



Small-scale Farmers' Information Needs and Obstacles: Evidence from the Volta Region, Ghana

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ABSTRACT:

Agricultural information is assuming increasing importance in the face of current biotic and abiotic stresses, coupled with changing dynamics of agricultural practice globally. This paper contributes to the discourse by examining information needs and obstacles of small-scale farmers in the Volta Region, Ghana. Structured questionnaires were used to collect primary data from six hundred and thirty (630) small-scale farmers, selected through multistage sampling technique. The study showed that information on marketing, post-harvest techniques, and diseases and pests management were the critical information needs of small-scale farmers in the Region. The study further established that majority of small-scale farmers were aware of information sources in the Region with the major information sources consulted by farmers in order of preference being family members, friends, radio, television and extension agents. A chi-square analysis showed that educational level of farmers was not significant at $\rho \leq 0.05$ and therefore did not affect farmers' information needs. Besides, the study showed that the major obstacles facing small-scale farmers were lack of skills to access information, inadequate information resources, insufficient agricultural extension agents, and absence of Agricultural Information Centres. These findings will certainly shape agricultural extension program planning in the Region and inform national extension policy.

Keywords: Small-scale Farmers, Information Needs, Obstacles, Volta Region, Ghana

INTRODUCTION:

Background

Information is power and an important working tool for the advancement of human and society (Apata & Ogunrewo, 2010). It is considered a vital resource, alongside land, labor, capital and skills (Doughan, 2020). Every rational person needs some form of information for his/ her day-to-day activities. Therefore, an emphasis on the importance of information to farmers

cannot be overruled, because information has been described as man's accumulated knowledge in all subjects, in all forms and from all sources that could help users of such information to improve and develop intellectually on their activities (Adio et al., 2016; Mtega, 2012). Additionally, information is an important factor needed to sustain the development of any society.

This is because getting the required information on time may help to reduce uncertainty and also may improve the quality of agricultural decision. According to Koutsouris (2010), in this era of information society, information and knowledge play a key role in ensuring sustainable development. Studies have

The development of a society largely depends on access to information. The flow of information from and to rural small-scale farmers is an essential pre-condition for the eradication of widespread poverty in rural areas (Parvin et al., 2007). Therefore, lack of agricultural information is a key factor that has greatly limited agricultural advancement in developing countries. In Ghana, farmers rarely feel the impact of agricultural innovations, either because they may have no or limited access to vital information or because it is poorly disseminated (Addison et al., 2022). Moreover, no one can categorically claim to know all the information needs of farmers, especially in an information-dependent sector such as agriculture in which there may be new and rather complex problems facing farmers every day.

There is no doubt that information is very important in all aspects of agricultural development from planning to the production stage in the farm. It is obvious that those factors that limit agricultural information development may be the difficulties in accessing information for research and development activities. Folitse et al. (2018) noted in their study that farming was one occupation that depended on the constant flow of information. However, most farmers may find it difficult to identify when they have the need for information. Again, most rural small-scale farmers in Ghana may resort to few information centres or meeting their information needs. Furthermore, even if these centres are

shown that farmers' information seeking behaviour has been hindered by relevance, usefulness and lack of technical advice for follow-up (Babu et al., 2011). In an earlier study, Etebu (2009) opined that access to and usage of information were necessary for improving rural people's livelihood.

available, one cannot rule out the possibility of them being less resourced in terms of best materials and personnel who can professionally handle the information needs of these farmers. This apparent disturbing development may tend to force rural small-scale farmers to depend more on unscientific and less reliable sources such as their friends and traditions handed over to them from generations to meet their information needs. Small-scale farming communities require various types of information for their day-to-day agricultural activities. They need information to improve their farming practices and these information needs may include the use of fertilizers, pest and disease control, higher yield/agricultural production, planting at the right time, weed control, improved seeds, post-harvest losses/preservation techniques, agricultural credits, agricultural cooperation etc. However, rural communities in Ghana lack proper information set-up and service centres (Sokey & Adisah-Atta, 2017). According to Serge et al. (2020), rural farmers are not getting the right information at the right time, leading to slow development of rural small-scale farmers' community in sustainable agricultural development activities. In Ghana, with agro-based rural economy, rural development can play a major role in national development. Therefore, quick and easy access to information is vital for the development of rural communities. The present agricultural information system in Ghana may not be perfect to address the

information needs of farmers (Maguire-Rajpaul et al., 2020). This strengthens the justification for a study on the information needs of the rural small-scale farmer to bring some clarity regarding small-scale farmers' information needs and examine what may constitute obstacles to their information seeking behaviours. This study is premised on the fact that agricultural development programs may work effectively when African governments implement new approaches to information dissemination and management that stem from a clear understanding of farmers' information needs (Antwi-Agyei & Stringer, 2021; Zhang et al., 2016).

Therefore, the objectives of the study were to:

1. Determine the demographic characteristics of small-scale farmers in the Volta Region, Ghana
2. Assess the information needs of small-scale farmers with reference to farmers in the study area
2. Examine the level of awareness of information sources by these farmers
3. Determine the preferred information sources consulted by the farmers
4. Establish how demographic characteristics of farmers have influenced farmers' information related variables.
5. Determine the challenges faced by farmers in accessing information.

Theoretical Framework:

This study is theoretically underpinned by Wilson's theory of information behavior, which is widely cited in information behavior literature. Introducing the term 'information need,' Thomas Wilson explained that understanding the information need of an individual involved three elements, namely why the individual decides to look for information; what purpose the information they find will serve; and how the information is used once it is retrieved

(Wilson, 1981). He later modified his theory by introducing the term 'information behavior' on the grounds that the previous term was unhelpful since 'need' could not be directly observed, while how people behaved in seeking information could be observed and investigated. Thus, his theory posited that information seeking behavior could be observed and investigated. Wilson described information behavior as the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use (Wilson, 2000). He described information seeking behavior as purposive seeking of information as a consequence of a need to satisfy some goal. It is instructive to note that increasingly, work in the information seeking field that followed afterwards introduced a nexus between information behavior and underlying needs (Jansen, et al, 2009). The theory has been the subject of some revisions, incorporating psychological components into the original model and a more recent review is found in the publication of Wilson (2016) in which the universality of the theory is reiterated. It is evidently clear that information remains the 'blood' that runs through all levels of the agricultural commodity value chain from input supplying, production, marketing, processing and other forms of value addition (Bjournlund et al., 2020). For farmers in the Volta Region, Ghana, this view is more pronounced and more valid than ever on the assumption that decision making may be a function of the quality of the information needs, information source and information use by the farmers. It is against this background that it is important to study the dynamics of the information seeking behavior farmers in the Region; the subject matter of this paper.

METHODOLOGY:

Study Area

Volta Region (or Volta) is one of Ghana's 16 administrative regions, with Ho designated as its capital. It is located west of Republic of Togo and to the east of Lake Volta and the North by the Oti Region. Divided into 18 administrative districts, the Region is bi-ethnic, with the Ewe, and the Guan people. Farming is the dominant form of land use and the main source of income for most households in the Volta Region. This is related to the predominantly rural character of the Region and fact that the Region is well endowed with natural resources and fertile soils. As in all other parts of the

country, the Region has a tropical climate, characterised by moderate temperature of 21-32° Celsius (70 – 90°F) for most of the year. The average annual rainfall ranges between 1,168mm and 2,103mm. More than half of the land area of the Region falls within the Volta River Basin with the Volta Lake draining a substantial portion of the Region. The area has two rainfall maxima: the main rainy season, occurring between May and August and the minor rainy season between September and October. Between the rainy seasons is a prolonged dry season, culminating in the dry Harmattan between November and February. Daily temperatures are very high, averaging some 26 degrees with an average humidity of 60 %.



Fig 1. Map of Volta Region Showing all the Districts and Municipalities

Research design

A survey design comprising an interview schedule was used to collect data for the study. The population comprised all small-scale farmers in the Volta Region of Ghana. Six hundred and thirty (630) respondents

were selected for the study. The selection of the small-scale farmers for inclusion in the study was based on the availability of the farmers as well as their ability to take part in the study due to their busy schedule in agricultural activities.

Sampling Procedure and Sampling Size

A multistage sampling technique was used to select the respondents for the study. At the first stage 50% out of the eighteen (18) Municipalities and Districts in the Volta Region were selected. The selected Districts and Municipalities were; Central Tongu, Keta Municipal, North Tongu, Ho West, South Dayi, Kpando, Afadjato, Agortime Ziope and Anloga. These nine (9) Districts and Municipalities selected for the study had a total of three hundred and eighty two (382) communities out of which one hundred and twenty six (126) representing one-third ($\frac{1}{3}$) of the total communities were randomly selected in the second stage. A sample is a small proportion of population selected for observation and analysis and also extremely expensive to interview all the units of the population. In the third stage, five (5) farmers each from the selected communities, were randomly selected and interviewed. Therefore, the sample size for the study was six hundred and thirty (630) small-scale farmers.

Data collection

Quantitative data were collected through structured interview schedules. Six hundred and thirty (630) structured interview schedules were administered with two research assistants from each community. The research assistants were trained on interviewing skills as well as meaning and interpretation of each item on the interview schedule of farmers to collect data for the study.

Data Analysis

This study employed descriptive statistical analysis methods; mainly frequency, ranking

and percentages. Quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) version 20.0. Software package. The interview schedules elicited responses pertaining to small-scale farmers' demographic characteristics, information needs as well as their sources, access to and utilization of information. Relationships between farmers' demographic characteristics and their information related variables (Needs, sources, access, awareness, and constraints) were tested using inferential statistical tools such as chi-square test.

RESULTS AND DISCUSSIONS:

Demographic Characteristics of small-scale farmers in the Volta Region

A total of six hundred and thirty (630) small-scale farmers in the Volta Region of Ghana participated in the structured interviews. The result in Table 1 showed that most (75.4%) of the small-scale farmers sampled were males, while 24.6% were females. This implies that, the gendered nature of the social, cultural, economic and policy systems may have limited female small-scale farmers from participating in the study (Lwoga & Ngulube, 2010). From Table 1, a total of 67% of the farmers were within the age bracket of 20 to 50 years. This showed preponderance of the youth in the Volta Region engaged in farming. Correspondingly, Table 1 indicated that small-scale farmers in the Volta Region were largely literate with majority of the farmers (66%) with some level of formal education. On the other hand, the Table indicated that 35.4% of the small-scale farmers had between 11 to 15 years of farming experience. Again, it was observed that majority (53.0%) cultivated between 3 to 4 acres of land each season.

Table 1. Demographic characteristics of farmers

Characteristics	Frequency	Percentage
Gender		
Female	155	24.6
Male	475	75.4
Age (Years)		
20–30	136	21.6
31– 40	156	24.8
41 –50	135	21.4
51– 60	133	21.1
61 years and above	70	11.1
Educational level		
Non formal Education	214	34.0
Primary/JHS education	180	28.5
Secondary education	165	26.2
Tertiary	71	11.3
Years of experience		
1 - 5years	201	31.9
6 - 10years	121	19.2
11 - 15years	223	35.4
16 - 20years	85	13.5
Farm size in acres		
1-2	157	24.9
3-4	334	53.0
5-6	139	22.1

Source: Field data, 2020

Information needs of small-scale farmers

The results in Table 2 revealed that while 93.2% of the small-scale farmers in the Volta Region indicated more interest towards market information, 88.3% opted for information on post-harvest techniques. Equally, 64.0% of the farmers affirmed that they needed information on disease and pest management, which was deemed to be critical to the productivity of their farming and by extension, their livelihoods. This results is in consonance with Folitse et al., (2018) who found out in a similar study among poultry farmers that, majority of the respondents (98.6%) indicated that they had information needs related to poultry disease management. Similarly, 63.0% of the farmers stated that they needed information on

agricultural credit. Agricultural credit plays an important role in enhancing the agricultural productivity in developing countries such as Ghana. Credit is the backbone for any business, especially for agriculture (Rehman & Jingdong, 2017). While 59.2% of farmers stated that they needed information on agro-chemicals to enable them plan the type of chemicals to purchase for the farming season, 58.3% of them desired information on irrigation management. According to Kljajic et al. (2013), irrigation, being one of ameliorating measures, is certainly the most successful way of fighting drought, because it controls soil water balance, which creates favourable conditions for high, stable and economically justified plant production. Irrigation schemes

may enable farmers to cultivate their fields all year round. In the same way, 56.2% of farmers specified that, they looked for

information on soil and water conservation to enable them manage the resources available to them to maximize their profits.

Table 2. Information needs of small scale farmers

Information needs	Frequency	Percentage	Males	Females
Market information	587	93.2	455	132
Post-harvest techniques	556	88.3	410	146
Diseases and pest management	403	64	305	98
Agricultural credit	397	63	186	121
Agro-chemicals	373	59.2	227	145
Irrigation management	367	58.3	217	150
Soil and water conservation	354	56.2	202	152
Manure and fertilizer management	348	55.2	217	131
Weather information	342	54.3	227	115
Modern cultivation system	336	53.3	231	105
Seeds and planting materials	312	49.5	196	116
Animal husbandry practices	293	46.5	161	132
Storage of crops	293	46.5	171	122
Weeding and thinning	73	11.6	42	31

Source: Field data, 2020

Awareness of information sources by small-scale farmers

The results of the study in Table 3 revealed that majority of respondents (76.0%) were aware of information sources with 24.0% of them unaware. Although majority of small-scale farmers in the Region had attained primary education as revealed by the study, the basic knowledge gained from school made it possible for them to search for and be aware of basic agricultural information sources. These findings are consistent with Iwuchukwu & Udoeye's (2014), who concluded that 97.5% of small-scale farmers in Nigeria were aware of information sources. The study found that the level of education and presence of extension officers contributed to small-scale farmers' level of awareness of information sources. Similarly,

Ukwu & Iorkaa (2011) found that very few farmers (39.8) were not aware of the availability of information sources. For these few farmers, this translated into limited access and use of information sources resulting in low agricultural production and increased poverty levels among this category of Nigerian small-scale farmers. Much earlier studies by Mokotjo & Kalusopa (2010) in Tanzania and Tshabalala (2003) in Lesotho also established that absence of information centres negatively affected farmers' awareness of information sources to support their agriculture activities. Therefore, access to education, presence of extension officers and availability of information centres in rural areas may improve awareness of rural small-scale farmers regarding information sources.

Table 3. Awareness of Information Sources

Awareness of Information Sources	Frequency	Percentage
Aware	479	76.0
Not aware	151	24.0

Source: Field data, 2020

Information sources consulted by small-scale farmers

The various sources of information were available to farmers in the Region are shown in Table 4. The information sources used included family members, friends, radio, television, extension agents, input suppliers, NGOs and printed materials. Among them, family members (86.0%) and friends (72.2%) were the mostly consulted by farmers in the region. It is important that the capacities of these family members and friends are built with the right information to enhance the effectiveness of the information disseminated. In a much earlier study, Halima (2007) noted that farmers had much easier access to friends and family members than other information sources. Again, Msoffe & Ngulube (2016) opined that farmers consult various sources for agricultural information; however, the most traditional but still mostly used among farmers in developing countries is the face-to-face communication, which is deemed to be the most traditional source in the history of humankind. Again, Habtemariam Tegegni & Azage (2015) reported that small-scale farmers transfer their knowledge to their neighbours, friends, relative and children mainly through informal discussion, experience sharing and inviting other farmers to visit their own farms. The study further showed that 70.3% of the farmers preferred radio as the source for their agricultural information. The results from the study, especially as regards radio, are also consistent with a much earlier study by Chapman et al., (2003) conducted in Northern Ghana, which concluded that radio could be efficient in delivering agricultural information if broadcasting was done using the local

language and applying a participatory technique involving farmers in the process. Other studies indicated that radio was a very effective medium of disseminating new agricultural technologies and marketing information to farmers (Owolade & Kayode, 2012; and Thapa (2009)). This may be attributed to radio as one of the cheapest and quickest means of passing information to farmers (Lwoga, Ngulube & Stilwell, 2010). On the other hand, 53.3% of the farmers sourced information from agricultural programs on television (Akuafu TV in Ghana cited as an example), while 50.0% also consulted extension agents in the Region for information. Lwoga et al. (2010) reported similar information sources for farmers. It is instructive to note that many of the farmers did not obtain information from extension agents as they did not even know their extension agents. Folitse (2014) noted in a study that extension agents may come from different cultural backgrounds and therefore may rely on translators and intermediaries who may distort information.

Though most of the small-scale farmers in the Volta Region are educated, 48.6% of them source information from printed materials. This is so because despite the importance of print materials, factors such as delayed delivery, difficult language to understand, ageing information, unimpressive writing, and high cost of print media such as magazines, while low access and lack of information about agriculture are the main factors affecting their effectiveness. (Rehman et al., 2011; Amjad, 2002).

Table 4. Information sources consulted by small scale farmers

Information sources	Frequency	Percentage
Family members	542	86.0
Friends	455	72.2
Radio	443	70.3
Television	336	53.3
Extension agents	320	50.8
Input suppliers	310	49.2
NGOs	308	48.9
Printed materials	306	48.6

Source: Field data, 2020; multiple response

Relationship between Demographic characteristics of farmers and information needs

In establishing the relationship between farmers’ demographic characteristics and their information needs, the paper formulated five research null hypotheses: there is no likely relationship between farmers’ age and their information needs; there is no likely relationship between farmers’ gender and their information needs; there is no likely relationship between farmers’ education and their information needs; there is no likely relationship between farmers’ years of experience and their information needs; and there is no likely relationship between farmers’ farm size and their information needs.

Table 5 shows the chi square relationship between the demographic characteristics of farmers in the Volta Region and their information needs as expressed in the five

hypotheses stated above. The analysis indicated that variables such as age ($\chi^2 = 19.006$ and $\rho \leq 0.01$), gender ($\chi^2 = 9.977$ and $\rho \leq 0.00$), years of experience ($\chi^2 = 48.181$ and $\rho \leq 0.00$), and farm size ($\chi^2 = 48.181$ and $\rho \leq 0.00$) affected the farmers information needs in the management of their agricultural activities. However, the educational level of farmers was not significant at $\rho \leq 0.05$ and therefore did not affect their information needs. The last column of Table 5 presents the Cramer’s coefficients; it establishes the strength of the relationship between two categorical variables. In statistical analysis, it is important to report the significance of the test as it has been done in this study. It is equally very vital to report the effect size. Since the test employed to assess the relationship is the Chi-square test, the Cramer’s Coefficient becomes the best candidate to assess the effect size or the magnitude of the relationship. The Cramer’s Coefficient is given by

$$V = \sqrt{\frac{\frac{\chi^2}{n}}{\min(c-1, r-1)}} \text{ and } 0 \leq V \leq 1.$$

Although variables such as age, gender, years of experience and farm size had significant relationship with farmers information needs; their Cramer’s coefficients indicated a

weaker relationship between them (i.e., all the Cramer’s coefficients were less than 0.5). Contexts and situations can be described as “how people need, seek, manage and use information in different environments”

(Wilson, 1996). Secondly, risks and rewards involved in using agricultural information bring closer the relationship between intervening variables and information needs. The risks were related to low agricultural production and consequently low income for not being able to utilize agricultural information regardless of their educational

level. Rewards to small-scale farmers on the other hand, increase production and income for using the information. Similar findings to the present study were reported in a study by Mbulu (2013) in Kenya. The study revealed that a statistically significant relationship existed between education of small-scale farmers and agricultural information needs.

Table 5. Chi-square and Cramer's coefficient of relationship between demographic characteristics of farmers in the Volta Region and information needs

Variable	χ^2	Df	p-value	Cramer's Coefficient
Age	19.006	8	0.01*	0.087
Gender	9.977	2	0.00*	0.12
Educational Level	8.855	4	0.06n.s	0.068
Years of experience	48.181	10	0.00*	0.159
Farm size	48.181	10	0.00*	0.196

Source: Field data, 2020. Note: *Significant at 0.05, n.s = not statistically significant at 0.05, χ^2 chi-square value

Obstacles faced by small scale farmers in accessing and using information

Several obstacles have been found in the literature to be militating against small-scale farmers' access to agricultural information before the farmers confirm their level of severity on the questionnaire (Acheampong et al., 2017). From Table 6, the major obstacle was lack of skills to access (92.7%) information sources identified and it is one of the major factors that affects the provision of services to small- scale farmers in the Region. The findings of the study revealed that 92.7% of small-scale farmers faced the challenge of inadequate information resources. Similarly, insufficient agricultural extension agents (91.7%) and lack of information centres were major challenges facing small-scale farmers in accessing and using information sources. Findings of the current study are supported by a study by Arusei (2012) in Kenya, which revealed that extension agents were located far from small-scale farmers which made it a challenge to visit them regularly.

Furthermore, the study revealed that, the complex nature of agricultural information (73.2%) was a hindrance to small- scale farmers in accessing information pertaining to agriculture. Again, the study revealed that the majority of rural small-scale farmers (71.9%), faced the challenge of mobility. Several studies have in part or fully supported the findings of this study. For instance, conclusions of a study by Odi (2014) were that some of the factors that obstruct effective access to information in Africa, especially small-scale farmers included illiteracy, ignorance of information sources, extension agents with insufficient knowledge and digital divide. Other challenges reported by Bernard et al. (2014) included lack of information services, inadequate number of extension agents, lack of awareness of information sources, information not easily accessible by small-scale farmers, lack of funds to obtain information and language barriers. A similar study by Masambuka-Kanchewa (2013) revealed that the lack of mobility was a major hindrance to access and

use of information by rural small-scale farmers in Malawi.

Table 6. Obstacles faced by small scale farmers in accessing and using information sources

Obstacles	Frequency	Percentage
Lack of skills to access information	584	92.7
Inadequate information resources	583	92.5
Inadequate Agricultural Extension Agents	578	91.7
No Agricultural Information centres (Library)	577	91.6
Inappropriate airing time of agricultural program	473	75.1
Complexity of information	461	73.2
Lack of mobility	453	71.9

Source: Field data, 2020; multiple response

CONCLUSION:

While studies have been done on information needs and obstacles of small-scale farmers in developing countries, in Ghana not much has been done, especially among farmers in the Volta Region. The present study provides empirical evidence to support the information needs and obstacles of farmers in the Region. Small-scale farmers in the Volta Region required information on marketing, post-harvest techniques, and diseases and pests management; thematic areas which have the potential to undermine productivity and negatively affect livelihoods. The study also established that the majority

of small-scale farmers were aware of information sources in the Region with the major information sources consulted by farmers being family members, friends, radio, television and extension agents. A chi-square analysis showed that, educational level of farmers was not significant at $\rho \leq 0.05$ and therefore did not affect farmers’ information needs in the Region. Besides, the study established that the major obstacles facing small-scale farmers were lack of skills to access information, inadequate information resources, insufficient agricultural extension agents, and absence of Agricultural Information Centres (AICs).

RECOMMENDATIONS:

- It is therefore, important for the Department of Agriculture Extension Services (DAES) of the Ministry of Food and Agriculture (MoFA) in the Region to immediately address these needs in order to improve access and use of information among small-scale farmers.
- As farmers fall on family members and friends as the first port of call in seeking information, it is important to build their capacity with the relevant and more

- accurate information so as to enrich the quality of the information disseminated
- The Department of Agriculture Extension Services should look at the effectiveness of mechanisms used in disseminating information to small-scale farmers and consequently, the need to provide information to small-scale farmers in order to address their information needs
- Other information sources such as Non-Governmental Organisations (NGOs), Magazines, and Agricultural Shows/Exhibitions be promoted and made

available to small-scale farmers in order to maximize the use of information contained in the sources for agricultural production.

- The challenges indicate an opportunity for the Department of Agriculture Extension Services (DAES) to improve access and use of information among small-scale farmers in the Volta Region by addressing the challenges.

These recommendations though may be limited to the Volta Region of Ghana, may also serve as good resource to shape the

direction of agricultural extension delivery in Ghana and other parts of the developing world.

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