



Analysing the Effectiveness of Agricultural Radio Programmes on Youth Engagement in Agriculture in Ghana: Evidence from Kumbungu District

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Abstract

Radio plays a critical role in the dissemination and adoption of agricultural innovations among various stakeholders, particularly among rural farmers. The study determined the effectiveness of agricultural radio programmes on youth engagement in agriculture in Ghana. It draws some insights from agricultural knowledge gained by farmers (youth) through the radio programs in Kumbungu District. The study employed a descriptive survey design using quantitative data collection methods and analytical techniques with 100 surveys in the Kumbungu district. The findings established that the majority of the farmers indicated that they are satisfied with the knowledge gained from the programme, as it had improved the use of agricultural technologies and best farming methods in the area. It was also found that the programme has positively impacted the lives of farmers in the study areas. Also, the findings established that youth (farmers) adopted the information disseminated through radio, which was found to be highly relevant (70%) to their needs. The results, however, established that the programmes do not focus specifically on the youth. However, the study indicated that the programmes do not specifically target the youth, but are generally designed for all farmers. The study therefore recommends that the government and other development partners should strengthen efforts to design and implement policies that prioritize youth development in the agricultural sector. Additionally, the study calls for government and stakeholders to establish radio programmes that specifically support capacity-building initiatives to change youth perceptions and enhance their knowledge and skills about agriculture.

Keywords: Agriculture, Farming practices, Ghana, Radio communication, Rural development, Youth engagement.

1. Introduction

Effective communication plays a crucial role in the dissemination and adoption of agricultural innovations among various stakeholders, including farmers, extension agents, and agribusiness actors. Since the genesis of broadcasting, the radio has evolved as one of the most common and enduring platforms for rural and smallholder agricultural communication. This is a result of its capacity for wider coverage and adaptability to local contexts (Adeyeye et al., 2021; Antwi-Boateng et al., 2023). With diverse radio programmes, agricultural programmes, or talk shows remain one of the most prominent and impactful modes of rural radio communication, as they allow the audience to engage with experts, send in information, and ask questions (Antwi et al., 2022).

As the programme is an interactive format, it enables the exchange of innovative knowledge, enhances peer learning, and contributes to better-informed decision-making in agricultural practices. Reviews of history and contemporary studies reveal the enduring role of radio, particularly the role of rural (community) radio in fostering agricultural communication and development. Since the establishment of radio broadcasting in Africa in the 1920s, radio as a medium has been recognised for its capacity to bridge information gaps in information-limited areas such as rural communities (Abdulai, 2018; Amadu, 2023; Musinguzi et al., 2024). The national development objectives are some of the plans that generated the establishment of community radio to serve as a tool for the broadcasting of information, mobilise communities, and form public understanding of socioeconomic priorities.

Particularly, the radio continues to provide an essential space for national and global development to rural communities dominated by agricultural activities, which remain marginalized from the digital or high bandwidth information systems, as well as offers them extension services, agricultural innovations, and market trends (Adeyeye et al., 2021; Musinguzi et al., 2024; Nthama & Oladele, 2025; Zakariah, 2020).

Africa has an exceptional population profile, as indicated by available statistics (United Nations, 2024). Young people make up 36 percent of the working population and account for 60 percent of the total unemployed (International Labour Organization, 2024). The large youth population in Africa should be seen as an asset for the continent's development if appropriate human capital investment measures are taken. Youth inclusivity in agriculture is thus imperative, with its numerous direct and indirect benefits. It will provide unemployed young

people with employment and income. This will provide the food we need via increased production and ensure farming is passed from one generation to the next. Indirectly, it will drastically reduce the criminal and illegal activities youth may indulge in due to a lack of gainful employment. Agriculture remains fundamental to poverty reduction and economic growth in the 21st Century (World Bank Group, 2023). The report further posits that 75 percent of the world's poor reside in rural areas, and most are engaged in farming, an activity that requires sustenance, especially among the youth who are the leaders of tomorrow. Youth aged 15 to 24 years constitute 16 percent of the world's population and over 20 percent of the population in Africa, according to the United Nations (2025).

African agriculture is beset by a host of challenges. Experts identify lack of market access, low productivity due to adoption of modern farming systems, climate change, low fertilizer usage, inadequate storage, and low agricultural extension and processing facilities as being the most crucial (Hruby & Mengoub, 2023). However, as these challenges may seem daunting, they pale into insignificance when contrasted against these two intertwined issues: Non-engagement of African youths in agriculture. African farmers are ageing, and the implications are staggering; not only for food security but also for the transfer of necessary knowledge, skills, expertise, and techniques, and for employment and economic development. The case for Africa is worsened by the non-attractiveness of agriculture to the youths who should replace the old farmers. According to Srivastava et al. (2022), people, as the central players amongst the factors of production, occupy a critical position.

They possess the entrepreneurship to combine and utilise the other factors, land, labour, machinery, and inputs efficiently and effectively to achieve sustainable food production. Their levels of agricultural knowledge, skills, innovation, technological, and technical know-how, therefore, determine how well they do this. Youth, by their very education, talent, innovation, energy, openness to new agricultural techniques and technology, are better poised to be more effective and efficient agricultural producers. They are thus able to combat the scourge of food insecurity ravaging Africa. A precedent global commitment towards tackling major world challenges produced the seventeen Sustainable Development Goals, of which poverty elimination continues to be prioritized alongside goals for economic growth, climate action, and social inclusion. Nevertheless, sustainable agriculture development, which is potent against poverty and hunger, requires involvement with entrepreneurship and youth participation. Challenges remain in bridging the gap between economic growth and job creation and, in turn, addressing the growing unemployment, especially among the youth (Magagula & Tsvakirai, 2020).

The achievement of food security for all remains elusive in Ghana. One of the rural districts in the Northern region of Ghana is the Kumbungu District. The population of Kumbungu, according to the 2021 Population and Housing Census, is 110,586. Males constitute 50.0 percent, and females represent 50.0 percent. All the people in the district live in rural areas. The population of the district is youthful (44.8%), depicting a broad base population pyramid which tapers off with a small number of elderly persons, 5.4 percent (Ghana Statistical Service, 2021). As rural residents, agricultural production is the main and core subsistence activity for the residents of the district.

Agriculture in the district is practiced mainly on a seasonal and subsistence level, with a few engaged in irrigation farming around the Bontanga Dam. Agriculture accounts for about 60% of the district's labour force. This reflects the agrarian nature of the economy. In both rural and urban areas of the district, most people cultivate food crops like maize, rice, groundnuts, yams, amongst others (Ghana Statistical Service, 2021). But, as a deprived agrarian community, the farmers and the young farmers in the district have limited access and knowledge of agricultural extension services and modern farming techniques. Srivastava et al. (2022) point out that Africa is going through a youth bulge (with more people under 25 years than above 50 years of age in all its countries). Countries that depend heavily on agriculture may not readily create sufficient jobs for the youth in non-agricultural sectors in the medium term (International Labour Organization, 2024).

The rural youth in agriculture are migrating to cities and towns with little success in finding remunerative, gainful, and decent employment, but instead to the already serious unemployment. Youth engagement in agriculture, while recognised as important, tends to become a 'side issue', with experts preferring to look at mainstreaming options instead of tackling the issue directly. Yet the issue must be perceived with due heavy seriousness, because it's a critical threat to future food security that must be addressed now. And in addressing that, it must be ensured that youth, who are the key stakeholders in this process, are fully involved (Srivastava et al., 2022). Although most agendas have focused on formal and non-agricultural sectors as avenues of job creation, Studies on youth employment in agriculture in Ghana are scanty, and most literature is basically opinion-based and not empirically ascertained.

Generally, studies on Ghana's agriculture do reveal that the sector is left to the less educated, the aged, and those farmers who have low access to technologies, credit, and agricultural extension services (FAO, 2022). The available studies on agriculture in Ghana have concentrated more on explaining variables such as lack of rain, erratic rains, and poor soils, lack of inputs, poor market for farmers, food insecurity, and high cost of fertilizer. Despite the available scholarly discussion on agriculture, there is limited available research work on the effect of agricultural radio programmes on youth engagement in agriculture. The few available research works on youth engagement rather focus on youth unemployment, youth migration, among others. There is very little scholarly discussion on the effect of radio programmes on youth engagement in agriculture. This research gap motivates this study. This study, therefore, contributes to filling this knowledge gap in the literature. Against this backdrop, the overarching concern of this study is to first examine the constraints to youth participation in agriculture in the Kumbungu. Secondly, how do agricultural radio programmes affect youth perception in agriculture? And thirdly, how can agricultural radio programmes be enhanced to promote youth engagement in Agriculture?

This study is of significant relevance for multiple stakeholders and policymakers. Precisely, government agencies, non-governmental organisations, and other actors within the agriculture sector can derive valuable insights from the findings. The findings and recommendations of this study also inform policy formulation, programme design, and intervention strategies. The findings add to the already existing body of knowledge on the promotion of youth in agriculture, shaping behavioral responses and engagement patterns. It offers evidence-based which strengthens actors' confidence in the effectiveness of information-driven approaches to influencing participation and decision making in the agricultural sector. The subsequent sections of this paper present the

theoretical frameworks, research methodology, and outline findings, results, and discussion of the study. This is followed by the conclusion, policy recommendations, and the references used and cited in the paper.

2. Materials and Methods

Kumbungu District geographically shares boundaries to the north with Mamprugu/Moagduri District, Tolon and North Gonja Districts to the west, Sagnerigu District to the South, and Savelugu/Nanton Municipal to the east. The district covers a total land mass of approximately 1,599 square kilometres, making it one of the smaller districts in the Northern region of Ghana (Ghana Statistical Service, 2021). According to the 2021 Population and Housing Census, the population structure of the district is predominantly youthful, with about 44.8%, depicting a broad base population pyramid which tapers off with a small number of elderly persons, aged 60 years and above, constituting 5.4 percent (Ghana Statistical Service, 2021).

Research design offers a systematic framework that guides the conduct of a study by clarifying the research questions, relevant data, method of data collection, and data analytical methods and procedures (Abdulai, 2018; Rubin & Babbie, 2009). In considering this view, the study utilized a descriptive research design to assess the effects of agricultural radio programmes on youth engagement in agriculture within the study area. Generally, it's often a practical challenge in surveying an entire population for a study, due to constraints related to time, cost, and logistical limitations. The study employed a sampling as a more feasible approach for the study (Creswell & Creswell, 2023). In accordance with Creswell (2013), in descriptive survey research, a smaller sample sizes of around 100 respondents are considered acceptable when justified by study design and resource constraints (Etikan, 2016; Nzilano et al., 2025). This study utilized a total of one hundred (100) respondents.

This study further adopts multi-stage sampling techniques in selecting the participants for the study. In the first stage of the sampling, the district was zoned and stratified into four sampling zones. Namely, North, South, East, and West. In the second stage, one farming community was purposely selected from each of the four sampling zones based on active agricultural engagement. In the third stage, 25 respondents were randomly selected from each of the four selected study communities from the sampling zones, resulting in a total sample of 100 respondents. The final stage consisted of administering the questionnaires to respondents through face-to-face interviews.

Both qualitative and quantitative data drawn from primary and secondary sources were used for the study. Primary data were obtained directly from residents of Kumbungu District through a field survey. Secondary data was attained from scholarly journals, articles, published and unpublished theses, books, institutional libraries, community radio stations, such as Neesim FM, Simli FM in Dalung, GBC-Radio Savannah, Zaa FM, and relevant internet sources. The study adopted multiple data collection tools to enhance the reliability of the findings, including a structured and semi-structured questionnaire administered to respondents in Kumbungu District.

The questionnaire largely consisted of closed-ended questions. This aimed to capture information on youth agricultural knowledge acquisition through the radio programmes and the constraints affecting youth engagement in agriculture. Likert-scaled items and statements of the questionnaire were used to determine the respondents' level of awareness, perceptions, knowledge and agreement with key issues, ranging (strongly agree, agree, neutral, disagree, or strongly disagree) of agreement of the respondents to the stated points. The data entry and processing were conducted using Google Forms and Microsoft Excel. Each research objective was analysed using appropriate statistical techniques, with descriptive statistics, such as frequency, percentages, and means, utilised to summarise the data. The findings were presented using tabular and graphical formats to facilitate clarity and interpretation.

3. Theoretical Framework

3.1. Technology Acceptance Model (TAM)

This study is guided by the Technology Acceptance Model (TAM). The model is used to explain factors influencing the adoption and usage of information systems (Al-Adwan et al., 2023). The theory provides the basis for tracing the impact of external factors on users' internal beliefs, attitudes, and behavioral intentions towards a particular technology (Danso-Abbeam, 2022; Dragusha & Brown, 2025). In the current case, the Technology Acceptance Model guided the study to determine all factors influencing the usage of radio as a source of agricultural knowledge and information among farmers.

From a development and economic perspective, it is postulated that community radio, when effectively organized, performs several substantial functions at the grassroots level that support rural development. First, it serves as a vital platform for disseminating information on agriculture, gender equality, education, trade and commerce, climate variability, natural calamities, disaster preparedness, poverty reduction, and other socio-economic issues. Community radio is usually a medium that is community-owned, community-managed, and community-driven for the people, and thus, agricultural radio programmes in rural communities often host and engage extension experts and experienced local farmers in the community to educate, share practical knowledge, motivate participation, and encourage youth involvement in agricultural activities (Nthama & Oladele, 2025; World Bank Group, 2023). Second, the model asserts that community radio strengthens collective action by enhancing the capacity of the local population to work together to tackle and address a range of shared social challenges, including poverty, social exclusion, and limited access to services, through the radio. Third, it offers an inclusive forum for creative dialogue, exchange of diverse information, and perspectives.

This enables young farmers to open up and share their experiences and concerns through interactive formats such as phone-in discussions, which aid and complement the formal agricultural extension services (Antwi-Boateng et al., 2023).

Information is important for farmers to maintain livelihoods and to gain a competitive edge in a rapidly changing economic and production environment where primitive farming methods might be ineffective to meet new demands (Dzanku et al., 2022). Notwithstanding the centrality of information to agricultural transformation, most people, particularly farmers in many African countries, including Ghana, persistently face a substantial gap in information access, especially in rural areas where a larger proportion of about 60-70% of the population lives (Shitaye et al., 2024).

3.1.1. Uses and Gratifications Theory

This theory posits that media audiences are active participants who deliberately select and use media content based on their individual needs and motivations (Kankam & Attuh, 2022). Scholars of this theory, Blumer and Katz, argue that people use the mass media primarily to derive personal benefits and to satisfy their specific needs (Atser et al., 2023). The uses and gratifications approach, rooted in the functionalist paradigm, conceptualizes media consumption as a process through which individuals seek to fulfill social and psychological needs, rather than passively receiving messages (Zhang et al., 2024). The uses and gratifications theorists further contend that people's needs influence their media choices, thus, how they use and respond to media content (Ungvarsky, 2020). This framework provides a typology of common reasons for media use, including the need for information seeking, personal identity formation, social interaction, and entertainment. This approach is particularly essential for assessing the effect of agricultural radio programmes on young farmers, as it enables an examination of how the target youth (farmers) actively engaged with radio broadcasts and used agricultural information to meet and satisfy their farming needs.

3.2. Empirical Literature Review on the Effectiveness of Agricultural Radio Programmes on Youth Engagement in Agriculture in Ghana

Agriculture, in its basic sense, means the process and activity of systematic cultivation of the land for the production of crops and the rearing, management, and processing of livestock and poultry. It comprises farming in all branches, including soil preparation and tillage, planting and harvesting of crops, as well as dairying, livestock production, horticulture, and other farm-related practices undertaken to boost agricultural output and livelihood (Wilson et al., 2025). Agriculture is one of the important sectors globally. It remains one of the fundamental sectors and instruments for sustainable development and poverty reduction in the 21st century; it extends beyond primary production and includes value addition, agribusinesses, and sustainable land and resource management practices, serving as a major source of employment, food security, and income generation, thus supporting inclusive economic development, predominantly in developing regions, including Africa (Prus et al., 2024; Vaïsse et al., 2025). Its impact in Africa has led to the conclusion that agriculture is the backbone of many African economies, including Ghana, as the sector employs about 70 percent of the workforce in Africa. It continues to serve as an essential support in economic activity, contributing to livelihood and contributing an average of 30 percent to the continent's Gross Domestic Product (Vaïsse et al., 2025).

In Ghana, agriculture remains a critical sector in the country's economy and a key driver of social development, accounting for 35 percent of the country's Gross Domestic Product and providing employment to about 56 percent of the workforce, primarily in rural areas and smallholder farmers. Despite Ghana's agricultural potential to produce a variety of crops in various climatic zones, the country faces ongoing challenges related to food security and the need to modernize production value chains (FAO, 2022; Wollburg et al., 2024). Yet the Food and Agriculture Organisation (FAO) Report for 2023 affirmed that agriculture is a key sector for Ghana's economy, employing almost "half of the national labour force."

However, with the vast agricultural potential across the continent, Africa continues to lag behind other regions in terms of agricultural productivity in the world (Prus et al., 2024; World Bank Group, 2022). Wollburg et al. (2024) recently argued that "agricultural productivity in Sub-Saharan Africa (SSA) remains low and is falling farther behind other regions of the world". In addition, Prus et al. (2024) equally underlined that Sub-Saharan Africa is the only region in the world where per capita agricultural output has remained lower over the last four decades. This suggests that the Sub-Saharan Africa region has not yet given its best in terms of agricultural productivity and could produce more, given the availability of its land and abundant labour force. Invariably, some challenges persist that prevent Africa's agricultural sector from fulfilling its potential. The socioeconomic, policy, and biophysical constraints, as well as low youth participation in agriculture, poor storage facilities, inadequate market facilities, and unsustainable land management practices, among others, have been identified as the major causes of low agricultural productivity in Africa (Moss, 2025).

The radio has been continuously recognised as a highly effective and efficient medium for communication and education, particularly in rural and low-resource areas where other mass media have limited reach. The extensive accessibility of the radio allows it to deliver timely and relevant information on a wide range of topics unfolding around the world to diverse audiences, particularly on agricultural extension, as well as climate change, health, governance, and deployment (Asare-Nuamah et al., 2025; Wilson et al., 2025). The radio is often affordable, which requires minimal infrastructure and can be used with little literacy (Afful & Mabena, 2024). The radio supports development outcomes by disseminating actionable information and facilitating community engagement globally (Musunguzi et al., 2024). Radio is appropriate for creating general awareness and bringing desirable changes in the attitude of youth engagement in agriculture. It also plays a significant role in providing extension services and direct communication with low-literate or farming communities in the local language, in gathering information on various kinds of agricultural activities so as to update their knowledge and skills (Kiwelu & Ngulube, 2025).

Despite the recognition of employment creation within the agricultural sector, youth participation in the sector, especially as primary producers (farmers), has continued to decline in Ghana and across other African countries alike (World Bank Group, 2023). Apparently, many young people perceive the agriculture sector as an unattractive career option due to its risks, labour-intensive nature, and comparatively low returns, which reduces its demand as a viable livelihood pathway and or sector (FAO, 2022). In Ghana, radio remains a powerful, influential, and effective medium for disseminating information and knowledge on agricultural-related issues (Gwabara et al., 2025a). Gwabara et al. (2025) opined that radio is a reliable medium that holds the advantage of a wider geographical coverage and the capacity to reach a large and diverse audience. However, the use of radio as a tool and medium of agricultural extension and in enhancing youth agricultural literacy is particularly important as it is capable of delivering timely and relevant information in the local language, thus fostering farmers' understanding of appropriate application of agricultural practices (Antwi-Boateng et al., 2023).

Youth Engagement is defined as the meaningful and sustained participation of young people in activities that extend beyond personal interest and contribute to the social, economic, and community outcomes (Backes &

Bonnie, 2019). Available literature points to the fact that agriculture remains a key sector with the capacity to absorb the large pool of surplus unemployed and underemployed youthful labor force in Africa. Agriculture currently plays a major role in the livelihood of many young people and is expected to remain central to youth employment prospects in the coming decades (World Bank Group, 2025). The World Bank's Agriculture for Development report highlights that employment creation in agriculture is likely to happen in countries with substantial agricultural sectors, a condition that applies to Ghana. With improved agricultural productivity, the sector is more likely to create greater and higher-quality jobs (World Bank Group, 2025). Notwithstanding, it offers the potential to enhance food security, a modern, efficient, and productive agricultural sector, which provides employment opportunities to young people (Kumar & Doan, 2025). Decent jobs and sustainable livelihoods in the agricultural sector can be achieved through upgrading the existing agricultural employment or by creating new opportunities along agricultural value chains (Sousa et al., 2024).

Many scholars' exposition that, given the persistent and volatile food prices that have been experienced over the past decade, strengthening local food production by encouraging youth active participation in agriculture can be significant in boosting socioeconomic benefits (Food and Agriculture Organization of the United Nations, 2025; Sousa et al., 2024). The increasing demand for agricultural products, both in regional and international markets and value chains, creates other opportunities for the youth to actively engage in agriculture and related activities to foster income generation. Also, productivity in most African countries remains below the potential, suggesting that improved access to inputs and technology, increased labour contribution, and better market linkages could significantly raise yield and expand employment prospects for youth in the agricultural sector (Musinguzi et al., 2024).

Despite the recognition of the potential of the agriculture sector nationally and internationally, literature points to the decline of youth interest and engagement in farming. Yet, most point out that young people should be at the forefront of revitalizing agriculture since they tend to be more innovative. Indeed, if their contribution is matched with the right skills and capital, the much-needed youth dividend might be realized. Lack of incentives and drudgery are some of the reasons why the youth are uninterested in agriculture (Magagula & Tsvakirai, 2020; Melash et al., 2023). FAC (2011) underlines the current limited effort by most governments to engage the youth in agriculture and target the youth specifically with a view to understanding the constraints they face and designing conceivable solutions in order to overcome them. The specific factors affecting youth engagement in agriculture have received little research attention nationally. Empirical studies to explain the relative exodus of Ghanaian youth participation in the agricultural sector are scanty.

The current trend, however, is that so many youths are leaving agriculture, even with the increased government support due to various reasons: young people in the country perceive agriculture as a profession of intense labor, not profitable, and unable to support their livelihood compared to what white-collar jobs offer (Gwabara et al., 2025b). Therefore, the decline in participation of the youth in agricultural production is linked to the rural-urban migration phenomenon in search of other livelihood employment.

The decision to migrate involves both "push" and "pull" factors (Mercandalli et al., 2019). The 'push factors' include, among others, declining national resources; increasing cost of social amenities; loss of employment; and lack of opportunities for personal development. Among the listed 'pull factors' is the likelihood of better employment opportunities (Sousa et al., 2024). However, Akpan (2010) points out that some empirical studies found that economic push factors (such as the lack of rural credit, unemployment, and rural poverty, among others) are most important, while economic pull factors (such as perception of high wages from urban employment) are dominant. This predisposition is used to help explain why there is a declining engagement of the youth in agriculture in Ghana. Adekunle et al. (2006) underscore that inadequate credit facilities, lack of agricultural insurance, poor returns to agricultural investment, lack of basic farming knowledge, and lack of access to tractors and other farm inputs are the major constraints hindering youth participation in agriculture. Unimproved conditions in Ghana's agriculture have rendered agriculture unattractive to the youth (World Bank Group, 2023).

In circumstances where willingness to contribute is matched with opportunity, the youth have made a big contribution to economic growth and social development (Maïga et al., 2020). Suriname (2011) also points out that the poor image of agriculture needs to improve the engagement of young people in the sector, because youth are the ideal catalysts for such change, given their greater propensity and willingness to adopt new ideas, concepts, and technology, which are all critical to changing the way agriculture is practiced and perceived. To further attract young people into agriculture, deliberate efforts should be made to make basic mechanization, agricultural markets, and agricultural extension services (information) accessible and affordable (Dzanku et al., 2022). The youth possess unique capabilities (dynamism, strength, adventure, ambition), and these are assets for agriculture (Maïga et al., 2020). Youths represent the most active segment of the population and the engine that does the most productive work in society (Food and Agriculture Organization of the United Nations, 2025).

The youth have also been identified as constituting the major resource base for any country that wishes to embark on any meaningful agricultural and rural development projects (Adeyanju et al., 2020; Food and Agriculture Organization of the United Nations, 2025). Young people are a formidable force in the agricultural production process, constituting a sizeable proportion of future progressive farmers and better citizens, especially in rural areas (Backes & Bonnie, 2019; United Nations, 2024). Therefore, youth present an opportunity for a sustained effort to participate in Ghana's development process because they possess greater energy, a larger workforce, and greater potential, and have the capacity to drive positive change. The concern of stimulating growth of employment in the agricultural sector remains paramount in countries with a large agricultural sector, and improvements in agricultural productivity can generate more and better jobs in most developing countries (World Bank Group, 2022, 2025).

Mapusteni (2006), in his study on the Use of Radio in Zimbabwe, is of the view that what motivated the use of radio as a pedagogic and educational tool was its perceived strengths. The strengths of radio as realized by the users have been enumerated by other scholars; It is based in oral tradition, it appeals to listeners and relies on the imagination of the listener, it can cross time and space without limit, it can go places and evoke images that are impossible in real life, and it is a personal medium that can simultaneously reach millions of listeners with the

power to speak to each one of the individually (Amadu, 2023; Antwi et al., 2022; Antwi-Boateng et al., 2023). The statements advanced by scholars in favour of radio build a case for the relevance of radio use in development. Weaknesses are, however, observed; according to Girard (2001, p.116) efficiency of rural radio is often limited by its structure and lack of peasant involvement in determining its programming.

4. Results and Discussion

4.1. Socio-Demographic Characteristics of Farmers

The study used a sample population of 100 farmers, who provided their demographic information, including gender, age, educational level, and occupation. Gender of the respondents, as indicated in Table 1; 84% of the respondents were male, while 16% were female. This shows that most of the respondents involved in the study were male, constituting the majority actively involved in farming activity in the area.

In Table 1, results reveal that the majority of respondents were male (84.0%), while females constituted 16.0%, indicating a gender disparity in participation. This suggests that men are more involved in agricultural activities, particularly in crop farming, compared to women, which is consistent with the broader trend of male dominance in rural agriculture, land ownership, and leadership roles.

Table 1. Gender of Respondents.

Gender	Frequency (n)	Percent (%)
Female	16	16.0
Male	84	84.0
Total	100	100.0

Table 2 illustrates the respondents' age distributions. The findings reveal that 22.0% of the respondents were aged between 17 and 24 years, 36.0% aged between 25 and 33 years, 31.0% aged between 34 and 44 years, 11.0% aged between 45 and above. This shows that the target population is aged between 17 and 35 years. This also indicates that the majority of respondents are in their active youthful years (17-35), suggesting that agricultural participation in the district is largely driven by economically active youth and the middle-aged, with limited active engagement of the elderly.

Table 2. Age of Respondents.

Age	Frequency	Percent
17-24	22	22.0
25-33	36	36.0
34- 44	31	31.0
45 and above	11	11.0
Total	100	100.0

As shown in Table 3, 17.0% of the farmers (respondents) had basic education, 22.0% attained secondary education, 6.0% had technical education, 13.0% had university education, whereas 41.0% had no formal education. This shows that the majority of the respondents have no formal or higher educational qualification. These findings imply that most of the farmers have low literacy, thus limited ability to read or write. In addition, the limited literacy of most farmers limits them from sourcing agricultural knowledge and information from diverse sources, apart from the radio and family members.

Table 3. Educational Background of Respondents.

Education Level	Frequency	Percent
Basic School	17	17.0
No formal education	41	41.0
Secondary School	22	22.0
Technical school	6	6.0
Tertiary	13	13.0
Total	100	100.0

As shown in Table 4, the majority of 91.0% were into farming occupations as primary occupation, and 7.0% were public servants, while a minimum of 2.0% of respondents were into business. This shows that most of the respondents engaged in farming activity as their dominant livelihood in the district. More specifically, subsistence farming is practiced by these communities, as the findings indicated 47.0% of respondents were involved in subsistence farming, while 37.0% engaged in commercial farming, as shown in Table 4. Therefore, 29.0% of the farmers earned an income of GHS 2000.00 Ghana cedis or more from the agricultural activity, revealing the potential of the sector in creating an income-generating avenue for young people.

Table 4. Occupation of Respondent.

Occupation	Frequency	Percent
Business	1	1.0
Farming	91	91.0
Others	1	1.0
Public servant	7	7.0
Total	100	100.0

Also, Table 5 reveals that subsistence farming is the predominant agricultural practice of 47%, followed by commercial farming (37%), livestock farming (12%), and poultry farming constitutes 4%. This suggests that almost half of the respondents are involved in subsistence farming, perhaps for household consumption needs, while a

proportion is involved in commercial farming, indicating a market-oriented approach. Likewise, the findings reveal a relative prevalence of livestock and poultry farming among the respondents.

Table 5. Type of Farming.

Type of farming	Frequency	Percent
Subsistence farming	47	47.0
Commercial farming	37	37.0
Livestock farming	12	12.0
Poultry farming	4	4.0
Total	100	100.0

4.2. Agricultural Knowledge Gain by Youth through the Radio Programmes in Kumbungu District

The respondents were further asked to indicate whether they listened to agricultural radio programmes and the stations on which they accessed such content. **Figure 1** reveals the findings that an overwhelming majority of respondents (95%) indicated listened to agricultural programmes on stations such as Zaa FM, Radio Savannah (GBC), Neesim FM, and other local broadcasters, while only 5.0% of the respondents indicated that they did not listen to any agricultural radio programmes.

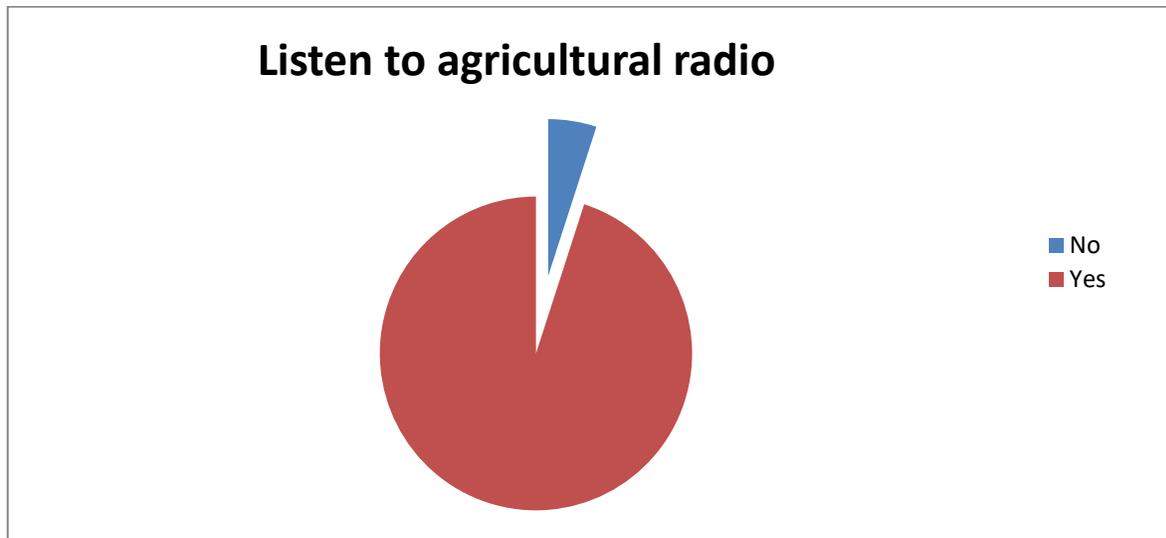


Figure 1. Listenership to Agricultural Radio.

However, the results in Table 6 further indicate varying levels of engagement with agricultural radio programmes among respondents, specifically, 35% of the respondents indicated that they always listened to or monitored the programmes, 43% indicated that they occasionally listened to the programmes. 19% indicated that they listen to the programmes rarely, while only 3.0% indicated that they never listen to the programmes. Overall, the findings suggest that most of the farmers either regularly or intermittently engage with agricultural radio broadcasts. Nevertheless, the study indicates a gap in farmers' access to diverse sources of agricultural extension information and services. Farmers in the study area have a limited source of information in gaining agricultural education, apart from the radio programmes, particularly Pukparilim Saha (Farm radio), and other family members. A respondent noted that officers from the Savanna Agricultural Research Institute (SARI) previously visited farmers to provide extension services, particularly information on modern farming methods, but these visits have stopped in recent years.

Table 6. Knowledge Gain by Youth through the Radio Programs.

Frequency	Frequency	Percentage
Attributes	Frequency	Percent
Listen to the radio program:		
No	5	5.0
Yes	95	95.0
Total	100	100.0
Frequency of listening to radio programs:		
Always	35	35.0
Never	3	3.0
Rarely	19	19.0
Sometimes	43	43.0
Total	100	100.0
Source of information	Frequency	Percent
Zaa FM – Pukparba Saha	9	9.0
Pukparilim Saha (Neesim FM)	69	69.0
Pukparilim Saha (Radio Savannah)	6	6.0
Simli Radio (Pukparba Saha)	1	1.0
SARI extension service	15	15.0
Total	100	100.0

4.3. *Perceptive Statements*

The respondents indicated their level of agreement with statements about the agricultural radio programmes. The findings in Table 7 reveal that more than 70% of the respondents agreed with the statement in Table 7. This implies that most of the farmers generally perceived the programmes with satisfaction.

Table 7. Perceptive statements.

Statements	Level of agreement (%)				
	SA	A	NS	D	SD
The youth prefer information that is specific to their agricultural needs	2.0	88.0	9.0	1.0	0.0
The youth prefer timely radio programs with current agricultural demand	5.0	89.0	6.0	0.0	0.0
The youth prefer radio programs as a source of finance	34.0	57.0	9.0	0.0	0.0
The youth prefer reliable radio programs on farming methods	27.0	66.0	7.0	0.0	0.0
The youth prefer radio programs that they can easily understand	18.0	80.0	2.0	0.0	0.0

Note: SA = Strongly agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly disagree.

4.4. *Influence of Knowledge Acquisition on Youth Engagement in Agriculture in Kumbungu District*

The respondents indicated their level of agreement with statements on the impacts of the agricultural radio programmes. The findings in Table 8 reveal that more than 70% of the respondents agreed to the statement in Table 8, on which 78% agreed that radio programs has increased their farm output, 19% agreed that the radio programmes has contributed to increased their level of income, 77% agreed that the radio programs has improved the quality of their yield, 72% agreed that the radio programs has helped reduced or control pests and disease on their farm, and (82%) agreed that the radio programs has enabled the use of innovations on their farms. These imply that the agricultural radio programmes have been impactful on most of the farmers, and they were satisfied with the programmes.

Table 8. Impact of radio programme on youth agriculture participation.

Statements	Level of agreement (%)				
	SA	A	NS	D	SD
Radio programs have increased my farm output	5.0	78.0	17.0	0.0	0.0
Radio programs have increased my level of income level	76.0	19.0	5.0	0.0	0.0
Radio programs have improved the quality of my yield	7.0	77.0	16.0	0.0	0.0
Radio programs have reduced/stopped pests and diseases on my farm	20.0	72.0	8.0	0.0	0.0
Radio programs have enabled the use of innovations on my farm	9.0	82.0	9.0	0.0	0.0

Note: SA = Strongly agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly disagree.

4.5. *Constraints to Youth Engagement in Agriculture in the Kumbungu District*

In looking at the challenges that affect young people (farmers) engagement in agriculture, respondents indicated a series of challenges and their level of agreement with statements, as shown in Table 9, the findings reveal that 73% agreed that lack of access to adequate extension services is a challenge to farmers and youth, 57% agreed that lack of awareness of information sources amount a constrained to farmers, 54% agreed that limited literacy (read and write) is a challenge as that restrict their source to information, thus, they only relied the radio for information, as it often uses the local language, and 54% agreed that weak government policies on information access and dissemination regarding agricultural inputs. The majority of farmers indicated challenges in low yield and large-scale farming, not because of inadequate education on the radio programmes, but due to financial constraints, an increased cost of agricultural technology, and other farming inputs such as fertilizer, weedicides, and access to tractors, limits their ability to engage in large-scale farming. Additionally, the change in rain patterns and erratic rainfall distracts farming activities, causing low yields.

Table 9. Challenges of youth engagement in agriculture.

Statements	Level of agreement (%)				
	SA	A	NS	D	SD
Lack of access to adequate extension services	15.0	73.0	9.0	1.0	2.0
Lack of awareness of information sources	3.0	57.0	40.0	0.0	0.0
Inability to read and write (illiteracy)	7.0	54.0	19.0	13.0	7.0
Poor radio programs	2.0	11.0	41.0	43.0	3.0
Radio programs on the media are aired at all hours	1.0	2.0	6.0	44.0	47.0
Poor government policies on information access and sharing	27.0	53.0	19.0	1.0	0.0

Note: SA = Strongly agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly disagree.

5. Discussion

5.1. *The Significance of Radio-Based Agricultural Knowledge to Farmers in Kumbungu District*

The study found that access to agricultural extension information is crucial to meeting farmers' needs in the Kumbungu District. Information plays a critical role in determining the success of agricultural activities and human endeavors in general, particularly concerning new market demands, modern and innovative farming methods, post-harvest storage for ensuring food security, and the essence of agricultural production (Abdulai, 2018).

Rural communities that depend mainly on agriculture often rely on an indigenous knowledge structure for innovation and adoption in their farming practices. Indigenous knowledge, however, remains unsatisfactory; if the rural farmers, who are usually dominated in subsistence farming, are expected to increase productivity necessary to ensure food security. This means that there is a need to integrate formal and informal knowledge and innovation to accelerate sustainable agricultural development (Melash et al., 2023). It also recognized that knowledge is not the preserve of science and new knowledge, but an interactive, bottom-up, social process (Olawuyi et al., 2024).

The policy brief of the International Food Policy Research Institute (IFPRI) defines knowledge as organized or processed information or data, which is fundamental in the pursuit of innovation. In contrast, innovation is the means of putting ideas, learning, and technology to work in a manner that brings about a significant improvement in productivity and product quality. Timely and appropriate information is also essential for farmers to increase crop yield, including the use of modern production techniques and the findings from contemporary agricultural research, as well as the capacity to efficiently tap into the changing market and credit conditions (Wollburg et al., 2024).

Perkins (2012) observes that many agricultural innovations have been developed by researchers and small-scale farmers themselves, and if widely adopted, would significantly contribute to increasing food security and poverty reduction. The fact that information has the power to turn around the fortunes of farmers globally, particularly in Sub-Saharan Africa. This is because agriculture is the backbone of African economies, being the largest employer and contributor to wealth creation and poverty alleviation on the continent (Prus et al., 2024). Smallholder farmers produce nearly 90% of Africa's agricultural output amid challenges and effects of climate change, and policy constraints in Africa (Prus et al., 2024; World Bank Group, 2022). Investing in knowledge-sharing and awareness-raising activities is one of the major policy recommendations, and proposes that governments should foster knowledge-sharing strategies that include the media. The media play a key role in disseminating information, raising awareness of climate change, and promoting agricultural knowledge generation (Prus et al., 2024; World Bank Group, 2023).

The Ghanaian economy is predominantly supported by agriculture, which is largely dependent on small-scale (subsistence) farmers, representing 75% of the farming population (Olawuyi et al., 2024). Like many African countries, Ghana is dominated by small-scale (subsistence) farmers, and despite the significant number of resources, African countries have yet to devote their efforts to knowledge dissemination and modern knowledge on agriculture to rural areas where up to 80 of the African population lives (Kankam & Attuh, 2022). For a long time, farmers in Africa have depended on extension services employed by the government-led extension services for important information on farm management practices, including seed varieties, market pricing, pests, and disease control (Wilson et al., 2025).

The extension concept adopted by many African countries was based on the notion that innovations are likely not accepted without effective communication from the originators to the intended users (target adopters) (Dzanku et al., 2022). Effective extension services are capable of transforming agricultural practices from traditional farming (subsistence) methods to adopting modern and technological farming practices, thus, from subsistence farming to a more productive activity, modern and technology-driven, aimed at promoting entrepreneurship and other value-chain initiatives necessary to improve the standard of living of people and communities (Danso-Abbeam, 2022).

Extension agents consequently play an essential role in the diffusion of agricultural technologies and innovations (Gebremariam et al., 2021). The study findings further indicate that farmers expressed a high level of satisfaction with agricultural information disseminated through the radio programmes. For many respondents, radio constitutes a primary source of agricultural information, apart from knowledge obtained from family members and fellow farmers. This reliance highlights the mounting significance of radio-based agricultural communication. Agricultural extension is widely acknowledged as a vital mechanism for enabling farmers to obtain relevant information and technologies that enhance their livelihoods and promote agricultural development (Anang, 2022). Thus, mass communication, particularly radio, has become a strategic tool for agricultural extension due to its broad reach, accessibility, and ability to effectively transmit and communicate agricultural knowledge and innovations to rural farming communities.

Extension agents play a central role in diffusing new agricultural technologies and innovation (Kankam & Attuh, 2022). Findings, however, reveal that farmers are satisfied with the agricultural extension knowledge disseminated through the radio programmes. The finding shows that farmers primarily rely on the radio source for agricultural information, apart from knowledge from family members and fellow farmers. This reliance highlights the growing importance of radio-based agricultural information. Agricultural extension is recognised as a key element for enabling farmers to obtain information and technologies relevant to achieving agricultural development and improved livelihoods (Dzanku et al., 2022). Mass communication, particularly radio, has been adopted for strategic agriculture extension services. This is due to its wide-reach capacity, easy accessibility, and ability to effectively communicate agricultural knowledge and innovations to farming (rural) communities (Kankam & Attuh, 2022; Olawuyi et al., 2024).

5.2. Agricultural Knowledge Acquisition by Youth through the Radio Programmes in Kumbungu District

The first objective of the study was to determine the effects of agricultural radio programmes on youth engagement in agriculture in Kumbungu District. The findings established that most of the respondents (farmers) regularly listened to and applied knowledge gained from the agricultural radio programmes (Abdulai, 2018; Adeyanju et al., 2020; Afful & Mabena, 2024). In addition, the findings indicate that most farmers were devoted to listening to the radio programme at the specified times, particularly at night and in the mornings. Aside from listenership, the study reveals that most of the farmers also participate in the programme through phone-in segments where the audience shares views, experience and challenges, while gaining clarifications on the farm-related concerns. However, most of the youth respondents indicated that they intermittently listen to the agricultural radio programmes.

The findings reveal that the radio was the most preferred, as almost all farmers were able to access a radio. The study established that most of the farmers frequently listen to the agricultural radio programmes aired on stations such as Radio Savannah, Zaa FM, Simli Radio, Neesim FM, and other local radio stations (Abdulai, 2018). Respondents indicate that they acquire a series of agricultural and related knowledge and skills from the programmes, including pest and disease controls, best farming practices, market opportunities and strategies, improved farm yield, as well as poultry production (Abdulai, 2018; Agbanu & Dzansi, 2024). Findings show that the programmes often involve agricultural officers who offer expert guidance and practical application of modern farming techniques. This information and practical guidance addressed the essential needs of farmers, which covers

the appropriate planting seasons, crop management practices, and methods for compost manure preparation, which is vastly essential to improving productivity and sustainability of agricultural produce.

In addition, the study reveals that farmers gained valuable knowledge and information on crop rotation, use of certified seeds, proper ways of grain storage, and use of scarecrows from the agricultural radio programmes, which are all relevant to farmers' agricultural development and sustainability. Furthermore, the study found that the programmes effectively offer an in-depth understanding of the application of modern and innovative techniques to farmers, which improves crop cultivation and increases farm yield, addressing the knowledge gap. The study further indicated that apart from crop production, which is mainly practiced by local farmers of the study area, poultry and livestock farming were also practiced. The programme also provided valuable practical knowledge on best management practices and suitable conditions for animal rearing and poultry production (Musinguzi et al., 2024; Nthama & Oladele, 2025).

5.3. Constraints to Youth Engagement in Agriculture in Kumbungu District

The study established that the radio programmes positively contributed to enhanced crop yield for farmers. Through expert guidance on modern farming practices and techniques offered on the agricultural radio programmes, farmers are gradually shifting away from traditional farming practices and adopting knowledge of modern and innovative farming techniques. Nevertheless, the study findings reveal that the agricultural radio programmes did not specifically focus on enhancing youth engagement in agriculture, but generally provided essential information and practical knowledge on agricultural-related issues to all farmers in the area. However, the radio programmes regularly cover a series of agriculture and related topics, such as new strategies for pest and disease control, compost manure preparation, agro forestry, market access, efficient land use, application of fertilizers to crops, and appropriate application of modern farm inputs, which are vital to increased farmers' knowledge and improve agricultural productivity and development that could motivate the agricultural sector as viable avenue to venture (Afful & Mabena, 2024).

The respondents (farmers) identified various challenges faced, particularly regarding the predictions of rain patterns (rainfall forecasts). The respondents indicated several cases when experts and agricultural extension officers appeared on the radio programmes and presented to the audience the appropriate planting times, as they expect rainfall on those days, which often do not occur. These instances blur farmers' confidence in agricultural agents educating them on appropriate planting times and affect farming or planting decisions. The study found that farmers in this area lack adequate agricultural extension services and information. According to the farmers, over the years, extension officers from the Savanna Agriculture Research Institute (SARI) used to visit and offer extension services to farmers in the district, but those visits have recently declined. Farmers mainly rely on the agricultural radio programmes for agricultural extension services and information. Other additional sources of agricultural information are educated family members and other experienced farmers, apart from the agricultural radio programmes. The primary reliance on radio-based information in the absence of regular on-farm extension further exacerbates the effectiveness of youth engagement in the agricultural sector in Ghana, particularly in the study area.

6. Conclusion

In conclusion, the study examined the extent to which agricultural radio programmes influence youth engagement in agriculture in the study area. The study reveals that agricultural radio programmes serve an instrumental role in promoting farmer knowledge, especially improved farming techniques, pest and disease control, adoption of new crop and livestock production practices, including the use of modern technologies. Overall, its influence on engaging and sustaining youth active participation in agriculture remains relatively low.

The study further reveals that youth participation in agriculture is highly constrained by access to substantial livelihood assets. Negative stereotypes also influence youth perceptions and aspirations towards the agricultural sector. Agriculture has the potential to serve as a viable source of income, employment, and boost food security. Nonetheless, fully harnessing this potential requires active and effective youth participation. Young people are energetic, innovative, and adaptable to the needs of transforming the agricultural sector and enhancing productivity and sustainability.

The study concludes that several challenges that constrain youth active engagement in agriculture could be addressed by improved access to the critical productive assets, which include land, financial resources (credit, savings, and social grants), agricultural extension support, and reliable market access, as well as dismantling negative perceptions and stereotypes about agriculture among young people. The study asserts that the farmers (youth) in the area gained substantial knowledge and benefits from the agricultural radio programmes. The participants assert that they gained practical knowledge on effective farming methods, including new skills in poultry production, compost manure preparation, how to improve farm outputs, and returns maximization from agriculture, and the application of modern technology in agricultural production.

In relation to the constraints to youth engagement in agriculture in the area, the study found that the youth generally have limited interest, negative perceptions, and low aspirations towards agriculture. The challenges could be addressed through government and other development partners, including structured policies designed to improve access to assets, thus agricultural-related resources and essential farm inputs. Such policies, when effective, will make the agricultural sector more attractive and provide economic avenues for the youth.

7. Recommendations

The study found that existing agricultural radio programmes focused generally on all farmers but were not specifically designed or targeted to engage and change the perceptions of young people towards the agricultural sector. The programmes provide limited information about market opportunities and linking to sell agricultural produce. Whereas this gap significantly intensifies post-harvest losses and the income of farmer-produced products. This study therefore recommends that the producers and stakeholders of the radio programmes should design a

structured radio programme that specifically focuses on youth participation in agriculture and marketing strategies and opportunities for agricultural produce.

Moreover, the study recommends that the government should design policies and programmes that focus on youth development in the agricultural sector, including training that enhances value-added initiatives and agripreneurships, and support youth in accessing finance and credit for agricultural purposes. This will reduce youth unemployment and economically empower the youth, attracting them to participate in agriculture.

The study further recommends the establishment of youth-focused training and development programmes to educate the youth and improve their perceptions, knowledge, and skills about agriculture. These programmes will help to dismantle negative stereotypes, while developing positive attitudes among youth about agriculture, as well as encourage the youth to take on agriculture as a viable and profitable livelihood option.

Ethical Approval:

Ethical approval for this study is granted by the Publication Ethics Committee of Sustainable Social Development (SSD). The journal's policies conform to the Core Practices established by the Committee on Publication Ethics (COPE).

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