Farmers' Access to Agriculture Information in an Agriculture Modernization Age: A Case Study of Farmers in the Wa West District, Ghana

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ABSTRACT

Information flow in an information age is essential for farmers' access to best agriculture practices for enhanced productivity. Though, the extant literature has given attention to agriculture information services, not much studies have examined access by farmers in deprived contexts to agriculture information. This study contributes to such a discourse in an information and agriculture modernization age.

A concurrent mixed method approach was adopted for the investigation in order to: a) assess the information needs, modes and sources, as well as challenges in accessing information by the wider farmer population, and b) uncover the underlying reasons behind the peculiar needs and challenges of farmers. Multistage sampling was used to select 395 respondents while probability and purposive sampling were employed to select 5-Farmer Based Organizations (FBOs) for the study. Descriptive statistics and analysis of variance were used to analyse the survey data while the qualitative data was used as triangulation and provided further insights into the results of the quantitative data.

The findings show that farmers had a wide range of information needs including pest and disease management information, input dealer information, credit facility information, preservation and storage information, weather information and marketing of produce information. Key sources of information were researchers, non-governmental organizations and family and friends. Limited availability of information on; pest and disease management, prices of farm produce, and standard measurement for agriculture produce were identified as challenges by farmers in accessing agriculture information.

The study concludes that famers' need for information in an increasing climate variability and deployment of technology in agriculture context, is enormous. However, a multiplicity of factors including low literacy levels, limited access to radio and television affect famers' access to timely and reliable agriculture information. The study recommends the pursuance of an aggressive rural development strategy with development of information infrastructure as the centre of the strategy to ensure farmers have access to up-to-date, timely and reliable information for informed decision making.

Keywords: agriculture information, agriculture modernization, pest and disease management, increasing climate variability, farmer-based organization.

INTRODUCTION

Information and communication have always mattered in production and productivity (McNamara et al., 2017). From the beginning of farming, farmers have always sought relevant agricultural information to address very pertinent production decisions, such as information on what crop to cultivate, livestock to rear, and many others (McNamara et al., 2017). Even though farmers have long practiced the cultivation or rearing of these crops and livestock, many factors, such as weather and soil conditions, including pest and disease epidemics, have tremendously changed the way agriculture is undertaken (McNamara et al., 2017). Magesa et al., (2020)

subscribe to the assertion by McNamara by saying that reliable, timely and suitable information helps farmers with market information such as deciding what to produce, when to produce it and where to sell it.

According to the FAO (2018), rural development needs information because it improves farmers' harvests and livelihoods. The report again intimates that information is more important to economic growth than commodities (FAO, 2018). It further indicates that certified seeds, pesticides and fertilisers alone are not enough to ensure agricultural sustainability but that information about input availability, prices, are key to boosting agricultural production and productivity (FAO, 2018).

Information has substantially changed how human society makes decisions, such information may be used to enhance agricultural productivity and crop yields (Dwivedi et al., 2020). Dwivedi et al., again say that every phase of farming requires information because it reduces the costs associated with human error and enables farmers to respond rapidly to challenges such as pests and drought conditions, helping them optimise profits and investment returns (Dwivedi et al., 2020).

Himesh et al., (2018) posit that the possible uses of information on a large scale in many fields, such as agricultural economics, climate change and agricultural policy research, have generated enormous interest. Himesh et al., further note that a more accurate understanding of the weather and environment might increase productivity in the agriculture sector. They however, intimate that, lack of information on rains and the occurrence of natural catastrophes like floods and droughts cause crop failures, food insecurity, hunger and death. Agriculture catastrophes are caused by climate change variability and extreme weather (Himesh et al., 2018). Access to information can significantly reduce the danger to the farming community in addition to traditional weather predictions and climate estimates (Himesh et al., 2018).

While Balamurugan et al. (2016) intimate that current agricultural information can improve farming skills and technologies such as crop cultivation, fertiliser application, how to manage illnesses and what crops to sow at what time. Cafer & Rikoon (2018) assert that farmers' exposure to agricultural innovation contributes to agricultural development and improves the welfare of both farmers and other rural people, and these benefits can manifest as an improvement in yield, income and standard of living (Cafer & Rikoon, 2018).

Effective agriculture information management affects land, capital, labour, technology and entrepreneurial abilities, and farmers make informed decisions, control resources and acquire influence when they have access to information from extension agents, researchers, educators and other sources (Maningas, 2000; Jain et al., 2015 & Allahyari & El Bilahl, 2018). The writers further note that communication, sharing information, making transactions, and passing on knowledge are important in almost every aspect of agriculture because they help increase production, marketing, and distribution (El Bilali & Allahyari, 2018).

Madhavan (2017) defines agriculture information as a set of several types of data and communications that are pertinent to farmers' agricultural production operations, such as crop cultivation and protection, animal production and management; and natural resource management. Since information is now considered a factor of production along with labour, capital, and land, it is one of the most important factors in increasing agricultural development (Kishore et al., 2011; Tologbonse et al., 2013 & McGuire, 2015).

Furthermore, Cafer and Rikoon (2018) consider it at the decision-making level, arguing that individuals who have access to relevant and timely data will make more reasonable decisions than those who do not. Siyao (2012) also considers agricultural information as one of the most critical materials in agriculture and rural development initiatives and that small-scale farmers are better equipped to compete with larger operators when they have access to information.

Agriculture was 18.9% of Ghana's GDP in 2016 (MOFA, 2017). Agriculture employs 44.7% of the workforce (GSS6, 2014). Ghana's job sector has shifted since 2000. This was due to the projected 17% increase in the services industry over the next few years. Between 2000 and 2020, agriculture shrank but remained the second largest employer. In 2000, agriculture accounted for 55% of all jobs; today, it is 35%. In 2020, 33% was anticipated, down 22%. Agriculture and agribusiness can offer structural reform and poverty reduction to Ghana and other rising nations (World Bank, 2016). Agriculture and agribusiness boost economic growth and reduce poverty, according to development literature (World Bank, 2016). High agricultural production promotes profits

and non-farm demand (World Bank, 2016). This leads to cheaper food and employment-intensive growth that benefits agricultural and non-farm industries (World Bank, 2016). Agriculture employs more people, especially in rural areas where it is the final resort (World Bank, 2016). In 2015, 9.3 million Ghanaians were nominally employed, according to the Ghana Labour Report. Agriculture employs 3.3 million (about 36 per cent of the total population) (World Bank, 2016).

Most underemployed farmers reside in rural areas (GSS, 2016). According to the 2015 Labour Force Report, 46.6% of the unemployed work in agriculture, forestry and fisheries, 13.9% in wholesale/retail and 13.4% in manufacturing. Agriculture, forestry, and fishing employ 70.2% of the unemployed in rural areas, compared to 13.3% in cities. In cities, underemployed people are approximately three times as likely to work in wholesale and retail trade (22.8% vs. 7.6%) (GSS, 2016). Over 80% of Ghanaians work in the informal economy; 55% of informal workers are in agriculture, fishing or construction crafts (13%), or agro-related services and sales (13 percent). Most individuals in the agricultural and agro-related informal sector confront challenges such as lack of effective regulation and low wages (World Bank, 2017). Agriculture has low yields for staple and cash crops (World Bank, 2017). This is not unusual for African countries; agricultural growth in Africa is often poor compared to other areas of the globe due to inconsistent public investment (World Bank, 2017). This phenomenon explains why most impoverished workers are in the informal sector. Crop, livestock and hunting are common jobs.

Agriculture's role in job development and poverty reduction cannot be overemphasised: agribusiness has one of the highest multipliers (1.8), creating 750 employments for every $1 million in output (World Bank, 2017). Moderate and extreme poverty rates, as well as inequality, have not changed recently, despite a decade of poverty reduction (World Bank, 2016b). Agricultural extension service relies heavily on the transfer of agricultural knowledge acquired via research to gain usable information and influence farmers attitudes and practices (Moore, 2015). Given the importance of agriculture to growth, agriculture information management in many developing countries is undermined by many factors, such as poor reception quality, limited television and radio coverage, and electronic messages that are not tailored to the information needs of rural farmers; information is rarely aired at the right time and often fails to reach the target audience (Fonsenka et al., 2019).

In terms of the print media, leaflets and newsletters as message carriers are of limited use in reaching illiterates; the technical language used in communicating information is incomprehensible to the farmers; and the inadequacy of existing extension (FAO, 2005). Where programmes exist, they are conceived without well thought-out plans and are prepared in a hurry without the farmers whose attitudes are to be changed making any inputs (FAO, 2005). Such agriculture information packages can neither sustain the farmers interest nor effect the designed attitudinal change (FAO, 2005). Farmers interests are disregarded even more, as most of the agriculture innovations are written and broadcast in English instead of the local language (FAO, 2005).There are still problems in the agriculture information systems themselves, in terms of planning extension activities, and the agricultural research-extension linkages are very weak (Olgun & Norman, 1993; Haruna & Baba, 2017). One way to overcome this problem may be to stop the over-differentiation between research and extension (Olgun & Norman, 1993; Haruna & Baba, 2017). Extension activities themselves are still planned centrally, and the information flow model is more or less top-down (Moore et al., 2015). Thus, farmer participation in planning extension activities is very weak (Moore et al., 2015). Studies of farmers' adoption of new technologies in industrial agriculture have often been framed within the traditional adoption diffusion model of innovation in which a few innovators initially adopt a conservation technology, then the majority of farmers follow subsequently, and finally, the remaining laggards join in (Jones, 1963; Llewellyn & Brown, 2020).

Farmers participation is most valuable since better communication between scientists and farmers would increase the utility and reliability of information reaching farmers and researchers must intentionally incorporate farmers as sources of knowledge from the outset, rather than seeing them as passive receivers of (McCorkle, 1989; Veluchamy & Saver, 1990; Kloppenburg, 1991; & Haruna & Baba., 2017).

In the flow of agriculture information, despite the application of technological transfer approaches, many problems remain unsolved, while indeed new ones have appeared in the world as a whole (Atanga, 2020). Technological advances and software packages developed with the hope of promoting efficiency in the information dissemination practices of research institutions and universities, or even in the companies of developed countries, have not really brought benefits to farmers (Atanga, 2020). Moreover, the small size of

farms, illiteracy among farmers, the lack of organisational unity among farmers and the instability of national agricultural policies have all played a part in undermining the effectiveness of agriculture information delivery (Atanga, 2020). Even though researchers have investigated agriculture information services in different parts of the globe (Yussuf et al., 2013; Yaseen et al., 2016; Haruna & Baba et al., 2017), little has been said about the information needs of farmers in Wa West District, how farmers have been accessing information for their farming activities, the challenges farmers encounter in accessing the information and some of the ways to improve the challenges. Additionally, the researcher has not found any work related to this study in the district. The researcher is actively attempting to bridge this gap.

LITERATURE REVIEW

An agricultural information system is one in which agricultural information is generated, transformed, transferred, consolidated, received and fed back in such a way that these activities work together to support agricultural producers' knowledge utilisation (Vidanapathirana, 2012). Abukari, Bawa and Awuni (2021) carried out a study on adoption determinants of agriculture extension communication channels in emergency and nonemergency situations in Ghana. The study used a multistage purposive sampling technique to select 318 farmers, focusing on the districts and the communities with the highest reported cases of fall armyworm infestation. The data was analysed using descriptive statistics and a multivariate probit model. The research shows that modern maize farmers in the region have a greater need for information on certified seeds and fertiliser applications because of demand-driven extension services. Emergency events tend to increase the number or intensity of agricultural communication channels for all channels except the workshop. Extensionists should avoid time-consuming channels, regardless of their usefulness, in emergencies because most farmers will not use them.

The study further notes that, despite Extension Agents serving as the primary and official channels of communication between the Ministry of Agriculture (MoFA) and farmers, Extension Agents (EAs) are not only inaccessible in an emergency but also not a reliable source of information in all circumstances and are also less popular in communities with electricity regardless of the situation. The covariance matrix shows that those who use it in an emergency usually supplement it with other non-personal channels, such as radio, television, telephone and posters. For this reason, the DAES should focus on these other channels to supplement extension agents in emergencies as outlined by MoFA.

The findings of the study affirm that radio has proven to be a reliable source of information in all conditions and is the most trusted in non-emergency situations. Since regular information is so critical in an emergency, this still contributes to the argument for radio to be given a great deal of attention. The research stipulates that, in both cases, farmers do not seem to be able to access agricultural information via television or the internet since they offer a linguistic barrier for those who desire to do so. Farmers with better earnings and farmers who have access to power use them. The National Communication Authority (NCA) can provide agriculture-related content in local languages. Regardless of the circumstances, avoid these channels when your target area lacks electricity (Abukari et al., 2021).

According to Abukari et al. (2021), non-emergency conditions are not favourable for workshops. As a result, agricultural extension efforts in the region should steer clear of this route at all costs, especially in emergencies. To reduce the time, energy, and resources farmers would have to spend participating, MoFA can educate all agricultural actors about the benefits of using this channel. Posters are easily accessible to farmers, but they are not always a reliable source of information for them in all circumstances. Because of this, posters should be continually revised and reprinted to meet the farmers' demand for new information and then widely disseminated within the time frame for farmers (Abukari et al., 2021). In an emergency, most channels are utilised in conjunction with one another. Farmers may decide to only use one channel at a time in a non-emergency. In emergencies, more channels are needed, and in non-emergencies, the most used channels need more focus. Access to electricity should be considered in this process (Abukari et al., 2021).

The findings of the study affirm that when faced with an emergency, farmers' communication channels and the factors that influence their decisions are different from when faced with a less dire circumstance. In addition, several emergency scenarios can have an impact on the growth and health of crops in the same way that fall armyworms do. Examples include severe droughts, pest outbreaks, and wildfires. However, this advice may be

unhelpful when crops are unaffected in the short term, such as during starvation, earthquakes, tsunamis, and pandemics like COVID-19. This study offers valuable insights into the factors that influence the adoption of agricultural extension communication channels in both emergency and non-emergency situations in Ghana. The study, however, is narrowed to maize producers and fall army scenarios whose backgrounds may be vastly different from other farmers' extension communication channels.

Munene et al. (2016) conducted a study on the effects of television agricultural shows on small-scale farmers' information needs in Kenya. The study investigated the effect of TV agricultural shows on small-scale farmers in Kenya. The study posited that small-scale Kenyan farmers were influenced by television shows on agriculture. According to Munene, small-scale farmers in Kenya have benefited from television shows in the promotion and transfer of farming skills and information. According to the findings of this study, small-scale farmers in the study area (Kikuyu) relied heavily on television agricultural shows for information. The target population for the study was farmers in Kikuyu Sub-county. The participants in this study were the local small-scale farmers who had access to television. A questionnaire with closed-ended and open-ended questions was used. Additionally, SPSS was used to analyse both datasets before they were presented in descriptive form, using frequency tables, percentages, weighted means, standard deviations, graphs, and pie charts.

Because the study target population is enormous and dispersed, multistage sampling was employed. Three (3) steps were included in the procedure. Curwin & Slater (2002) explained that in a multi-stage sampling procedure, people are first divided into groups, and then one or more clusters are randomly selected, and everyone in that cluster is randomly sampled. Wards, sub-locations and villages served as sampling units in each of the three stages of the study. Pearson's product-moment correlation technique was used to assess quantitative data. Using Pearson's product moment correlation, the independent and dependent variables were isolated and analysed. SPSS, a statistical tool for the social sciences, was used to examine both qualitative and quantitative data.

The study found that small-scale farmers in the Kikuyu region relied heavily on TV agricultural shows for their farming information. According to the findings of the study, television, in particular TV agricultural shows (TVASs), should be given the attention it needs to be more effective. It was found that while farmers in this area were found to be in their 40s and above, television access was found not to be high. Because farmers were either unaware of the existence of TVASs or there were other contributing circumstances, the “shows'” popularity was limited. Farmers cited interactivity, right scheduling, language knowledge, and showing interest as factors in their decision to watch one TVAS over another. Even while this research is eye-opening, it is worth noting that is because most rural farmers cannot read or understand English, TVASs broadcast in that language may fall short of their intended goals. To complicate matters further, the survey only included small-scale farmers who owned television sets.

Yussif, Masika and Ighodaro (2013) researched the topic Agricultural Information Needs of Rural Women Farmers in Nkonkobe Municipality: The Extension Challenge. Eastern Cape Province, South Africa. A total of 118 houses were surveyed for this research project. Snowball sampling was used to locate the female farmers in four different communities. The study reveals that gardening in the backyard is the most prevalent method of supplementing food security (87.2 per cent; n = 103) and indigenous chicken keeping (65.2 per cent; n = 77). After using cow dung as manure, the majority of growers (80.5%; n = 95) had weed difficulties.

Insect attacks on cabbage, spinach and carrot leaves were reported at 70.3 per percent, whereas seed dormancy was only 24.58 per cent (n = 29). Bird theft (66.95 per percent; n = 49) and feathered predators (40.68 per cent; n = 48) were both common occurrences. There was a slightly higher-than-average percentage of respondents (54.2 per percent), but the vast majority (99.1 per cent; n = 117) relied on extension workers and farm demonstrations to learn about agricultural issues from their peers. In the study, it was shown that the farmer-to-farmer model of technology transfer is extremely important among agriculturalists. According to the authors of the study, a farmer-to-farmer model might be used to supplement the efforts of extension services in supplying farmers with agricultural knowledge.

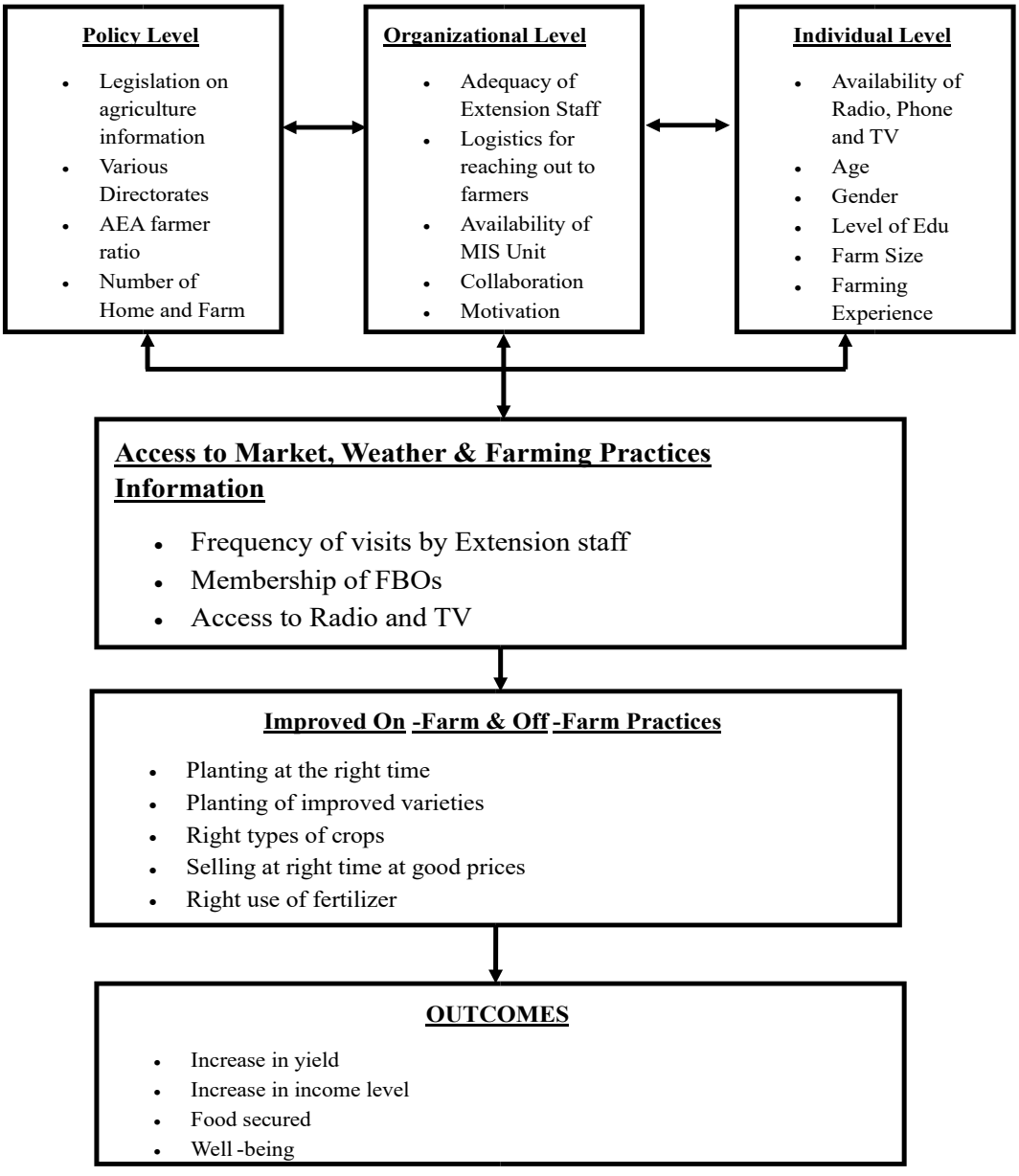
With a population of 131,071 and 28,259 households, Nkonkobe Municipality was chosen for the study (Global Insight, 2008). In addition, there are 21 wards in the municipality. Women farmers in Nkonkobe Municipality ward 12 were the intended audience. Although a total of 144 questionnaires were sent, only the responses of 118 female farmers, or around 81.9 percent of the original number of questionnaires, were collected and analysed

through the snowball approach. SPSS version 20 was used to analyse the gathered data. Descriptive statistic tools include frequency counts, percentages and mean values.

To develop a solid and healthy agricultural foundation, Yussif et al. posited that having access to appropriate, relevant and reliable agricultural information is a necessity. Women must be assisted in gaining access to accurate and reasonable agricultural information, given their important impact on global food security. As a result of the many difficulties they encountered in rural areas, women farmers were deemed to be particularly vulnerable. The difficulties may be overcome if they had access to the right kinds of agricultural knowledge, which would lessen the impact of the natural shocks that come with susceptibility. According to the findings of this survey, the majority of women farmers raised chickens in their backyards or on other properties. They need information on farming and animal rearing that has been tested and verified to handle various issues. The majority of farmers, according to the study findings, relied on word-of-mouth for agricultural information. According to the authors, research into the farmer-to-farmer approach to technology transfer to reach small-scale female farmers in South Africa is encouraged. The significance of this research cannot be overstated. As a result, the population is limited to women farmers, a single segment of the social unit. As a result, generalising the findings of this study is problematic because women's information demands are highly variable compared to men's.

Conceptual framework

Figure 1.1: Conceptual Framework



Author's Construct, 2022

The concept outlined the relations among policy level, organisational level/ Collaborative and individual factors and how these parameters have an influence on farmers information needs and access to information (weather, market and other farming practices). The concept clarifies that significant decisions such as legislation on agriculture information, main directorates at the Ministry of Food and Agriculture, the extensionist-farmer ratio and the number of districts, among others, are determined by policymakers (government). And the decisions made by policymakers have a direct correlation with organisation levels (regional and district), where staff level is determined and logistics for reaching out to farmers are provided, including human resource training. The capacity or incapacity of the individual farmer (demographics), such as access to radio, TV set, gender, educational level, age and farm size, influences information needs and the sources available to farmers (Poudel, 2013).

METHODOLOGY

Profile of the study district

The Wa West District is among the eleven districts that constitute the Upper West Region. The District was carved out from the then Wa District in 2004 by Legislative Instrument 1751 under the Local Government Act, 463, 1993. With Wechiau as the district capital (Ghana Statistical Service (GSS), 2010). The Wa West District is located in the western part of the Upper West Region, with approximate longitudes of 40ºN and 45ºN and latitudes of 9ºW and 32ºW. The District has two well-known paramountcies, namely Wechiau and Dorimon (MoFA, 2010). The Wa West District has a population of 96,957 with a projected population growth of 1.6 annually and a growth rate of 1.7 (GSS, 2020). According to the population and housing census (2010), Wa West District had a population of about 81,170. The Wa West District is about 11.6% of the total population of the Upper West Region (GSS, 2010). Male comprises 40,227 and female 41,121. This represents 49.5% and 50.5%, respectively. The sex ratio is 98 males to 100 females (GSS, 2010). The district covers a land area of about 1,489 km². The vegetation is Guinean savanna grassland. The following trees predominate in the district: shea, dawadawa, kapok baobab, mahogany, cashew, mangoes, etc. Major crops cultivated include maize, sorghum, groundnuts, cowpeas, and vegetables (MoFA, 2010).Major economic ventures in the District include agriculture, tourism, rural commerce and social services. Agriculture activities engage about 86.0% of the population. A great number of the population ~~are~~ is small-scale farmers, whereas a small number ~~are~~ is involved in fish farming along a few panels of the Black Volta. Women primarily work in enterprises like pito brewing, petty trading, and shea butter extraction (MoFA, 2010). Wa West District alone produced 13.6% of the regional output in 2015. The Wa West District is noted for the production of yam, groundnut, maize and many other crops. In terms of crop segregation over the last seven years, yam production has recorded an average production figure of 89,153.07, followed by groundnut with 23,387.75 and maize with 13,714.53. But regarding the average yield per hectare, yam, rice, and maize performed well, accounting for 15.42, 2.45, and 1.99, respectively. See table 1.1 below.

Table 1.1. Agriculture Production and Yield by commodity in MT in Wa West.

Crop	2016	2017	2018	2019	2020	2021	2022	Total
Yam	6,666	7,035	37,840	38,173	177,000	175,270	182,088	624,071.49
G'nut	26,647	29,552	31,761	29,291	14,801	15,444	16,219	163,714.26
Maize	5,087	5,331	14,053	19,456	21,015	15,730	15,330	96,001.73
Rice	1,502	1,528	21,965	36,010	6,122	6,201	6,578	79,905.08
Cowpea	4,406	4,875	9,002	11,846	12,296	12,602	14,434	69,459.55
Sorghum	6,365	6,561	4,448	15,748	9,000	9,723	12,423	64,268.50
Millet	5,317	5,339	17,718	20,829	1,927	2,483	2,567	56,180.69
Soyabean	3,748	3,911	3,389	16,191	8,565	9,100	8,984	53,888.75

Source: (SRID, MoFA, 2016- 2022)

Strategy

A concurrent, mixed approach descriptive method was employed in this study. According to Nworgu (2006), the purpose of a descriptive study is to collect data about something and describe it systematically, including the characteristics and facts about a certain population. Both quantitative and qualitative data were collected and analysed. The reasoning behind the mixed method is to give room for each method to complement the other in overcoming their weakness. In the opinion of Shannon-Baker (2016), the "mixed methods approach increases the overall strength of the study more than using either qualitative or quantitative." More so, the triangulation approach did not only upscale the room and scale of the investigation but also equipoise the weakness of each other (Creswell & Plano, 2007). While qualitative provides in-depth appreciative survey responses, the quantitative approach throws more light on the statistical inferences and much knowledge on analysis and patterns and responses. Driscoll et al. (2007) opined that triangulation design affords the researcher a practical approach to dealing with complicated questions. This therefore implies that research that neither involves deeper analysis of qualitative nor multivariate analysis of quantitative data, the triangulation approach is the way to go.

Population

The main target population was farmers from the Wa West District in the Upper West Region of Ghana. There were 31,216 (MoFA, broadspectrum.com, 2022) in the District. The research targets farmers who stayed in the chosen communities.

Sampling technique and sample size determination

The qualitative part of the study relied on purposive sampling to get FBOs for Focus Group Discussion while the quantitative section of the study employed probability sampling. In probability sampling, all members of the target population have equal chances of being selected for the study, unlike purposive sampling which deals with the selection of a sample based on the judgment of the researcher. Studying a whole population will be difficult if not impossible; hence the study was guided by the Yamane formula in determining the sample size for the quantitative section of the study. Yamane (1967) intimated that dealing with a whole population is a "poor" assumption and therefore provided a simplified formula to calculate sample sizes. This formula is stated as follows:

$$n = \frac{N}{1+N\,(e)\,2}$$

Where n is the sample size, N is the population size, and e is the level of precision. The farmer population of Wa West District is estimated at 31,216 (MoFA, broadspectrum.com, 2022).

Sample distribution

The Wa West District comprises five zonal areas. These zonal areas are the Gurungu, Wechiau, Vieri, Dorimon, and Ga zones. The district has over 250 farmer-based organisations (FBOs) (DOA, Wa West, 2022). 5 FBOs were purposively selected from each of the zones for the study. Purposive sampling was used to identify the FBOs, and later on, simple random sampling was applied to select the five FBOs for the study. To elicit divergent views for discussion, the researcher interviewed two women-only groups, two men-only groups and one mixed group. The researcher considered pre-existing groups, as it may be easier to join since they share comparable experiences and are more at ease with one another, making it easier to discuss issues or challenge one another. In terms of probability sampling, multistage sampling using a progressive method was used to group the district into five zones. The study further employed quota sampling, in which five communities in each of the five zones were selected. And for each zone, simple random sampling through the lottery method was used to select the five communities. All farmers had equal chances of selection through the lottery system. Additionally, since the farmers' list was obtained from the E-Agric database, the lottery system is suitable since the lottery system is suitable for digitalised or already stored data. Both the researcher and the agriculture extension officers conducted the sampling at the community level. However, communities with small farmer populations in the study area were eliminated because their number of farmers fell short of the number for the required responses.

These communities were eliminated because it was not feasible to get the required numbers for the interview. A replacement list was made available to substitute respondents who said they had stopped farming temporarily or were absent at the time of the visit**.** See table 1.2.

Table 1.2. Sample Size Distribution and Study Communities

Zone	**Community**	**Sample Size**
Wechiau	Wechiau	16
	Dodoma	15
	Baleofilli	5
	Bamkpama	15
	Tanvaare	15
Dorimon	Dorimon	16
	Gbache	15
	Varempare	15
	Salimaana	15
	Domawa	15
	Salimaana	16
Ga	Naaha	15
	Tendoma	15
	Tanina	15
	Poyentanga	15
	Polee	15
Gurunga	Chogsia	15
	Kpenateng	15
	Meteu	15
	Talewonchali	15
	Solimbo	15
Vieri	Piireteng	16
	Vieri	15
	Berenyasi	15
	Siiru	16
	Yelyiri	15
Total		**395**

(Field Data, 2022)

Data collection methods

The study comprises both primary and secondary data. Data was gathered from respondents in farming communities in the Wa West District. Generally, data for studies was centred on demographic features, information needs of farmers, how farmers have been accessing information, the challenges in accessing information and how these challenges can be improved for farmers in the Wa West District. Primary data was

obtained from respondents. The respondents were made up of individual farmers and farmer groups. It takes the form of a Kobocollect survey questionnaire for individual farmers and audio recordings of interviews with farmer groups. On the other hand, the researcher also used secondary data from reports, published theses, relevant textbooks, policy documents, blog posts, news articles, and journals, as well as surveys that relate to the study. And to ensure the study is rigorous, many sources were triangulated.

Data collection tools and process

The study made use of key data collection methods such as focus group discussions to complement the quantitative data in answering the "what, why and how" questions. Given that, the study deployed an interview guide, semi-structured schedules, observational tools to validate responses and audio-visual recordings for late confirmations. The quantitative data was gathered using KoboCollect and later deployed for analysis. The discussion was open-ended, as it offered participants the opportunity to speak not only from many angles but also to express their experiences and thoughts based on their situations. Participants were informed 2-3 weeks before the interview day and were later reminded a day before the interview. 10-15 members participated in the discussion, though the total number of members for each group exceeded 20 people. In all, 65 members took part in the discussion. Members' opinions were respected, as no opinion was considered wrong or discarded during the discussion. The researcher ensured that discussions were held in places that were neutral for participants; so, classrooms and churches were used as meeting venues. Checks were also put in place to avoid destruction and ensure participants speak freely. Ground rules were set to put mobile phones on silence and possibly reduce movement so as not to disrupt the recording. To ensure the timing was convenient for participants, the discussions were organised between the hours of 6:30 am and 8:30 am. This allowed participants to engage in the discussion while still finding time for their daily activities. The discussion was recorded using mobile phones. The researcher went to the field with two mobile phones for recording; one for backup. The researcher kept eye contact with each participant to ensure each person was listening to the discussion. Participants were also encouraged to speak louder to get a clear voice recording. Any time a researcher could not grab a full response from a participant, the researcher probed further by redirecting the question. The researcher managed dominant talkers by intentionally encouraging other quiet people to speak. The researcher asked relevant questions such as the name of the FBO, year of formation, total membership, the main purpose of the group, type of crops FBO cultivates, number of years the FBO has been involved in farming, type of crop production season FBO practices, type of labour use on the farm, whether the group ever received training on any information on agriculture before, what the information needs of the FBO are, how the FBO has been accessing agriculture information for their farm activities, challenges FBO faces in accessing the information and ways to improve the said challenges. The FBOs were chosen from the following communities: Varempere, Gurungu, and Berenyasi; Gonbile and Naaha in the Wa West District.

Data analysis

To make meaning of the data to be collected, SPSS version 23 was used to analyse the quantitative data. Tables, pie charts, bar graphs and analysis of variance (ANOVA) were used to present the study results. Most qualitative researchers agree with Snider's (2010) assessment that numbers are impressive, but they hide considerably more than they show. They would also agree with Davis et al. (2008) that "excellent qualitative data has met, if not exceeded, quantitative approaches in stature, importance, and methodological rigour" (p. 574). Most qualitative researcher (s)' thoughts and proposed measures are guided by a few principles. The philosophical principles of qualitative inquiry guide qualitative research in all of its complicated designs and data analysis methods: To comprehend a complex phenomenon, you must evaluate the various "realities" that participants have encountered the "insider" viewpoints. Natural settings are ideal for observing how people develop their meanings from events or situations. Quantitative researchers' pursuit of objective truth is abandoned in favour of the premise that humans create their individualised universes.

As previously mentioned, the qualitative data was recorded in the field, transcribed verbatim, and analysed thematically. The thematic analysis is guided by the work of Braun and Clarke (2006). The analysis follows the process below: familiarisation, coding, identifying themes, checking themes, defining and labelling themes and writing up.

Ethical consideration

Significantly, ethical guidelines and principles such as informed consent, confidentiality, and liberty to withdraw from the interview process were mentioned to respondents as outlined in the American psychology Association manual. Given the previously mentioned, the study did not include respondents' names in the demographic section of the questionnaire. Participants were assured of no harm as they contribute to this study.

RESULTS AND DISCUSSION

The sex of the respondent is an inalienable factor in determining ownership and access to land for agricultural purposes (Abdul-Mumin, 2020). Access to land influences the information needs of farmers. Interestingly, most of the respondents for this survey were females 52.7% in the study area. The Wa West District revealed that 47.3% of the population was male (GSS, 2020). Among the 395 farmers interviewed, 40.5% lacked any formal education. This group was followed by 19.5% who had education up to the primary level, and about 0.8% of farmers indicated that they have obtained education up to the bachelor's degree level. This aligns with the Wa West District population and housing census (2020), which indicated that 64.7% have no educational background, while 35.3% are literate.

Table 1.3. Demographic, Social and Economic Factors of Farmers

Indicators	Variables	Frequency	Per cent
Marital Status of Respondents	Divorced	2.00	0.50
	Married	353	89.30
	Single	32.0	8.60
	Widow/Widower	8.00	2.00
Sex of Respondents	Male	123	31.10
	Female	272	68.80
Religion of Respondents	Christianity	191	48.40
	Islam	144	36.50
	Traditional believers	60.00	15.10
Native or Migrant	Migrant	52.00	13.90
	Native	341	86.30
Household Head	Yes	169	42.70
	No	230	58.20
Social Position	No	324	82.00
	Yes	67.0	17.00
Level of Education	Bachelor's Degree	4.00	0.80
	Diploma	9.00	2.00
	JHS	71.0	17.70
	No-Education	161	40.50

	Primary	77.0	19.5
	SHS	74.0	18.70
Crop Production Season	Irrigation only	5.00	2.50
	Rain-fed and irrigation	83.0	20.50
	Rain-fed only	307	77.70
Type of labour hired	Family	264	66.40
	Hired	78.0	19.60
	Others	27.0	6.60
	Self-Group	26.0	5.90
Whether farmers received information or training or not before	No	166	42.0
	Yes	229	57.9

Source: Field Survey, 2022

The minimum age of respondents was 18 years, while the maximum was 70 years, with an average of 39.54. Thus, a lot of youth are into farming in the study area. The minimum household size was 1, with a maximum of 17 and an average of 7.5. This data was corroborated by the Ghana Statistical Service in the Wa West District population and housing census, which revealed that the average household size in Wa West was 7.0 (GSS, 2015). Farmers had between 1 and 40 years of experience, with an average of 16.2 years. The highest number of acres farmers cultivated was 40, with an average acreage of 6.1 and the least of 1 acre.

Table 1.3.1. Demographics and Socio-Economic Factors 2

Variables	Minimum	Maximum	Mean	St. Deviation
Age of Respondent	18.00	70	39.54	8.84
Household size	1.00	17	7.50	5.26
Farming Experience	1.00	40	16.12	7.99
Size of Crop Farm	1.00	40.0	6.107	4.63

Source: Field Survey, 2022

Main Crops Cultivated by Respondents (100%)

Table 1.4 shows that the number of main crops cultivated among respondents was maize at 62.8%, groundnut at 10.4%, and millet at 5.1%. The second main crops cultivated were soybeans, maize, and groundnuts, at 18.2% and 15.2%, respectively. In terms of average production, maize cultivation is leading with about 29.57%, followed by soya bean with 12.70%, and the least cultivated crop was guinea corn with 0.27%.

Table 1.4. Main Crops Cultivated by Respondents (100%)

Main Crops Cultivated	Crop 1	Crop 2	Crop 3	Average
Maize	62.80	18.00	7.60	29.57
Soyabean	4.00	18.20	15.90	12.70
Cowpea	3.00	13.20	19.70	11.97

Groundnut	10.00	15.20	8.00	11.07
Millet	6.00	8.10	6.00	6.70
Vegetables	1.20	3.00	14.20	6.13
Yam	3.00	4.00	6.80	4.60
Rice	2.00	5.00	4.80	3.9
Beans	3.00	2.50	3.50	3.00
Sorghum	0.00	2.00	6.80	2.93
Cashew	2.00	5.00	0.80	2.60
Cassava	0.00	4.10	1.30	1.80
Bambara Beans	3.00	1.00	1.10	1.70
Watermelon	0.00	0.40	3.00	1.13
Guinea corn	0.00	0.30	0.50	0.27

Source: Field Survey, 2022

Main livestock reared

Table 1.5 depicts that the first main animals reared among respondents were goats, fowl (local) and sheep. About 40.5% of farmers indicated they rear goats, followed by 21% who mentioned they rear fowl and 16.3% who intimated they rear sheep. This, therefore, means the farmers interviewed reared either goats, fowl or sheep, irrespective of the arrangements. Goat rearing was dominant among farmers interviewed, with 35.03%, followed by fowl rearing with 28.23%, with rabbits as the least reared animal, which also constitutes about 0.27%.

Table 1. 5. Main Animals Reared by Respondents

Animal Type	Animal 1 (100%)	Animal 2 (100%)	Animal 3 (100%)	Average
Goat	40.50	39.60	25.00	35.03
Fowl	21.00	29.70	34.00	28.23
Sheep	16.30	19.80	17.70	17.93
Cattle	13.00	3.20	10.60	8.93
Pigs	6.60	5.00	7.00	6.20
Guinea	1.80	2.70	5.70	3.40
Rabbit	0.80	0.00	0.00	0.27

Source: Field Survey, 2022

Information needs of farmers

The information in Table 1.6 depicts that pest and disease control was the most preferred information, recording approximately 53.40% as "strongly agreed" with a mean score of 4.28. This was followed by information on storage with 42.80%, and this also presented a mean score of 4.13. Meanwhile, the data also revealed that

information on land and conflict and carriage fees was the least of the information needs of farmers, with 10.60% and 10.30%, respectively, also giving a mean score of 2.88 and 2.82 accordingly.

"We wish to have access to information on prices of fertilizer, information on tractor service and their prices and prices on certified seeds. We need information on the cropping calendar on some specific crops such as maize, groundnut, soya bean and rice. We also need information concerning weather, information on storage, information on prices of certified seeds, information on fertilizer prices and information on pest and disease management". (FGD, all Groups August, 2022).

This means that most farmers in the study communities barely seek for information on carriage fees: either they easily have access to information on carriage fees, or this type of information has less impact on their farming plans or decision-making. They, however, admit that pest and disease information is an inalienable input for them. Knowledge of pest and disease management is an important element in farm management because the incidence of pests and diseases on either crops or livestock has dire consequences on farm productivity, such as a reduction in yield or, in severe cases, even leading to the complete loss of crops and animals. When this happens, farmers lose investments and therefore are demotivated from investing in farming in subsequent years. Again, when farmers are handicapped in how to control pests and diseases on their farms, particularly on crops, the ripple effects are that the health of local communities will be jeopardised, and, for that matter, consumers are not safe, since crops on the farms could be poisoned due to inadequate knowledge on the application of pesticides and insecticides. Madhavan (2017) and Mishra and Bhatta (2021) established that agricultural information is essential for small-scale farmers to improve farm productivity and output. Farmers need information to carry out agriculture practices, including knowledge on input markets and pricing, disease and pest control, farm inputs, pesticides, fertiliser application, and farm equipment, among other things. The study further revealed that farmers' information needs include information, weather information, planting, harvesting, markets, and financing facilities, among other things.

Table 1.6. Information Needs of Farmers (100%)

Type of Information	S. A	A	N	D	S. D	Mean	St. Dev.
Pest and Disease Control	53.40	27.60	13.0	5.00	1.00	4.28	0.76
Storage	42.80	35.00	15.30	6.20	0.70	4.13	0.64
Input Price	40.50	32.90	16.90	6.80	2.90	4.02	0.59
Market (Produce)	38.00	36.70	16.90	2.10	6.30	3.98	0.58
Input Dealer	30.50	35.90	27.10	4.50	2.00	3.89	0.4
Weather	30.10	30.50	30.20	6.70	2.50	3.79	0.34
Flood	30.20	23.30	32.70	11.00	2.80	3.68	0.22
Credit Facility	30.60	23.60	21.80	22.00	2.00	3.59	0.17
Land and Conflict	10.60	21.30	30.50	20.60	17.00	2.88	#NUM!
Carriage Fees	10.30	19.50	31.00	20.00	19.20	2.82	#NUM!

Source: Field Survey, 2022

Types of information accessed

The most type of information accessed was "fertiliser application", and this constitutes about 89.9%, followed by 68.9% on "weed control". The least score for this category was 54.2%, which was assessed on "improved planting materials". However, 48% of respondents indicated they do not access information about "timely

planting". This group was followed by 45.8% who also said they do not access information on "improved planting". At least 10.1% admitted they do not access information on "fertiliser applications."

"We access farming information through the agriculture extension officers. And also, through our group leaders, radio, NGOs such as GIZ, and access project." (FGD, Kanyirisuma (Dongtanga) August 2022).

Many farmers accessed information on fertiliser application and weed control because stable crops such as maize, sorghum, millet and yam are major crops cultivated in most of the study communities. And these crops will not produce the needed yields without information on fertiliser application and weed control. Most so, farmers have also observed that over the years, crop yields keep declining because soils have become poor year after year. And this is due to the fact that soils lose nutrients after each harvest. When weeds compete with crops, the crops do not maximise the nutrients required of them. And there is the need to replace nutrients lost at the beginning of each season to maximise production. Without access to information on fertiliser application and weed control, farmers will not recoup their investments because the right information on fertiliser application and weed control are predetermined factors in how much yield farmers get at the end of harvest. So, a lack of access to information

on fertiliser applications and weed control will have a devastating effect on crop performance.

Information sources and frequency of access

The study revealed that about 67.7% of the farmers interviewed never accessed information through MoFA Extension officers. However, 78% of farmers confirmed they accessed information through researchers every quarter. About 92% of the farmers have confirmed they are accessing information through NGOs or private organisations every month. It is interesting to note that 97% of farmers in the study communities never access information through TV. Meanwhile, only 0.5% of the respondents interviewed indicated they accessed information through TV on a weekly and monthly basis.73% of farmers accessed information through farmer-based organisations every six months. Farmers explained that FBO leaders who participate in agriculture programmes, such as seminars and workshops, among others, share the knowledge with their colleague members. The majority of the farmers, thus 92%, get their information through NGOs and other private sector actors.

"We access farming information through the agriculture extension officers. And also, through our group leaders, radio, NGOs such as GIZ, and access project." (FGD, Kanyirisuma (Dongtanga) August 2022).

This, therefore, means that, out of the 395 farmers interviewed, 0.5% accessed information through television sets yearly and 97% never accessed it through TVs. Even though TV agriculture shows give audio/visual documentation of how agriculture knowledge can be applied without or with little assistance from experts, most farmers in the study area are being shortchanged because they hardly either receive extension service from MoFA or watch agriculture programmes through TV. These vulnerable farmers struggle on their own or rely on colleague farmers for assistance, which in turn affects their farming business because either their colleagues feed them half information or most times prescribe wrong advice. In some cases, farmers burnt their crops with overdosed chemicals during spraying because they had no information on the right calibration for each crop. In so doing, farmers suffer from waste of lands, seeds, fertiliser and many other inputs, and this puts a lot of burden on farmers. The above assertion was corroborated by Poudel (2015): farmers in Nepal get their agricultural information from a variety of sources and channels, such as extension staff, agro-retail stores, forward-thinking farm families, government agencies and social media platforms. Men and women farmers frequented social institutions in rural areas: churches and other religious organisations. Farmers hold markets weekly, biweekly, or monthly to exchange information about their products (Tadesse, 2008).

Table 1.7. Source and Frequency of Access (100%)

Sources	**Frequency of Access**				
	N	**Y**	**ESM**	**Q**	**M**
MoFA	67.70	3.50	6.30	10.90	11.60

Researchers	18.40	1.50	2.00	78.00	0.10
NGO/Private Organizations	3.50	1.50	3.00	3.50	92.00
Farmer Based Organizations	3.50	5.30	73.00	12.40	5.80
Family & Friends	3.00	7.80	32.00	2.80	54.40
Television Set	97.00	0.50	0.50	0.30	1.70
Place of Worship	72.70	19.00	0.80	4.30	3.20
Market Centres	0.80	3.30	61.30	7.00	27.60
Community Durbar	93.40	1.50	1.80	0.50	2.80

Source: Field Survey, 2022

Respondents Educational Level And Access To Agriculture Information

The table below depicts the relationship between educational level of respondents and access to agriculture information using one-way Analysis of Variance (ANOVA). The results revealed that there is significant differences in access to agriculture information among the respondents with educational levels of ($p < 0.05$). This indicates that respondents with educational background accessed agriculture information through channels such as Radio, TV and extension officers (MoFA) more than respondents with no education. The table further disclosed that respondents with Diploma and Bachelors qualifications demonstrated highest access as against respondents with primary and no educational background. This implies that higher education has an influence on not only access to information but the choice of channels as well, and this is most likely occasioned by literacy rate or exposure. Munene et al. (2016) findings revealed that farmers who have access TV benefited from television shows in the promotion and transfer of farming skills and information. Moreover, Samuel Kwizerimana., (2023) and Kabanda et al., (2019) found out that education enhances individuals ability to search for information, decode the information and apply the information through multiply sources leading to digital and information inclusivity.

Respondents Educational Level And Access To Agriculture Information

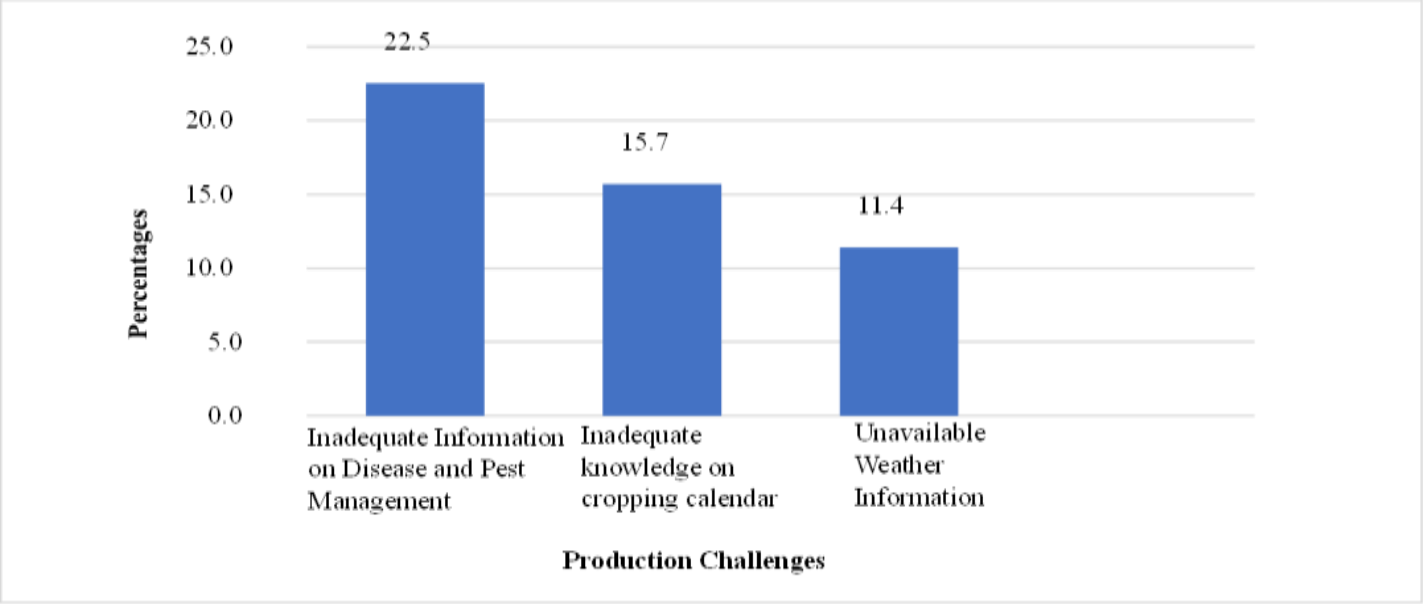
Descriptive Statistics

Level of Education	**Mean Access Score**	**SD**	**N**
Diploma	3.12	1.36	8
Bachelor's Degree	3.00	1.73	3
No Education	2.42	1.42	163
JHS	2.16	1.18	70
SHS	2.08	1.28	74
Primary	1.94	0.92	77

Source: Field Survey, 2022

Challenges Farmers Face in Accessing Agricultural Information

Figure 1.2. Production Challenges

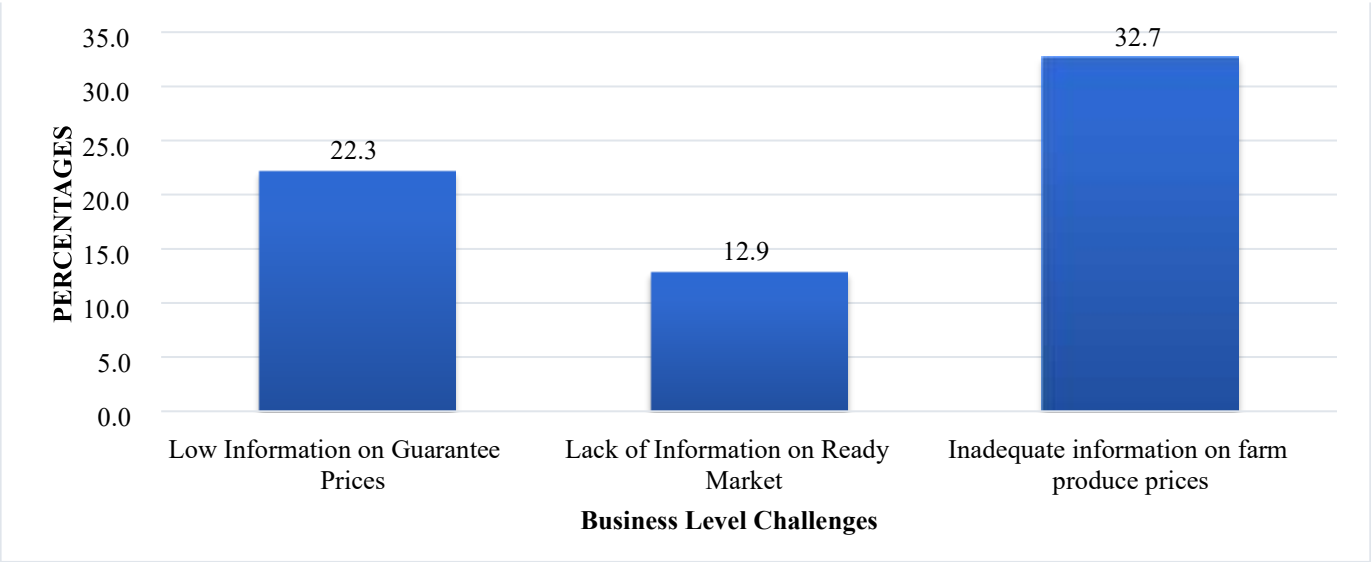


Source: Field Survey, 2022

From figure 1.2 above, about 22.5% of the respondents indicated that information on pest and disease infestation on crops and livestock was a major challenge for them. This was followed by inadequate knowledge of cropping calendars, with 15.7%, and about 11.4% also saying they barely have access to weather information. When farmers have challenges in accessing these types of information, they rely on previous experience, and in most cases this experience leads to season failure for most farmers because the climate has changed over time and the experiences are no longer reliable. The lack of available weather stations negatively impacts production decisions because farmers need to know the exact months when rains will begin, how long they will last, and the intensity and coverage of the rainfall. These and many others influence the type of crops farmers will produce in a particular season. Say, for instance, farmers have weather stations providing daily forecasts of rain for a season; such data will be a deciding factor on whether farmers will opt for short-term varieties that will suit the season or vice versa.

Business Challenges

Figure 1.3. Business Challenges

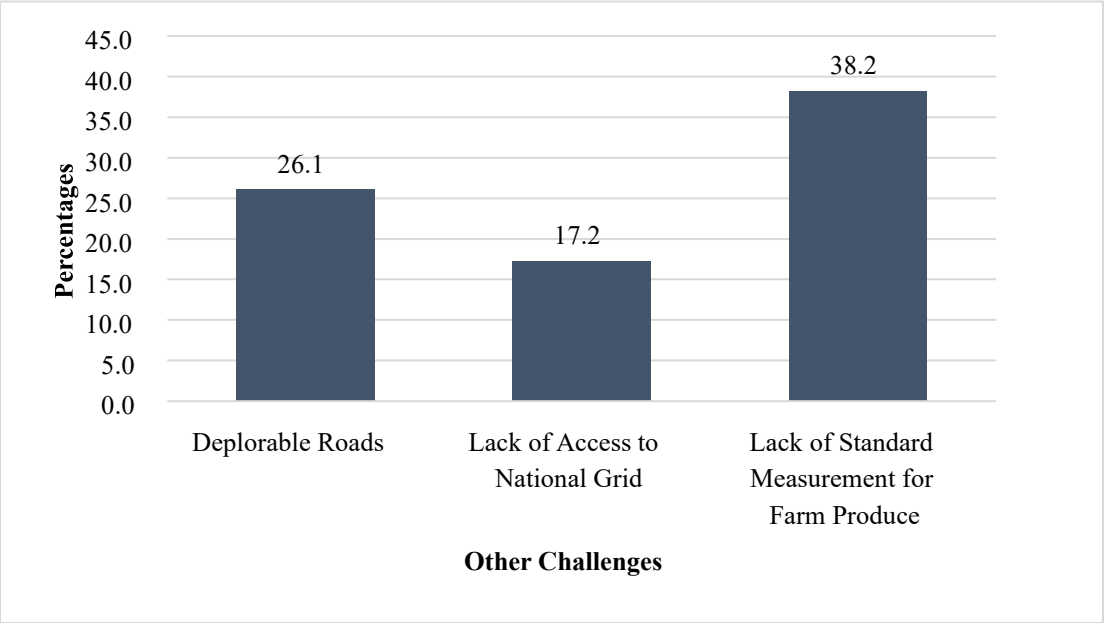


Source: Field Survey, 2022

Figure 1.3 indicates that the majority of the respondents face challenges in the area of information on where to obtain farm produce prices. Given that, 32.7% responded by indicating that they face challenges in obtaining information on farm produce prices, either from the government or private entities. This was followed by low information on guaranteed prices for farm produce; about 22.3% indicated that they barely receive information on the said topic. Here farmers admitted that the price at which buyers purchase their produce was discouraging, as the cost of production has increased tremendously vis-à-vis how much the market is ready to offer them. The least significant challenge in the business is the lack of information about the ready market, with only 12.9% of farmers reporting this issue. This therefore means, in terms of marketing farmer produce, farmers did not even have any information on how much the commodity the farmer intends to produce will be sold at harvest, nor do they have any information on whether there is a ready market for the farm produce. In view of this, farmers are being short-changed by buyers; even though as producers they should decide prices, buyers rather decide for producers. Moreover, the study revealed that farmers barely have any information on whether there is a fixed price for their farm produce. Farmers are left to vulgarise in negotiating for produce prices. In so doing, they do not have strong bargaining power to negotiate and end up being cheated by buyers.

Any other challenges

Figure 1.4. Any other challenges



Source: Field Survey, 2022

Figure 1.4 above suggests that a high number of farmers interviewed admitted that the lack of standard measurement for farm produce was a bane, and this constituted 38.2%. Again, out of the 395 farmers interviewed, 26.1% indicated that their roads were in a deplorable state. The third challenge among farmers interviewed was lack of access to the National Grid, and about 17.2% complained that their communities were not connected to it. The results therefore mean the lack of standard measurement for farm produce puts farmers in a vulnerable position since most times buyers decide the price for the farmers. The deteriorating roads leading to the communities add up to transportation costs. Meanwhile, buyers do not factor in or consider how much farmers pay for carriage fees to market, regardless. So, placing uniform prices on farm commodities does a disservice to farmers, who cart produce on bad roads to market centres. Buyers also travel on such roads to rural communities that suffer the same conditions and therefore will not offer farmers prices that the farmers bring to the table. Crops such as tomatoes and fresh okra are perishable produce, and therefore farmers are unable to store them due to a lack of packhouses in the communities. Abukari et al. (2021) supported this assertion. According to the report, farmers had difficulties using better seeds and applying fertiliser. The study also found that Agriculture Extension Agents, who served as the MoFA's primary and authorised networks for disseminating agricultural information to farmers, were not always accessible in emergencies, were not trustworthy sources of information, and were generally unpopular.

"We lack access to radio, timely access to information on tractor services, inadequate access to information on storing farm produce and inadequate access to weather information. We also do not have access to agric officers, information on the cropping calendar and because of that we do not know which month exactly to start farming activities. We also find it difficult to have early information on prices on tractor service and this affects our plans. We do not also have government information recommended certified seeds for farmers." (FGD, Kanyirisuma & Enye, August, 2022).

Theoretical implication

The researcher aimed majorly at identifying information needs of farmers, the various channels through which farmers access information, some of the challenges and possible ways to overcome these challenges among farmers in the Wa West District of the Upper West Region. The researcher adopted two theories, thus, E.M Roger's 1962 diffusion theory and Albert Bandura's 1968 social learning theory. The researcher adopted two theories, thus, E.M Roger's 1962 diffusion theory and Albert Bandura's 1968 social learning theory. While Roger's theory explains that concepts or products are initially adopted by some cross section of a given society and spread later to others, Bandura espouses that a person can learn by observing another doing something instantaneously. Social learning is also significant to the study because farmers are socially-interacting beings and for this reason, they share experiences, and knowledge and co-influence one another. The findings show that farmers learn to accept innovation in both ways. The results revealed that, while some farmers accessed information via diffusion theory (by first observing first-timers putting the information into use and others following suit later) example, farmer field schools, others important sources of information were FBOs and family/friends and this aligns with social learning theory and these farmers do not necessarily wait for their colleague farmers to put the innovation into use first. Diffusion learning theory, for instance, often concentrates solely on an innovation line without paying attention to complex social, economic, technological and other factors that determine how the innovation is spread into a society. Again, the most prevalent channels through which farmers accessed information were village meetings and other events such as marriage grounds, market days, farmer field schools, extension staff, agro-retail stores, forward-thinking farm families, NGOs, radio and TV sets (Poudel, 2015; Negash et al., 2022).The study also found out that numerous challenges confront farmers in their pursuit to access information.

CONCLUSION

The researcher adopted two theories for the study thus, diffusion and social learning theories. The findings aligned with social learning and diffusion theories in that some farmers exchange information through FBOs and family and friends while farmers who are enlightened adopt innovations first and the rest follows later (farmer field schools).

The study identified the following as information needs of farmers: pest and disease control been the most needed, followed by information on preservation and storage, with information on carriage fees. Farmers also admitted they accessed the following information for their farming activities: information on fertilizer application being topmost, followed by information on weed, with access to improved planting materials as the least accessed information. The study further unravels that, farmers accessed information through the following dominant channels; FBOs, Family & Friends and NGOs with TV being the least.

Additionally, the three most important information challenges at the production level were: inadequate knowledge of pest and disease control, inadequate knowledge of cropping calendar and unavailable weather information. Business level challenges were, lack of set prices for farm produce, lack of information for ready market and inadequate knowledge on farm produce. The "other challenges," were bad roads and inadequate electricity situation.

Finally, farmers proffer some of the following recommendations; local communities should get weather information so that they can receive information on sunshine and rainfall days, disseminate information on government programmes such as inputs subsidies, set up agro-input stores, financial services, community agriculture extension services, mass radio agriculture programmes and provision of subsidies on fuel prices. Government agencies and other NGOs have to work together to get farmers to sign contracts with marketers or aggregators.

RECOMMENDATION

The researcher recommends the following:

- Government agencies and other NGOs have to work together to get farmers to sign contracts with marketers or aggregators and automate irrigation systems that would assist farmers in overcoming other challenges by allowing year-round farming.

- The Wa West District assembly and the Department of Agriculture should empower Farmer Based Organizations and community extension volunteers in the farming communities to augment the easy flow of extension services to other farmers.

- Government should ensure uniform and standard measurement of agricultural products across the board. And deplorable roads should be reshaped alongside connecting communities to the National Grid. So that farmers can watch agriculture programmes on television sets.

- The Wa West District and other stakeholders should contribute and establish a radio station in the district capital alongside weather stations in some selected communities so that farmers can receive information on sunshine and rainfall days, disseminate information via local dialects on government programmes such as inputs subsidy and enhance mass radio agriculture programs airing.

- Finally, MoFA must conduct research with agriculture stakeholders including farmers to ascertain the information needs of rural farmers. When this is achieved, it will inform MoFA on the right information needs of farmers and the type of channels to use in agriculture information dissemination.

REFERENCE

1. Abdul-Mumin, A. (2020). Examining the constrains to poverty reduction among smallholder farmers in selected northern region, Ghana. (Doctoral dissertation University for Development Studies).
2. Abukari, A.-B. T., Bawa, K., & Awuni, J. A. (2021). Adoption Determinants of Agricultural Extension Communication Channels in Emergency and Non-emergency Situations in Ghana. Cogent Food & Agriculture, 7(1), 1872193. https://doi.org/10.1080/23311932.2021.1872193.
3. Atanga, S. N. (2020). Digitalization of agriculture: how digital technology is transforming small-scale farming in Ghana. Agrarian, Food and Environmental Studies (AFES). A research paper submitted to Erasmus University in partial fulfilment of the requirements for the degree of Master of Arts in Development Studies at the International Institute of Social Studies.
4. B.P. Mishra & S. Bhatta (2021). Agricultural Information Need of Smallholder Farmers Chitwan District, Nepal. International Journal of Applied Science. Biotechnol, 9(2): 94-97. DOI: 10.3126/ijasbt.v9i2.38004.
5. Balamurugan, S., Divyabharathi, N., Jayashruthi, K., Bowiya, M., Shermy, R. P., & Shanker, R. (2016). Internet of agriculture: Applying IoT to improve food and farming technology. International Research Journal of Engineering and Technology (IRJET), 3(10), 713-719.
6. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.
7. Cafer, A. M., & Rikoon, J. S. (2018). Adoption of new technologies by smallholder farmers: the contributions of extension, research institutes, cooperatives, and access to cash for improving tef production in Ethiopia. Agriculture and human values, 35(3), 685-699.
8. Cresswell, J. W., & Clark, V. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks CA: Sage.
9. Curwin J. & Slater, R. (2002). Quantitative Methods for Business Decisions (5th Ed.). New York: Thomson.
10. Davis, B., & Higdon, K. (2008). The effects of mentoring/induction support on beginning teachers' practices in early elementary classrooms (K-3). Journal of research in childhood education, 22(3), 261-274.
11. Driscoll, D. L., Appiah-Yeboah, A., Salib, P., & Rupert, D. J. (2007). Merging qualitative and quantitative data in mixed methods research: How to and why not.

12. Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. International journal of information management, 55, 102211.
13. El Bilali, H., & Allahyari, M. S. (2018). Transition towards sustainability in agriculture and food systems: Role of information and communication technologies. Information processing in agriculture, 5(4), 456-464.
14. FAO. (2005). Agricultural Knowledge and Information Systems for Rural Development.
15. Fonseka, C. L., Vidanapathirana, B. N., De Silva, C. M., Athukorala, A. A. B. B., Goonawardena, P. R., Karunathilake, A. P., ... & Dissanayake, A. S. (2019). Doxycycline usage for prevention of leptospirosis among farmers and reasons for failure to use chemoprophylaxis: a descriptive study from southern Sri Lanka. Journal of tropical medicine, 2019.
16. Food and Agriculture Organization of the United Nations (2018). Transforming Food and Agriculture to Achieve the SDGs, FAO: Rome, Italy.
17. Ghana Districts, (n.d.). The districts of Ghana. Retrieved from http://www.ghanadistricts.com/home/.
18. Ghana Statistical Service (GSS). (2014). The Ghana living standards survey round six (GLSS6).
19. Ghana Statistical Service. (2013). 2010 population & housing census: National analytical report. Ghana Statistics Service.
20. Ghana Statistical Service. (2016). Population statistics.
21. Global Insight. (2008). Nkonkobe Municipality Annual Report, Financial year 2009-2010.
22. Haruna, A. & Baba, D. (2017). An appraisal of famers internet use for sourcing agricultural information in North –Western Nigeria. SHS Web of Conference, 33, DOI:10.1051/shsconf20173300051.
23. Himesh, S., Rao, E. P., Gouda, K. C., Ramesh, K. V., Rakesh, V., Mohapatra, G. N., ... & Ajilesh, P. (2018). Digital revolution and Big Data: a new revolution in agriculture. CABI Reviews, 1-7. http://mofa.gov.gh/site/wp-content/uploads/2011/07/wa-west-300x208.jpg. Https://mofa.broadspectrumltd.com/landing
24. Jain, L., Kumar, H., & Singla, R. K. (2015). Assessing mobile technology usage for knowledge dissemination among farmers in Punjab. Information Technology for Development, 21(4), 668-676.
25. Jones, M. (1963). The therapeutic community. psycnet.apa.org.
26. Kabanda, S., & Rother, H. A. (2019). Evaluating a South African mobile application for healthcare professionals to improve diagnosis and notification of pesticide poisonings. BMC medical informatics and decision making, 19(1), 40.
27. Kishore, J., Gupta, A., Jiloha, R. C., & Bantman, P. (2011). Myths, beliefs and perceptions about mental disorders and health-seeking behavior in Delhi, India. Indian journal of Psychiatry, 53(4), 324.
28. Kloppenburg, J. (1991). Alternative agriculture and the new biotechnologies. Science as Culture, 2(4), 482-506.
29. Llewellyn, R. S., & Brown, B. (2020). Predicting adoption of innovations by farmers: What is different in smallholder agriculture?. Applied Economic Perspectives and Policy, 42(1), 100-112.
30. Madhavan, S. (2017). Agriculture Information Needs of Farmers: An Overview. International Journal of Science and Research (IJASR), 7(6), 209-216.
31. Magesa, M. M., Michael, K., & Ko, J. (2020). Access and use of agricultural market information by smallholder farmers: Measuring informational capabilities. The Electronic Journal of Information Systems in Developing Countries, 86(6), e12134.
32. Maningas, M. (2000). Preparing to be an entry-level outdoor leader: Hiring preferences of AEE accredited organizations (Doctoral dissertation).
33. McCorkle, C. M. (1989). Toward a knowledge of local knowledge and its importance for agricultural RD&E. Agriculture and Human Values, 6, 4-12.
34. McGuire, S. (2015). FAO, IFAD, & WFP. The state of food insecurity in the world 2015: meeting the 2015 international hunger targets: taking stock of uneven progress. Rome: FAO,. Advances in Nutrition, 6(5), 623624.
35. McNamara, K., Belden, C., Kelly, T., Pehu, E., & Donovan, K. (2017). Introduction: ICT in agricultural development. elibrary.worldbank.org.
36. Ministry of Food and Agriculture (MoFA, n.d.). The Ministry of Food and Agriculture. Retrieved from the MoFA website: http://mofa.gov.gh/site/.
37. Mishra, B. P., & Bhatta, S. (2021). Agricultural Information Need of Smallholder Farmers in Chitwan District, Nepal. International Journal of Applied Sciences and Biotechnology, 9(2), 94-97.

38. Mishra, L. (2016). Focus Group Discussion in Qualitative Research. TechnoLearn. An International Journal of Educational Technology, 6(1), 1. https://doi.org/10.5958/2249-5223.2016.00001.2.
39. MoFA. (2010). Ministry of food and agriculture in Ghana Annual Report. Retrieved from Ministry of Food and Agriculture Information Directorate.
40. MoFA. (2015). "Agriculture in Ghana – Facts and Figures (2014)." Statistics, Research and Information Directorate (SRID).
41. MOFA. (2017). Ministry of food and agriculture, Ghana. Agricultural sector progress report 2017.Retrieved from http://mofa.gov.gh/site/wp-pontent/uploads/2018/09/MoFA%202017%.
42. MOFA. (2017). Ministry of food and agriculture, Ghana. Agricultural sector progress report 2017.Retrieved from http://mofa.gov.gh/site/wp-pontent/uploads/2018/09/MoFA%202017%.
43. Mojaki, R. A., & Keregero, K. J. B. (2019). Turning challenges into opportunity: Potential for adoption of eextension in Lesotho. Journal of Agricultural Extension and Rural Development, 11(11), 184-191.
44. Moore, D. A., Ferguson, O., & Lolig, V. (2015). Assessment of Extension and Advisory Services in Ghana's Feed the Future Zone of Influence. 56.
45. Munene, M. W., Nairobi, T.-, & Mberia, H. (2016). Effects of Television Agricultural Shows on Small-Scale Farmers' Information Need in Kenya: A Case Study of Kikuyu Sub-County. International Journal of Academic Research in Business and Social Sciences, 6(4), 102-110. https://doi.org/10.6007/IJARBSS/v6-i4/2084.
46. Negash, S., & Araya, B. (2022). 3 Social protection for inclusive development in the Afar region of Ethiopia. Social Protection, Pastoralism and Resilience in Ethiopia: Lessons for Sub-Saharan Africa, 41.
47. Nehra KS. Jangra Mukesh R. Jangra S. & Kumar R. (2018). The Role of Information Technology in Agriculture. Department of biotechnology, Government College, Hisar-125001, India.
48. Nworgu, F. C. (2006). Prospects and pitfalls of agricultural production in Nigeria. Blessed Publications: Lagos.
49. Olgun, E., & Norman, T. (1993). Grain size analysis of some olistostromes between Balkuyumcu and Alci (SW Ankara). Bulletin of the Mineral Research and Exploration, 115(115), 31-48.
50. Poudel, K. P. (2013, December). National development plan and urbanization in Nepal. In 12th International Asian Urbanization Conference on Urban Dynamics, Environment and Health: Challenges for the Twenty First Century. Department of Geography, Banaras Hindu University, India (pp. 1-16).
51. Rogers, E. M. (1995). Diffusion of Innovations: modifications of a model for telecommunications. Die diffusion von innovationen in der telekommunikation, 25-38.
52. Samuel, K. (2023). Impact Of Collective Marketing Participation On Smallholder Avocado Farmers'income In Murang'a County, Kenya (Doctoral dissertation, Kenyatta University).
53. Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. Journal of mixed methods research, 10(4), 319-334.
54. Siyao, P. O. (2012). Barriers in Accessing Agricultural Information in Tanzania with a Gender Perspective: The Case Study of Small-Scale Sugar Cane Growers in Kilombero District. The Electronic Journal of Information Systems in Developing Countries, 51(1), 1-19.
55. Snider, C. E., Kirst, M., Abubakar, S., Ahmad, F., & Nathens, A. B. (2010). Community-based participatory research: Development of an emergency department–based youth violence intervention using concept mapping. Academic emergency medicine, 17(8), 877-885.
56. SRID, (2010). Agriculture in Ghana. Facts and figures (2010) ministry of food and agriculture -statistics, research and information directorate (srid) October 2011.
57. SRID, (2011). Agriculture in Ghana. Facts and figures (2011) ministry of food and agriculture -statistics, research and information directorate (srid) October 2012.
58. SRID, (2012). Agriculture in Ghana. Facts and figures (2012) ministry of food and agriculture -statistics, research and information directorate (srid) October 2013.
59. SRID, (2013). Agriculture in Ghana. Facts and figures (2013) ministry of food and agriculture -statistics, research and information directorate (srid) October 2014.
60. SRID, (2014). Agriculture in Ghana. Facts and figures (2014) ministry of food and agriculture -statistics, research and information directorate (srid) October 2015.
61. SRID, (2015). Agriculture in Ghana. Facts and figures (2015) ministry of food and agriculture -statistics, research and information directorate (srid) October 2016.
62. SRID, (2016). Agriculture in Ghana. Facts and figures (2016) ministry of food and agriculture -statistics, research and information directorate (srid) October 2017.

63. Tadesse, D. (2008). Access and utilization of agricultural information by resettler farming households: the case of Metema Woreda, North Gondar, Ethiopia (Doctoral dissertation, Haramaya University).
64. Tologbonse, E. B., Jibrin, M. M., Auta, S. J., & Damisa, M. A. (2013). Factors influencing women participation in women in agriculture (WIA) programme of Kaduna state agricultural development project, Nigeria. International Journal of Agricultural Economics and Extension, 1(7), 47-54.
65. Veluchamy, S., & Saver, C. L. (1990). Clinical technology assessment, cost-effective adoption, and quality management by hospitals in the 1990s. Quality Review Bulletin, 16(6), 223-228.
66. Vidanapathirana, N. P. (2012). Agricultural information systems and their applications for development of agriculture and rural community, a review study. In The 35th Information Systems Research Seminar in Scandinavia–IRIS (Vol. 1, pp. 1-14). Wa West District Assembly (n.d). Ministry of local government service. Wechiau - Search.
67. World Bank. (2016a). "Expanding Job Opportunities in Ghana." Washington DC: The World Bank.
68. World Bank. (2016b). "Ghana Economic Update" June. Washington DC: The World Bank.
69. Yamane, Y. (1967). Mathematical formulae for sample size determination. J. Mathemetics, 1, 1-29.
70. Yaseen, M., Xu, S.W., Yu, W. and Hassan, S. (2016). Farmers' Access to Agricultural Information Sources: Evidences from Rural Pakistan. Journal of Agricultural Chemistry and Environment, 5, 12-19. http://dx.doi.org/10.4236/jacen.2016.51B003.
71. Yefimov, V. (2004). On pragmatist institutional economics.
72. Yusuf, S. F. G., Masika, P., & Ighodaro, D. I. (2013). Agricultural information needs of rural women farmers in Nkonkobe Municipality: The extension challenge. Journal of Agricultural Science, 5(5), 107.