

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Tropical AgriSciences

Department of Economics and Development



**The impact of gender inequality on information
exchange in rural Ghana:
A case study of East Akim district in the Eastern
Region of Ghana**

Master thesis

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Supervisor:
Alexander Kandakov, Ph.D.

Author:
B.Sc. Acheampong Edwin Boateng

Declaration

“I hereby declare that I worked on my Master thesis, the impact of gender inequality on information exchange in rural Ghana, a case study of the East Akim district in the Eastern region of Ghana by myself and that I used solely literature resources listed below in references.”

22nd April 2017, Prague

.....

B.Sc. Acheampong Edwin Boateng

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Abstract

This thesis was focused on estimating the influence that farmer's income, size of farm, education level and gender has on accessing adequate information in rural communities. The thesis also found out about the information needs of farmers, types of information resources and services available to farmers, their knowledge of information resources and services, level of satisfaction on information available to them as well as the incidence of gender inequality in information transfer. Research was conducted in East Akim district in the Eastern region of Ghana. A categorical binary logistic model in SPSS was used to determine the significance and impact of farmer's income, size of farm, education level and gender on adequate information access. Farmers income was the only variable that had a real major positive impact on accessing adequate information, therefore contributing to the probability that the richer the farmer the easier to access adequate information. Size of farm and education level of farmers did not have a real impact on accessing adequate information. Male farmers had a 0.173 times chance more than female farmers in accessing adequate information but do not reflect much on their income. Gender inequality seemed not to be a problem which will prevent farmers especially women to access adequate information.

Keywords: gender inequality, information, Agriculture, rural communities, East Akim District, Ghana.

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List of Abbreviations

| | |
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| AAUW | American Association of University Women |
| AfDB | African Development Bank |
| APRM | African Peer Review Mechanism |
| EFRD | European Forum on Rural Development |
| FAO | Food and Agriculture Organization |
| FASDEP | Food and Agriculture Sector Development Policy |
| GDP | Gross Domestic Product |
| GHS | Ghana Cedis |
| GoG | Government of Ghana |
| GSGDA | Ghana Shared Growth and Development Agenda |
| GSHRDC | Gender Studies and Human Rights Documentation Centre |
| GSS | Ghana Statistical service |
| METASIP | Medium Term Agriculture Sector Investment Plan |
| MFED | Ministry of Finance and Economic Development |
| MOFA | Ministry of Food and Agriculture |
| GW | Ghana Web |
| HDR | Human Development Report |
| MOWAC | Ministry of Women and Children Affairs |
| NSPS | National Social Protection Policy |
| RELCS | Research Extension Links Committees |
| SARD | South African Agriculture Research Department |
| SWR | Social Watch Report |
| UN | United Nations |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Educational Scientific and Cultural Organization |
| USD | United States Dollar |
| VOA | Voice of America |
| WB | World Bank |

1 Introduction

The development of any nation depends largely on agriculture, either as raw materials for manufacturing or for exportation in order to receive foreign exchange. Many developing countries such as Brazil, Botswana and Ghana owe their development to agriculture, basically on commodities such as sugar, diamond and cocoa respectively. Gender concerns are raised in all aspects of human endeavor and the agricultural sector cannot be exempted. In spite of the enormous literature and continues research on gender issues regarding information exchange in rural areas mostly in developing countries (Anderson and Genicot, 2014; Connell, 2002; Wharton, 2005; Goldin et al., 2006; Greenwood et al., 2005), there is no quantitative research done regarding Ghana and the reason could be because women are mostly seen as farm helps.

This thesis determined the information needs of farmers', ascertained the type of information resources and services available to these farmers as well as their knowledge of these information resources and services. Also, the thesis found out the level of satisfaction of the farmers regarding these available resources and finally tried to ascertain the incidence of gender inequality in information transfer in the East Akim district in the Eastern Region of Ghana.

However, the main aim of this research was to estimate the influence that farmer's income, size of farm, education level and gender has on accessing adequate information in Apapam village, Ahwenease village and Adadientem village all in the Eastern Region of Ghana. The thesis employed a similar approach used by Karippai et al., (1995) in examining the gender disparity in agricultural extension service delivery in Ethiopia, which pointed out that sizes of farm had a positive impact on information access (Karippai et al., 1995). In order for farmers to access adequate information, this thesis took into account gender analysis as to the information needs of males and females in rural areas. It considered aspects of gender division of labor, freedom from domestic violence, access and control of benefit and decision making in the household.

Findings of this thesis revealed that, information needed for farmers' improvements were access to markets and bank credit facilities. Therefore the result of this thesis might be useful for further analysis.

2 Literature Review

2.1 Definition of gender/ gender inequality

It is important to define gender in order to understand fully its related issues in a society. This is defined as the social science that characterizes women and men (Connell, 1987; Connell, 2002; Wharton, 2005). These characterizations begin from childhood with parents playing a major role. Research by Moon and Hoffman (2008) showed that, Parents are somewhat liberal to their male children when it comes to particular behaviors, for example playing rough, being loud and getting dirty, but are less tolerant of such behaviors in the case of a female child. Similarly, female parents and teachers mostly engage in personal interactions, compared with male figures, which help to enhance gender norms (Moon and Hoffman, 2008).

Wharton (2005), Connell (2002) and Arnot and Ghail (2006) emphasized that gender categorization are sharply linked to gender inequality and evident in all spheres of the society.

Men's characteristics and masculinity are viewed as having more value than women's femininity (Connell, 2002); this causes the creation of gender inequalities (Wharton, 2005). "Hence, irrespective of the angle from which gender distinctions are examined, they provide the basis of inequality" (Wharton, 2005, Connell, 2002).

2.1.1 Gender inequality in the world and its consequences

According to the Human development report (2014), it has been established across the world that, violence on women has been a norm, at least once in their life time. This type of violence can be sexual or physical or both (HDR, 2014), talking of about 1.2 billion women. In the developed countries, gender inequality is viewed in a different dimension. What comes to mind when talking of gender inequality are problems to do with career advancement, wage differences and so on. A report by the American Association of University Women in the United States, noted that, on the average women make \$0.78 for every dollar males earn and this cannot be explained by the differences in career choices (AAUW, 2014). Moreso, Latin American region has been seen as one of the most unequal parts of the world and depicted by the fact that the richest one-tenth of the population of Latin America and the Caribbean earn 48 % of total income are mostly males, whereas the

poorest tenth mainly females earn only 1.6 %. In industrialized countries, by contrast, the top tenth of the population earns 29.1 %, and the bottom tenth earns 2.5 %. (Bourguignon and Morrison, 2002).

In low income economies, this topic is far from what is experienced in higher-income countries. Gender inequality is seen in all sectors of the economy including education and health sectors not forgetting human right abuses. In many parts of Africa and Middle East, female genital mutilation has been a common cultural practice for some ethnic groups, a typical case of human rights violation on women and girls (Tostan, 2014). This horrifying culture has to do with the expulsion of the external female genitals of young girls which causes them to bleed excessively and in many cases leaving them with chronic infections, infertility and complications in childbirth (VOA, 2014). Most families prefer boy child than the girl child.

In Ghana for instance, when a person gives birth most people wanting to know the sex of the child jokingly ask, did you give birth to “Nipa” (human being) or a girl and these sorts of words dampens the morale of women making them very timid in the society. Because of such discrimination in favor of males, they usually get access to everything including better health care, quality education, and best nutrition and in turn inherit properties of the family whilst women flee from their communities out of neglect (Sen, 2003). Guilmoto (2007) has buttressed on the point that, about 163 million women are missing in Asia alone, due to neglect and discrimination (Guimoto, 2007). Kristoff and WuDunn (2010) emphasized that, more women were murdered during the wars in the 20th century than men especially in Afghanistan, Pakistan, Cambodia, and India (Kristoff and WuDunn, 2010). Inequality impedes the rate at which poverty reduction strategies in most regions in the world are carried out. Studies by Bourguignon (2002) confirmed this accession and went on to conclude that, the income or expenditure distributions across the developing world, confirmed that higher rates of economic growth are associated with higher rates of poverty reduction (Bourguignon, 2002).

Table 1: Gender inequality index

| HDI rank | Country | Gender Inequality Index Value 2013 | Gender Inequality Index Rank 2013 | Maternal Mortality Ratio 2010 | Adolescent Birth Rate 2010/2015 | Share of seats in parliament 2013 |
|----------|----------------------|------------------------------------|-----------------------------------|-------------------------------|---------------------------------|-----------------------------------|
| 1 | Norway | 0.068 | 9 | 7 | 7.8 | 39.6 |
| 2 | Australia | 0.113 | 19 | 7 | 12.1 | 29.2 |
| 5 | USA | 0.262 | 47 | 21 | 31.0 | 18.2 |
| 6 | Germany | 0.046 | 3 | 7 | 3.8 | 32.4 |
| 14 | UK | 0.193 | 35 | 12 | 25.8 | 22.6 |
| 17 | Japan | 0.138 | 25 | 5 | 5.4 | 10.8 |
| 25 | Slovenia | 0.021 | 1 | 12 | 0.6 | 24.6 |
| 31 | Qatar | 0.524 | 113 | 7 | 9.5 | 0.1 |
| 40 | United Arab Emirates | 0.244 | 43 | 12 | 27.6 | 17.5 |
| 49 | Argentina | 0.381 | 74 | 77 | 54.4 | 37.7 |
| 55 | Libya | 0.215 | 40 | 58 | 2.5 | 16.5 |
| 57 | Russia | 0.314 | 52 | 34 | 25.7 | 12.1 |
| 62 | Malaysia | 0.210 | 39 | 29 | 5.7 | 13.9 |
| 79 | Brazil | 0.441 | 85 | 56 | 70.8 | 9.6 |
| 91 | China | 0.202 | 37 | 37 | 8.6 | 23.4 |
| 110 | Egypt | 0.580 | 130 | 66 | 43 | 2.8 |
| 118 | South Africa | 0.461 | 94 | 300 | 50.9 | 41.1 |
| 135 | India | 0.563 | 127 | 200 | 32.8 | 10.9 |
| 136 | Cambodia | 0.505 | 105 | 250 | 44.3 | 18.1 |
| 146 | Pakistan | 0.563 | 127 | 260 | 27.3 | 19.7 |
| 147 | Kenya | 0.548 | 122 | 360 | 93.6 | 19.9 |
| 154 | Yemen | 0.733 | 152 | 200 | 47 | 0.7 |
| 166 | Sudan | 0.628 | 140 | 730 | 84 | 24.1 |
| 169 | Afghanistan | 0.705 | 149 | 460 | 86.8 | 27.6 |

Source: HDR, 2014

2.1.2 Gender and agriculture

There is a great concern regarding gender equity all over the world and the importance of resolving such issues (March et al., 1999; Guijt and Shah, 1999). A sure way of promoting gender equality is to create a level playing field for all irrespective of sex, to brainstorm and have healthy intellectual discourse (UNESCO, 2002). The ongoing perception that farming is a man's job and that women are not better farmers is not synonymous to only developing countries, rather dominant in the dialogue on farming in

agricultural communities in developed economies (Leckie, 1996; Schmitt, 1998; Pini, 2002). These pattern, is associated with overall submission of women in society and relate specifically to rural women and their alliance with social duties, such as being a wife and family life (Little and Panelli, 2003). Violation of these acceptable settings by women calls for lack of confidence in them whilst others also discriminate against them (Trauger, 2004). These dialogues on farming as a male job are normally linked to imagery about gendered bodies. As noted by Brandth in 2006, working on the farm means using physical strength (Brandth, 2006). Working bodies in agriculture are clearly gendered with the male body always in mind and takes the pivotal stage materially and symbolically. Women's body on the other hand has acted in a way that defines the potentiality between men and women (Weitz, 1998). It has been endorsed that, women are not pictured as having the physic that warrant them to farm. For some reason, their bodies are viewed as lacking in masculine characteristics leading to the point of view that women's work on farms is undemanding and valueless than that of men (Saugeres, 2002). Other studies has indicated that cultural orientations of rural males revolve around tough, physical, dangerous and dirty work (Brandth and Haugen, 2000; Peter et al., 2000). It is argued that, the male body is attributed to all forms of agricultural work irrespective of how tedious or manageable it may be (Bryant, 2000). In 2003, Silvasti elaborated that in Finland, masculine qualities are best-liked when appointing replacement to farms and women's subordinate position in farming is linked to the size, form, and power of their bodies (Silvasti, 2003). Due to the emergent of farm machinery, Male bodily dominance in farming would soon trifle away since there will be less need for physical strength and tenacity. Be that as it may, Brandth (1995) and Little (2006) argued that, manliness now constitute professional know-how over farm machinery (Brandth, 1995; Little 2006). Brandth (1995) went on to argue that farm machinery is considered as a branch of the male body and the eagerness for large, powerful equipment is associated with bodily strength and ability.

In trying to acquire knowledge about agricultural production, women farmers discuss facts including the ideas about and realities of their bodies and their association with agricultural machines. Their body type and competence in mechnery as against most men farmers often drive women farmers to go in for new types of production strategies that depend upon less physical strength and limited use of large equipment (Brandth, 1995).

Their educational needs on these issues are almost never addressed. Current studies however show that if women are given equal access to productive resources as men, they could cause drastic change in production output they generate and lift millions out of hunger (FAO, 2011). Research on women's contribution to agriculture during the colonial period often showed that they lost power and economic autonomy and exclusion from the global marketplace with the arrival of cash crops. Even further, men and international commerce benefited because they were able to rely to some extent on women's unremunerated labor (FAO, 2011).

Furthermore, utilization of the resources by both male and female farmers will as well increase the totality of agricultural productivity in the developing countries, contributing to better standard of living. Therefore, any aim to improve agriculture as a whole and the livelihood of smallholder farmers in that vein must take into consideration women's roles in livelihoods and food production (FAO, 2011).

2.1.3 Perception of Women in agriculture

The gendered manner in resource distribution is attributed to production ineffectiveness whereas measures put in place to solve these issues disregard women's lacks of access to agricultural information (Quisumbing and Pandolfelli, 2008). Likewise, when extension officers visited farming communities, their attention is always on the male farmers, making the female group who make up a significant number of farmers in the community feel rejected (Aina, 2006). Even though women's involvement in the agricultural sector has been significant; as well as in other sectors of the economy, data regarding their contribution are not captured well. Other researchers including Brodie (1994) have pointed out that women's contribution are mostly affected by socioeconomic, political and cultural context and went on to state that women are "fractured and polarized" around class, race, ethnicity and place of residence (Brodie, 1994).

Again, the idea that women are just helping hand on the farms contributes to their inability access information (Safilios-Rothschild 1985). Furthermore, the farmers to famer approach of extension and information delivery strategy usually do not take into consideration the female character (Baser, 1988). These are linked to gender-related attitudes and practices (Materu-Behtsa, 2004), not forgetting the assumptions that, cash

crops are cultivated and owned by males whilst food crops are for females (Naidoo et al., 2008), which Gives priority to the notion concerning the categorization of crops into that of “males” and “females” in some developing countries. As firmly established, men are supposed to bring agricultural income to the house whereas the women feed the family, therefore one cannot be wrong to categorize cash crops and subsistence crops as male and female crops respectively (Kumar, 1987; Randolph, 1988; Koopman, 1993), meanwhile, reliable access to appropriate agricultural information by women could address most of their weakness, if not all and urge them on their pursuit of production efficiency and effectiveness along with market accessibility.

Taking a cue from some of the fast emerging economies like China, it can be noted that there was a radical change in agriculture due to improved information services and delivery (Delman, 1991; Xu, 2001).

2.2 Overview of Ghana

Ghana, officially called the Republic of Ghana, lies within latitude 4° 44'N and 11° 11'N and 3° 11' W and 1° 11' E, along the coast of West Africa, sitting on the Gulf of Guinea. The total land area of Ghana is 238,540 km² and bordered on the west by Ivory Coast, Burkina Faso on the northern side and Togo to the east. The country was formally colonized by United Kingdom until 1957 when she gained independence. Ghana is now a sovereign state with unitary presidential constitutional democracy. The capital city is Accra, which is also the seat of government located at the Greater Accra region, (Ghana Web, 2015).

Population of Ghana is 27,316,004 people with density 120 people/km². Current male and female population are 13,418,881 (49.1%) and 13,897,129 (50.9%) respectively (WB, 2015). Ghana has 10 regions and the Ashanti been the most populated in all has 19.4% followed by Greater Accra (16.3%), Eastern (10.7%), Northern (10.1%), Western (9.6%), Brong Ahafo (9.4%), Central (8.9%), Volta (8.6%), Upper East (4.2%) and Upper West (2.8%). Most of these regions including Ashanti has rural majority (GSS, 2015). Majority of the Ghanaian population is mainly born and bred in Ghana (93.7%). There are several ethnicities in the country but the main ones are Akan (47.5%) followed by the smaller groups such as Ewe (13.9%), Ga-Dangme (7.4%), Mole-Dagbon (16.6%) , Gurma

(5.7%), Guan (3.7%), (Grusi 2.5%), Mande-Busanga (1.1%), other (1.6%), (GSS, 2012). Even though Ghana is not officially a Christian state, most of the people are Christians (71.2%). The other religions are Islamic (17.6%), Traditional (5.2%), Atheist (6%). The official language of Ghana is English, which a significant number of the population is able to read and write (67.1%). The literacy rate of Ghana stands at 71.5% of the total population. As many ethnic languages are in Ghana, more than half of the population is able to read and write in at least one Ghanaian language. As at now 375,000 foreigners are legally registered and permanently residing in Ghana including expatriates and students (GSS, 2012).

Ghana's fertility rate is currently 3.94 in rural areas and 2.78 in urban areas. Ghana has seen a tremendous mean annual growth over the years of about 2.6% (UN, 2015).

Because of the medium human development index Ghana is positioned at 138th place in the world in terms of human development (UNDP, 2014).

Country is ranked as lower middle income. Majority of the population still live below the poverty line with less than 2 USD per day (WB, 2015) due to the fact that nine of the regions are more of rural than urban.

GDP per capita is has grown to its highest rate as compared to some years ago. The highest GDP distribution comes from services sector (49%) followed by industry sector (29%) and agriculture sector (22%), (World Bank, 2015). Even though the agricultural sector contributes the smallest part to GDP, it plays an important role in economy of Ghana. Agricultural sector employs up to 60% of the total population in Ghana (WB, 2012). The climatic condition of Ghana can be described as tropical with two categories of seasons namely, rainy and dry seasons. The average annual temperature is about 26°C (79°F). There are two distinct rainy seasons in the southern and middle parts of the country. Thus: April to June and September to November. The North is, however, is associated with one rainfall season that starts in May, reaches its maximum in August, and lasts till September. On the average, the annual rainfall ranges from 1,015mm (40 inches) in the North to about 2,030mm (80 inches) in the Southwest (GSS, 2015).

2.2.1 Gender issues in Ghana - Historical Context

Ghana is a diverse and multi-cultural country whose socio-economic and political developments have been defined and shaped by varying internal and external factors and forces. Studies on the traditional Ghanaian societies (which were formed in the pre-colonial era and sustained and integrated into modern day Ghanaian socio-economic and political systems) present the socio-economy as simple yet exhibiting and complex systems and structures that are unique in their formation and functions (Sarpong, 1974). The traditional structure and systems of chieftaincy, economics and trade, politics and governance were formulated to promote specific forms of social functioning and positioning and are explicit in every aspect of the economy with deep implications for gender.

Women in Ghana generally are very submissive in their marriages and the society as a whole and mostly affect negatively their decision making and use of time. They often burden themselves with unfair domestic chores thereby not having the ample time for income generation activities. This is the case because of the perception the society have on carrier women (World Bank, 2015).

Although the Ghanaian traditional system is surrounded with diverse social organizations the two main kinship and lineage systems are the matrilineal and patrilineal systems roughly coincided with the north (patrilineal) and south (matrilineal) geo-political divides of Ghana (Tsikata, 2000). These systems are influential factors in the socio-economic and political context of today's Ghana. Understanding their meaning is necessary in defining the gender and development perspective of the country (Sarpong, 1974).

While it integrated men into the newly created economies, the colonial ruling of Ghana put restrictions to women's participation in activities outside of their home. Access to and benefits from the formal sector were also unequal; creating conditions that favored mostly men (Sarpong, 1977 and Tsikata, 2000).

2.2.2 Gender inequality in Ghana

Women in Ghana, like any other woman in the world often face many of similar constraints to economic participation and inclusion. These constraints include large gender gaps with respect to accessing of productive inputs, time spent on domestic chores, and the

quality and number of jobs and other opportunities available. This is harmful to not only females but families, communities, and economies as a whole (World Bank, 2015).

The government of Ghana in consultation with the council of state been aware of gender issues in the country saw to the passing of the National Gender and Children's Policy bill into a law in 2004. It is a recognized part of the national development process and stand up for development of the country (World Bank, 2007). Its main aim is to develop women and children within the context of national development. The overall goal of the policy is to mainstream gender concerns in the developmental process to enhance the social, legal, political, economic and cultural conditions of Ghanaians, most importantly women and children. The policy sees to recognize the role of other stakeholders in the achievement of the goal and calls for the establishment of a "Multi-Sector" Steering Committee to be coordinated by the Ministry of Women and Children Affairs (MOWAC) and led by the Ministry of Finance and Economic Development (MFED) that would enhance the mainstreaming concerns related to women and children, including budget allocation. However, the establishment of the steering committee was delayed and the Policy has yet to be widely circulated or understood, even within the line ministries (Tsikata, 2000). In 2006 the African Peer Review Mechanism (APRM) team noted that the marginalization of women remains a very real problem in Ghana despite constitutional and other legislative provisions to protect and secure the rights of women (APRM, 2005).

2.2.3 Key gender issues in Ghana's agricultural sector

Ghana, and in most developing economies, lawmakers, policymakers and researchers are very much aware of the importance to include gender related issues into programs and analysis. There are several gender discourse areas but a few are, education; boys' are preferred rather than girls to be educated because the opportunity cost of girl's labor is higher due to their greater household chores.

In light of this parents often deem it worthwhile investing in the education of their male children with the limited funds rather than the female (Boakye et al, 1997). In rural areas, lack of female education causes low farm output. Agarwal (1991) argued that three quarters of female farmers have no formal education (Agarwal, 1991).

Also, the division between the public and private globe has offered to bind women to specific female spheres of activities such as house chores, reproduction, child caring and nurturance, caring for the sick and aged (Bleek, 1987). Whilst men can engage in local political activities as a preparation for long term political ambitions, majority of women are restricted from those ventures due to cultural orientations (Atieno and Teal, 2006) this has resulted in the low representation of women in legislature as well as the local government level in Ghana. In the 2008 general election, only 19 parliamentary seats (8.3%) out of 230 went to women the remaining 211 parliamentary seats (91.7%) were taken by their male counterparts. The 2012 election saw a 2% increase in overall seats won by women (GSS, 2015). Domestic violence is one of the talked about impediments of gender equality. It prevents females from securing their fundamental human rights to equality of protection under the law and the right to life and liberty since they suffer the most (GSS, 2015).

Furthermore, we can talk about human trafficking and sexual violence; the two usually go hand-in-hand. This is when a person is forced or tricked into working in terrible conditions. Victims of human trafficking may be kidnapped. They also may be persuaded with fake promises of a better life somewhere other than where they lived. These people are sometimes drugged, locked up, beaten, starved, or made to work for many hours a day. The sort of work trafficked persons may be forced to accomplished include prostitution, farm work, cleaning, childcare, or sweatshop work (Bond, 2005).

There has been a development on the significance of gender to some specific sectors in recent times. It has also become a universal issue in agriculture, due to the fact that there has been drastic change in issues relating to gender. Women do most of the work in the subsistence agricultural sector in most local areas in Ghana. Women are responsible for the day-to-day activities in the homestead (Olawoye, 2002). A research conducted by GSHRDC (2016) indicated that, even statistics of sexual violence in Ghana shows that 27% of women have had sexual assault in their lifetime, 1 in 3 had been fondled against their will, 2 in 10 women had their first experience in sex against their will and 2 in 5 women are harassed when they refuse their partner sex. More so, 3 out of 10 women forced by male partners to have sex, 7% of women had been threatened to touch a man's private part as well as 6% had been threatened by a school-teacher into having sex last but not the least, 4% had been threatened with demand for sex in exchange for a job. Studies indicate that

women are most at risk of sexual violence at all forms, even as early as ages 10 to 18 year (GSHRDC, 2016).

2.2.4 Role of women in agriculture in Ghana

In the past decades, Ghana has been engaged in numerous agricultural plans with a typical example “Operation feed yourself”. The importance of women in the agricultural sector in Ghana was acknowledged by the Spanish secretary of state for International Development during the European Forum on Rural Development organized in Palencia in Spain (EFRD, 2011), stating that, female farmers in Ghana are equal to their male counterparts and looking at the cereal production sector one can notice a majority of female producers. She reiterated that, to improve the global agenda of food security there should be a greater recognition and support for female farmers. Extension agents under the Ministry of Food and Agriculture (MOFA) are the key state institution known to be responsible for the provision of agro-base services to female farmers (Manpower Division, MOFA, 2004). In terms of its ability to carry out activities most departments under the ministry lacks personnel who are well qualified to cause a change in the development of women in agriculture. Odebode (2008) emphasized that, despite serious gender awareness programs worldwide, data on women’s contribution economically has been nothing good to write home about (Odebode, 2008). Feasibility studies on sexual differences and socio-cultural trends have shown gender biasness in all sectors of the economy (Sarr, 1999). Women are thereby often relegated to the status of second-class citizens, depending on the rights of their husbands and other male relatives. They are most of the time restricted as to the access to and control of productive resources such as land, technology or financial services (FAO, 2013). As pointed out by Olawoye (1988), women forms the majority in the active labor force but were mostly not recognized as such due to the fact that they are considered as helps on the farm. Braimah et al. (2014) buttressed on the same point that due to non-recognition of women’s economic contribution, data regarding such venture are not available to policy-makers and went on to say that it is necessary to access and quantify women’s involvement in household food security in order to determine their economic output (Braimah et al., 2014).

2.2.5 Constraints and consequences to women's role in agriculture

Women in agriculture are faced with enormous challenges and they come in many forms, but two main areas thus social and economic challenges are always evident. Ghanaian women play an important role in agricultural production in Ghana.

About 50% of women and 30% of female-headed households are involved in agriculture (FAO, 2011). Since Ghana's agriculture is rain fed, they need to wait for the right time to plant, as well as the limited access to and control of land.

Doss and Morris (2001) pointed out that, there exist gender inequalities since only 39% of female farmers adopt improved crop varieties, compared with 59% of male farmers, because they have less access to land, family labor and extension services (Doss and Morris, 2001).

Research by the African gender innovation lab of the World Bank also emphasized on the fact that women are generally not safe when it comes to land tenure or land acquisition in Ghana so they do not intend to leave their scanty piece of land they have managed to acquire to fallow due to the fear of encroachment, resulting in less-fertile land and low production (World Bank, 2015).

Ghanaian women also own less livestock, use less fertilizers, own less mechanical equipment, have less years of education and school attendance rates than men. Market-oriented farming has great potential for helping farming women to overcome poverty. Ghanaian women appear to be more industrious than their male counterparts and their farms are proportionally more market-oriented. From the angle of cocoa farming as particularly good for female farmers because, it can income security is assured in order to acquire land for production. More so, the country's economy becomes less stressful because more than 75% of small holder farmers contribute part of their funds for development by way of taxes (Teal et al., 2006; Vigneri, 2005). Vigneri (2005) and Holmes (2009) also argued that, in spite of their limitation, female cocoa farmers in Ghana are able to equal output as those of the men. Similarly, Goldstein and Udry's study (2008), articulated that women farmers are as competent as their men in the production of maize and cassava, but they achieve lower yields. Should they have equal access to the same level of inputs as men, this would lead to higher yields and to potential benefits for themselves

and for Ghana's rural economy as a whole. If these gender inequalities are fairly tackled, women's benefits may increase substantially (Vigner, 2005)

2.2.6 Government commitment to gender equality in Ghana

The entirety of the economic plan, known as "Vision 2020" put in motion in 1995; saw Ghana as the leading African state to attain the status of a developed nation by 2029 and a freshly manufacturing country between 2030 and 2039 through government sponsored programs in science and technology, not forgetting the agricultural sector. The Ghana Shared Growth and Development Agenda 2010-2013, aimed at supporting oil and gas development, whilst investing in infrastructure, agriculture etc. Focus of the GSGDA social policy was on human development based on indicators such as health and education.

In addition the government of Ghana in conjunction with the Gender Innovation Lab of the World Bank working on the Ghana Commercial Agricultural Project (GCAP) to address the needs of female and male smallholder farmers have supported various commercial arrangements (contract farming) that links small-scale farmers to larger entities that are able to provide access to inputs, markets, land, and irrigation services (World Bank, 2015).

The vision of the ministry of Food and Agriculture (MOFA) is to modernize agriculture in a transformed economy in order to alleviate poverty. Referencing the above goal, all efforts of the government has been geared towards improving and sustaining research and extension for better productivity and improvement of livelihoods. Public-private partnerships in the area of marketing and provision of credit facilities to farmers were the main approaches to achieving the vision MOFA. One important vision of the Food and Agriculture Sector Development Policy (FASDEP II) in 2007 was the modernization of agriculture and improves productivity of Ghanaian farmers. To tackle the FASDEP II in a serious manner the government implemented the Medium Term Agriculture Sector Investment Plan (METASIP) spanning 2010-2015. This represents the priority areas of agricultural improvement, with food security and emergency preparedness as well as increased growth in incomes being the major areas for investment. Another way the government is committed in creating an all-inclusive and empowered society is through the setting up of the implementation of the National Social Protection Strategy (NSPS) in 2008

to train and empower the society by especially the vulnerable has been a sign of great gender equality strategy, also the affirmative action policy to promote women into decision making positions. Based on that the government increased the number of female appointed members of the District Assembly from 30% to 50% in accordance with Article 35 (6) (b) of the 1992 Constitution. See Table 2

Table 2: Gender profile of Core Decision-Making Position

| Office | Total | Male | Female | Percent Female |
|---------------------------|-------|------|--------|----------------|
| Ministers | 29 | 25 | 4 | 1.4 |
| Deputy Ministers | 38 | 29 | 9 | 23.7 |
| Regional Ministers | 10 | 10 | 0 | 0 |
| Deputy Regional Ministers | 10 | 6 | 4 | 40 |
| Council of State | 24 | 21 | 3 | 12.5 |
| District Chief Executives | 138 | 126 | 12 | 8.7 |
| Parliament | 230 | 205 | 25 | 10.9 |

Source: Abantu for Development, 2002

2.3 Importance of agricultural information

Information is the output that emanates from receiving, encoding and transmission of data in a way that creates added value to the recipient (Belkin and Pao, 1989). More so, "Information is perceived firstly, as a resource and if combined with other inputs like labor, capital and land, results into production of goods and services and secondly as a source of authority, which gives the capacity to make informed decisions which leads to self-actualization (Castels, 2000; Nassanga, 2001). Although information is viewed as one of the basic needs of life after food, shelter, air, and clothing (Stanley, 1990), and can also be described as very necessary due to its importance to cause a difference in the society (Rezvanfar et al., 2007), by way of developing, planning and make crucial decisions (Olorunda and Oyelude, 2008). In addition communication of agricultural information is noted as an ingredient of change in farming communities (Hossain, 1998). This contributes to enhanced productivity, and improved country development (Coetzee, 2000). At a close look at the agricultural trends, one can realize that at any point in time in the lives of farmers, they need various form of information before attempting to acquire any machinery

whatsoever (De Silva and Ratnadiwakara 2008; Mittal et al., 2010). Despite its potential for agricultural development, Adomi, Ogbomo and Inoni (2003) conceived that most African countries have not made any conscious efforts to disseminate knowledge and information, in rural areas where 70% to 80% of the population lives (Adomi; Ogbomo and Inoni, 2003). This is the more reason why proper information transfer and application in the rural level is required, so as to help improve productivity in agriculture and farmer's livelihood (Mudukuti and Miller, 2002). More so, the right type of information is vital for agribusiness (Doss, 1999). Above all, to achieve agricultural sustainability and food security is mostly incumbent on appropriate information available to farmers rather than solely on material support (United Nations, 2002; FAO, 2004; IFPRI 2004; Des Castello and Braun, 2006). A research conducted by the South African Agricultural Research Development in 2007 indicated that there has been a drastic declination in the population of rural inhabitants from 44.9% in 1996 to 42.5% in 2001 due to the facts that there are fewer opportunities in farming (SARD, 2007). This clearly shows how important it is to provide various kinds of information thus; from the planting stage to marketing of products to encourage farmers, who are mostly women, not to abandon the industry as well as reducing vulnerabilities.

On the other hand, such information can also help policy-makers in their planning of annual budgets as emphasized by Bajek (2015) in a research conducted on the share of direct payment by member countries of the common agricultural policy (CAP) based on impact of crises, trade negotiations, reports on farm economics and income (Bajek, 2015).

With this, the right scientifically researched information regarding problems associated with factors militating against good farming practices, diseases and pest control in crops and livestock production, climate change, storage and market knowledge are necessary to satisfy their needs.

2.3.1 Information needs of farmers

The agricultural sector in the developing world is gradually becoming knowledge conscious. This is because researchers are continually generating new information and technology. Whereas the agricultural systems becomes more complex, farmers' access to relevant, reliable, time sensitive information sources becomes more crucial to their

development. Such knowledge or Information should be relevant and meaningful as well as communicated in a way that will serve their purpose (Diekmann; Loibl and Batte, 2009).

What quickly clicks the mind when the phrase “information need” or “need in information” is mentioned in agricultural discourse is the fact that there is a lack of appropriate and reliable information which farmers require in order to improve upon their farming practices which in turn helps them in production efficiency and effectiveness and maximize profit (Devadson and Lingam, 1996).

Research by Meitei and Devi (2009) showed that farmers require different types of information relating to variety of seeds, pesticides and fertilizer (Meitei and Devi, 2009). However, unless the entirety of the information been put out to these farmers work out successfully at the level of the intended recipients it cannot in any way contribute to development (Heeks 2005). As noted by Coudel and Tonneau (2010), “Information may seem appropriate, usable, relevant, but it can only be useful if the actors have the capacity to use it and if their environment offers them the opportunity to use it” (Coudel and Tonneau, 2010).

South African women farmers were seen as needing the requisite knowledge in pesticide application and this has also been evident in small-scale sugar cane farms in kilombo due to lack of information and proper training (Naidoo et al., 2008). Adding that, the survival of small-scale farming depends largely on small-scale women farmers, but due of lack of education, cultural factors and domestication, they find it difficult to reach information (Ikoja-Odongo, 2008; Nath, 2001; WCW, 1995). Information nowadays are not cheap, to access them means to pay for them, making farmers fear because they don't have that kind of money to pay for such information (Williamson, 1997). Also Heeks (2005) argued that, economic resources such as money and skills form a crucial part of every farmer's life if they really want to access or assess a reliable and relevant source of information (Heeks 2005).

2.3.2 Medium of information transfer

It is acknowledged that the medium through which information are communicated are very important but there exist various factors that hinder free flow of such information

(Ellen, 2003). The aforementioned is expected that, rural dwellers identify the sort of information they are lacking and seek answers for such deficiencies, but most often than not, they are handicapped when it comes to such critical thinking (Burton, 2002), because they do not have the requisite education (Carter, 1999; Mbozi, 2002).

Aina (2006) emphasized on the fact that even libraries may not be a useful means of agricultural information transfer since most farmers in Africa lack education and cannot even make use of brochures (Aina, 2006). This applies to women; they mostly have little or no opportunity to attend school and usually rely on their peers or local information centers and talking drums for information (Walker, 2002). It happens like that because women are considered as housekeepers (Little and Panelli, 2003). They also do not attend most communal gatherings considering the enormous task they carry out in the house (FAO, 1998).

In 1995 Ozawa elaborated on the point that multi-tasking makes rural women at the end of the day broken-down so much that even listening to something on the radio becomes difficult (Ozawa, 1995) and they end up getting information that are no more related to situation at hand due to their rate of illiteracy (Dutta, 2009). Additionally television and the radio are useful sources of information but rural communities rarely have access to electrification to power these gadgets, which can also have throat cutting prices (Kalusopa, 2005; Dutta, 2009).

A vast majority of African farmers are illiterates, which means it's not possible to neither read nor write making information written in English not helpful to small-scale farmers.

In supporting the same idea, Omekwu in 1998 however pointed out that small-scale farmer in developing countries are unable to acquire up to date information due to language barriers (Omekwu, 1998). When information are in complex format such as electronic and zipped, one can be assured that it will not be useful since most African farmers, especially the women are illiterate (Ozawa, 1995; Momodu, 2002; Aina, 2007), the information is required to be clear, specific, simple, agreeable and understandable by farmers (Rwazo, 2007).

Munyua (2000) noted that, traditional medium of agricultural information delivery to farmers have been used very successfully in developing countries and that rural radio in

particular has played a major role in delivering agricultural messages whilst print, video, television, films, slides, pictures, drama, dance, group discussions, meetings, exhibitions and demonstrations (Munyua, 2000). In light of this Djojmartono and Pertini argued that face-to-face communication, including extension agents, group meetings, community organization and demonstrations are the ways to effectively educate and develop credibility yet not all that effective because of resource constraints such as budgetary allocations and this happens because most trainings are based on sponsorships so if it delays or refuses to come the everything goes down the drain (Djojmartono and Pertini, 1998).

For such reasons it is advisable to use basic and accessible way which the local community will understand and serve their purpose rather than employing strictly laid down procedures that will not serve its intended purpose (Nicholas, 1996).the only reason why someone may decide to use certain types of information is when it is beneficial to them (Ochieng, 1999). More so, everyone has its principles regarding the way and manner they want information to be communicated to them and even what they want to hear (Martin and Metcalfe, 2001). This was confirmed in an interview conducted by Bhagat, Nain and Narda in 2004 at Jammu and Kashmir in India where 200 farmers revealed that their most preferred medium of agricultural information transfer was radio, television and newspapers respectively (Bhagat; Nain and Narda, 2004).

The ratio of farmers and extension officers are nothing good to write home about and because of that, majority of farmers do not receive current information (Ozawa, 1995; Isinika and Mdoe, 2001; Aina, 2006). It has been established that, only few farmers receive information from the limited number of extension workers (Bilonkwamanagara, 2008) and these few farmers are certainly males because that's where their focus is whenever they visit farming communities (Aina, 2006), making the information flow very restricted and thereby causing asymmetry in the information provision (Mntambo, 2007).

2.3.3 Sources of information available to farmers in Ghana

The agricultural production maximization theory implies that, farmers need various types of information at every level of the production process especially in the adoption of technology stage (De silver and Rosenzweig, 2010). Farmers can acquire knowledge and information from numerous sources, including, their own trial and errors, friends, the mass

media such as radio sets and televisions, the print media, farmer groups like the cooperatives, community libraries and the extension agents.

In Ghana the extension agents under the Ministry of Food and Agriculture (MOFA) are known to be responsible for farmer training and extension works (Ghana Web, 2015). Emphasis made by Bown and Okedara (1981) indicated that extension capacity building goes a long way to help farmers develop knowledge, skills and required approaches to new ways of farming. By so doing it empowers them to identify their problems and solve them the best way they could (Bown and Okedara, 1981).

The mass media (radio sets, televisions and newspapers) cannot be ignored when it comes to its contribution to the spread of agricultural information in rural area. With special emphasis on the radio sets, it is evident that even illiterates can benefit due to the fact that there is the availability of local channels which can be beneficial to rural people in terms of understanding (Ghana Web, 2015). Rural areas without any source of electricity do also benefit from radio programs as the main source of information (Ghana Web, 2015). We cannot take out the important role the television is playing in the information dissemination process, since it's more of visuals understanding is quite easier to farmers, but as argued by Kalusopa (2005) and Dutta (2009), rural communities rarely have access to electrification to power these gadgets.

Cooperatives and peers have also been a very reliable source of farmer information in Ghana. It is easy for farmers to learn from each other as well as giving trainings to peers, this is because they live in the same community and it is assumed that the plight of fellow farmers are known so when it comes for them to provide information, they know the type of information their peers want (Yahaya and Olayide, 2002).

One such important group when it comes to agricultural information dissemination in the aspect of land tenure/acquisition is the traditional leader and council of elders. Without land there is no way agriculture can go on and looking at the Ghanaian land administration settings almost 80% of the total land area is owned by the stool (Deininger, 2003).

2.3.4 Agricultural information transfer in Ghana

Information and knowledge acquisition are regarded as vital for farmers to react successfully to the emerging advantages and challenges of the social, physical and political environments in which they are engaged (McQuail, 1983). The search for useful agricultural information is as important as ever (Leisa, 2002).

The government of Ghana has put in place several services to promote information dissemination to farmers. The research extension link committees (RELCS) were established in 2001 in five “ecological zone” in the country to foster an intimate working relationship among researchers, extension agents and farmers (MOFA, 2005). The main work of extension officers today is to provide agricultural information on time to farmers. Ozowa (1995) added that, research has confirmed agricultural innovation as having the ability to increase agricultural production and growing the economies of many developing states provided the innovation gets to the farmers in a timely manner. As a matter of fact, most African countries have not chocked successes in the diffusion of information and technology (Ozowa, 1995). In Ghana, those responsible for the dissemination of information are the agricultural extension agents and they employ channels such as print and electronic media, demonstrations and educational tours.

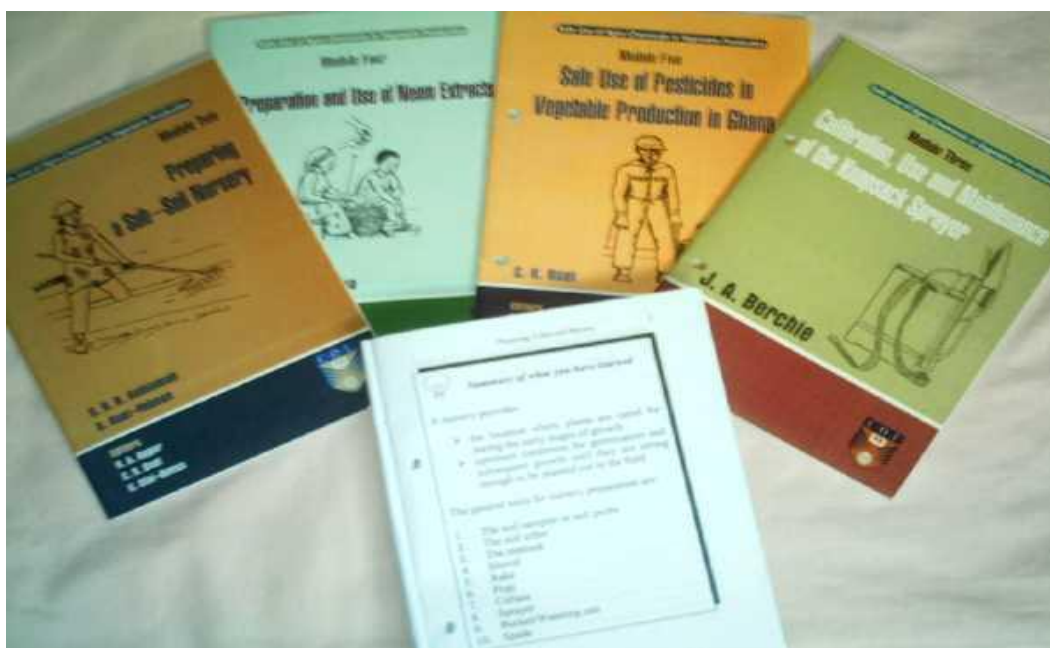


Figure 1: Print material with local content (Osei et al., 2003)

2.4 Conceptual framework for gender inequality

A conceptual framework as shown in figure 2 is a way of thinking about a process or a system under study (Smyth, 2004).

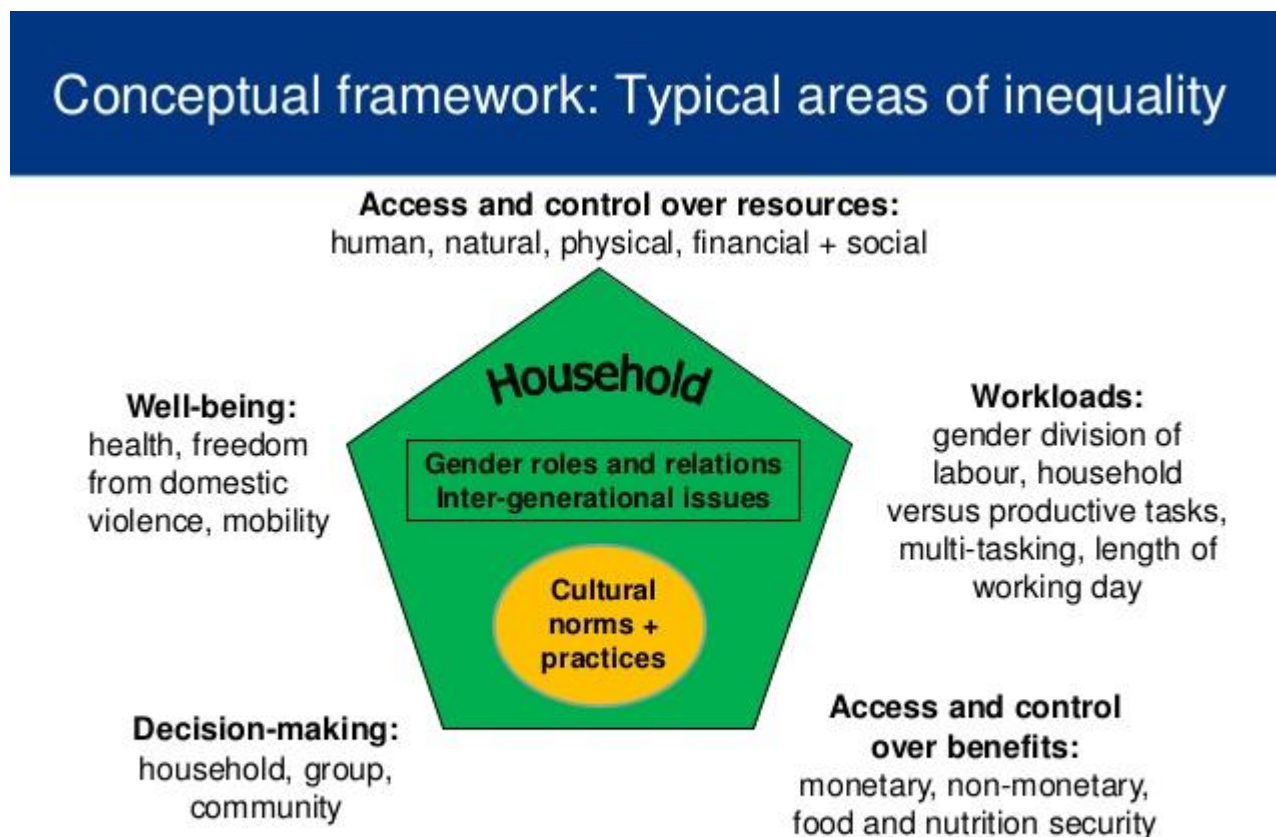


Figure 2: Considerable Areas in gender mainstreaming (ISSER, 2009)

According to the African Development Bank (AfDB) policy on gender, the convincing way of achieving conceptual and operational framework for gender responsiveness in the development of Africa is through the gender mainstreaming approach (AfDB, 2001). Gender inequality continues to undermine local and national efforts for improving living conditions, reduce poverty and enhance national development in Ghana, irrespective of numerous gender discussions entered into the development discourse right from independence (Social Watch Report, 2006). It is almost impossible to promote development in Ghana or elsewhere in other developing countries without the recognition of aspects of gender (GoG, 2003 and Nikoi, 1998).

According to Article 35 (1) of the land administration act in Ghana, there is the right of women to own and control natural resources especially land for their economic activities. Most often than not, this is not the case in the family and tribe holdings where men are perceived to be natural leaders (Duncan, 2004). In view of this, it also becomes difficult for women to borrow start-up capital (bank credit) or expend business since collaterals are often demanded before loans are granted. Because customary law does not recognize marital property, women's claims over benefits are lost once the marriages break down because that's the only way a little power is vested into them (Women's manifesto, 2004). Gender patterns in division of labor places land clearance in man's disposal, which gives them the priority in original acquisition and possession (Duncan, 2004).

3 Aims of the thesis

Main aim of this thesis was to estimate the influence that farmer's income, size of farm, education level and gender has on accessing adequate information.

Particular aims of the thesis include:

- ❖ To determine the information needs of farmers.
- ❖ To ascertain the type of information resources and services available to farmers.
- ❖ To find out what the farmers' knowledge of information resources and services available to them are.
- ❖ To find out the level of satisfaction of the farmers with these available resources.
- ❖ To ascertain the incidence of gender inequality in information transfer.

4 Methodology

4.1 Studied area

Research was conducted in East Akim District in the Eastern Region of Ghana. Three villages were visited in the whole process, namely: Adadientem, Ahwenease and Apapam. See figure 3

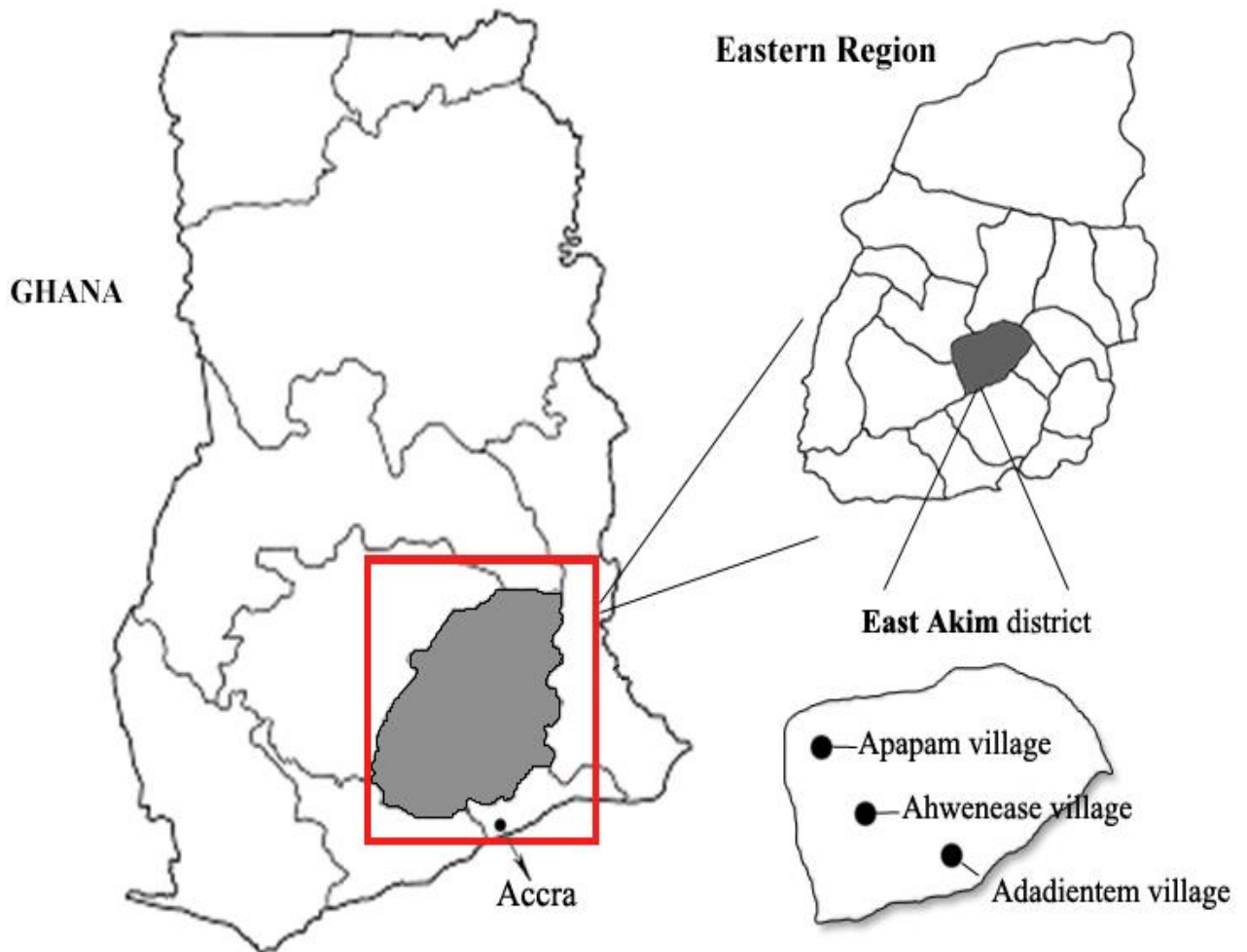


Figure 3: Ghana map showing location of studied region

Eastern Region is characterized with agriculture in Ghana and hosts the biggest cocoa research center in West Africa called Cocoa Research institute of Ghana (CRIG). It is the fourth largest producer of cocoa in Ghana out of the six regional producers (9.5%) of the total production in Ghana.

Eastern region finds is self to be boarded to the east by the Volta Lake, North, West and South by Brong-Ahafo and Ashanti and Central and Greater Accra regions respectively (GSS, 2013). The eastern region is the location of the biggest hydro power in the sub region and also known for its high dominance of energy generation. See Figure 4



Figure 4: Hydroelectric project on the Volta Lake (Ghana Web, 2015)

Eastern region covers an area of 19,323 Km², about 8.1% of the country's overall landform. It is located at the south eastern part of Ghana with a total population of 2,633,154 (10.7%) of the total Ghanaian population, density of 140 people per Km². Most of the inhabitants (56.5%) live in the rural areas. The ethnic groups found in the area are, Akan (52.1%), Ga-Dagme (18.9%), Ewe (15.9%) and Guan (7.2%). The region has 17 districts and the Akans been the majority in 11 of the districts constitute about 85.4% of the population in Birim South, 75% in Birim North and 67.9% in East Akim. Yilo Krobo and Manya Krobo have the greatest concentration of the Ga-Dagme with 79.7% and 71.45% respectively. The Ewe population is highest in the Asuogyaman (39.1%) and the Afram Plains (50.8%). The Guans are most concentrated in the Akuapem North with 34.5% even though they are not the largest ethnic group in the district.

The population of the region is considered to be young with 41.7% aged less than 15 years and 5.8% older than 64 years. Male and female population is 49.2% and 50.8% with sex ratio of 96.8:100 respectively. 58.4% of the population is engaged in agriculture work, 13.5% are into buying and selling whilst 9.1% works with manufacturing. The

distribution of the population shows that, about 34.6% lives in 56 urban settlement (towns with population above 5,000) whilst 65.4% been majority live in rural areas (GSS, 2015).

The East Akim district (see figure 5) is has a total land area of about 725km² and situated at the central part of Eastern Region. The district is boarded by, Atiwa District to the north, West Akim District to North West, Fanteakwa District on the Eastern side, New Juaben at the south, Yilo Krobo District to the south east and Suhum-Kraboa-Coaltar District to the west. East Akim lies in a semi-equatorial zone which is characterized by two main rainfall seasons occurring in June and October. The foremost rainy season starts from May to June and the second from September to October every year. The mean annual rainfall is between 125mm and 175mm. The dry seasons are distinct starting between November and late February. Temperatures in the district are found to be uniform ranging between 26 degree Celsius in August and 30 degree Celsius in March. Humidity is generally high throughout ranging 70% - 80% in the dry season and 75% - 80% in the wet season (GSS, 2014).

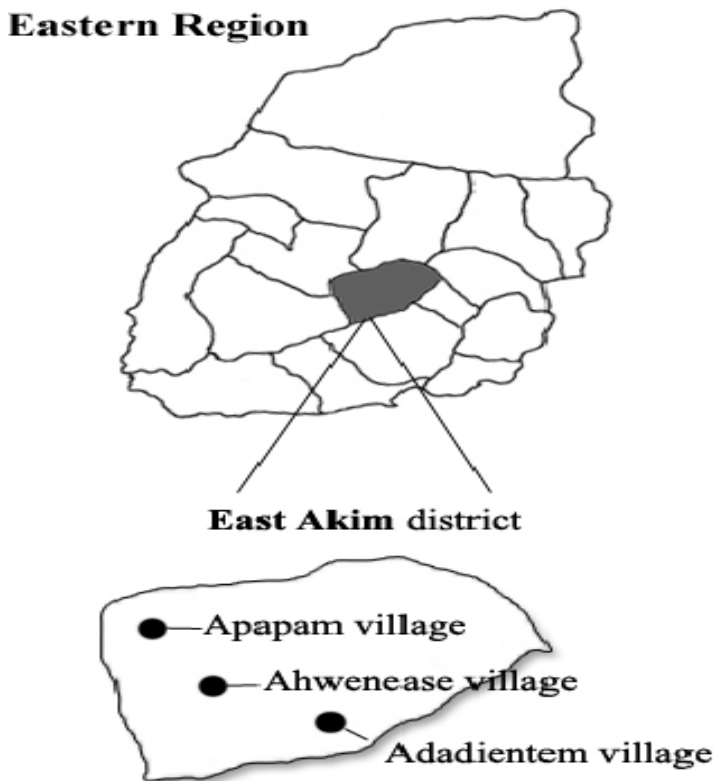


Figure 5: Map of East Akim District

The East Akim district has a total population of 167,896 people which is equivalent to 6.4% of Eastern Regions population. It covers land area of 508.3 Km². Significant number of the population (51.3%) are females giving rise to a sex ratio of 94.9, showing that, in the district there are 95 males to every 100 females.

The population of children (14 years and younger) representing more than a third (56%) of the entire population, indicates a high child dependency ratio. In in the district, the population density is about 330 persons per every square kilometer. However, about 60% of the population in the district lives in an urban settlement (GSS, 2013). 122,816 people who form 87.7% of the total population in the district who are 11 years and above are literate in, English and at least one Ghanaian language. English only and Ghanaian language only are 17.1% and 11% respectively. Number of children 3 years and older in school are 63,357 (GSS, 2015).

4.2 Timeframe

The overall period for the data collect in Ghana was three months, from 13th April 2015 until 20th July 2015. Preparation and gathering of information towards the data collection process in Eastern region started in February 2015. Designs of questionnaires were completed in March 2015 and proper finishing touches were made to it in April 2014. The desired area of the data collection was chosen in February 2015. There was an initial testing in April to find out how things will go. By the end of May 2015 visits to MOFA, observations transect walks and data collection had occurred. Interviews conducted with local farmers spanned for 5 days. Time for data collection was chosen based on situation on the ground, as there were disagreements among the chiefs in the area due to mining activities.

4.3 Research design

The studied area was selected based on a past study conducted by Aina in 2006, which alleged that when extension officers visited farming communities, their attention is always on the male farmers, making the female group who make up a significant number of farmers in the community feel rejected (Aina, 2006). Also, the fact that it's a major farming area in Ghana with large deposits of gold and kaolin as well as social and economic

characteristics that indicate high forest dependence. The research was undertaken solely with famers (either full time or part-time).

4.4 Sample size

Sample size was chosen by willing and dedicated respondents who are into farming activities in the catchment area, East Akim District in the Eastern Region of Ghana. Total number of respondents involved was 150 people (farmers).

4.5 Data and data sources

Two main types of data were collected and used on this thesis- primary and secondary data. Primary data were collated through interviews with farmers. Feedbacks were validated by transect walks and observations in the studied area. Complementary data were obtained from conversation with extension officers, MIS Director at the local MOFA office as well as the management of the agronomy soil science division CRIG.

Secondary data and information sources were also utilized to accurately illuminate trending situation and to come out with detailed results as possible by meticulously examining of various articles, reports, documents and other databases.

4.6 Data collection methods

Numerous data collection methods were applied during the research. Selected data such as structured questionnaires, interviews, observations and transect walks were employed in order to gain accurate and useful information.

4.7 Pilot testing

First and foremost, questionnaires were edited thereafter deliberating with a researcher in Ghana. Slight additions and subtractions were done on the trend of questioning. Open ended questions were modified since respondent found it difficult to come out with answers there and then.

4.8 Structured questionnaires

Structured questionnaires (See Annex 1) were employed as the main data collection tool because the visit of research team was announced in the area weeks early by the chief farmers in the various communities. A meeting was organized with the help of the chief

farmers, based on the advice of the extension officer in charge who was also the research team leader. Questionnaires were considered to be appropriate research tool due to the high number of respondents and a limited time available for the research. One type of questionnaire was created for both male and female respondents. In order to avoid discrimination the questions were such that, most could be obtained from respondents. Questionnaires were prepared in English language. Even though the official language is English, only majority of respondents could not express themselves properly in English especially the women.

4.9 Data analysis

Gained data from 150 filled questionnaires were categorized and transcribed into Microsoft Office Excel. SPSS (version 16.0) was employed during the empirical analysis.

4.9.1 Logistic regression model

The empirical analysis of the impact of gender inequality on information access is carried out by employing Logistic regression Model. Logistic regression is a non-linear model which is used when dependent variable is binary. In this thesis' Binary Logistic Regression is SPSS with Two Dichotomous Predictor Variables was used, the explained or endogenous variable is a categorical or dummy variable with 0 (if farmer did not receive adequate information) and 1 (if farmer received adequate information). The present study considered some significant quantitative explanatory variables. The list of the selected variables for Logistic regression model analysis is given below in Table 3.

Table 3: List of Variables for Logistic Regression Model Analysis

| Variable | Description of Variables |
|---|---|
| <u>Endogenous (dependent) variable</u> | |
| Y Information (from extension officers) | = 0 if farmer did not get adequate information = 1 if farmer received adequate information |
| <u>Exogenous (independent) variable</u> | |
| X ₁ | Unit vector (constant) |
| X ₂ Income | average income for farmers in GHS |
| X ₃ Farm size | average size of farm per farmer (hectares) |
| X ₄ Farmers education | = 1 Below high school = 0 Completed high school |
| X ₅ Gender | = 1 Male = 0 Female |

Logistic Regression Formula

$$\Pr(Y=1|X_1, X_2, \dots, X_k) = \frac{1}{1 + \left(\frac{1}{e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k)}} \right)}$$

Pr = Likely Probability.

Y = Variable likely to occur in the form (y₁).

B₀ = The constant.

B₁, B₂, B_k = Variable coefficient.

X₁, X₂, X_k = Variables to be estimated.

e = Exponent.

$$y_i = \begin{cases} 1 & P_i \\ 0 & 1-P_i \end{cases}$$

y = The true outcome of Y . (realization of random variable Y)

P_i = Expected Probability.

If $y_i = 1$, we obtain P_i thus farmer receives adequate information.

If $y_i = 0$, we obtain $1 - P_i$ thus farmer did not receive adequate information.

5 Results

5.1 Descriptive Analysis

5.1.1 Demographic and social indicators of respondents

Gender distribution and educational level of respondents

The total gender distribution was wide. Number of males (69%) was twice as higher than that of females (31%) (See figure 6)

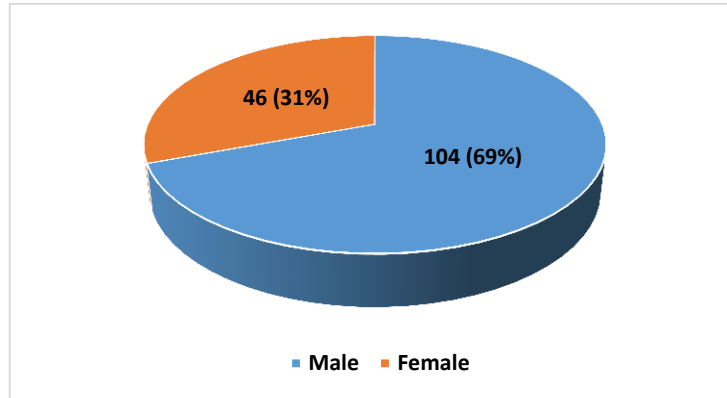


Figure 6: Total gender distribution of farmers

Gender distribution and education level of farmers in the three villages where data collection took place are summarized below.

Adadientem

Total share of female farmers at *Adadientem* who were available for interview was 13 (30%) of overall number of farmers interviewed. Male farmers 30 (70%) outnumbered the female farmers as shown in figure 7

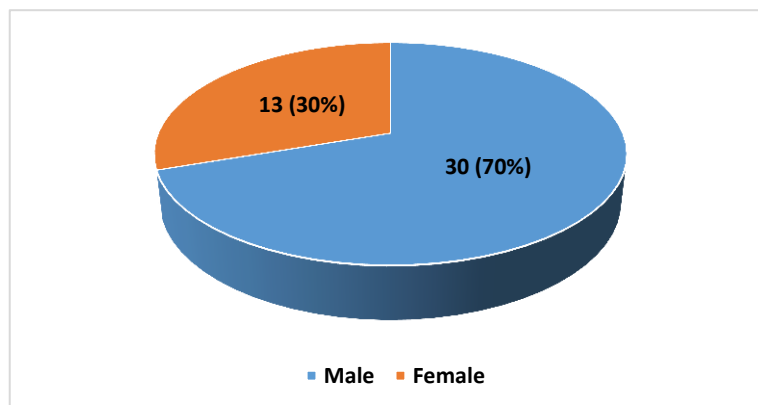


Figure 7: Gender distribution of farmers in *Adadientem*

Number of males (27) had below high school education whilst (3) had atleast high school diploma. Likewise (11) females had education below high school and (2) of them had high school diploma (See Table 4).

Table 4: Education level of farmers in *Adadientem*

| | Male | Female | Total |
|---------------------|------|--------|-------|
| Gender | 30 | 13 | 43 |
| Education | | | |
| Below high school | 27 | 11 | 38 |
| High school diploma | 3 | 2 | 5 |

Source: Authors field survey, 2015

Ahwenease

Females (30%) were interviewed in Ahwenease and men (70%) were also interviewed (see figure 8 below). The gender distribution is similar to that of Adadientem percentage wise. (17) female and (40) male farmers were present for the interview

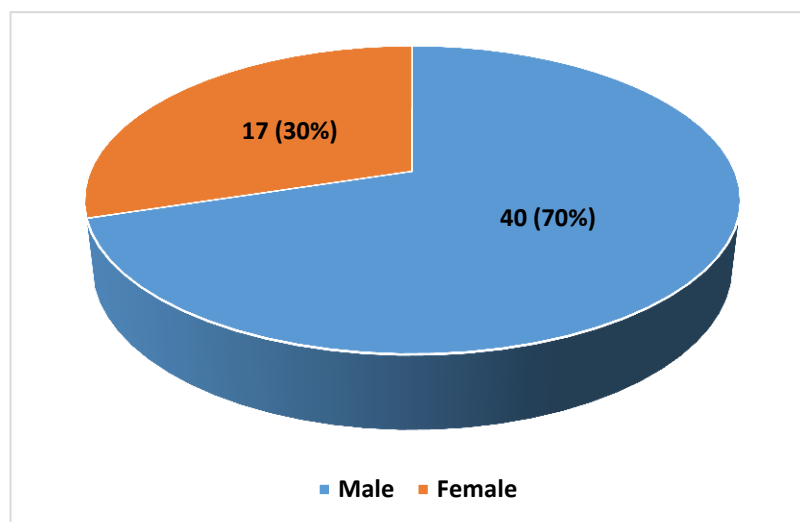


Figure 8: Gender distribution of farmers in *Ahwenease*

Most of the farmers had below high school education and a hand full of the were able to complete the high school diploma (see Table 5)

Table 5: Education level of farmers in *Ahwenease*

| | Male | Female | Total |
|---------------------|------|--------|-------|
| Gender | 40 | 17 | 57 |
| Education | | | |
| Below high school | 35 | 14 | 49 |
| High school diploma | 5 | 3 | 8 |

Source: Authors field survey, 2015

Apapam

As shown in figure 9, male respondents interviewed in *Apapam* were (68%) of the total respondents whilst females (32%) were engaged.

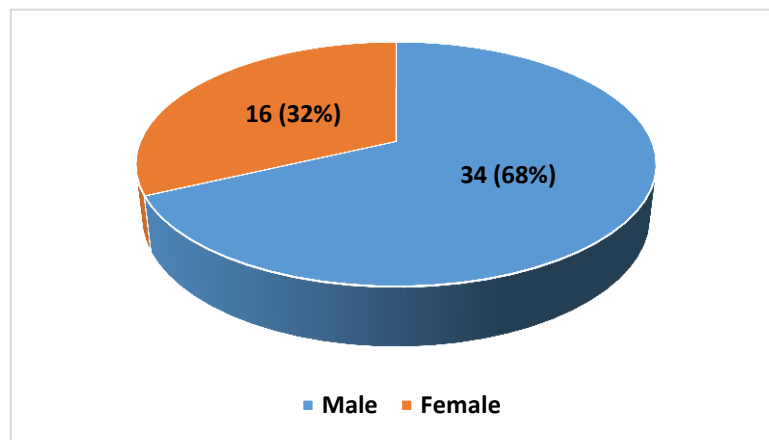


Figure 9: Gender distribution of farmers in *Apapam*

Table 6 shows a breakdown of male and female respondents who were engaged in Apapam and their education level

Table 6: Education level of farmers in *Apapam*

| | Male | Female | Total |
|---------------------|------|--------|-------|
| Gender | 34 | 16 | 50 |
| Education | | | |
| Below high school | 30 | 10 | 40 |
| High school diploma | 4 | 6 | 10 |

Source: Authors field survey, 2015

Tables (3,4 and 5) indicates that, males 92 (73%) and females 34 (27%) had below high school education whilst the number of males 12 (52%) as well as 11(48%) females had accomplished their high school education (See Figure 10 and Figure 11) respectively.

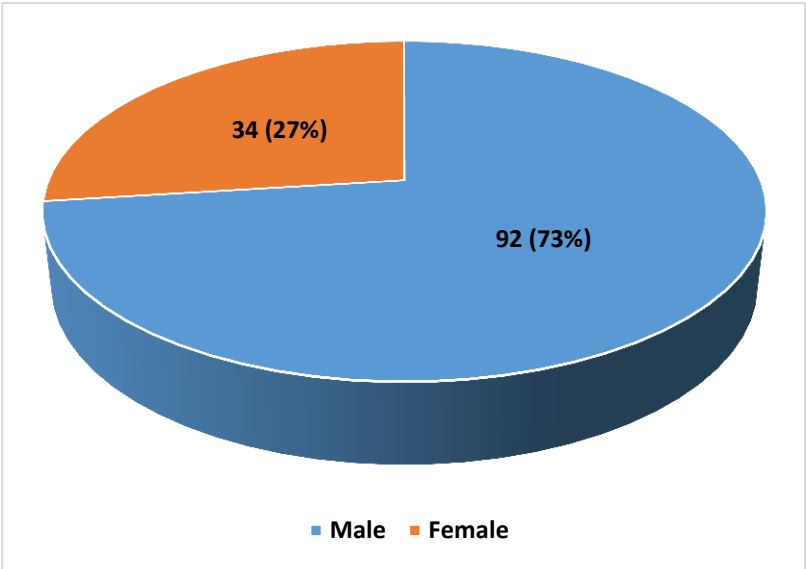


Figure 10: % share of male and female respondents with below high school education

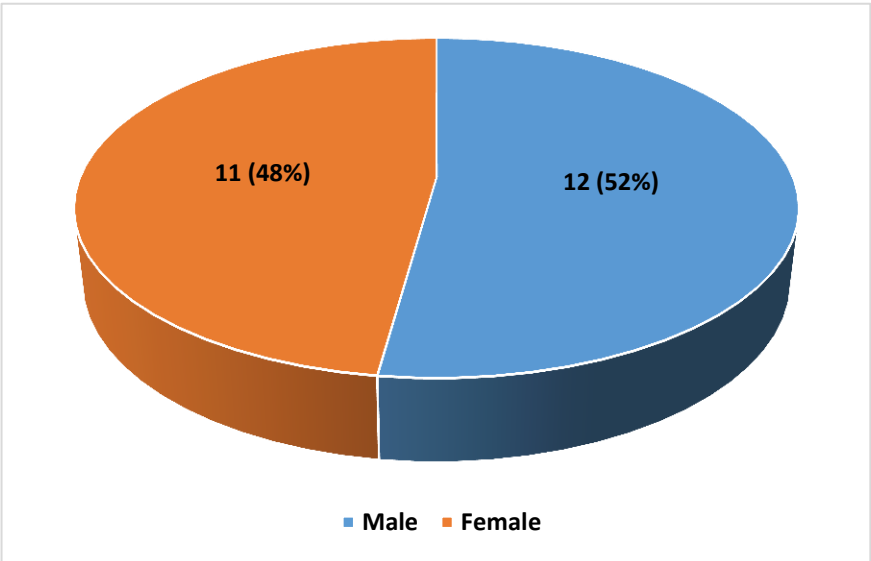


Figure 11: % share of male and female respondents who had high school diploma
Respondents high school accomplishment is virtually the same in the male and female distribution.

Age distribution of respondents

Average age of farmers was 44.30 years. Farmers were divided into 5 range of age groups. Farmers with ages ranging from, 21 to 30 years represented 7%. 33% of farmers representation were of ages ranging 31 to 40 years. Middle-aged farmers (41 to 50 years) formed 31%. Aging farmers (51 to 60 years) created 23% whilst older farmers (61 to 70 years and above) represented 6% of all farmers (see figure 12)

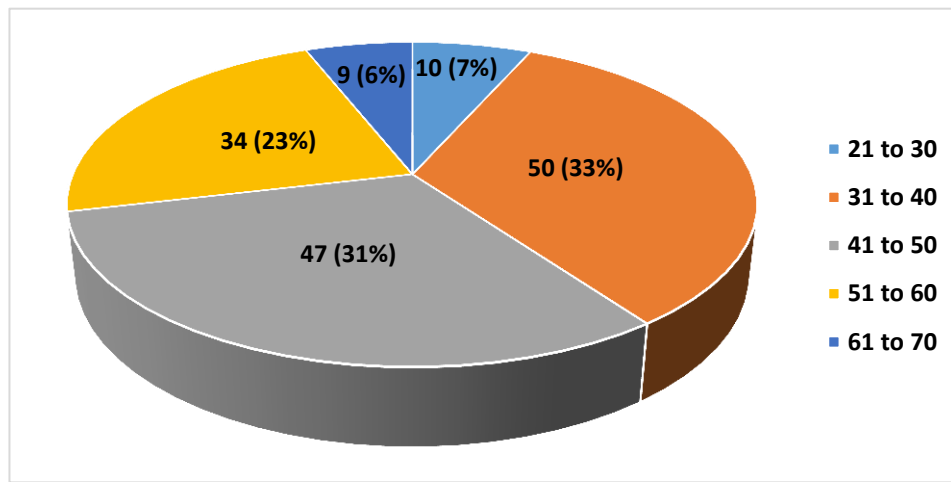


Figure 12: Age distribution of respondents

Full time and Part-time farmers

Of all the farmers, 98.69% males interviewed are into full time farming. Female full time farmers form 44.31% of total female farmers interviewed (see Figure 13)

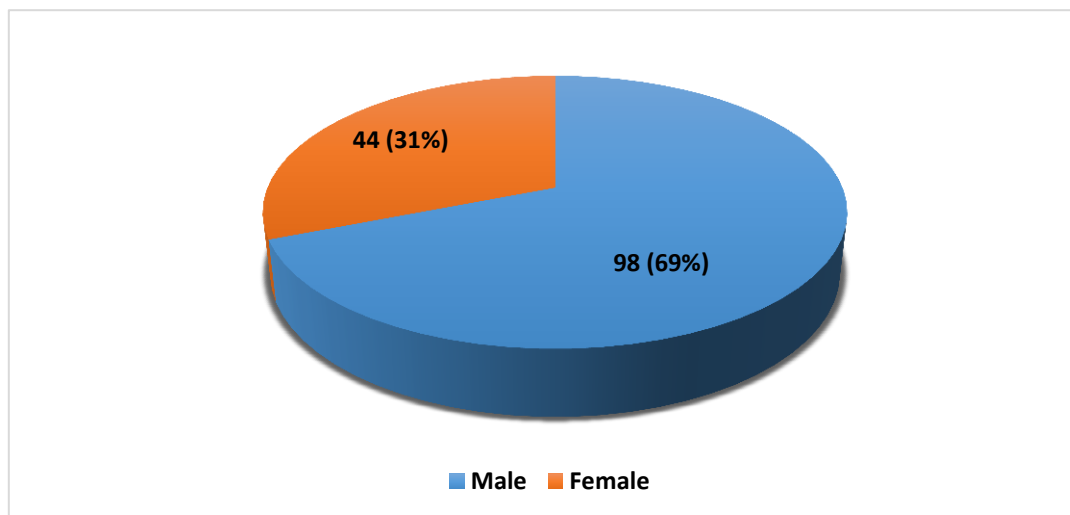


Figure 13: Distribution of male and female full time farmers

Total number of part-time farmers were 8 comprising of both male and female farmer. 6 (75%) represent total number of male part-time farmers. Female 2 (25%) form the total number of part-time farmers (see Figure 14)

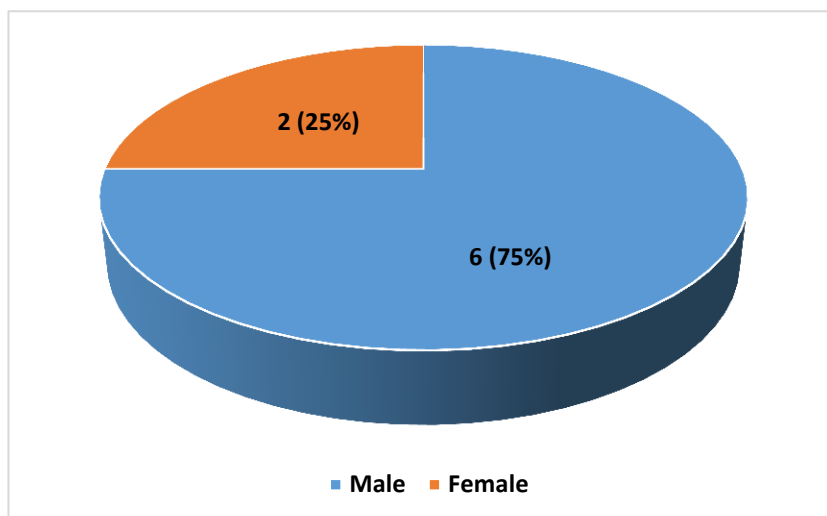


Figure 14: Distribution of male and female part-time farmers

Average income of farmers (Monthly)

On the average, monthly income of farmers was GHS 476.05 (\$120.49) including any other income generating activity outside of the farm. 39% of the farmers lived on GHS 300 or less and a few (9%) estimated their average monthly income as a little over GHS 901 (see Figure 15).

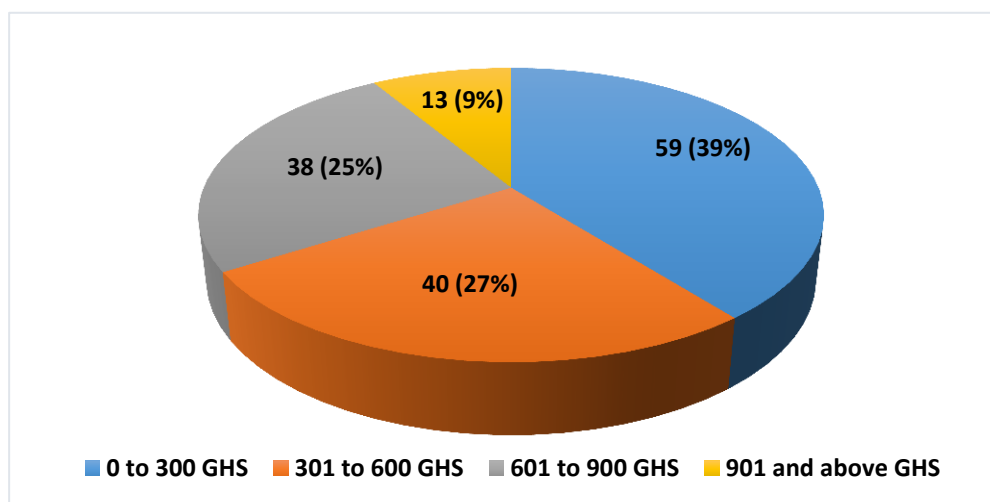


Figure 15: Average monthly income of farmers

Male farmers who estimated their average monthly income to be GHS 300 or less were twice as higher than that of the females whilst those farmers who claimed to earn GHS 901 and above were almost the same for both male and female (see Table 7)

Table 7: Total number of male and female farmers in each range of income

| Income (GHS) | Number of Males | Numbers of Female | Total farmers |
|---------------|-----------------|-------------------|---------------|
| 0 to 300 | 40 | 19 | 59 |
| 301 to 600 | 30 | 10 | 40 |
| 601 to 900 | 26 | 12 | 38 |
| 901 and above | 8 | 5 | 13 |

Source: Authors field survey, 2015

Farm size of farmers

Average size of farmer was 6.20 hectares. Majority of farmers (38%) had farm size (4 to 6 ha), whilst 13% had bigger farms ranging (10 to 12) hectares.

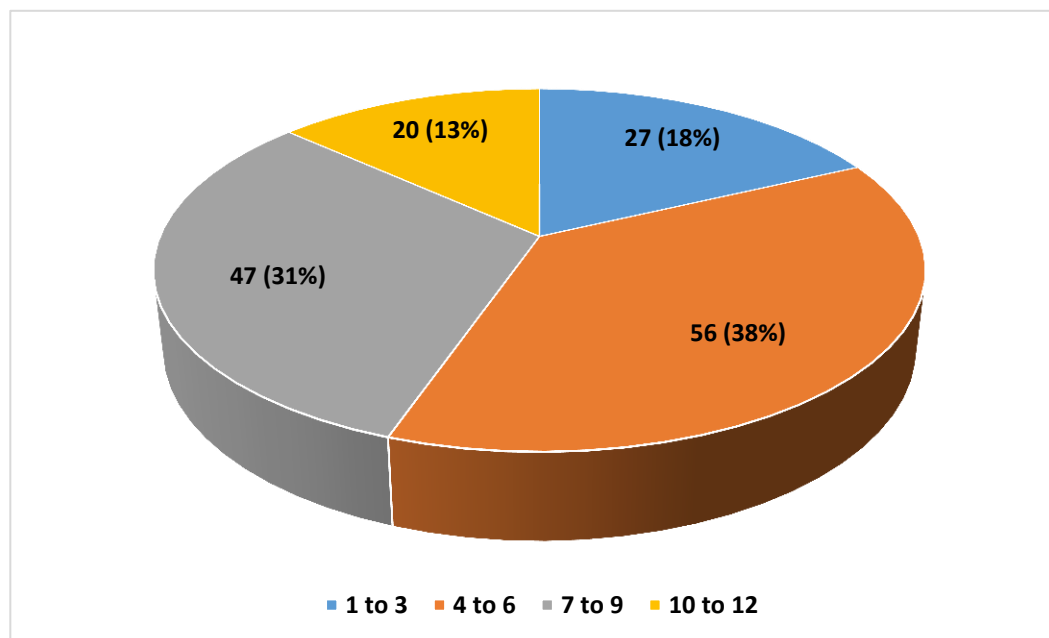


Figure 16: Distribution of farm size (Hectares)

Due to the low turn out of the female population, majority of males farmers were recorded to have the biggest farm sizes whilst their female counterpart had a hand full of them in that category (see Table 8)

Table 8: Total number of male and female farmers in each group of farm size

| Farm size (Hectres) | Male | Female | Total |
|------------------------|------|--------|-------|
| 1 to 3 | 19 | 8 | 27 |
| 4 to 6 | 38 | 18 | 56 |
| 7 to 9 | 30 | 17 | 47 |
| 10 to 12 | 17 | 3 | 20 |

Source: Authors field survey, 2015

Acquisition of information based on adequacy

Farmers seemed to be satisfied with a lot of information, especially the ones they acquire from extension officers. Few information are not easily accessible to farmers in order to make a forecast as to when and where to make sales as well as how to apply for bank credits. In this regard all farmers were saying they had no idea as to how to secure such an important information (see Table 9).

Table 9: Farmers information needs and their satisfaction rate

| | Male | Female |
|-----------------------------|------------------------------------|------------------------------------|
| Marketing | Not adequate (104) | Not adequate (46) |
| Training programs | Adequate (96) Not adequate (8) | Adequate (32) Not adequate (14) |
| Post harvest loss education | Adequate (102) Not adequate (2) | Adequate (40) Not adequate (6) |
| Input provision | Adequate (99) Not adequate (5) | Adequate (44) Not adequate (2) |
| Bank credit | Not adequate (104) | Not adequate (46) |
| Monitoring and evaluation | Adequate (101) Not adequate (3) | Adequate (43) Not adequate (3) |

Source: Authors field survey, 2015

Sources of farmer's information

As shown in table 10, majority (50%) of the respondents indicated that they gathered their information from extension officers in the community. Whilst 13.3% acquired their information from the various groups they belonged to, 15.3% made use of radio sets in their houses, television as a way of receiving information accounted for 10% of the respondents. 7.4% and 4% utilized friends and print media respectively as their source of information.

Table 10: Sources of farmer's information

| Sources of information | Number of farmers | Percentage (%) |
|-------------------------------|--------------------------|-----------------------|
| Farmer groups | 20 | 13.3 |
| Extension agents | 75 | 50 |
| Televisions | 15 | 10 |
| Radio | 23 | 15.3 |
| Friends | 11 | 7.4 |
| Print media | 6 | 4 |

Source: Field Survey, 2015

Required Information by farmers

Through the conversation I had with the few female farmers I came in contact with, they usually needed to know the types of fertilizers available and how to apply them to achieve maximum results. Also, how to go about taking care of their plants and animals in the dry season since they mostly grow stunted during that period as well as the types of crops suitable to be grown together (mixed cropping) as well as pest control mechanisms and the required chemicals needed and finally where to sell their produce as well as bank credit sourcing.

Obtained information by farmers

Farmers explained that they obtained more information about the weather, how to use protective gears since most of the chemicals are sensitive to the skin as well as the types of seeds to be grown. The activities and informational sources of respondents are summarized in the Table 11 below

Table 11: Activities and sources of information

| Activity | Decision on activity | Information sources | Consequences of lack of information |
|------------------------|----------------------------------|--|--|
| Land acquisition | Where to get the land | Other farmers, past experience | Low yield due to poor location of farm |
| Land preparation | Timing, labor | Past experience, radio for weather information | Disorganized timing of activities |
| Planting | Timing, type of crops to grow | Past experience and other farmers | Late planning resulting in low yield |
| Weeding | Timing, labor and money involved | Past experience, other farmers | Pest and rodent infestation |
| Fertilizer application | Types of fertilizers | Mainly AEA's | Pest and diseases |
| Spraying | Types of chemicals | Mostly from AEA's, other farmers | Crop damage, bad effects on consumers |
| Harvesting | Timing and labor | Other farmers, past experience | Poor produce quality leading to low prices |
| Selling | where, at what price | Other farmers, buyers | Low price of produce |
| Storage | Methods of storing | Mainly AEA's | Post-harvest losses and low income |

Source: Field Survey, 2015

5.2 Empirical Analysis

The thesis aimed at finding the impact of gender, farm size, educational level and income of farmers on information access. Annex 2 details the table of data input used in the analysis. The analysis was conducted with SPSS 16.0 software and the results discussed below. To estimate the probability of having access to adequate information due to the above stated factors, a non-linear logit model analysis for binary data was with two dichotomous predictor variables (education and gender) used. The categorical predictor variables were coded in SPSS as shown in the Table 12 below. The observed groups and predicted probability was of the membership adequate information (see annex 3).

Table 12: Categorical Variables Coding

| | | Frequency | Parameter coding |
|--------------|-----------------------|-----------|------------------|
| | | | (1) |
| Gender X5 | Male | 104 | 1.000 |
| | Female | 46 | .000 |
| Education X4 | Below high school | 126 | 1.000 |
| | Completed high school | 24 | .000 |

Accuracy level of model

The accuracy level explains how close a measured value is to the actual (true) value. The Table 13 below gives the entirety of the test for the model including the predictors. The chi-square value of 19.275 with a p-value of less than 0.05 tells us that our model as a whole fits significantly better than an empty model (i.e., a model with no predictors) in SPSS.

Table 13 :Omnibus Tests of Model Coefficients

| | | Chi-square | df | Sig. |
|--------|-------|------------|----|------|
| Step 1 | Step | 19.275 | 4 | .001 |
| | Block | 19.275 | 4 | .001 |
| | Model | 19.275 | 4 | .001 |

The accuracy level of the empirical model was relatively high, 72.7%. It means that the model predicted the outcomes correctly 72.7% of cases as shown in the Table 14 below.

Table 14: Classification Table^a

| Observed | | | Predicted | | Percentage Correct |
|--------------------|---------------|--------------|---------------|----------|--------------------|
| | | | Information Y | | |
| | | | Not Adequate | Adequate | |
| Step 1 | Information Y | Not Adequate | 8 | 37 | 17.8 |
| | | Adequate | 4 | 101 | 96.2 |
| Overall Percentage | | | | | 72.7 |

a. The cut value is .500

Results of model and interpretation

In table 15 labeled Variables in the Equation we see *the coefficients (B)*, their *standard errors (S. E)*, the Wald test statistic with including its *degrees of freedom (df)* and *Sig (p-values)*, and the *exponentiated coefficient* also known as an odds ratio (Exp (B)). The sign of coefficient indicate whether exogenous variable has a positive or negative effect on the endogenous variable.

The statistical significance (p-values) determines which exogenous variables are important and whether their impact on endogenous variable is real.

Table 15: Variables in the Equation

| | B | S.E. | Wald | df | Sig. | Exp(B) | 95% C.I.for EXP(B) | |
|------------------------------|--------|------|--------|----|------|--------|--------------------|-------|
| | | | | | | | Lower | Upper |
| Step 1 ^a incomeX2 | .001 | .001 | 3.937 | 1 | .047 | 1.001 | 1.000 | 1.003 |
| SizeoffarmHaX3 | -.260 | .203 | 1.641 | 1 | .200 | .771 | .517 | 1.148 |
| EducationX4(1) | .538 | .523 | 1.061 | 1 | .303 | 1.713 | .615 | 4.770 |
| GenderX5(1) | -1.754 | .540 | 10.529 | 1 | .001 | .173 | .060 | .499 |
| Constant | 1.819 | .779 | 5.456 | 1 | .020 | 6.168 | | |

a. Variable(s) entered on step 1: incomeX2, SizeoffarmHaX3, EducationX4, GenderX5.

The model predicted that farmer’s income has a positive effect on adequate access to information which confirmed existing literature. According to World Bank (2003), less income of farmers decreases the willingness to access information. The model suggests that farmers with high income are 1.001 times more likely to receive adequate information.

Size of farm had a negative effect on adequacy of information accessed; however literature suggests that increasing size of farm increases access to information from any source (Karippai et al., 1995 and Momodu, 2002).

The assumption that, educated farmers are more likely to acquire personal relevant Information as stated by World Bank (2003) was contradicted by the model. Even though education had a positive impact on the dependent variable, farmers with the lowest level of education (below high school) according to the model are 1.713 times likely to access adequate information than those who completed high school.

The model predicted that, gender (male) has a negative impact on accessing adequate information. In spite of that, the model went on to predict a 0.173 times chance of male farmers receiving adequate information than that of female farmers, confirming the notion that, there is gender biasness against female farmers when extension officers visited farming communities (Aina, 2006). The model output predicted two out of the four exogenous (independent) variables had statistical significance on the endogenous (dependent) variable, thus; Income and gender.

The model went on to show that the variable with the highest impact on accessing adequate information was the education level(X_4), especially below high school.

6. Discussions

To understand and learn more about the roles men and women play, it is necessary to undertake a gender analysis. This helps to find ways of providing information to men and women on the performance of shared and specific tasks, technical tasks, and alternative ways of communicating such information to farmers as well as facilitating the formation of female farmers groups (Olawoye, 2002)

The results of this study confirms the findings of earlier studies (Bown and Okedara, 1981) that farmers main source of relevant and adequate information comes from the extension officers, as shown in table 10. Even though Aina (2006), Ozawa (1995), Isinika and Mdoe (2001) as well as Bilonkwamanagara (2008) has pointed out that there are limited number of extension officers and it's not likely they can deliver adequate information to the expectation of the enormous number of farmers in the industry but a few. In addition Aina (2006) emphasized that the few farmers who received adequate information from the limited number of extension officers were males confirming the result of the model which predicted male farmers are 0.173 times more likely to receive adequate information than their female counterparts.

According to Agarwal, (1991) lack of female education is likely to limit farm productivity and went on to state that, three quarters of female farmers have no formal education. Seconding the statement, Boakye et al (1997) stressed that parents often deem it worthwhile investing in the education of their male children with the limited funds rather than the female. Females are made to carry on activities such as house chores, reproduction, child caring and nurturance, caring for the sick and aged (Bleek, 1987). Whilst men can engage in other activities such as politics, majority of women are made to believe that those activities are for men due to cultural orientations (Atieno and Teal, 2006). However the findings of this thesis show that education is not statistically significant even though it has the highest impact on accessing adequate information. Less educated farmers according to the results are the ones likely to acquire adequate information.

Several studies have shown that size of farm has a positive impact on the acquisition of relevant information from any source (Karippai et al., 1995 and Momodu, 2002).

Women, forms a majority in the active farming labor force but are mostly not recognized as such due to the fact that they are considered as helps on the farm. (Olawoye, 1988), they often have limited access to and control of productive resources such as land (FAO, 2013). Goldstein and Udry's study (2008), articulated that women farmers are as competent as male farmers, but they usually yield less because they do not have the same level of inputs as men. Again, Duncan (2004) noted that the family and tribe holdings perceives men to be natural leaders in spite of the fact that, Article 35 (1) of the land administration act in Ghana, gives right to women to own and control natural resources especially land for their economic activities. More so, due to the non-recognition of marital property by the customary law, women's claim over benefits and the decisions in the household when their marriages break down are lost, since this is the only way a little power is vested into them (Women's manifesto, 2004). None the less, findings of this thesis prove otherwise. It shows that irrespective of the size of farm, access to adequate information is assured.

The American Association of University Women in the United States, (2014) reported that on the average women make \$0.78 for every dollar males earn. Gender patterns in division of labor also places land clearance in the hands of men (Duncan, 2004) which in turn makes them rich and powerful in the society. The survival of small-scale farming depends largely on small-scale women farmers, but due to lack of educations, cultural factors and domestication, they find it difficult to reach information (Ikoja-Odongo, 2008; Nath, 2001; World Conference for Women, 1995). Information nowadays are not cheap, to access them means to pay for them, making farmers fear because they don't have that kind of money to pay for such information (Williamson, 1997). The results of this thesis confirm the above literatures, predicting that income has a positive effect on accessing adequate information.

According to table 7, more males had less income (300 GHS) or less as compared to females. The difference between males and females with higher income was 3, in favor of the males but looking at the major turn out of the male farmers it is expected to have high number of males making more income as well, but that is not the case.

This goes to support Goldstein and Udry's study (2008), which claimed that women farmers are as competent as their men, if they should have equal access to the same level of inputs as men; it will lead to higher yields and potential benefits for themselves and for Ghana's rural economy as a whole. Buttressing on that is a statement made by the Spanish secretary of state for International Development during the European Forum on Rural Development organized in Palencia in Spain (2011), that, female farmers in Ghana are equal to their male counterparts. She reiterated that, to improve the global agenda of food security there should be a greater recognition and support for female farmers. Even though results from the model prove that males have a 0.173 chance of accessing adequate information, it does not reflect on their average household income, rather the few females are noticed to receive impressive incomes (see Table 7). From the above it can be inferred that, if female farmers had turned out in their numbers the claim that they are excellent farmers would have been clear. Therefore it can be recommended that women farmers be supported and recognized in the society by way of a law so as to encourage other females to commit themselves fully to farming.

Even though income and gender are both statistically significant as shown in table 14, gender (male) has a negative impact on accessing adequate information whilst income has a positive impact. This shows that only income has a real major impact on accessing adequate information.

Many studies (e.g. to Boakye et al, 1997; Baah et al, 1997; Ikoja-Odongo, 2008) employed the logit model in analyzing information transfer in rural communities. The logistic regression model is equally applied in this thesis for the empirical analysis of this thesis.

My personal conversation with several female farmers revealed that they became full-time farmers when they lost their husbands. Majority of them were into the sale of local medicines which fetched them quite a good sum of money to support the home. However they wish to continue selling the local medicine as it's their passion to help the sick, not to talk of the good amount of money they earned. They went on to say that, farming has brought them closer to their children their children since they do not travel long distance to

sell anymore. But if they should have a market close by to do their selling part-time it would be appreciated. It is again recommended that further studies be focused on the interests of both men and women in enhancing development in rural areas.

7 Conclusion

This thesis estimated the influence that farmer's income, size of farm, education level and gender had on accessing adequate information.

The result was that income alone had a real major positive impact on accessing adequate information, therefore contributing to the probability that the richer the farmer the easier to access adequate information.

Size of farm and education level of farmers did not have a real impact on accessing adequate information.

Majority of farmers 105 (70%) interviewed revealed that information acquired were adequate, males (64) and females (41) form the total number of farmers who were able to access adequate information. 45 (30%) noted they did not receive adequate information thus: males (40) and females (5) as indicated in annex 2. Upon a conversation with the extension officers, it was realized that they had no idea about the marketing strategies of farm products as well as how farmers can acquire bank credit to help them improve their production. All the farmers revealed that, they did not receive adequate information on when and where to market their produce and also information on credit facilities from banks (see Table 9).

This thesis concludes that even though income of farmers had a real impact on accessing adequate information, the degree of its impact is not so high to deprive poor farmers from accessing equal amount of adequate information in the rural areas of the Eastern region of Ghana where female farmers are most vulnerable. Therefore gender inequality in those areas seems not to be a problem which will prevent farmers especially women to access adequate information.

This particular thesis analyzed a few of the causes of gender inequalities in rural societies. The findings revealed that, information that could be needed for farmer's improvements were noted to be on access to markets and bank credit facilities.

It is recommended again that further research be geared towards marketing and bank credit sourcing analysis.

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Annexes

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Annex 1: Questionnaires

The impact of gender inequality on information exchange: A case study of East Akim district of the Eastern region of Ghana

This questionnaire has been designed to carry out a research on the above topic for academic purposes at the Czech university of life sciences. All information provided will be used solely and exclusively for academic reasons and would be treated with the necessary confidentiality it deserves. Information provided would be used to make sound empirical analysis in order to come out with suitable recommendations that would help improve farmer's activities in the study area and country at large.

1. Gender (please check):

(a) *Male*

(b) *Female*

2. Age, Please check your age(s) in the number ranges given: -

21-30 yrs. ()

31-40 yrs. ()

41-50 yrs. ()

51-60 yrs. ()

61-70 yrs. ()

71-80 yrs. ()

3. How many members are you in your household?

1-3 ()

4- 6 ()

7-10 ()

10- 13 ()

4. What is the highest educational level attained?

(a) *Below high school*

(b) *High School Diploma*

(c) *Bachelor's Degree*

(d) *Master's Degree*

(e) *Doctoral Degree*

5. Are you a full time farmer?
- (a) *Yes*
- (b) *No*
- (c) *Not sure.*
6. How long have you been a farmer?
- 1-3 years ()*,
- 4-6 years ()*,
- 7-10 years ()*
- 11-15 years ()*,
- Other ()*
7. What is the size of your farm/ hectare?
- 1-3 ()*
- 4-6 ()*
- 7-9 ()*
- 11-12 ()*
- Other (.....)*
8. Land tenure?
- Own land ()*
- Rented ()*
- Family land ()*
- Government ()*
- Other ()*
9. How much do you normally earned from the farming activities in a month?
- Please state.....Ghs*
10. Do you think it is necessary for you to learn more about modern types of agriculture?
- (a) *Yes*
- (b) *No*
- (c) *Not Sure, And why?*
-
-
11. How would you rate the availability of extension officers?

Not often ()

Rarely often (),

Often (),

Very often (),

Always available ()

Evaluation of the information based on adequacy

This is ranked as (1) Adequate (2) Not adequate

12. Input provision to famers?

Adequate []

Not adequate. []

13. Provision of credit to farmers?

Adequate []

Not adequate. []

14. Awareness creation of ext. services?

Adequate []

Not adequate []

15. Visiting farmers and org. meetings?

Adequate []

Not adequate []

16. Holding field days with farmers?

Adequate []

Not adequate []

17. Farmer training programs?

Adequate []

Not adequate []

18. Do you have an adequate access to market information?

Adequate []

Not adequate []

19. Post-harvest loss education /technology transfer?

Adequate []

Not adequate []

20. Monitoring and evaluation?

Adequate []

Not adequate []

Annex 2: Data table for empirical analysis in SPSS

| Respondent | Information Access | Unit Vector | Farmers Income | Size of Farm | Farmers Education | Gender |
|-------------------|---|--------------------|---|--|---|--|
| | 1-Farmer received adequate information 0-Farmer did not receive adequate information | Constant | Average monthly income per farmer in GHS | Average size of farm per farmer in hectares | Education level of farmers 1-below high school 0-completed high school | 1-Male farmers 0-Female farmers |
| | Y | X1 | X2 | X3 | X4 | X5 |
| 1 | 0 | 1 | 200 | 1 | 1 | 1 |
| 2 | 1 | 1 | 150 | 2 | 1 | 1 |
| 3 | 1 | 1 | 100 | 2 | 1 | 1 |
| 4 | 1 | 1 | 100 | 2 | 1 | 1 |
| 5 | 1 | 1 | 100 | 2 | 1 | 0 |
| 6 | 1 | 1 | 250 | 2 | 1 | 0 |
| 7 | 0 | 1 | 300 | 2 | 1 | 1 |
| 8 | 1 | 1 | 1100 | 2 | 1 | 0 |
| 9 | 0 | 1 | 230 | 3 | 1 | 1 |
| 10 | 1 | 1 | 250 | 3 | 1 | 0 |
| 11 | 1 | 1 | 350 | 4 | 1 | 1 |
| 12 | 0 | 1 | 250 | 4 | 1 | 1 |
| 13 | 0 | 1 | 200 | 2 | 1 | 1 |
| 14 | 1 | 1 | 200 | 2 | 1 | 1 |
| 15 | 1 | 1 | 100 | 2 | 1 | 1 |
| 16 | 1 | 1 | 100 | 2 | 1 | 1 |
| 17 | 1 | 1 | 100 | 1 | 1 | 1 |
| 18 | 1 | 1 | 100 | 1 | 1 | 1 |
| 19 | 1 | 1 | 120 | 4 | 1 | 1 |
| 20 | 0 | 1 | 150 | 4 | 1 | 1 |
| 21 | 0 | 1 | 150 | 1 | 0 | 1 |
| 22 | 1 | 1 | 170 | 2 | 1 | 1 |
| 23 | 1 | 1 | 1500 | 1 | 1 | 0 |
| 24 | 1 | 1 | 1400 | 2 | 1 | 0 |
| 25 | 1 | 1 | 1300 | 1 | 1 | 0 |

| | | | | | | |
|----|---|---|------|---|---|---|
| 26 | 0 | 1 | 500 | 2 | 1 | 1 |
| 27 | 1 | 1 | 700 | 3 | 1 | 1 |
| 28 | 1 | 1 | 200 | 3 | 0 | 0 |
| 29 | 1 | 1 | 900 | 3 | 1 | 0 |
| 30 | 1 | 1 | 400 | 3 | 1 | 1 |
| 31 | 1 | 1 | 100 | 1 | 1 | 0 |
| 32 | 1 | 1 | 400 | 1 | 1 | 1 |
| 33 | 1 | 1 | 400 | 1 | 1 | 0 |
| 34 | 1 | 1 | 350 | 1 | 1 | 1 |
| 35 | 1 | 1 | 750 | 4 | 1 | 1 |
| 36 | 0 | 1 | 600 | 4 | 1 | 1 |
| 37 | 0 | 1 | 350 | 4 | 1 | 1 |
| 38 | 0 | 1 | 850 | 4 | 0 | 1 |
| 39 | 1 | 1 | 800 | 1 | 1 | 1 |
| 40 | 1 | 1 | 600 | 2 | 1 | 1 |
| 41 | 1 | 1 | 100 | 2 | 1 | 1 |
| 42 | 1 | 1 | 100 | 2 | 1 | 1 |
| 43 | 1 | 1 | 735 | 2 | 1 | 0 |
| 44 | 1 | 1 | 450 | 3 | 1 | 1 |
| 45 | 1 | 1 | 560 | 2 | 1 | 0 |
| 46 | 1 | 1 | 1350 | 2 | 1 | 1 |
| 47 | 1 | 1 | 100 | 2 | 0 | 0 |
| 48 | 1 | 1 | 300 | 1 | 0 | 0 |
| 49 | 0 | 1 | 300 | 1 | 0 | 1 |
| 50 | 0 | 1 | 100 | 1 | 1 | 1 |
| 51 | 1 | 1 | 100 | 1 | 1 | 1 |
| 52 | 1 | 1 | 213 | 1 | 1 | 1 |
| 53 | 1 | 1 | 390 | 2 | 1 | 1 |
| 54 | 1 | 1 | 750 | 2 | 1 | 0 |
| 55 | 1 | 1 | 300 | 2 | 1 | 1 |
| 56 | 1 | 1 | 575 | 2 | 1 | 0 |
| 57 | 1 | 1 | 620 | 2 | 1 | 0 |
| 58 | 1 | 1 | 950 | 2 | 1 | 1 |
| 59 | 1 | 1 | 390 | 2 | 1 | 1 |
| 60 | 1 | 1 | 730 | 2 | 1 | 1 |
| 61 | 0 | 1 | 660 | 2 | 1 | 1 |
| 62 | 1 | 1 | 840 | 3 | 1 | 1 |
| 63 | 0 | 1 | 70 | 2 | 1 | 1 |
| 64 | 1 | 1 | 212 | 2 | 1 | 0 |
| 65 | 1 | 1 | 320 | 3 | 1 | 1 |
| 66 | 1 | 1 | 630 | 2 | 1 | 0 |

| | | | | | | |
|-----|---|---|------|---|---|---|
| 67 | 1 | 1 | 770 | 3 | 1 | 0 |
| 68 | 0 | 1 | 100 | 3 | 1 | 0 |
| 69 | 1 | 1 | 220 | 2 | 1 | 0 |
| 70 | 1 | 1 | 150 | 2 | 1 | 0 |
| 71 | 1 | 1 | 150 | 2 | 0 | 0 |
| 72 | 0 | 1 | 170 | 3 | 0 | 0 |
| 73 | 0 | 1 | 150 | 3 | 0 | 0 |
| 74 | 1 | 1 | 60 | 3 | 0 | 1 |
| 75 | 1 | 1 | 700 | 2 | 0 | 1 |
| 76 | 0 | 1 | 670 | 3 | 0 | 0 |
| 77 | 1 | 1 | 700 | 2 | 0 | 0 |
| 78 | 1 | 1 | 1550 | 4 | 0 | 1 |
| 79 | 1 | 1 | 175 | 2 | 0 | 1 |
| 80 | 0 | 1 | 687 | 4 | 1 | 1 |
| 81 | 1 | 1 | 650 | 2 | 1 | 1 |
| 82 | 1 | 1 | 360 | 4 | 1 | 1 |
| 83 | 0 | 1 | 380 | 1 | 1 | 1 |
| 84 | 1 | 1 | 500 | 4 | 1 | 1 |
| 85 | 1 | 1 | 100 | 1 | 1 | 1 |
| 86 | 1 | 1 | 230 | 4 | 1 | 0 |
| 87 | 1 | 1 | 100 | 1 | 1 | 0 |
| 88 | 0 | 1 | 100 | 4 | 1 | 1 |
| 89 | 0 | 1 | 450 | 1 | 1 | 1 |
| 90 | 1 | 1 | 590 | 4 | 1 | 1 |
| 91 | 1 | 1 | 500 | 1 | 1 | 1 |
| 92 | 1 | 1 | 600 | 4 | 1 | 1 |
| 93 | 1 | 1 | 780 | 1 | 1 | 1 |
| 94 | 0 | 1 | 600 | 3 | 1 | 1 |
| 95 | 1 | 1 | 600 | 2 | 1 | 0 |
| 96 | 0 | 1 | 720 | 3 | 1 | 1 |
| 97 | 0 | 1 | 600 | 2 | 1 | 1 |
| 98 | 0 | 1 | 100 | 3 | 1 | 1 |
| 99 | 1 | 1 | 400 | 3 | 1 | 0 |
| 100 | 0 | 1 | 350 | 4 | 1 | 0 |
| 101 | 1 | 1 | 300 | 3 | 1 | 0 |
| 102 | 1 | 1 | 800 | 4 | 1 | 0 |
| 103 | 1 | 1 | 790 | 3 | 1 | 0 |
| 104 | 1 | 1 | 850 | 4 | 1 | 1 |
| 105 | 1 | 1 | 500 | 2 | 1 | 1 |
| 106 | 1 | 1 | 700 | 2 | 0 | 1 |
| 107 | 0 | 1 | 650 | 2 | 1 | 1 |

| | | | | | | |
|-----|---|---|------|---|---|---|
| 108 | 0 | 1 | 100 | 2 | 1 | 1 |
| 109 | 1 | 1 | 350 | 2 | 1 | 1 |
| 110 | 1 | 1 | 450 | 3 | 1 | 1 |
| 111 | 0 | 1 | 470 | 1 | 1 | 1 |
| 112 | 0 | 1 | 530 | 3 | 1 | 1 |
| 113 | 0 | 1 | 200 | 2 | 1 | 1 |
| 114 | 1 | 1 | 630 | 3 | 1 | 1 |
| 115 | 0 | 1 | 890 | 2 | 0 | 1 |
| 116 | 0 | 1 | 1000 | 1 | 1 | 1 |
| 117 | 0 | 1 | 650 | 1 | 1 | 1 |
| 118 | 1 | 1 | 200 | 1 | 1 | 0 |
| 119 | 1 | 1 | 530 | 1 | 1 | 0 |
| 120 | 1 | 1 | 770 | 2 | 1 | 1 |
| 121 | 0 | 1 | 100 | 2 | 1 | 1 |
| 122 | 1 | 1 | 300 | 2 | 1 | 1 |
| 123 | 0 | 1 | 275 | 3 | 1 | 1 |
| 124 | 0 | 1 | 1000 | 3 | 1 | 1 |
| 125 | 0 | 1 | 300 | 3 | 0 | 1 |
| 126 | 1 | 1 | 1350 | 3 | 1 | 1 |
| 127 | 0 | 1 | 100 | 3 | 1 | 1 |
| 128 | 1 | 1 | 320 | 3 | 1 | 1 |
| 129 | 1 | 1 | 1600 | 3 | 1 | 1 |
| 130 | 1 | 1 | 890 | 3 | 1 | 1 |
| 131 | 1 | 1 | 900 | 3 | 1 | 0 |
| 132 | 1 | 1 | 670 | 3 | 1 | 0 |
| 133 | 1 | 1 | 400 | 3 | 0 | 0 |
| 134 | 1 | 1 | 500 | 3 | 1 | 0 |
| 135 | 1 | 1 | 350 | 3 | 1 | 0 |
| 136 | 1 | 1 | 700 | 3 | 1 | 1 |
| 137 | 1 | 1 | 450 | 3 | 1 | 1 |
| 138 | 1 | 1 | 750 | 3 | 1 | 1 |
| 139 | 0 | 1 | 950 | 2 | 1 | 1 |
| 140 | 0 | 1 | 390 | 3 | 1 | 1 |
| 141 | 0 | 1 | 220 | 3 | 1 | 1 |
| 142 | 1 | 1 | 360 | 3 | 1 | 1 |
| 143 | 0 | 1 | 100 | 4 | 1 | 1 |
| 144 | 1 | 1 | 750 | 3 | 1 | 1 |
| 145 | 1 | 1 | 630 | 3 | 1 | 1 |
| 146 | 1 | 1 | 155 | 3 | 0 | 1 |
| 147 | 1 | 1 | 100 | 3 | 0 | 0 |
| 148 | 1 | 1 | 320 | 2 | 0 | 0 |

| | | | | | | |
|-----|---|---|-----|---|---|---|
| 149 | 1 | 1 | 800 | 2 | 0 | 1 |
| 150 | 1 | 1 | 640 | 2 | 0 | 1 |

Annex 4: Photos from the research



Photo 1: Meeting with the Chief farmer and other farmers



Photo 2: Meeting with farmer groups in East Akim district



Photo 3: Interviews with farmers in the East Akim district