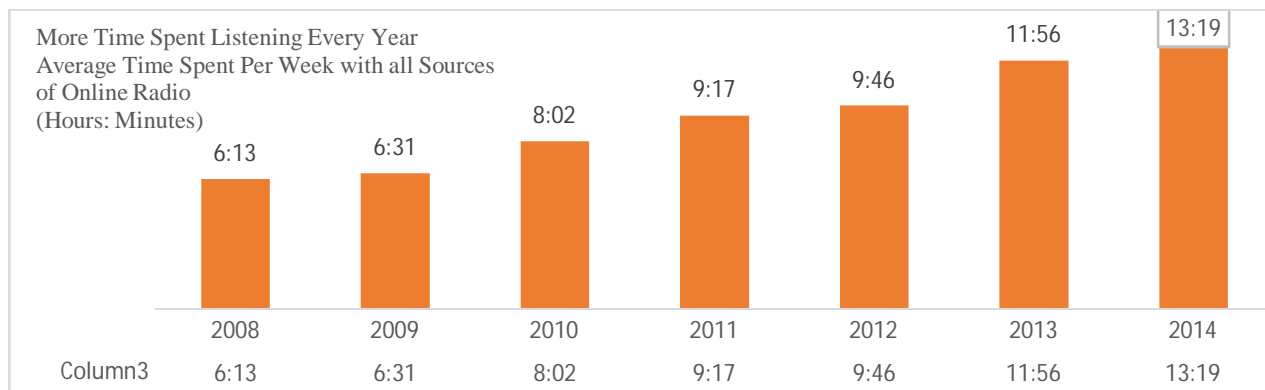
As Nwokeafor & Okunonye (2013) recently determined in their "media power in elections" research, the mass media is capable of exerting irresistible or compelling influence on voters, news sources "have the opportunity to mold their minds and significantly influence flow of news and information and directing their thinking and selection of candidates. Citing presidential elections in Nigeria in 2015, Nwokea for and Okunoye explained that PDP positioned their presidential candidate, Dr. Jonathan, as a more electable candidate based on media presentation of the candidate's agenda, his political experience and qualification. The news media creatively and strategically presented Dr. Jonathan as a more capable person to be president of Nigeria, which immensely impressed voters. The perceived favorable characteristics of the candidate by the media, according to the authors (2013, p.9), "positively influenced the opinion of the Nigerian electorate as a result of which candidate Jonathan was overwhelmingly elected the president of the nation in the April 2011 general election." The concept of agenda-setting is the strategic manipulation of public opinion and agenda by news sources (radio, television, newspapers, and the new media) in favor of a particular candidate and issues.

This mind or opinion control exerted on the audience, which Lippmann (1922), Okigbo (1992) Klapper (1960), McCombs and Shaw (1972), and Lippmann (1962) consistently described as defining, emphasizing, and/or repositioning salience of political issues and developments. In recent studies, Okoro (2010),Megwa (2009, 2014), and Biagi (2017)determined that the press is exceedingly influential in political environments and can control a significant segment of the social and political process that establish political issue and event salience. As a news source largely used in rural communities of Africa, radio broadcasting is therefore quite capable of setting the agenda for the citizenry, which ultimately affects elections' outcomes.

Evolution of Digital Radio Technology: A Global Assessment

The rising growth of Internet radio and mobile technology provides a vehicle for listeners who have an inquisitive interest in local and national programs and events which impact their cultural environment. XAPP-media (2015) reported that Internet radio growth will reach millions of listeners who are moving from traditional daily radio to spending more time accessing and downloading streaming program services. Hausman, Messere Benoit, and O'Donnell (2016, p. 347), stated that the number of Americans subscribing to Internet radio broadcasting has grown to nearly half of the U.S. population. According to their study, approximately 73% of individuals 12 and older listen to Internet radio and more than 90% of individuals 12 and older are terrestrial listeners. Similarly, Edison Research and Triton Digital reported (as cited in XAPP media 2015, p.4) discussed the growth rate of Internet online radio over a five year period. This report pointed out that the growth rate of Internet online radio users has dramatically increased to 13.5% over the last five years). Figure 1 below illustrates the rapid growth rate of weekly Internet online radio listeners from 2008 to 2014.

Figure 1: Weekly Online Radio Listeners Report

Column3	2008	2009	2010	2011	2012	2013	2014
	6:13	6:31	8:02	9:17	9:46	11:56	13:19

More Time Spent Listening Every Year
Average Time Spent Per Week with all Sources of Online Radio (Hours: Minutes)

Source: 2014 Edison Research and Triton Digital

Nielsen data (2015, p.4) reported a faster growth rate of 60.5% for Internet online radio listeners interested in streaming music and entertaining programs.

Furthermore, XAPP media (2015) reported that Internet radio will generate billions of dollars in revenue and music will represent nearly 20% of the mobile audiences' choice for selected entertainment. It explained that millennials between the ages of 18-34 had disposable income and would spend an estimated $200 billion dollars annually by the year 2017 and 10 trillion dollars during their life time.

Central to the XAPP-media (2015) study is the attraction of consumers to Internet Radio broadcasting. According to XAPP media's report, Internet Radio attracts consumers who are preoccupied with a number of personal activities and mobile devices like smart phones and persona tablets. Moreover, Nielsen's data (2014) reported that Internet and broadcast radio audiences spend nearly 80% of their mobile music listening while multi-tasking during personal, professional, and travel time.

Analysis of Internet Radio Universal Coverage

Internet radio broadcasting and streaming services are developing new innovative technology for consumers to access free information and entertainment around the world. This development will benefit audiences in developed and developing countries in Africa for years to come. Consequently, broadcasting and audio engineers are researching various ways to deliver new broadcasting services to mobile consumers and listeners in sub-Saharan Africa and other African countries.

Mobile users throughout the globe will have opportunities to download significant information involving government regulation, economic, political, cultural, and historical international and global events. This chapter noted the profound growth and mobile networking evolution through a very high-tech study conducted by Cisco (2016, p. 31) called "The Zetta byte Era: Trends and Analysis." This unique technological study forecasted that by the end of 2016, the annual busy hour internet traffic will increase by 51 percent and that smartphone traffic will exceed PC traffic by the year 2020. Cisco (2016) also reported that Annual global IP video traffic will increase by nearly 82% for both businesses and consumers, and global mobile data traffic will increase by 53% between 2015 and 2020, reaching Exabytes by 2020. Cisco (2016, p. 2) further stated that content delivery networks (CDNS) will carry nearly two-thirds of Internet traffic globally by 2020, which will immensely benefit developing countries in Africa where rural communities need more information to participate in the political process of democracy. This research pointed out that new evolutionary technology expanded the availability of Internet radio broadband and mobile video to each millions of smartphone traffic consumers with broadband speeds which will double from 24.7 Mbps to nearly 48 Mbps by the year 2020.

The Development Streaming Internet Radio Technology

Internet radio audio content incorporates various technological mechanisms for distribution of live programming transmitted by up-linking and then down linking to service providers throughout the world. As a result, Internet radio program files are transformed to streaming media formats and distributed to mobile smartphones globally.

Rayburn and Hoch (2005, p, 85) asserted that live webcasting is one of the most common digital component for streaming media to public and private audiences in develop and developing countries in Africa. Additionally, the studies pointed out that technological resources and new innovations are extremely important and beneficial in the process of delivering and broadcasting live events in real time. For examples, some benefits include new innovative systems that provide tremendous and interesting ways for schools and cultural institutions to stream live educational content to classrooms where lectures and instructions are being conducted during actual scheduled sessions. Moreover, students are gaining insight into depths of education and information with immediacy which wasn't previously available. Other benefits include the use of smartboards, smartphones, and tablet.

The growth of Internet mobile traffic technology and development is rapidly expanding at unprecedented demands for service and accessibility to countries in developed nations, and gradually it will extend to the developing nations of Africa. Cisco's (2015, p.2) report illustrates this rapid expansion in the Middle East and Africa. Specifically, this report asserts that:

In Middle East and Africa, mobile data traffic was 294.5 Petabytes per month in 2015, the equivalent of 74 million DVDs each month or 811 million text messages each second. In 2015, Middle East and Africa's mobile data traffic grew 2.2-fold, or 117%. In Middle East and Africa, mobile data traffic in 2015 was equivalent to 34x the volume of Middle Eastern and African mobile traffic five years earlier in 2010. In Middle East and Africa, mobile data traffic grew 2.6 times faster than Middle Eastern and African fixed IP traffic in 2015. In Middle East and Africa, the average mobile-connected end-user device generated 231 megabytes of mobile data traffic per month in 2015, up 98% from 117 megabytes per month in 2014. In Middle East and Africa, the average smartphone generated 835 megabytes of mobile data traffic per month in 2015, up from 519 megabytes per month in 2014. In Middle East and Africa, the average PC generated 2,478 megabytes of mobile data traffic per month in 2015, up from 1,953 megabytes per month in 2014. In Middle East and Africa, the average tablet generated 1,758 megabytes of mobile data traffic per month in 2015, up from 1,080 megabytes per month in 2014.

Internet radio digital technology has unlimited potential for universal availability. This rapid changing, terrestrial phenomenon has revolutionized the way consumer's access media services through their personal computer, smartphone, tablet or mobile phone. In addition, Internet radio is a vital distribution network for the entertainment industry. The popularity of the social media experience, combined with consumer's increased demand for technological advancements in mass quantities, more streaming media, and high-tech media gadgets, have placed corporations in a constant renewed and transformative position to proactively conform and respond to consumer requests, and take advantage of new technological opportunity and innovation for competitive benefit, efficiency, enhanced communication, and sustainability. Streaming is a powerful, progressive download of live programming over the Internet for continuous local and national viewership, to generate revenues, enhance communication, and improve content quality, training, and programming delivery systems in a cost-effective way.

Consumers can listen to Internet radio services on satellite either free or through subscription anywhere they would like for personal interest and entertainment: in their cars, on their mobile phones, on their computers, on their tablets, at home, or at the office. According to Nielsen's report (as cited in Biagi, 2017, p. 150), "Americans spend an average of 31 hours a week watching traditional TV and video on the Internet. Similarly, people 50 years and over spend twice as much time watching TV and videos on the Internet."

Conclusion:

The study provides a comprehensive exploration and evaluation of the role of radio broadcasting in the democratic process, social media communications, and the impact of using Internet radio to transform or enhance elections' outcomes and to build interactive communication among diverse communities in Africa. As civil societies and democratic nations are improving communication tools and acquiring more sophisticated channels for the purpose of ensuring that citizens are communicating effectively, there is a renewed focus on making sure that developing nations are using radio broadcasting to strategically enhance sustainable political development. Media and political communication scholars are consistent in their positions that the usefulness of radio can be used to support elections in the rural areas of Africa, because it a popular channel for the rapid dissemination of fundamental and critical information in a variety of languages and dialects across geographically vast areas of the continent. Further, radio broadcasting, if properly and adequately used, can provide a constructive platform for interactive communication (dialog and debate) among development stakeholders. It can also become an efficient channel for rural and urban communities to express themselves on development-related issues, and to provide an avenue for raising public awareness and social mobilization among citizens in rural/local areas.

Essentially, radio and other news sources are critical to the advancement of democracy. Over the years, empirical studies strongly indicate that democratic elections will not produce a credible result without the significant role of the mass media. In an analysis of media role in African changing electoral process, (Megwa 2009, 2014) described political elections as highly competitive involving transitional processes that are fraught with tension, confrontations, conflict, and instability especially in developing nations of Africa. The political stage involves the mass media (radio, television, newspapers, etc.), citizens, politicians, political parties, and governments at all levels who play active role to ensure that the outcome of elections are fair and free, responsibly conducted, and wildly acknowledged.

Author Megwa (2014) emphasized that in representative democracies in developed and developing nations, the mass media, more than any of the actors and groups in the political stage are expected to play a neutral, independent, and effective role in the electoral process by objectively shaping citizens' opinion and positively influencing political behaviors and decisions. As a result of the agenda-setting function of news sources, citizens will be able to reliably utilize information provided to make brilliant voting decisions and can hold elected officials accountable for their actions. Internationally-recognized subject-matter experts, authors across disciplines, and mass media scholars (Nwokeafor, 2013; Langmia, 2010; Okoro, 2010; Onwumechili, 2009, Okigbo, 1992) agree that the single most important requirement in the evolving African democracy for a sustainable political development is the presence of a robust and effective Internet radio and social media to build interactive communication among diverse rural and urban communities. This is a critical central point as the relationship between radio and community has been a significant concern for decades.

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