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MASTERS' THESIS

WOMEN'S EMPOWERMENT

THROUGH AGRI-COOPERATIVES IN RURAL GHANA

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Declaration

I declare that I have worked on my masters' thesis titled "Women's Empowerment through Agricultural Cooperative in Rural Ghana" by myself and I have used only sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 21st April 2023

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To God be the Glory who makes all things beautiful in His time.

Abstract

In Ghana, investment programmes within the agricultural sector work alongside Sustainable Development Goals and as such, one of the key areas has been to empower women to achieve gender equality (SDG5). This study explores the knowledge on women's empowerment through agricultural cooperatives by examining the benefits, factors that determine one's decision to join agricultural cooperatives, and how agricultural cooperatives can empower women. With this, 106 female farmers (of which 31 were non-members of agricultural cooperatives with 71 being members) in the rural part of Ashanti Region were used as the unit of analysis. Purposive sampling method was employed in the data collection. Descriptive statistics (frequencies and percentages) were used to present the demographic characteristics of the female farmers and their perceived benefits and constraints of joining a cooperative. A Pearson chi-square test of association was used to determine the association between joining an agricultural cooperative and overall women's empowerment. Overall, the findings on empowerment indicated a statistically significant relationship between agricultural cooperatives and women's empowerment. The study found that about 97% of disempowered women were non-members of agricultural cooperatives, whereas over two-thirds of the empowered belonged to an agricultural cooperative. The study therefore recommends education on benefits of joining a cooperative as a fifth of the 106 female farmers reported not knowing any benefits associated with joining cooperatives. This could be initiated by cooperatives and non-governmental organisations who have direct communications with the communities.

Key words: gender equality, collective action, Ashanti Region

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List of Abbreviation

SSA	Sub-Saharan Africa
UNDP	United Nation Development Programme
MoFA	Ministry of Food and Agriculture
FAO	Food and Agriculture Organization
GEM	Gender Empowerment Measure
GPI	Gender Parity Index
GDI	Gender-related Development Index
IFPRI	International Food Policy Research Institute
USAID	United States Agency for International Development
OPHDI	Oxford Poverty and Human Development Initiative
WEAI	Women's Empowerment in Agriculture Index
ICA	International Cooperative Alliance
IPL	International Poverty Line
JHS	Junior High School
JSS	Junior Secondary School

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1 Introduction

There has been evidence that postulates that women's empowerment leads to socio-economic benefits, not just for the woman, but also for their households, communities and countries (The World Bank 2012; Lecoutere 2017; Klasen 2018; Anderson et al. 2020). Although such socio-economic empowerment of women has become essential in recent decades, evidence from developing countries within sub-Saharan Africa (SSA), and especially in its rural areas, show that women remain disempowered and face persistent gender inequalities (The World Bank 2012; African Development Bank 2016). Although women form over half of the populace and produce a significant proportion of the food, they face economic disadvantages and unequal access to productive resources (Ankrah et al. 2020; Glazebrook et al. 2020; Fonjong & Gyapong 2021). It is even estimated within the Africa Human Development Report that such inequality within the sub-region costs SSA about 95 Billion USD each year (UNDP 2016).

To reduce such inequalities and empower women would be to find sustainable solutions within the various sectors of the economy. For rural women, who bear the brunt of such disempowerment, one of the suggested areas to attain empowerment has been within the agricultural sector (Akter et al. 2017). The quest to formulate policies on women's empowerment within the agricultural sector stems from it being the leading employer for economically active women within the sub-region (Jayne et al. 2017). Within the various policies set by the governments in SSA, one of the more justified approaches advocated to empower rural women has been the formulation of cooperatives (International Co-operative Alliance 2016). This stems from the historically unequal access to resources needed to improve the wellbeing of women in agriculture. Cooperatives could be a breeding ground to enhance the knowledge and capabilities of women (Tesfay & Tadele 2013).

More so, within rural areas, cooperatives are better appreciated as they combine both communal welfare and business enterprises for the purpose of socio-economic improvement (Nlerum & Ogu 2014).

In Ghana, where the study is sited, the government has put in place measures to support cooperatives (Asibey-Bonsu 2012; Grashuis & Dary 2021). In 2018, the Ministry of Food and Agriculture (MoFA) reported of over 4,700 farmer cooperatives and over 98,000 members in such farmer-based organisations (42% of which are women) (MoFA 2018). In Ghana, the Agriculture sector employs over 30% of the population, and over 61 % of those in rural areas (Ghana Statistical Service 2021a), and thus, membership should be higher in the agricultural cooperatives due to the benefits they are supposed to provide for farmers. However, low membership in cooperatives in Ghana may be indication of the cooperatives not living up to the goals for which they have been set up (Asante et al. 2011; MoFA 2018) This calls for a look at agricultural cooperatives and its role in empowering women in agriculture within the Ghanaian context.

1.2 Problem Statement

Agriculture promises to be an avenue for food security, wealth creation, and sustainable wellbeing. Yet, gender gaps within the sector have led to differences in access to, and control of, productive assets, labour, information, and tools for female farmers (FAO 2011; Mukasa & Salami 2015). In addition, such gender inequalities have led to high levels of poverty, reduced economic growth, and have reduced productivity in agriculture (The World Bank 2012; African Development Bank 2016). These disadvantages do not only affect women, but also hinder future sustainable production and constrain the ability of women to adopt efficient adaptation strategies toward

climate variability and climate change (Adzawla et al. 2019). It is therefore important to improve women's empowerment in agriculture as this could double agricultural productivity, and lead to sustainable livelihoods for poor rural women (FAO 2011). Cooperatives for female farmers therefore need to be considered, especially since they are a promising pathway for development and empowerment (Ferguson & Kepe 2011; Asibey-Bonsu 2012; Lecoutere 2017).

Usually, cooperatives are acclaimed for being a potential avenue for improved sustainable livelihoods, as various studies in Sub-Saharan African (SSA) report that it can address socio-economic needs of the rural populace (Ghebremichael 2013; Tesfay & Tadele 2013; Gebremichael 2014; Kumar et al. 2015; Oyediran et al. 2015; Woldu et al. 2015). In Ghana, however, knowledge on the potential of agricultural cooperatives on women's empowerment is limited (Keep & Ferguson 2011; MoFA 2018). This study therefore contributes empirical evidence on the role of agricultural cooperatives on women's empowerment in the rural part of the Ashanti Region of Ghana.

1.3 Rationale for the Study

Owing to the lower levels of empowerment, there have been reduced economic development and increased levels of poverty in rural areas, and those who bear the brunt of these tend to be female farmers in Sub Saharan Africa. It is therefore up to development organisations and governments to put in efforts needed for female farmers to boost productivity and improve upon their wellbeing. The formulation of, and participation in agricultural cooperatives promises to be an avenue for women's empowerment and this would significantly influence income, wellbeing, food security

and other facets of sustainable livelihoods (International Year of Cooperatives 2012; International Co-operative Alliance 2016; Esayas & Gecho 2017).

In Ghana, investment programmes within the agricultural sector work alongside international goals and as such, one of the key areas has been to empower women to achieve gender equality (United Nations 2015; Glazebrook & Opoku 2020). There is therefore the need to revisit women's empowerment through agricultural cooperatives within rural Ghana. The study adds to the knowledge on women's empowerment through agricultural cooperatives by exploring the benefits, factors that determine one's decision to join agricultural cooperatives, and how agricultural cooperatives can empower women.

Added to this, the study gathers evidence from the rural part of Ashanti Region of Ghana, as this region is one of the leading areas with the highest membership of farming cooperatives in Ghana. Such evidence of the role of agricultural cooperatives in women's empowerment would not only add to knowledge but would also aid in promoting female membership in cooperatives to build an equitable and productive future for rural areas.

2 Literature Review

2.1 Introduction

Women's empowerment has become one of the crucial development issues worldwide, due to the hindrances posed by gender inequalities in poverty reduction and development efforts for the poor and marginalised in society. To give rural women the capacity to make and alter their choices into desirable ends, one of the suggested ways has been through agricultural cooperatives. Therefore, this section of the study looks at the literature on empowerment, focusing on the empowerment of female farmers through agricultural cooperatives. The reviewed works are under the headings: empowerment, women's empowerment in farming, agricultural cooperatives, and the effects of agricultural cooperatives on women's empowerment in agriculture.

2.1.2 Definition of Women's Empowerment

The theory of empowerment has evolved due to the difficulty in defining it (Völker & Doneys 2021). However, one of the highly used empowerment definitions has been that of Kabeer (1999). She defines empowerment as a way through which the capabilities of people are expanded to choose in a manner that affect their lives (Kabeer 1999). In this case, empowerment is seen as a transitioning process from a state of disempowerment where an individual has little to no privileges, to empowerment where the individual gains access to privileges needed for their wellbeing (Kabeer 2005). Her concept of empowerment also centres on self-denial and clarifies that individuals who have been denied life's opportunities are regarded as empowered after transitioning (De Smet & Boroş 2021).

She further posits that to understand empowerment, three inter-related dimensions- resources, achievements and agency- must be considered. The former looks at the medium such as the social materials, resources and claims that are needed to boost the individual's ability to choose in the future. After acquiring resources, one needs the 'agency' through which individuals can make decisions and negotiations. The agency could either be active, effective, transformative or passive (Kabeer 1999). Within active agencies, there is purposeful behaviour for better outcomes, whereas passive agencies depict the actions taken when there is little choice. There may also be 'effective' agencies through which individuals can effectively carry out responsibilities and roles, and 'transformative' agencies in which individuals are able to overcome restrictions of the roles assigned to them. Through resources and agency, outcomes or achievements are guaranteed (Kabeer 2018). The three dimensions mirror the concept and although they influence one another, a change in one may not automatically contribute to the other (Kabeer 2005; Alsop et al. 2006; Luttrell et al. 2009). For this reason, changes may take place over a long period (sometimes across generations) (Kabeer 2018).

From this definition, it can be concluded that if people are to gain capacity and choose/alter what they have into desirable outcomes, they should be knowledgeable of themselves and their environments, and should be willing to work with others to create the change (Gobezie 2013). In addition, some themes on empowerment have emerged. First, empowerment deals with gaining and/or controlling and thus changes societal power relations (Galiè & Farnworth 2019). This view has led to the empowerment of women gaining grounds over the years because women have been disadvantaged in decision making (Bayeh 2016). Women are also often unable to gain complete access to and/or ownership of vital resources, and this leaves majority of women in the lower social class (World Bank 2014). Although there may be other disempowered marginalised groups such

as the elderly and disabled, it is proven that being female (even within the marginalised groups), exacerbates inequalities (The World Bank 2012; Doss et al. 2020).

Also, empowerment progresses from a state of disempowerment to empowerment (Malapit & Quisumbing 2015; Johnson et al. 2018). In being empowered, disempowered persons must be actively part of the process. It has been advised that self-empowerment should also take place as it is more interactive and it is directed by the stimuli response of the individual (Gilat 2015). Thirdly, empowerment is context-specific (Toufique 2016). Different livelihood options are available to different contexts and countries, and so different strategies are needed in empowerment. For instance, women who live in patriarchal societies and engage in agriculture may not be allowed to freely gain ownership of land when compared to those in matrilineal societies (Lowes 2020; Narciso & Henriques 2020). For this reason, empowering such women would be giving them access to and control or ownership of land. This has been specifically needed for societies that depend on agriculture as a the main livelihood option, with women accounting for a high proportion in agriculture, such as SSA (Amenyah & Puplampu 2013; Palacios-Lopez et al. 2017). In such situations, empowering women may include targeting women in agriculture and finding measures to empower them (Alkire et al. 2013; Johnson et al. 2018). The final empowerment theme is on the domain such as time, resources, leadership and others. The domain in which one finds themselves tends to determine their capabilities and the avenues to empower them. As such, being empowered may be relational as it differs for each individual (Alsop et al. 2006). Such relativity in empowerment has made it possible to compare the various domains over a life cycle (Alsop 2007).

From the aforementioned themes, it is worth mentioning that empowerment must include different domains if the goal is to be achieved. Considering the women tend to be disempowered, it becomes

important to identify the context and target empowerment programmes to bring out positive outcomes. Considering that this study is focusing on female farmers, the ensuing sections focus on women's empowerment in agriculture and its associated measures.

2.1.3 Empowering Female Farmers

The concept of women's empowerment was introduced after realising that women should be treated impartially in both international and local socio-political structures (van den Bold et al. 2013). Since its introduction in about half a century ago, discourses of women's empowerment have been introduced in other spheres of development like education, agricultural production, food security and healthcare among others (The World Bank 2012). In the most recent global pursuit to achieving the sustainable development (SDGs), women's empowerment remains one of the key goals as Goal 5 seeks to 'Achieve Gender Equality and Empower all Women and Girls' (United Nations 2021 p.12). Themes in the report include ensuring women's access to productive resources and equal opportunities in all spheres of their lives (United Nations 2015). Women are required to be contributors in the transformation process by developing mechanisms to transform their lives (Kabeer 1999).

Based on the themes in empowerment, researchers note that the meaning of the concept may vary from one context to another (Luttrell et al. 2009; van den Bold et al. 2013; Alemu et al. 2018). This includes, but is not limited, to discussions on women's empowerment in agriculture. Empowering female farmers has become important as they are known to produce a substantial amount of the foods consumed globally (FAO 2011). Even though there are difficulties in quantifying the total yields of women due to the high proportions being smallholder farmers

(Paloma et al. 2020), there are still significant contributions made by female farmers in the agriculture sector (Doss et al. 2018). It has also been reported that female farmers, especially within SSA, tend to work on family lands and are often not paid for the work done (Fonjong & Gyapong 2021). Even in situations where work is being done on commercial farms, such work is seasonal and as such female farmers tend to have higher job insecurity and lower incomes (Devereux & Tavener-Smith 2019).

The aforementioned issues facing female farmers have led to them not being empowered and is worsened by institutions as they tend to favour men when it comes to access to productive resources (The World Bank 2012; Ministry of Gender 2015). Added to this, socio-cultural norms tend to disempower female farmers. For instance, in Ghana, marital stability is critical to women's access to land for agriculture. In a study, it was found that married women had better access to agricultural lands than unmarried women. The lack of a clear social identity of women weakened their rights to access to land (Kuusaana et al. 2013). In rural Ethiopia, however, single women were more likely to own land and had higher control of their expenditures and productive decisions (Badstue et al. 2020). In terms of obtaining resources that should lawfully be theirs, however, it was found that single women struggled (Badstue et al. 2020). It is for this reason, and others, that women often lose out in competing for arable land and irrigation (Domènech 2015). The barriers also extend to intangible assets like business and social networks, as well as literacy and further disempower women (Quisumbing et al. 2014; Dutt 2017).

When women are unable to gain access to the tangible and intangible assets, empowerment and productivity declines (FAO & ECOWAS 2018). In fact, when the same inputs and services are given to women, it is estimated that they would be empowered and this would lead to further increase in yields, income, education, food security and household welfare outcomes (FAO 2011;

Doss 2017; Inder et al. 2017; Pawlak & Kołodziejczak 2020). Such outcomes are however not possible without a critical look at empowerment of women and gender equality being made a priority in national policies for the agriculture sector (Quisumbing et al. 2014; Malapit & Quisumbing 2015).

2.1.4 Measuring women's empowerment in agriculture

Empowerment encompasses social, personal, political and economic dimensions (Simbar et al. 2017). Political empowerment looks at one's power to decide, and it usually explain the equal representation of women in formal and informal decision making structures (Simbar et al. 2017). Economic empowerment enables individuals to engage in productive activities so that they can be independent, whereas the social empowerment component explores issues of literacy, education access, and access to other intangible assets (Naz et al. 2012; Blattman et al. 2013). None of the dimensions can be achieved, however, without ensuring personal empowerment. This makes the measurement of empowerment difficult.

Various ways have been used in the measurement of empowerment. For instance, there is the Gender Empowerment Measure (GEM) which shows the political and economic level of participation that women have in a country (Klasen & Schüler 2011; Adjei 2015). GEM is measured by keeping track of the share of seats (parliamentary) held by women, and a track of the female legislators, professionals, technical workers and senior officials, and then examining the disparities in the income of the sexes (Adjei 2015). Similar measures include the Gender Parity Index (GPI) and the Gender-related Development Index (GDI) (UNDP 2015).

Based on the empowerment themes aforementioned however, empowering women in agriculture must include measures that involve women in decision-making, increase women's right of entry to productive resources, and improves women's awareness on their socio-political rights (Alsop et al. 2006). This enables the multidimensional nature of women's empowerment in agriculture to be fully assessed in terms of agency, capacity and opportunity (Hennink et al. 2012). Capacity, in this case, takes place when women are able to choose with the intent to change a situation, whereas opportunity looks at the culture, laws, and behaviour of the society. Agency endows individuals with organisational, financial, human, informational and social assets (Hennink et al. 2012).

To enhance women's ability to make decisions related to agricultural production, women may need productive resources like land, income from crop sales, common property, seeds and livestock (Sraboni et al. 2013). In terms of decision making, female farmers should specifically be given the power over time use and income as this has proven to empower female farmers especially within SSA (Alkire et al. 2013).

Although it has been difficult to attain an accepted measure for women in agriculture, one of the widely used instruments was developed by the IFPRI, USAID as well as the Oxford Poverty and Human Development Initiative (OPHDI), is known as Women's Empowerment in Agriculture Index (WEAI). The WEAI works through five domains- production, leadership, resources, time and income- to empower women (Alkire et al. 2013). Women's choices on income, farming and expenditure are used in assessing the production and income domains, whereas, resources explore how women own and access productive resources like credit facilities, agricultural inputs and land (Alkire et al. 2013). The leadership domain examines the woman's comfort when speaking in public and their membership in socio-economic groups (like cooperatives), and the time domain focuses on the allocation of time to domestic and productive activities.

The WEAI proves to be a means through which the effectiveness of empowerment programmes are measured among female farmers (Johnson et al. 2018). Activities and programmes that score higher among the five domains are therefore more likely to empower women. The WEAI has been useful in studies on food security and nutrition (Sraboni et al. 2013; Akter et al. 2017; Johnson et al. 2018), as well as that on other livelihood outcomes (Malapit et al. 2019; Mohammadi & Jalilian 2020). A thorough understanding of the WEAI domains could thus be the key to understanding how to improve food security, income, and sustainable use of resources among women. This is because empowered women in agriculture tend to have higher access to productive resources for farming, have higher income and thus higher levels of food security compared to those who are not empowered (SPRING 2014; Akter et al 2017; Anderson et al. 2021; Mobarok et al. 2021) In Ghana, the FAO (2018) reports that focusing on the various domains explored in the WEAI can be used as an appropriate measure for women empowerment, although there has not been gender-based results to support the assertion. This study therefore contributes to knowledge in the women empowerment in agriculture discourse by examining agricultural cooperatives and its influence on women's empowerment, adapting the five domains in the WEAI as a measure of the latter.

2.2 Understanding Cooperatives

To cooperate is to work together, and as such, it is a way and philosophy of life (Ghebremichael 2013). Cooperation has been the basis for social and domestic life and can be viewed as a group instinct that man has to aid him in living together with others and helping them in time of stresses and shocks. A cooperative is thus defined as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise” (ICA 2015). In our society, cooperatives

include a “group of people with collective responsibilities and thoughts for the development of needy, especially under privileged” (Kumar et al. 2015). The formulation of cooperatives thus centres on values like democracy, equity and equality, self-help and self-responsibility, and then solidarity (Tesfay & Tadele 2013; ICA 2015). These values also translate into the ethical values of members who are expected to be open, honest and show care and responsibility for others (ICA 2015).

The ownership and management of cooperatives are usually either through non-profit community organisations and businesses by persons who either use the services of, or work for, the cooperatives (International Co-operative Alliance 2016). As such, cooperatives come in different forms and ranges from loosely organised groups of kin networks to those that are officially registered (Asibey-Bonsu 2012; International Co-operative Alliance 2016). The cooperative movement has thus gathered a lot of people with over 12% of the world’s populace part of over 3 million known cooperatives in the world (ICA 2018).

Different types of cooperatives exist in societies but can be grouped under the following types. There are production cooperatives which deal with industrial and agricultural production and include farming/agricultural cooperatives, processing cooperatives, and industrial cooperative (Okonkwo et al. 2019). Marketing cooperatives also exist to market agricultural produce, and may include consumer cooperatives and agricultural marketing organisations (Agbo et al. 2015). There are also service cooperatives which exist to provide services that are necessary for their members and includes cooperative banks, housing cooperatives, and cooperative credit societies (Kumar et al. 2015; Okonkwo et al. 2019). Lastly, there are allied service cooperatives and these deal with activities needed for the business and daily life of farmers, artisans, and others (Kumar et al. 2015).

The aforementioned types of cooperatives have been present in SSA and have been beneficial to the poor who also dwell in rural areas and depend on agriculture for their livelihoods (Nlerum & Ogu 2014; Woldu et al. 2015; International Co-operative Alliance 2016). Considering the benefits had on members and its importance to rural development, agricultural cooperatives have significantly increased. It is thus estimated that about 7% of the population in Africa belong to cooperatives, with more than 10% recorded in countries like Kenya, Egypt, Senegal and Ghana (International Co-operative Alliance 2016).

2.2.1 Benefits of Joining Agricultural Cooperatives

Cooperatives have become one of the most important voluntary organisations around the world, with reports that they are the principal form of organisation in marketing, credit provision, agriculture, and consumer goods distribution (Ghebremichael 2013). As such joining agricultural cooperatives is associated with several benefits for its members.

First of all, cooperatives create jobs and provide financial assistance to the households of members (Ferguson & Kepe 2011). Considering the smallholder farmers dominate agriculture, cooperatives could assist them in staying competitive and resilient by integrating them into the supply chain (FAO 2021). Sustainable production practices through higher access to extension services for members could also be created through cooperatives (Fischer & Qaim 2012; Msimango & Oladele 2013). Like a business venture, members of agricultural cooperatives who happen to be poor, are able to pool their resources and scale up their lives (Asibey-Bonsu 2012; FAO 2021). Cooperatives are able to pool risks and invest through community-driven microfinance and other programmes needed to realise benefits (The World Bank 2012). This has especially been true in the case of

cooperatives with support from non-governmental organisations and governmental entities (International Co-operative Alliance 2016; Theeuwens et al. 2021).

Cooperatives also provides members the needed supplies to boost production. They can pool resources to purchase inputs, protect members from market fluctuations, and obtain higher output prices for members (FAO & ECOWAS 2018; FAO 2021). Besides this, they can purchase raw materials and improved seeds for members. However, membership is often regulated and corresponds to the sale volume of the members (Majee & Hoyt 2011). Production cooperatives could also aid its members in obtaining market for their products and eliminating middlemen who decrease profit margins of the sellers (Majee & Hoyt 2011).

One of the most popular benefits to joining agricultural cooperatives has been its influence on credits, income, and savings (Fischer & Qaim 2012; Martey et al. 2014). Cooperatives offer loans to members, with an advantage of not requiring collateral. Members can therefore obtain financial assistance when needed. Cooperatives may also find it easier to acquire loans. For instance, in Uganda, there is evidence of the Development Finance Company of Uganda targeting registered cooperatives to offer group loans to members who are in need but lack conventional securities needed to acquire individual loans (The World Bank 2012). Cooperatives improve the financial status of members by distributing and marketing crops (Okonkwo et al. 2019). This is done by linking producers with consumers, arranging and scheduling delivery, setting the location for the delivery and securing prices (Johnson et al. 2018; Okonkwo et al. 2019). Members can thus produce independently but purchase supplies for production to improve the bargaining power that arises from purchasing voluminously. In Uganda, interviews revealed that farmers belonging to agricultural cooperatives were better able to learn from each other, had better yield, and gained access to financial resources (Theeuwens et al. 2021).

Another benefit of joining cooperative is the training and information such social networks and organisations provide, such as sharing knowledge on innovations that enhance productivity (The World Bank 2012). Among the motivational factors for joining agricultural cooperatives in Croatia, authors found that farmers joined cooperatives to help them acquire social and professional skills, reduce production cost, employment into cooperative roles and acquire support from the government (Nedanov & Zutinic 2018). Cooperatives provide training on accounting and bookkeeping, how to use insecticides and mechanised equipment, modern farming techniques, as well as modern storage and food preservation systems (Okonkwo et al. 2019).

Table 2.1: Benefits Associated with Joining Agricultural Cooperatives

INDICATOR	BENEFIT	REFERENCES
1. Availability of extension officers for cooperative members.	Gaining access to extension services	(Fischer & Qaim 2012; Msimango & Oladele 2013)
2. Monthly visit of extension officers to farms of cooperative members.		
1. Availability and access to seeds, agro chemicals, cutlass due to membership in cooperative.	Obtaining agricultural inputs and reducing production costs for members.	(Fischer & Qaim 2012; Nedanov & Žutinić 2018; Blekking et al. 2021)
1. Cooperatives ensures that members farm produce are sold.	Ease in selling members' products	(Majee & Hoyt 2011; Okonkwo et al. 2019)
2. Cooperatives ensures that members have access to consumers at all times.		
1. Cooperatives provide members with tools to improve production output.	Improvement in production output	(FAO & ECOWAS 2018; FAO 2021; Theeuwien et al. 2021)
2. Members of cooperatives meet their targeted output.		
1. Cooperative members receive market price for their goods.	Improving bargaining power of products	(Ghebremichael 2013; Okonkwo et al. 2019)
2. Cooperative members are able to bargain for their products based on		

training received by cooperative members.

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Cooperative members are linked to job opportunities that enhance their capabilities. 2. Cooperative members are trained on savings schemes. 3. Cooperative members have groups geared towards education and training on 'susu' schemes. | <p>Creating employment, improving savings and income (Fischer & Qaim 2012; Martey et al. 2014)</p> |
| <ol style="list-style-type: none"> 1. Cooperative members are provided training to improve their knowledge on their farming. | <p>Provision of access to capacity training (The World Bank 2012)</p> |
| <ol style="list-style-type: none"> 1. Cooperative members are provided soft loans with little/no interest. | <p>Provision of financial assistance/credit (Ferguson & Kepe 2011; Ghebremichael 2013)</p> |
-

2.2.2 Motivations and Hindrances to Joining Agricultural Cooperatives

Agricultural cooperatives have become necessary to boost sustainable production and livelihoods for smallholder farmers. Although there are benefits associated with joining cooperatives, the decision to participate is often based on the perceived benefits, motivations, and challenges associated with joining the cooperatives (Theeuwes et al. 2021). Incentives for joining any organisation could be individual or collective such as the perceived benefits, challenges, opportunity costs, and even the socio-demographic and economic background of the individual (Amoke et al. 2015; Omotesho et al. 2016). It is noteworthy that the factors that serve as incentives could also hinder other persons from joining the cooperatives. To this effect, such factors must be identified and tackled to improve participation in agricultural cooperatives.

Several studies have explored the individualistic incentives and constraints to joining agricultural cooperatives. For instance, age, having a higher education, having smaller farm sizes, higher

output, and higher income and expenditure have been associated with agricultural cooperative participation (Martey et al. 2014; Amoke et al. 2015; Omotesho et al. 2016). Gender has been one of the most explored issues as gender relations and norms put men at a socio-economic advantage (International Year of Cooperatives 2012). Women thus become limited in their opportunities to gain access to and participate in formal groups (Donkor & Hejkrlik 2021; Theeuwien et al. 2021). In terms of age, it has been found that younger persons tend to participate more in cooperatives than their older counterparts (Martey et al. 2014). The authors attribute this to older persons being more experienced in farming, having more social networks, and having a higher unwillingness to adopt innovation (Martey et al. 2014).

Higher levels of education are associated with willingness to join cooperatives as educated farmers are knowledgeable and can better adapt to new innovations (Amoke et al. 2015; Kimutai & Chepchumba 2016).

In Kenya, increasing farm sizes under horticultural cultivation was associated with belonging to an agricultural cooperative (Kimutai & Chepchumba 2016). However, within rural Nigeria, respondents with smaller farm sizes were more likely to join a cooperative (Amoke et al. 2015). Considering that smallholder farmers form the majority of farmers in SSA, this is indicative that cooperatives are usually a union of smallholder farmers, and as such larger farm sizes are not entry conditions to participating in cooperatives (Amoke et al. 2015).

Higher household size, income, and expenditure are also indicative of joining and participating in cooperatives. Persons with larger household sizes tend to have much supply of family labour especially when farming in labour-intensive tropical regions, and as such, household heads with larger household sizes would be more willing to participate in cooperatives to gain the tools and knowledge needed to boost productivity (Martey et al. 2014). Persons with higher income and

expenditure alternatively would want to broaden their social networks and thus have higher participation in agricultural cooperatives (Martey et al. 2014). Such high income may be attained from one's engagement in highly paid jobs, or engagement in an alternative or secondary off-farm source of income (Danso-Abbeam et al. 2020).

Perceived benefits, shared values and goals, as well as sense of community have also been associated with higher participation in agricultural cooperatives (Donkor & Hejkrlik 2021). In the same vein, persons who perceive higher cost may also not want to join such cooperatives. For instance, annual income, along with access to credit and training have been one of the considered benefits for which farmers join agricultural cooperatives (Majee & Hoyt 2011; Omotesho et al. 2016). The willingness to join also stems from the perceptions about the knowledge gained, and witnessing improved technology from members (Gyau et al. 2016). The decision to join therefore comes with the perceived production and marketing risks, and as such persons who perceive higher risks to joining would be constrained (Zheng et al. 2012; Zhang et al. 2019).

Others take into account issues like trust, along with human, physical and social assets before joining cooperatives (Msimango & Oladele 2013; Zhang et al. 2019; Donkor & Hejkrlik 2021). Ownership of assets could hinder participation in agricultural cooperatives. For instance, land ownership which is often a requirement for joining cooperatives may hinder women from participating (Woldu et al. 2015). Others who may not have access to the income to purchase forms and pay membership fees (Martey et al. 2014) may also be hindered from participating and receiving the benefits of joining cooperatives.

Coupled with these constraints, lower participation could be attributed to institutional and structural conditions, such as the size of the group, timing of payments and previous experiences with such conditions (Fischer & Qaim 2013). Diversified farmers may thus be unwilling to join

the cooperatives and sell especially when the marketing activities of the group focus on one commodity (Fischer & Qaim 2013). Such collective incentives/constraints make it crucial to assess the reasons for which people, especially women, join cooperatives. Table 2.2 shows a summary of the constraints to joining agricultural cooperatives.

Table 2.2: Hindrances to Joining Agricultural Cooperatives

INDICATOR	CONSTRAINT /HINDRANCE	REFERENCES
1. Age of the respondent.	Socio-demographic constraints (e.g., age, household size, sex, educational level, farm size, occupation, individual and household expenditure)	(Martey et al. 2014; Amoke et al. 2015; Omotesho et al. 2016; Donkor & Hejkrlik 2021; Theeuwen et al. 2021)
2. Sex of the respondent.		
3. Household size of the respondent.		
4. Occupation of the respondent.		
5. Farm size of the respondent.		
6. Marital status of the respondent.		
7. Religious Affiliation of the respondent.		
8. Total household expenditure of the respondent.		
9. Occupation of the respondent.		
10. Educational level of the respondent.		
1. Cooperative allows one to gain access to extension services.	Perceived benefits	(Gyau et al. 2016; Donkor & Hejkrlik 2021)
2. Cooperatives allows one to obtain agricultural inputs for members.		
3. Cooperatives makes it easy to sell products of members.		
4. Cooperatives improves production output/yield of members through capacity training and easy access to agricultural inputs (cutlass, seeds, agro chemicals).		
5. Cooperatives reduce production costs of members.		
6. Cooperatives improve bargaining power of products of members.		
7. Cooperatives create employment for members.		

8. Cooperatives improve savings habits of members.
 9. Cooperatives increases income of members.
 10. Cooperatives provide credit services/financial assistance to its members.
 1. Cooperatives are short lived and so there is a fear that they may not be authentic. Perceived risks (Zheng et al. 2012; Zhang et al. 2019).
 1. Lack of trust in cooperative management as leaders do not fairly distribute products to farmers. Lack of trust in cooperatives (Msimango & Oladele 2013; Zhang et al. 2019; Donkor & Hejkrlik 2021)
 1. Non-members of cooperatives have limited access to physical and financial assets (e.g., land, fees, capital) to join cooperatives. Lack of physical and financial assets (e.g. land, fees, capital) (Msimango & Oladele 2013; Martey et al. 2014; Woldu et al. 2015; Zhang et al. 2019; Donkor & Hejkrlik 2021)
-

2.2.3 Agricultural Cooperatives and Women’s Empowerment

Following the foregoing discussions on agricultural cooperatives, it becomes important to consider the relationship between joining an agricultural cooperative and women’s empowerment. Joining an agricultural cooperative could influence women’s empowerment in various ways. For instance, in 2011, a study in Uganda found that agricultural cooperatives had improved the confidence, negotiating skills, and female farmers’ ability to provide various services such as transfer of knowledge to community members, while having better control of their household decisions (Ferguson & Kepe 2011). Similarly, another author found positive impacts such as improved knowledge, economic wellbeing, and adoption of sustainable agronomic practices among women who are in cooperatives, along with higher decision making power in their households (Lecoutere 2017). Among dairy producers in South India, authors found that being a member of an agricultural

cooperative, whether mixed-gender or women only could empower women by improving their influence in household decisions (Dohmwirth & Liu 2020). Evidence from Kenya also suggests that women's empowerment increases through agricultural cooperatives. Using the Women Empowerment in Livestock Index, which is an evolved gender tool for persons in livestock production, authors in Kenya found that joining a cooperative or production organisation could equip women with assets and give them higher control over decisions related to production (Mwambi et al. 2021).

The general trend in the relationship between joining an agriculture cooperative and the levels of women empowerment is thus positive in the literature, as women tend to be empowered when they join agricultural cooperatives. This may happen irrespective of joining a mixed-gender cooperative or women's only cooperative (Dohmwirth & Liu 2020). Added to this, the foregoing discussion shows that women's empowerment in general could be positively influenced by joining a cooperative, however, different aspects of empowerment may be influenced.

The prevailing arrangements point to cooperatives being dominantly controlled by men which calls for effective women's empowerment among memberships to ensure that women in rural areas have stronger control in decision making (FAO 2011). Nevertheless, cooperatives have been crucial to the various domains of women empowerment.

In terms of income or economic empowerment, interventions like cooperatives offer financial assistance and products to female farmers, while giving them entrepreneurship training and financial literacy (Johnson et al. 2018). Within communities, agricultural cooperatives (more specifically women-based groups), also have the potential to generate social capital by promoting production and help women to have control over their earned income, as has been the case in Bangladesh (FAO 2011). For instance, creating the Sabarkantha Women Farmer's Cooperative

gave the women power to recover 3000 hectares of ravine lands, with incomes tripling from US\$ 112 a year (FAO 2011). Through cooperatives, there is an increase in profits for women, goods can be easily transported to markets, and there are better terms of produce sales (Hennink et al. 2012). With increased income, there is evidence of women's positions in their households and communities being strengthened as they are able to make major decisions in their households and own productive assets (Alemu et al. 2018). For this reason, community based groups may come together voluntarily to discuss challenges and find ways to improve upon their livelihoods (FAO 2021).

In terms of leadership, there have been strides created as a result of cooperatives. Agricultural cooperatives could also create avenues for women to increase decision-making (De Smet & Boros 2021) and bring out leadership qualities. In Uganda, agricultural cooperatives have been linked to women's confidence in public speaking (Ferguson & Kepe 2011). In Cameroon, strides are made to include women in extensions services and technology, leading to 67% participation of women and 60% of women in leadership positions within cooperatives (FAO & AUC 2020). Cooperatives thus increase self-confidence for women, improve their ability to speak publicly, and their ability to assume leadership roles, and increases decision-making through training and capacity-building programmes (Othman et al. 2021).

In terms of the time, production and resources domains, cooperatives have been more suitable as they tend to emphasise consensus and intuition, as opposed to hierarchy (Alkire et al. 2013). Women can develop inter-organisation relationships with other women and men to gain an easier access to financial resources, equipment, credit and other productive resources (Theuwen et al. 2021). This would lead to less marginalisation of female farmers. In fact, in cooperatives dominated by women, they can access resources easily, and become more empowered for

sustainable wellbeing (Theeuwes et al. 2021). This enables female farmers to allocate time for both domestic and productive activities. Training and provision of life skills has also boosted the production domain of women's empowerment. Through such activities, female farmers are able to make efficient autonomous decisions about agricultural production and this boosts productivity (Dutt 2017).

The principles of cooperatives thus permeate social life and improves equality, harmony, shared values and goals for women (ICA 2015). Considering the statistics show a lower participation of women in cooperatives, there is still much to be done for poverty alleviation among poor rural women. The agricultural cooperative model could thus change this by bring female farmers together to acquire the needed tools to increase their self-confidence, work on the challenges faced in production, make decisions and manage risks. In so doing, female farmers can be empowered to be active agents of change and promoters of socio-economic transformation in their communities.

2.3 Agriculture and Gender Equality in the Ghanaian Context

Ghana is a country situated in the west African where agriculture is one of the high contributors to the county's National Gross Domestic Product, foreign exchange and sustaining food security (Assan et al. 2018; FAO 2015; Abena et al. 2011). Agriculture can therefore be said to be the backbone of Ghanaian economy with active labor force of about 50% engaged in this sector and providing nutritional requirement for the nation (Assan et al. 2018; FAO 2015; Abena et al. 2011)

Women in Ghana and their contribution to agriculture cannot be overemphasized as they are seen as the key players within the agriculture value chain. Their role including farm production, marketing of agriculture produce, decision on farm production and food distribution etc. Women

are now more involved in post-harvest activities such as processing of agriculture produce, storing of harvested farm produce, grains shelling. With this, women involvement and contribution to the agriculture space is becoming increasingly significant (Abena et al. 2011; Biritwum et al 2014; Nara et al. 2021).

Despite women enormous contribution to agriculture, they face various challenges in their bid to contribute to economic development, food security and poverty reduction limiting their growth and livelihood (Lambrecht 2016; Nwapi 2016; Atata et al. 2019; Pandolfelli & Quisumbing 2009; Ajala 2017

Women are known to represent 43% of the agricultural labour force yet they have limited accessibility and control to productive resources than their male counterparts. Various studies have also shown that women in developing countries are most disadvantaged in access, ownership, and control of assets, especially land, access to loan, agricultural extension which put constraints on their capacity to improve their livelihood and productivity (Lambrecht 2016; Nwapi 2016; Atata et al. 2019; Pandolfelli & Quisumbing 2010; Ajala 2017).

3 Objectives

The study aims to examine how women can be empowered through agricultural cooperatives in rural Ashanti Region of Ghana. To achieve this, the study

1. Explores the benefits of agricultural cooperatives from the perspectives of female farmers.
2. Finds out the factors that motivate female farmers to join agricultural cooperatives.
3. Examines the constraints to joining agricultural cooperatives.
4. Examines the effect of joining agricultural cooperatives on women's empowerment in agriculture using the WEAI tool.

3.1 Hypotheses

The following hypotheses were drawn from the study.

H_a: Increasing age has a significant effect on joining an agricultural cooperative

H_a: Joining an agricultural cooperative has a significant effect on being empowered.

3.2 Conceptual Framework

The study seeks to examine the effect of joining an agricultural cooperative on women's empowerment using the women empowerment in agriculture index (WEAI) tool. Based on this objective, specific objectives formulated include examining the benefits, factors that motivate or constrain female farmers, and the effect of joining agricultural cooperative on women's empowerment using the WEAI tool. Figure 3.1 shows the relationships between these variables.

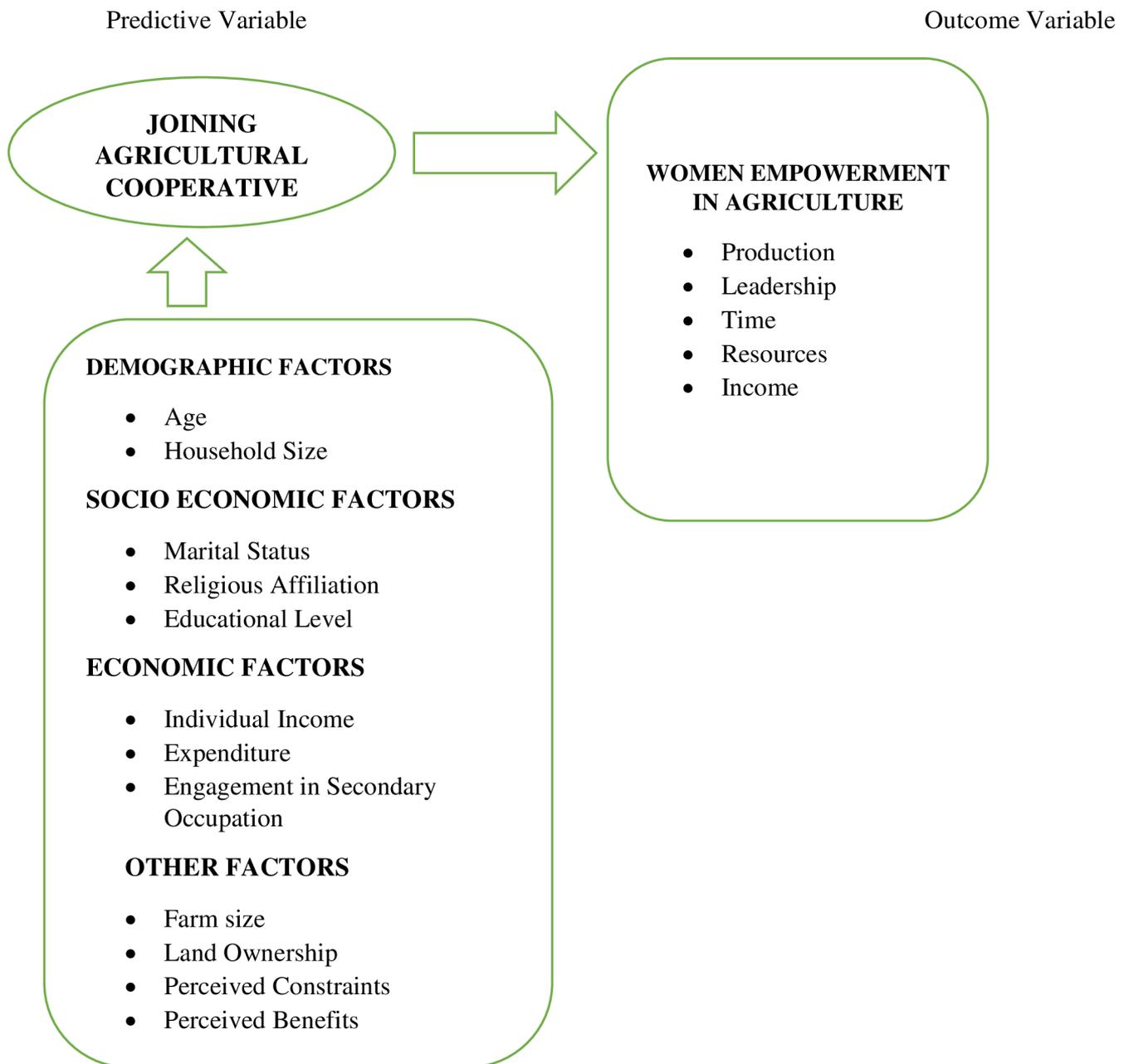


Figure 3.1: Conceptual Framework (Authors' construct 2022)

The main objective of the study is to examine the effect of joining an agriculture cooperative on women's empowerment using the WEAI tool. The literature for the study argues that agricultural cooperatives are beneficial, and could influence women's empowerment (Mudege et al. 2015;

Dohmwirth & Liu 2020; Mwambi et al. 2021). However, when a female farmer joins an agricultural cooperative, it can also affect the various domains of the WEAI tool, which is the measure for women's empowerment for the purpose of this study.

Empowering female farmers would be to find a way through which the capabilities of these farmers are expanded, so that they can choose in a manner that affect their lives (Kabeer 1999). The WEAI tool being used in the study, however follows the dimensions of empowerment, as defined by Kabeer (1999), and has been designed to measure inclusion, empowerment and agency in the agriculture sector (Alkire et al. 2013). The tool is thus a reflection of women's empowerment and attempts to assess female farmers empowerment through five domains, with increasing scores showing increased levels of empowerment. These domains are production, leadership, time, resources, and income (Figure 3.1).

In the work of Alkire et al. (2013) on the WEAI tool uses ten indicators to measure the five domains. Production is a dimension concerned with the decisions made in agriculture production, and these decisions may be either sole or joint decisions about cash and food crop farming, livestock, and agricultural production autonomy, without being judged on whether the joint or sole decision making reflects greater levels of empowerment. Its indicators are thus on autonomy in production and input in productive decisions. The 'resources' dimension looks at one's ownership, access to, and power of decision-making on productive assets like land and agriculture equipment. Three indicators are used in measuring the resource dimension: owning assets, access to and decisions about credit, and sale, transfer or purchase of assets. The income dimension concerns joint or sole control over how income is used, and over one's expenditures, and its indicator reflects the control over use of income. Time looks at time allocation in terms of domestic and productive tasks, as well as satisfaction of persons with the time assigned to activities of leisure, which makes

workload and leisure two important indicators to examine the time dimension. Lastly, leadership as a dimension is concerned with leadership of the farmers in the community and focuses on whether one is a member of a social or economic group, and one's comfort in public speaking.

Based on the literature, the ability to join or be a member of an agricultural cooperative could thus influence women's empowerment in the various domains, and as such, the WEAI proves to be a means through which the effectiveness of empowerment programmes are measured among female farmers (Johnson et al. 2018).

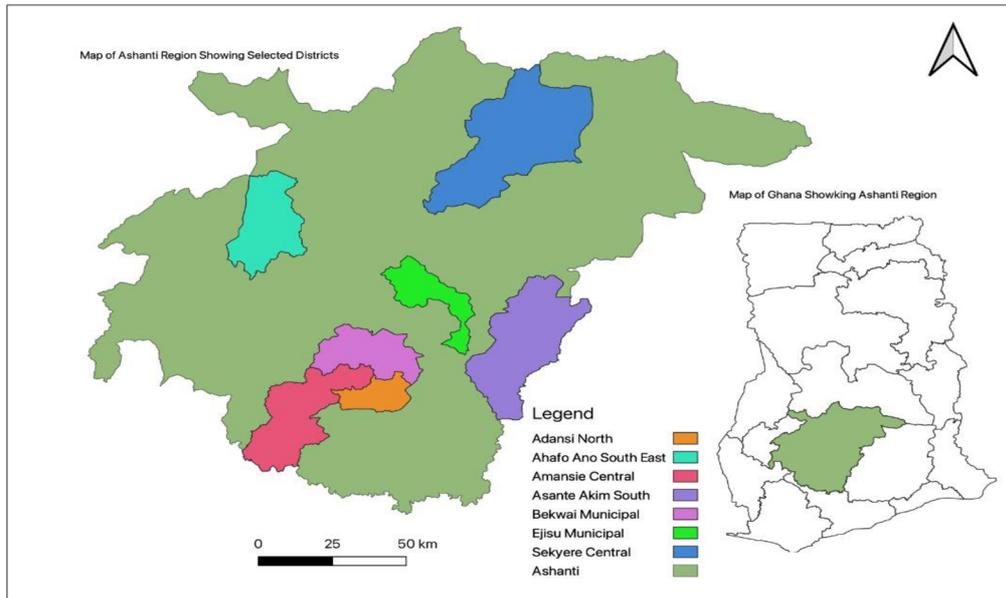
Besides exploring the benefits experienced by female farmers to joining an agricultural cooperative, the study also examines the constraints and motivations to joining agricultural cooperatives. Based on the literature (see 2.2.1 and 2.2.2), the various factors that may affect a female farmer joining an agricultural cooperative is also explored. The factors that may constrain or motivate a female farmer from joining an agricultural cooperative could be demographic, socio-economic, and other factors. In terms of the social factors, the study is being conducted among women only, and for this reason, the effect of gendered norms, which tend to affect women's decisions to join agricultural cooperatives could not be explored. The demographic factors, which could influence one joining an agriculture cooperative were age and household size. Given that gender norms are also reflected in some practices, such as marriage and religion (Schnabel et al. 2018; Anderson et al. 2020b), these factors were explored as part of the socio-economic factors, in addition to level of formal education and expenditure. The use of expenditure, rather than income, stems from the fact that in Ghana, income for smallholder farmers is usually seasonal and unpredictable (Akraasi et al. 2020). At the end of a farming season, a farmer can sell their produce, at prices determined by the buyers, and as such income is unstable. However, it is much easier knowing monthly expenditures for the individual female farmer, and as such, the study uses that.

Other factors explored included identified barriers and motivating factors, such as ownership of assets like land, farm size, perceived benefits, and perceived constraints. These factors in various ways could influence a female farmer joining an agricultural cooperative.

3.3 Methodology

Designing a research encompasses the approaches used in the research process, and extends from theories to the collection and analysis of data (Creswell & Creswell 2018). Choosing an appropriate methodology is influenced by the study objectives as well as the time allocated for the study. This study examined women's empowerment through agricultural cooperatives through four specific objectives, and this section discusses the research methodology for the study in the Ashanti Region.

The Ashanti Region is one of the key agricultural zones in Ghana. Located in the deciduous rainforest agro-ecological zone, it supports successful crop farming activity, and is selected, as it is one of the leading regions with a high proportion of members in farmer-based organisations (MoFA 2018). The Ashanti Region occupies about 24,389 square kilometres (equivalent to 10%) of the land area of Ghana (Ghana Statistical Service 2013). About 38 % of its population is rural, with 467,201 persons 15 years and older engaged in agriculture as an economic activity (Ghana Statistical Service 2021a). Of the total number of 15 years and older persons in agriculture, 363,208 persons (77%) are in rural areas and about 42% t (152.390) are females (Ghana Statistical Service 2021a). Figure 3.2 shows a map of Ashanti Region and the selected districts.



*Figure 3.2: Map of the Ashanti Region Showing the Selected Districts
Authors' Construct (2022)*

3.3.1 Research Approach

The study gathered information from individuals or groups at a single point in time, so that the researcher can observe the variables being studied without influencing them (Zangirolami-Raimundo et al. 2018). As such, a cross-sectional research design was used, as this can be used in both descriptive (summaries using descriptive statistics) and analytical (why/how certain outcomes occur) studies (Connelly 2016).

Several approaches or strategies can be used in studies on women's empowerment in agriculture. Empirical reviews are often framed within quantitative and/or qualitative approaches. Qualitative approaches provide in-depth experiences of a few perspectives and consequently explore and appreciate meanings to social phenomena by individuals (Creswell & Creswell 2018). Researchers thus pose open-ended questions that elicit responses reflecting the subjective meanings of

individual experiences. Qualitative approaches, however, limit the generalisability of the results obtained to the study population. It has however been used in studies that seek to explore in-depth the benefits of agricultural cooperatives (Ferguson & Kepe 2011) and difficulties encountered by female farmers (Theeuwien et al. 2021).

Quantitative studies, unlike qualitative approaches, make use of deductive logic when testing theories and have become more reliable in result predictions. They also examine cause-effect relationships due to its ability to establish the strength of relationships between variables (Creswell & Creswell 2018). The approach gives room for truth approximations based on human limitations and can yield optimum results.

The objectives of the study sought to examine the benefits, factors that determine/motivate and constrain joining of agri-cooperatives, as well as effect of joining an agricultural cooperative on empowerment, and these outcomes were best examined using a descriptive and inferential analysis. In addition, information was gathered using questions and responses from previous studies (van den Bold et al. 2013; Malapit & Quisumbing 2015; Akter et al. 2017; Malapit et al. 2019; Mohammadi & Jalilian 2020) and summaries were then done using descriptive and inferential statistics for the outcomes being explored. Given the nature of the questions, responses were gathered using quantitative tools as the method is more objective, focused and fast (Creswell 2013; Creswell & Creswell 2018). It was also the best method due to the need to test and confirm the hypotheses of the study. For this reason, the quantitative research strategy was adequate in considering the inherent empowerment-cooperative nexus, and also addressed the questions and objectives formulated for this study.

3.3.2 Approach to Data Collection

The study made use of the two main approaches or sources of data collection to enhance the credibility of the study. Secondary data sources were gathered from documents or data formerly gathered by other institutions or individuals (Windle 2010). They were therefore free of administrative costs and burden involved in primary data sources (Windle 2010). This study made use of secondary data gathered from books, reports from recognised institutions (such as FAO, Ghana Statistical Service), journals and peer-reviewed articles. Information gathered from the secondary sources enriched the literature and the study.

In addition, female farmers in rural Ashanti Region were selected for the study, and for this reason, primary data sources were used in this study. Researchers gather such sources of data on the field to meet the study objectives (Kabir 2016). Female farmers in rural Ashanti Region were thus surveyed through questionnaire survey posed on the benefits, motivations, and constraints, as well as effect of joining agricultural cooperatives on female farmers' empowerment. More specifically, primary data was collected through descriptive surveys, which aim to describe the characteristics of the phenomena (Salaria 2012). Descriptive surveys therefore describe opinions, situations and concerns of the target female farmers with questions on 'Where?', 'Who?', 'How many?', and 'What is happening?' (Salaria 2012).

Based on the land size of Ashanti Region (24,389 square kilometres), and the total number of 152,390 females in skilled agriculture, forestry and fishery economic activity, there was the need to sample from the population. Sampling enables researchers to study smaller units of the target population to obtain data that is representative of the population (Kabir 2016). For the purpose of the study, the sample was determined using the proportion of female farmers in the rural areas of Ashanti Region. In it, 152,390 females are engaged in the skilled agriculture, forestry and fishery

economic activity in rural Ashanti Region (Ghana Statistical Service 2021a). As the selection of the study population would be large irrespective of the error margin, a representative sample size was determined and selected using an appropriate sampling process to elicit quantitative responses enough to generalise for female farmers in agricultural cooperatives in rural Ashanti Region.

3.3.4 Sampling Technique

Following the use of a quantitative approach to the study, probability sampling techniques were adopted. The outline is shown in Figure 3.3

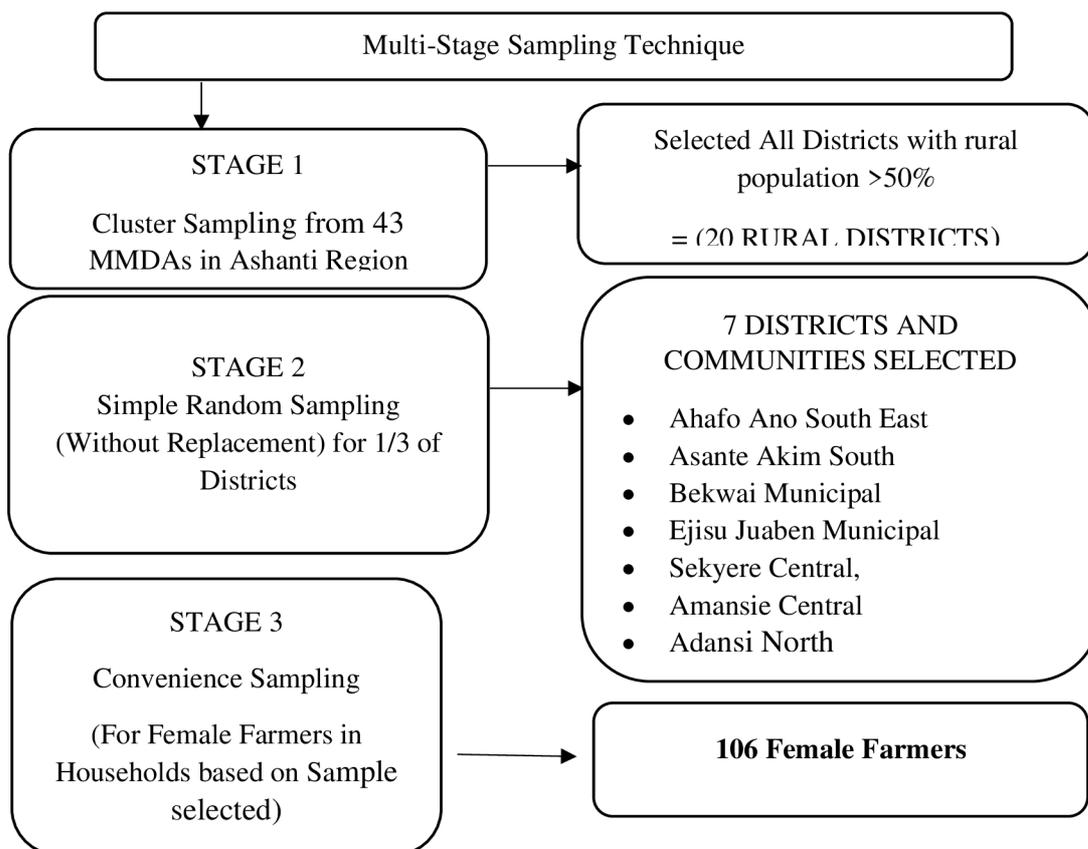


Figure 3.3: Sampling Stages Scheme (Author's Construct 2022)

This technique is based on the assertion that researchers select samples from larger populations, and give each member of the population a chance to be selected (Kabir 2016). In this study, a multi-stage sampling technique was used. This included a cluster sampling where predominantly rural districts in Ashanti Region were selected across the 43 Metropolitan, Municipal and District Assemblies (Ghana Statistical Service 2021b). In view of farming being mostly done in rural areas, the selection of the district was based on whether more than 50% of its populace were in rural areas at the time of the publication of the 2021 Population and Housing Census report. This brought the selection to 20 predominantly rural districts in Ashanti Region (Ghana Statistical Service 2021b).

The next stage was to sample from the districts. A list of the 20 districts was made after, with a unique identifier assigned to each of the 20 districts. Due to the time constraint of the study, data could not be collected from all the districts. For this reason, a goal was set to gather data from one-third of the rural districts. A simple random sampling technique was used in the selection of the districts. Numbers corresponding to the districts were placed in a bowl and seven were selected without replacement. This brought the total selection to Ahafo Ano South East, Asante Akim South, Bekwai Municipal, Ejisu Juaben Municipal, Sekyere Central, Amansie Central and then Adansi North districts.

The next stage of the process was to select the respondents. There is a lack of information on the proportion of female farmers in each district. For this reason, the computation of a sample size by Cochran (1963 cited by Israel, 2013) was used to select the sample. The district assemblies were asked of the top farming communities in each district, and as such, seven communities were visited in the seven districts. Added to this, the district assemblies noted that they did not have information on the cooperatives in the communities mentioned, although they knew that cooperatives existed

in those communities. Based on the layout of the communities, every third house was selected, especially since some communities had less than 20 houses. One household was then selected in each structure using convenience sampling to select available female farmers within their households at the time of the study in the various districts. In total, 106 female farmers in 106 households across 7 communities in 7 districts were selected. Respondents were not asked if they joined an agriculture cooperative prior to the study, as the researcher wanted to find out the proportion of respondents in cooperatives. At the end of the study, 75 female farmers were found to be in agriculture cooperatives and the remaining 31 were not in cooperatives.

3.3.5 Sample Size Determination

The study made use of the formulae by Cochran (1963 cited by Israel, 2013) due to its extensive use in populations of smaller frames. The formula is as follows:

$$a. \quad n = \frac{n^0}{1 + \frac{n^0 - 1}{N}} \text{ where } n = \text{the sample size and } N = \text{the population size}$$

However, $n^0 = \frac{z^2 pq}{e^2}$, where, z^2 = the abscissa of the normal curve cutting of an area at the tails (1.96), p = estimated proportion of the attribute that is present in the population (0.5), $q = 1 - p$ (1-0.5), and e = the desired precision level (± 10).

$$\text{Therefore } n^0 = \frac{1.96^2(0.5)(0.5)}{0.1^2} = \frac{3.8416(0.25)}{0.01} = 96.04.$$

Since N is 152,390, then

$$n = \frac{96.04}{1 + \frac{96.04 - 1}{152390}} = \frac{96.04}{1 + 1.000623662970011} = 95.98014 \sim 96.$$

Adding 10% for non-responsiveness: $\frac{10}{100} \times 96 = 9.6 \approx 10$

Therefore, the sample size equals $96 + 10 = 106$.

In this study, the population was made of 106 female farmers within rural areas in the Ashanti Region of Ghana. The inclusion criteria were therefore that the respondents must be:

- females who had continuously engaged in crop and/or animal farming for at least 2 years;
- residents in the selected rural areas of Ashanti Region;
- available and consent to be part of the study;
- 18 years and above.

The sample size of 106 were then distributed from population accessible within the communities based on the inclusion criteria. Although the quantitative nature of the research aided in the choice of communities and the number of respondents, there came the need to use non-probability sampling techniques (purposive sampling as only females were the target) in the selection of the female farmers in agricultural cooperatives. In households, female farmers who consented to participate in the study were included. Also convenience sampling aided in choosing respondents based on their availability (Kabir 2016). Information on the study objectives was gathered from readily available participants who met the research criteria within the communities.

3.3.6 Questionnaire Design and Administration

Questionnaires aid in acquiring information without the need to go in-depth and is used in quantitative studies. Based on the purpose of the study, and the objectives, an enumerator-administered questionnaire in a house to house visit to female farmers using the Kobocollect App containing a set of structured questions with pre-coded responses in a house to house visit. The

questionnaire ensured anonymity (names were withheld of respondents) (Kabir 2016) with relevant and easy to understand questions being asked to enhance efficient use of time during the collection of data.

The questionnaire was divided into four sections with questions set to meet the objectives of the study. The first section consisted of the socio-economic and demographic background of the female farmers (e.g. age, farm size, educational level, etc.). The second section explored the perceived benefits of agricultural cooperatives from female farmers. The third section focused on whether the respondents join agricultural cooperatives as well as the perceived constraints to joining agricultural cooperatives. The final section focused on agricultural cooperatives on women's empowerment using adapted questions in the five domains of empowerment for both members and non-cooperative members. These questions enabled respondents to submit their views on the goal for the study.

Table 3.1: Structure of Questionnaire

Questionnaire Section	Variable	Number of Questions/Statement
Background Characteristics	Age, Education, Marital Status, Household size, Religious affiliation, Individual Expenditure, Engagement in secondary occupation, Years of Farming, Farm Size, Land ownership Status	14
Benefits of Joining Agricultural Cooperatives	Access to Extension Services Input, Sell Product Output/Yield, Production cost, Savings, Income Training, Financial Assistance	16
Constraint to Joining Agricultural Cooperative	Capital, Fees, Awareness Access, Time, Trust	10
Agricultural Cooperatives and	Production	7

Women		
Empowerment		
	Resources	8
	Income	3
	Leadership	2
	Time	2

The questionnaire was then tested by randomly selecting five female farmers to ensure that the questions adequately reflect the objectives. Revisions were then done to plan for the period of collecting data and the cost per unit of questionnaire administration. An informed consent was taken from respondents (Appendix A) and relevant questions were then added up after the pilot study and this formed the final questionnaire used in the study (Appendix B). All questions were reviewed to ease its understanding while ensuring the validity and reliability of all questions.

As a purely quantitative study making use of a structured questionnaire, majority of the questions had pre-coded responses.

The first objective examined the benefits to joining cooperatives. A total of 15 statements identified in literature, and brought out during the pilot study, were presented in the final questionnaire (Appendix B). Respondents then indicated whether they agree or do not (yes/no) with the statements on benefits of cooperatives.

The second objective explored the factors that determine female farmers' decision to join agricultural cooperatives. Based on the literature reviewed, background features of the female farmers, as well as other factors tend to determine joining agricultural cooperatives. For this reason, the factors served as predictors whereas the outcome variable was whether the respondent joins an agricultural cooperative (yes/no) this to respond to the second objective.

The third objective examined the constraints to joining agricultural cooperatives. All respondents, irrespective of whether they joined or did not join cooperatives shared their views on what hinders female farmers from joining cooperatives. Based on the literature reviewed, and responses from the pilot study, 10 constraints were identified, and respondents indicated a yes or no to the listed constraints based on their respective experiences.

In the final objective, the effect of agricultural cooperatives on women's empowerment was explored. Statements adapted from the five domains of empowerment in the Women's Empowerment in Agriculture Index by Alkire et al (2013) and agreed on during the pilot study were presented. Respondents then indicated their current level of empowerment using the five domains (leadership, time, production, income, and resources) irrespective of their status on joining agricultural cooperatives. Using the WEAI, attaining 80% or more of the weighted five domains indicate as being empowered (Alkire et al. 2013; Johnson et al. 2018).

3.4 Method of Analysis

For further analysis of the data collected, all data in completed questionnaires were entered into the Statistical Package for Social Sciences (version 23) software. Questionnaires with missing values and incomplete questionnaires were checked to prevent any effect on data quality, as this may affect the analysis (Yuan et al. 2012).

On the benefits of agricultural cooperatives, descriptive statistics (frequencies and percentages) were used to present the proportions of female farmers on each of the listed benefits in a table. With the second objective, a Pearson chi-square test of association was used to explore the association between the various background characteristics on joining agricultural cooperatives.

As a test of statistical significance, it provided probability values which when less than the confidence level (which is 95% or 0.05 in this study), implied a statistically significant relationship. Thus, p-values less than 0.05 showed that indeed, the relationship between the variables being examined are affected or impacted.

The third objective explored the constraints to joining agricultural cooperatives. These were also presented with descriptive statistics, using a figure that shows the proportions identified under each constraint from female farmers.

The final objective sought to examine the effect of agricultural cooperatives on women's empowerment, and cross-tabulations were employed. Respondents who are not in cooperatives, as well as those who are in one, had their empowerment in the five domains presented. A score was then created, based on the number of 'yes' responses to the set of questions and women with scores of less than 80% were deemed as disempowered, whereas their counterparts with scores of 80% and higher were categorised as empowered (Alkire et al. 2013). Afterwards, a Pearson chi-square test of association was used to determine the association between joining an agricultural cooperative and overall women's empowerment.

3.5 Ethical Consideration

The study protects the identity and anonymity of the respondents, and as such consent was taken before the responses were taken. The female farmers were also informed that the study was to be used purely for academic purposes, and that their anonymity was to be ensured in the subsequent stages of the study (Appendix A).

4 Results

4.1 Introduction

This section focuses on the findings from the data collected from female farmers in the Ashanti Region of Ghana. Using a quantitative methodology, a total of 106 questionnaires were administered within 7 rural districts in the Ashanti Region. Statistical analyses were then done using SPSS (Version 25), with findings presented using descriptive analysis (graphical presentations and frequency distributions where needed), as well as inferential analysis (Chi-Square Tests of Association). Table 4.1 shows the background characteristics of the female farmers (N=106).

Table 4.1 Characteristics of the female farmers (N=106)

Indicator	Frequency	Percentage
Age		
18 – 64 years	82	77.4
65 years and above	24	22.6
Household Size		
1 – 3 members	27	22.5
4 – 6 members	36	34.0
7 and above members	43	40.6
Highest Level of Formal Education Attended		
No formal education	40	37.7
Primary School	24	22.6
JSS/JHS	14	13.2
Middle School	28	26.4
Marital Status		
Single	10	9.4
Married	52	49.1
Separated/Divorced	22	20.8
Widowed	22	20.8
Religion		
No Religious Affiliation	4	3.8
Christianity	88	83.0

Islam	14	13.2
Secondary Occupation		
No	63	59.4
Yes	43	40.6
Estimated Monthly Expenditure		
Below International Poverty Line (IPL)	69	65.1
At and Above IPL	37	34.9
Farm Size		
1 – 3 acres	48	45.3
4 – 6 acres	19	17.9
7 and above acres	39	36.8
Farming Type		
Subsistence	51	48.1
Commercial	39	36.8
Plantation	2	1.9
Mixed farming	14	13.2
Land Tenure Arrangements		
Inherited Land	70	66.0
Purchased Land	6	5.7
Share Cropped Land	16	15.1
Rented for Cash or in Kind	3	2.8
Distributed by family/Village	11	10.4

Source: Field Survey 2022 (Author's Construct)

The following sub-sections are presented based on the findings attained on the objectives of the study.

4.2 Benefits to Joining Agricultural Cooperatives

The first objective of the study sought to find out the benefits associated with joining agricultural cooperatives. Considering that such cooperatives are widespread within farming communities in the rural areas, all female farmers were asked about their general knowledge on the benefits to

joining cooperatives. Based on the responses of farmers, 15 statements were presented, findings are presented in Table 4.2.

As indicated in Table 4.2 majority (79.2%) of the female farmers believed that agricultural cooperatives were beneficial in one way or the other. Among the benefits identified, the leading proportion of female farmers noted that agricultural cooperatives allowed members to obtain agricultural inputs, such as fertilizers, seeds (Grain, Cocoa, vegetables etc), chemical products, etc. for their farms.

About 39 % of the respondents also reported that agricultural cooperatives were beneficial in that it provides access to capacity training, whereas 27% mentioned that indeed, agricultural cooperatives could allow one to gain access to extension services, and also acquire modern systems of food storage and preservation. Only 6 % however reported that agricultural cooperatives provide access to credit and financial assistance for farmers.

Given that 79% of the respondents saw some benefits to joining agricultural cooperatives, a score was created from the concurred-on benefits of agricultural cooperatives. Out of the 15 statements, the scores ranged from 0 to 6 indicating relatively low levels of benefits associated with agricultural cooperatives among selected female farmers in Ashanti Region. The mean score was 2.0 (± 1.55) of the 15 identified benefits confirming the low benefits associated among the farmers. This is presented in Table 4.2 below.

Table 4.2: Female Farmers' Perception on Benefits of Agricultural Cooperatives (N=106)

Benefit	Frequency*	Percentage*
Allows one to obtain agricultural inputs for members	57	53.8
Provides access to capacity training	41	38.7
Enables one to acquire modern system of food storage and preservation	29	27.4
Allows one to gain access to extension services	29	27.4
Enables one to acquire professional and social skills	24	22.6
Has no benefits	22	20.8
Reduces production costs	19	17.9
Makes it easy to sell products of members	13	12.3
Improves production output/yield	12	11.3
Increases income	9	8.5
Provides credit services/financial assistance	6	5.7
Improves savings	3	2.8
Creates employment	2	1.9
Improves bargaining power of products	1	0.9
Enhances participation in other rural projects	1	0.9

*More than one statement per respondent was possible

Source: Field Survey (2022)

4.3 Motivations to Joining Agricultural Cooperatives

One of the key objectives of the study was to identify the factors that motivate female farmers to join agricultural cooperatives in rural Ashanti Region. To achieve this, socio-demographic, economic, farm characteristics, and perceived benefits/constraints were tested. The Chi-square tests of association were conducted among the variables to find out whether they have a significant relationship/association with whether female farmers joined agricultural cooperatives or not.

In all, 71% of the respondents joined agricultural cooperatives, and the inferential statistics (Table 4.3) brought out some variations between the women in terms of most of the variables examined. The two groups (cooperative members and non-members) showed differences to some extent in terms of age, household size, religion, formal education, engagement in a secondary occupation, estimated monthly expenditure, size of farm, land ownership arrangement, and then perceived constraints and benefits. These variables are examined in the ensuing sections.

Findings among the female farmers in Ashanti Region revealed that the mean age of the female farmers was 54.6 years, with ages ranging from 31 to 84 years old. Among the ages, it was found that 82% of female farmers within the working age group of Ghana (15 to 64 years) were part of agricultural cooperatives. Alternatively, 67% of elderly female farmers (aged 65 and above) were not part of agricultural cooperatives indicating a less likelihood to join agricultural cooperatives as an elderly female farmer as compared to being a young, working aged female farmer. Based on this finding, the study accepts the hypothesis that age has a significant effect on joining an agricultural cooperative.

The household size of female farmers also showed a statistically significant association with joining agricultural cooperatives. The average household size recorded was 5.6 members with households ranging from 1 to 15 persons per household. In categorising the household sizes, it was found that over 74% of female farmers in households of 7 and above members, and 81% of those in 4 to 6 member households joined agricultural cooperatives. As such, female farmers in households higher than 3 members were more likely to join agricultural cooperatives when compared to those in 3 or less member households.

In the social variables explored, both were statistically significant with joining agricultural cooperatives. In terms of religion, female farmers of the Islamic faith were less likely to join

agricultural cooperatives as 64% were not in an agricultural cooperative. Christians and persons without any religious affiliation, conversely, were more likely to join an agricultural cooperative as indicated by the 76% and 75% respectively. In terms of formal education, about 93% of the female farmers with middle school level of education joined agricultural cooperatives as compared to 79% of those in Junior Secondary School (JSS)/ Junior High School (JHS) levels of education. In similar vein, these proportions were lower for female farmers with primary school education (62.5%) and no formal education (57.5%).

Economic variables examined included engagement in secondary occupation, which is any off-farm occupation engaged in and the estimated monthly expenditure of the female farmers. About 41% of the female farmers engaged in other occupations such as trading, selling of food, waitressing, and engaging in handicrafts. The study found that majority (81.4%) of female farmers with secondary occupations joined agricultural cooperatives. As farmers, income from farming may either be non-existent or seasonal. This means that, at the end of a farming season, a farmer has little or no bargaining power with buyers resulting in an unstable income. As such, the monthly expenditure of the female farmers and its association to joining agricultural cooperatives were explored. Majority of the female farmers spent less than 414.9 Ghana Cedi (GHC) each month. Findings of the study also showed that a slightly higher proportion of female farmers living below the International Poverty Line (IPL) with 414.9 Ghana Cedi (GHC) each month (converting the rate of \$1.90 a day to Ghanaian rates at the time of data collection) did not join agricultural cooperatives. Conversely, 84% of female farmers at and above the IPL joined agricultural cooperatives.

Farm characteristics such as the size of farm and land ownership showed a statistically significant association and are thus explored. The average farm size recorded was 7.14 acres with farms

ranging of 0.3 acres to 49 acres. Findings from the study show that female farmers in cooperatives increased in each higher category of farm size. As such, 60% of female farmers with 3 or less acres of farm size were in cooperatives, whereas 68% of those in 4 to 6 acre farms were in cooperatives. The highest proportion recorded was that of 7 and above acres, where 85% of female farmers showed higher tendencies to join agricultural cooperatives. It was also found that 76% of those who owned land joined agricultural cooperatives, as compared to 43% of those who do not own land and are not in agricultural cooperatives.

Lastly, perceived benefits and constraints to joining agricultural cooperatives, and its effect on joining such cooperatives were explored. Although constraints are explored in detail in the next objective, the categorisation of its score indicates that female farmers who perceive 2 or more constraints to joining showed lesser tendency to join. As such, 80% of those who perceived less than 2 constraints joined cooperatives, whereas 61% of those with more than 2 perceived constraints joined agricultural cooperatives. In terms of perceived benefits, the categorisation of scores indicated that 82% of those who found no benefits to joining agricultural cooperatives did not join. However, over 84% of those who found some benefits with the cooperatives were part of such cooperatives. The findings also indicate a higher proportion joining such cooperatives with increasing number of benefits identified.

Table 4.3 Factors that Affect Joining of Agricultural Cooperatives (N =106)

Variable	non-members (%)	members (%)	Total	P-value
Age Group				<0.001***
Working Age Group (18-64 years)	18.3	81.7	82	
Elderly	66.7	33.3	24	
Household Size				0.037*

1 to 3 members	48.1	51.9	27	
4 to 6 members	19.4	80.6	36	
7 and above members	25.6	74.4	43	
Marital Status				0.086
Single	20.0	80.0	10	
Married	36.5	63.5	52	
Separated/Divorced	9.1	90.9	22	
Widowed	36.4	63.4	22	
Religion				0.008**
No Religious Affiliation	25.0	75.0	4	
Christianity	23.9	76.1	88	
Islam	64.3	35.7	14	
Formal Educational Level				0.011*
None	42.5	57.5	40	
Primary School	37.5	62.5	24	
JSS/JHS	21.4	78.6	14	
Middle School	7.1	92.9	28	
Secondary Occupation				0.047*
No	36.5	63.5	63	
Yes	18.6	81.4	43	
Estimated Monthly Expenditure				0.031*
Below International Poverty Line(IPL)	36.2	63.8	69	
At and Above IPL	16.2	83.8	37	
Farm Size				0.046*
1 to 3 acres	39.6	60.4	48	
4 to 6 acres	31.6	68.4	19	
7 and above acres	15.4	84.6	39	
Farming Type				0.121
Subsistence	39.2	60.8	51	
Commercial	20.5	79.5	39	
Plantation	50.0	50.0	2	
Mixed Farming	14.3	85.7	14	
Land Ownership				0.045*
Do not own land	43.3	56.7	30	
Owns land	23.7	76.3	76	
Perceived Benefits				<0.001***
No benefits	81.8	18.2	22	
1 to 2 benefits	15.6	84.4	32	
2 to 6 benefits	15.4	84.6	52	

Perceived Constraints				0.030*
1 constraint	20.0	80.0	55	
2 or more constraints	39.2	60.8	51	

Source: Field Survey (2022)

4.4 Constraints to Joining Agricultural Cooperatives

Another key objective of this study was to examine the constraints to joining agricultural cooperatives. To achieve this, 10 constraints were generated from the responses of the female farmers in Ashanti Region. A score was then created from the responses, and this ranged from 1 to 5 of the 10 constraints with a mean of 1.8. Figure 4.1 shows the list of constraints identified by the female farmers.

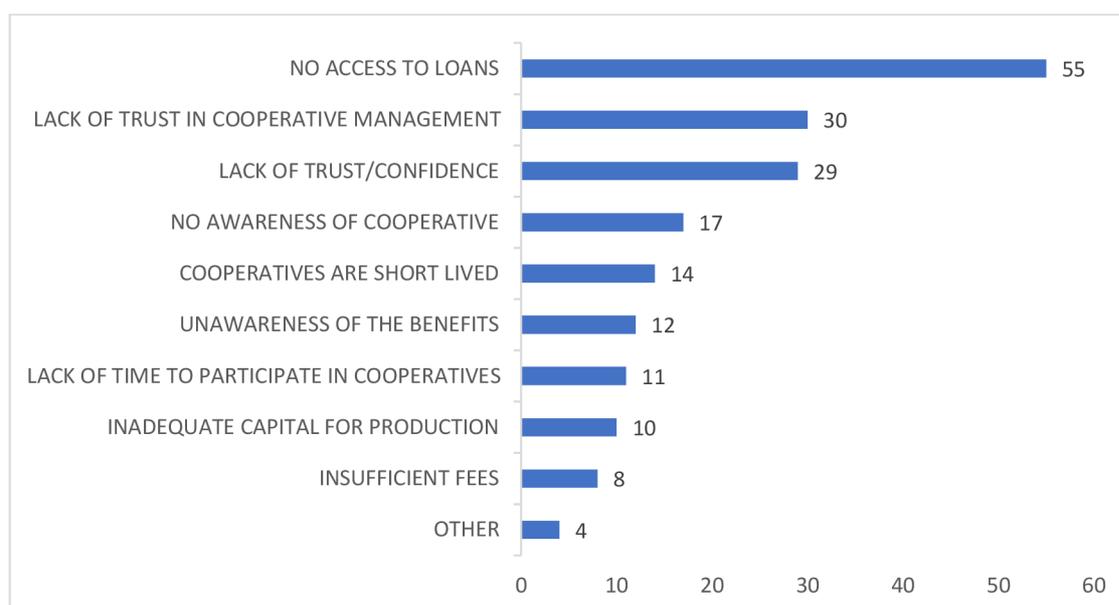


Figure 4.1: Hindrances to Joining Cooperatives perceived by female farmers (N=106) (more statements per respondents were possible)

Source: Field Survey (2022)

As indicated in Figure 4.1 all the female farmers noted that there were constraints to joining agricultural cooperatives. Among the list, majority (51.9%) of the female farmers reported that one of the major constraints to joining cooperatives was the lack of access to loans. Without such loans, farmers may not be interested in joining the cooperatives, and those who join may not find the cooperatives beneficial without the needed financial assistance. Following this, lack of trust in the cooperative management was another reported constraint. With this, the female farmers noted that leaders of cooperatives within their various communities did not fairly distribute products such as agrochemicals and agricultural inputs to farmers provided to them by the government. Some reported that the leaders played 'favouritism' and gave away inputs based on their relationship to members of the cooperative. Such lack of trust deterred and hindered persons from enjoying the full benefits of cooperatives, and even stopped others from joining. Closely linked to the lack of trust in the leadership is the lack of trust in the cooperatives themselves. About 27% reported that cooperatives are set up in the communities, but they do not benefit the farmers. They benefit only a few persons, and this deters other farmers from joining. They further stated that, the leaders deal directly with government agencies and ministries, and they decide what to give to members.

Other constraints identified include the lack of cooperatives in some areas. The female farmers reported that not all communities have cooperatives and in some cases, some had been set up and abandoned because of poor leadership and mismanagement. Others also reported that closely linked is the authenticity of cooperatives. In fact, one of the respondents mentioned that over the past decade, there had been attempts to set up cooperatives. But after registering and paying their dues, the leaders of the cooperative leave with their monies and thus it has become difficult to join any new cooperative. Also, there may be lack of time to join cooperatives as the meeting days and

times may not be favourable to some farmers due to responsibilities of women in the household including cooking and taking care of the home. Insufficient funds of some farmers were also noted to be a constraint in joining a cooperative as some farmers are financially disadvantaged in meeting the financial conditions of the cooperatives such as entry fees and payment of dues.

4.5 Agricultural Cooperatives and Women's Empowerment

The final objective of the study sought to explore the effect of agricultural cooperatives on women's empowerment, adapting statements from the five empowerment domains (leadership, time, production, income, and resources) of the Women's Empowerment in Agriculture Index. To achieve this, 21 statements were made, of which the female farmers indicated their agreement to the statements. Table 4.4 shows the responses of the female farmers in Ashanti Region.

From the data, a majority of the sample had high empowerment levels (percentages of 80 and higher) in 18 of the 21 statements. The highest recorded indicator within a domain was found in the income domain where 93% of the female farmers agreed to having control over how their incomes were used. With this, they decide what they use their incomes for without any interference as it is their monies. The least recorded proportions however were in the resources domain. In this, only 7% of the female farmers reported having access to agricultural technologies, 17% had access to credit and how to use such credit, and then 26% reported having access to extension services, and these three are much needed to empower female farmers.

Table 4.4: Women's Empowerment perceived by female farmers

Empowerment Domain	Per cent %
Production	
I have sole input into making decisions about food crop farming in my field.	82.1
I can make personal decisions about agricultural production in my field.	80.2
I can make personal decisions about which inputs to buy for my farm from my money.	71.7
I can make personal decisions about which types of crops to grow for agricultural production in my field.	81.1
I can make personal decisions about when to take or who would take the crops(harvested) to the market in my field.	81.1
I can make personal decisions about livestock raising in my field.	73.6
Resources	
I have sole ownership (customary recognized, leased or purchased) of agricultural land.	57.5
I have sole ownership of assets (including farm equipment, house, household durables, cell phone, non-agricultural land, and means of transportation).	66.0
I make decisions regarding the purchase, sale, or transfer of land and assets	79.2
I have access to credit and how to use credit from various sources (non-governmental organizations, formal and informal lenders, friends or relatives, rotating savings, and credit associations).	17.0
I have access to extension services.	25.5
I have access to training (farmer business training on good agricultural practices, farm records keeping etc.)	50.9
I have access to agricultural information on Good agricultural practices and climate smart farming tips.	52.8
I have access to agricultural technologies (smart phones, irrigation systems etc.).	6.6
Income	
I have input into decisions about income generated/income generating activities	70.8
I have control over the use of my income	92.5
I am in charge of managing the household budget	77.4
Leadership	
I am a member of at least one social or economic group, including Agriculture producers' or marketing groups, Mutual help group (sharing of ideas and experiences to improve farm production)	79.2
Trade and business associations, Local government groups, Religious groups, Credit or microfinance groups, or other women's groups	

I feel and am comfortable when speaking in public 72.6

Leadership

I am satisfied with the time I have allocated to productive and domestic tasks 81.1

I am subjectively satisfied with my available time for leisure activities such as visiting neighbours, watching TV, listening to the radio, seeing movies, or doing sports. 79.2

Source: Field Survey (2022)

Due to the objective seeking to examine how agricultural cooperatives empower women within the various domains, a Chi-square test of association was done to find out how joining agricultural cooperatives can empower women using the five domains. This is shown in Table 4.5. Using the 80% cut off point to determine empowerment levels, it was found that 29% of the female farmers in the rural areas were disempowered whereas the remaining were empowered.

In terms of production, it was found that 42% of female farmers who reported having joined an agricultural cooperative were disempowered. However, only 9% of those who had not joined a cooperative were empowered. This indicates a statistically significant positive relationship between joining an agricultural cooperative and having higher control of agricultural production decisions. Within the next domain (resources), a statistically significant association at p-value of less than 5% indicated strong evidence that female farmers who did not join cooperatives were more likely to be disempowered. Such women lacked access to assets, extension services, training, information, and technologies needed to boost their production and empower them. In fact, all female farmers who did not join cooperatives were disempowered in terms of their access to resources, and less than 9% of those who did not join were empowered.

Within the time domain, there was no strong evidence to suggest differences in the empowerment levels among the female farmers who joined or did not join agricultural cooperatives. However, evidence within the income and leadership domains showed statistical significance. With income,

77% of female farmers not in agricultural cooperatives were disempowered, whereas 64% of those who joined were empowered. A similar line of evidence was found among female farmers in assessing the leadership domain. Within that, 80% of those who joined agricultural cooperatives were empowered, whereas 77% of those who did not join were disempowered.

Table 4.5 The Association Between Membership in an Agricultural Cooperative and the Domains of Women's Empowerment

Domain	Non-Members (%)	Members (%)	Total	P-value
Production Domain				<0.001***
Disempowered	58.1	41.9	31	
Empowered	9.3	90.7	75	
Resources Domain				0.033*
Disempowered	100.0	0.0	31	
Empowered	86.7	13.3	75	
Income Domain				<0.001***
Disempowered	77.4	22.6	31	
Empowered	36.0	64.0	75	
Leadership Domain				<0.001***
Disempowered	77.4	22.6	31	
Empowered	20.0	80.0	75	
Time Domain				0.603
Disempowered	19.4	80.6	31	
Empowered	24.0	76.0	75	
Empowerment of Female Farmers (Total)				<0.001***
Disempowered	96.8	3.2	31	
Empowered	32.0	68.0	75	

Putting together the domains, the influence of agricultural cooperatives on overall women's empowerment was tested. Findings from the study showed strong evidence of female farmers who did not join cooperatives being disempowered. Almost 97% of female farmers who are not in

cooperatives were disempowered. On the other hand, 68% of those in cooperatives were empowered. The study therefore accepts the hypothesis that joining an agricultural cooperative has a significant effect on women's empowerment.

5 DISCUSSIONS

5.1 The Benefits to Joining Agricultural Cooperatives

Agricultural cooperatives have and will always play a crucial role to the lives of farmers, and more so for smallholder farmers in Ghana (Ghebremichael 2013). The study confirmed this and showed that majority of the female farmers had some knowledge about the benefits associated with agricultural cooperatives.

Among the outlined benefits of agricultural cooperatives among the female farmers in Ashanti Region of Ghana, obtaining agricultural inputs for members was the leading benefit identified by the female farmers. It is important for farmers to gain access to agricultural inputs such as fertilizers, seeds and chemicals needed to boost productivity (Olagunju et al. 2021). In fact, recent reports by the Food and Agriculture Organisation (FAO) consider this benefit as one of the leading reasons for which farmers would join agricultural cooperatives (FAO 2018, 2021). Leadership of agricultural cooperatives are better able to pool the resources needed to purchase inputs for their members as has also been found in the case of Zambia (Blekking et al. 2021) and Nigeria (Ibitoye 2012). In the study, some of the farmers also reported having been informed to join agricultural cooperatives by community leaders so as to gain access to agricultural inputs. Farmers had therefore been given the opportunity to join either women's groups, men's groups, or groups of both sexes to get access to such inputs. This makes access to such inputs a key benefit for the female farmers in rural Ashanti Region.

The next leading benefit identified by a high proportion of the female farmers, included provision of access to capacity training. Agricultural cooperatives have been known to train and share farming knowledge among members (The World Bank 2012). Such capacity training could aid

members to acquire better knowledge on the use of insecticides and mechanised equipment and modern farming techniques (Okonkwo et al. 2019). These in turn boosts productivity for farmers in rural areas. In addition, cooperatives enable members to gain access to modern systems of food storage and preservation as has also been found in Northern China (Zheng et al. 2012) and South Africa (Msimango & Oladele 2013). Such knowledge and access do not only aid female farmers professionally, but they are also able to acquire social skills from their interactions with other members and leaders of their respective cooperatives (Esayas & Gecho 2017; Nedanov & Zutinic 2018). For this reason, the female farmers also noted that another benefit includes enabling members to acquire social and professional skills.

Less than a fifth of the female farmers also reported that agricultural cooperatives reduced production costs, makes it easy to sell produce, and improves yield of members. One of the key aspects of cooperatives for farmers has been its ability to reduce the cost of production for members (Nedanov & Zutinic 2018; Blekking et al. 2021). This is often achieved through introduction to and use of modern farming techniques by members, engagement in diversified agriculture, and better exposure to markets (Nedanov & Zutinic 2018). In addition, cooperatives are better able to aid members in selling their produce as cooperatives act as middlemen and mouthpiece for members. In China, it was found that cooperatives enable members to sell a higher proportion of their produce due to ease of access to transportation and information (Zheng et al. 2012). Such cooperatives are also able to eliminate middlemen who decrease the profit margins of sellers (Majee & Hoyt 2011). Farmers may thus become dependent of agricultural cooperatives when it assists them in selling their produce (Zheng et al. 2012).

Also the ability to obtain agricultural inputs enables farmers to improve their output/yield (FAO 2018, 2021; Theeuwens et al. 2021), and sell to increase their income and improve their savings

(Ghebremichael 2013). Although a popular benefit to joining cooperatives, influence on credit and savings was listed by less than a tenth of the female farmers in Ashanti Region. They reported that although they are in need of financial assistance, the cooperatives within their communities did not offer loans to members as has been the case in Uganda due to collateral requirement which cooperatives members are unable to provide (The World Bank 2012; ACET 2017). Members could therefore not obtain financial assistance when needed.

Given that the outlined benefits were few (less than 6 of the 15 benefits), this indicated relatively low levels of benefits associated with agricultural cooperatives among selected female farmers in Ashanti Region. It is however important to have a higher perception of benefits as this could influence one's decision to join agricultural cooperatives and thus reap the benefits to joining such cooperatives (Abate 2018; Olagunju et al. 2021). It is important to point out that some of the benefits although reported by few respondents is considered important benefits realised in joining agricultural cooperatives as other studies have shown. For instance, although less than 10% indicate increase in income as benefits, a study in Ghana by Owusu (2021) found out that agricultural cooperatives significantly increase members' household welfare in monetary terms of from GHC265.64 (\$24.60) and GHC534.05 (\$49.45). This indicates diversity in the views of different cooperative members in Ghana regarding the benefits.

5.2 Factors that Motivate Female Farmers to Join Agricultural Cooperatives

Agricultural cooperatives are important to sustaining the livelihoods of smallholder farmers. The study therefore examined the motivating factors that determined joining of an agricultural cooperative. Such decisions to participate are often based on the perceived benefits, hindrances,

and even the socio-demographic and economic background of the individual (Awotide et al. 2015; Omotesho et al. 2016; Theeuwien et al. 2021), and as such were explored in the study. The factors that were found to be key determinants to joining agricultural cooperatives included age, household size, religion, formal education, engagement in secondary occupation, estimated monthly expenditure, size and ownership status of farm, the perceived benefits, and the perceived constraints.

The age of the female farmer was significantly associated with joining an agricultural cooperative. Over a fourth of female farmers whose ages were within the working age group (15 to 64) of Ghana joined agricultural cooperatives whereas two-thirds of elderly female farmers (65 and above) did not join cooperatives. It can be inferred from this result that younger (working aged) female farmers have a higher willingness to join agricultural cooperatives than older female farmers in the Ashanti Region of Ghana. This result is consistent with that of Nigeria (Awotide et al. 2015), as well as that on farmer based organisations in Ghana (Asante et al. 2011). The reason for such findings are attributed to older farmers being more experienced in farming and thus developing the needed social networks which enhance their farming (Martey et al. 2014). With such experience, and coupled with the unwillingness to adopt innovation, elderly farmers tend to be more reluctant when joining a cooperative (Martey et al. 2014). Added to this, elderly farmers tend to be less considered when they are in need of financial assistance and credit and this discourages them from joining agricultural cooperatives (Asante et al. 2011). When elderly farmers have past experiences that are negative with such cooperatives, they may be complacent and would believe that the cooperatives do not have anything to offer them (Asante et al. 2011). In Nigeria, however, younger farmers joining agricultural cooperatives have been attributed to their risk-neutral nature and their readiness to embrace change as compared to older farmers (Awotide et al. 2015).

A statistically negative association was also found between household size and joining an agricultural cooperative among the female farmers. In the study, farmers who were part of agricultural cooperatives had increasingly higher household sizes. The size of one's household usually represents the labour available for farming activities (Awotide et al. 2015). Given that farming within the Ghanaian context is usually labour-intensive and rain-fed, persons in larger households may be more willing to join cooperatives as they would have excess labour to work on their farms when they are absent (Martey et al. 2014). Female farmers in the study area also noted that in larger households, they may also be motivated since they have economically inactive members to cater for in their households, and since joining agricultural cooperatives can get them the resources to boost productivity, they believed that joining the cooperatives would improve their farming and thus they would be able to take care of their households. This notion is corroborated in Northern Ghana, where higher demand of unemployed and economically inactive members, serves as a coercion to join such platforms to improve farming (Martey et al. 2014).

Besides the demographic factors, significant social factors such as religion and formal education were also found. Religion may be a key aspect when examining women's empowerment (Laszlo et al. 2020), yet knowledge on its influence on participation in cooperatives is low. The study however found that female farmers of the Islamic faith, in comparison with Christians and those without any religious affiliation were less likely to join agricultural cooperatives. Although more than two-thirds of Christians and persons with no religious affiliation joined cooperatives, almost two-thirds of female farmers of the Islamic faith did not join agricultural cooperatives. This finding, however, could be attributed to some factors. In the Ghanaian context, Muslim women have the religious obligation to avoid contact with certain persons including males (Ganle 2015). Although female farmers are encouraged to form women only groups, findings from the study

showed that less than a tenth of those in agricultural cooperatives belonged to women-only cooperatives. As such, Muslim women due to their religious specificities may not be able to join agricultural cooperatives.

The level of formal education of female farmers were also explored. Although the female farmers had limited levels of education, the study found that increasing levels of education corresponded to increasing participation in agricultural cooperatives. Education is usually expected to have such positive effects or associations with participation in such groups as increasing formal education can give farmers adequate knowledge on how important it is to belong to such an association (Asante et al. 2011; Kimutai & Chepchumba 2016). In addition, being formally educated enables one to choose independently, act on their decisions and can also increase one's tendency to cooperate with other persons and engage in group activities (Martey et al. 2014).

Economic characteristics also influenced or motivated female farmers to join agricultural cooperatives. Findings from the study showed a statistically significant association between engaging in a secondary occupation and joining an agricultural cooperative. Over four-fifths of the female farmers who were in agricultural cooperatives had secondary occupations whereas a little less than two-thirds of those engaged in farming only joined agricultural cooperatives. Engaging in multiple occupations could increase one's income and in having a higher income, farmers may want to broaden their social networks to sustain their income, and as such would be willing to participate in agricultural cooperatives (Martey et al. 2014). This is closely linked to the income and expenditure of farmers. In the study, female farmers living at and above the international poverty line showed higher tendency to join agricultural cooperatives than those living below the poverty line. As those living above tend to have more money to spend, they can make financial commitments to agricultural cooperatives by paying dues and making contributions (Asante et al.

2011). Such spending may be difficult for farmers without the money to spend (Martey et al. 2014; Kimutai & Chepchumba 2016) and this could explain the tendency of those with more to spend joining agricultural cooperatives in the Ashanti Region of Ghana.

Besides socio-economic and demographic factors, farm characteristics were also explored. Among the characteristics, farm size and land ownership status showed an association with joining an agricultural cooperative. Findings showed that as farm sizes increased, members in agricultural cooperatives also increased. With more land available to produce more and earn higher income, persons with larger land sizes may want to engage in agricultural cooperatives to boost their productivity and earn more (Martey et al. 2014). In addition, farmers who have larger farm sizes may want to engage in commercial farming and thus would be interested in ways to increase yield, improve their capacity through training, and receive support through access to extensions services and credit (Asante et al. 2011). This could explain the reason for which majority of female farmers with larger farm sizes joined agricultural cooperatives. Also, female farmers who owned land (whether bought or inherited) joined agricultural cooperatives. When land is owned, farmers may want to increase yields and income, and may thus join agricultural cooperatives to gain access to the resources needed to do so.

Female farmers (members) with higher perceived benefits were more likely to join agricultural cooperatives, whereas those (non-members) with higher perceived constraints were less likely to join agricultural cooperatives in Ashanti Region. Perceived benefits, constraints, as well as sense of community have also been associated with higher participation in agricultural cooperatives (Donkor & Hejkrlik 2021). The willingness to join also stems from the perceptions about the knowledge gained, and witnessing improved technology from members (Ibitoye 2012; Gyau et al. 2016). The decision to join therefore comes with the perceived production and marketing risks,

and as such persons who perceive higher risks to joining would be constrained (Zheng et al. 2012; Alho 2015; Abate 2018; Zhang et al. 2019).

5.3 Constraints to Joining Agricultural Cooperatives

The factors that hindered participation in agricultural cooperatives among female farmers in Ashanti Region stemmed from personal constraints, lack of benefits, and problems related to the cooperatives. The leading problem identified was the lack of access to loans. One of the most popular benefits to joining agricultural cooperatives has been its influence on credits (Ibitoye 2012; The World Bank 2012). Cooperatives offer loans to members, with an advantage of not requiring collateral. Members can therefore obtain financial assistance when needed (Ghebremichael 2013). Cooperatives may also find it easier to acquire loans and this serves as an incentive to join them. However, without this incentive, persons are deterred from joining cooperatives.

Personal constraints formed the bulk of listed hindrances to participation among female farmers. Some of the non-members reported being unaware of cooperatives within their communities, whereas others noted that they are not aware of benefits of cooperatives within their area of residence. They further explained that they have not seen anything beneficial about being a part of cooperative hence their decision of not joining a cooperative. Others noted a lack of time especially when meeting days and times for the cooperatives conflict with their activities, and even laziness of some farmers to join the cooperatives due to personal reasons and priorities of what to use their time on. Fewer respondents also reported that they did not have the required fees to join, or the capital required by the cooperatives to assist in production. Although fees are not high, cooperatives require payment of membership fees and this deters participation(willingness to

participate in meetings, share ideas and adoption of new agricultural technologies and usage) when farmers do not have the fees (Martey et al. 2014).

Some female farmers reported that they are short-lived. Cooperatives are easy to create in rural areas. However, they are often abandoned after a short while. Farmers who experience this often therefore do not feel the need to join, pay their fees and then be informed later that the cooperative has collapsed. Such past experiences lead to farmers not joining the cooperatives (Fischer & Qaim 2013), as they had lost trust in the cooperatives. There may also be a lack of trust in the leadership or management of cooperatives. Some farmers reported that agricultural inputs were often shared among the persons closer to the leaders and this deterred them from joining. Leaders often played favouritism and members without ‘connections’ to the management did not get agricultural inputs. One of the female farmers also reported that sometimes, the leaders would inform them that the training is for ‘men only’. In the past six months, a training session had been held on cocoa spraying and female cocoa farmers in the community had been excluded as the male leaders said that women cannot engage in cocoa spraying. This deterred a lot of women and forced them to leave the cooperatives as they were not included in some of the activities. This affirms that trust between management and members is important and could constrain participation in cooperatives (Msimango & Oladele 2013; Zhang et al. 2019; Donkor & Hejkrlik 2021).

5.4 Agricultural Cooperatives and Women’s Empowerment

Evidence within sub-Saharan Africa suggest the need to establish agricultural cooperatives for the purpose of empowering women (Tesfay & Tadele 2013; Gebremichael 2014; Kumar et al. 2015).

First of all, the levels of empowerment within the five domains of empowerment (Alkire et al. 2013) were explored. Out of the six statements under the production domain, majority of the female farmers responded in the affirmative indicating that they had sole input and made personal decisions about their food crop farming, inputs to buy, types of crops to grow, engaging in livestock raising, and taking the crops to the market. Similar trends were found under the leadership, time, and income domains. In the resources domain however, several lower scores were reported. Less than a third of the female farmers reported having access to credit and how to use credit, access to extension services, and access to agricultural technologies. It is however important to ensure access to such services and technologies as female farmers may need such resources to boost their economic and personal empowerment (Gebremichael 2014).

Following the aforementioned levels of empowerment, the study sought to examine how agricultural cooperatives can empower the female farmers. Among the five domains explored, statistically significant associations (p-value of <0.05) were found in all but the time domain. In terms of production, about 9 out of 10 female farmers who joined an agricultural cooperative were empowered in their agricultural production. Such women thus had sole input into decisions or made personal decisions related to their farming activities. Agricultural cooperatives tend to provide training and life skills needed to boost the production domain of women's empowerment (Tesfay & Tadele 2013). This is usually done by giving women agricultural inputs and improving their capacity through training so that they can make better autonomous decisions related to agricultural production to boost productivity and further economic empowerment (Gebremichael 2014; Dutt 2017).

The income domain also showed significantly positive associations between joining agricultural cooperatives and being empowered. Findings showed that over two-thirds of female farmers who

had joined agricultural cooperatives were empowered, whereas almost 8 out of 10 female farmers who are not in cooperatives were disempowered within the domain. Cooperatives have been known to offer financial assistance and products to female farmers, while giving them entrepreneurship training and financial literacy (Johnson et al. 2018). Such literacy improves how income is generated for the female farmers, how they use their income and how their household budgets are managed. This has been justified within countries like Bangladesh where agricultural cooperatives generate social capital and assist women to have control over their earned income (FAO 2011). Such cooperatives also increase the profits of women by linking them to markets (Hennink et al. 2012), and in so doing, increase women's incomes and positions in their households and communities to make major decisions in their households and own productive assets (Alemu et al. 2018).

Within the leadership domain, the female farmers showed significant differences in that, in terms of empowerment, a fifth of those who did not join cooperatives were empowered whereas almost four-fifths of them were not empowered. This has also been proven in other contexts, and has been attributed to agricultural cooperatives giving women the avenue to make decisions and bring out leadership qualities (De Smet & Boroş 2021). When women are able to join such groups, be it agricultural cooperatives, religious groups, mutual help groups, trade and business associations, local government groups, credit or microfinance groups, or other women's groups, it empowers them and equips them with leadership qualities. For instance, in Uganda, agricultural cooperatives have been linked to women's confidence in public speaking (Ferguson & Kepe 2011). In Cameroon, strides are made to include women in extensions services and technology, leading to 67% participation of women and 60% of women in leadership positions within cooperatives (FAO & AUC 2020). Cooperatives thus increase self-confidence for women, improve their ability to

speak publicly, and their ability to assume leadership roles, and increases decision-making through training and capacity-building programmes (Othman et al. 2021).

Although the resources domain had some lower scores among the female farmers, significant differences were found between those who joined and those who did not join agricultural cooperatives. In fact, all disempowered female farmers within the domain did not join agricultural cooperatives whereas a little over a tenth of those who joined were empowered. Women can develop inter-organisation relationships with other women and men to gain an easier access to financial resources, equipment, and other productive resources (Theeuwien et al. 2021). In fact, in cooperatives dominated by women, they can access resources easily, and become more empowered for sustainable wellbeing (Theeuwien et al. 2021). Such resources could include ownership of agricultural and non-agricultural assets, as well as access to training, extension services, and agricultural information. In the study area however, findings from the female farmers indicated that there were few women-based cooperatives (Asante et al. 2011). Given that such cooperatives have a higher probability of empowering women to gain access to more resources, it could explain the limited levels of empowerment within the domain for those who joined and those who did not join (Asante et al. 2011; Anderson et al. 2021). Notwithstanding, female farmers who join agricultural cooperatives have a better likelihood of being empowered in their resources.

Overall, the findings on empowerment indicated a statistically significant relationship between agricultural cooperatives (membership in agricultural cooperatives) and women's empowerment.

The study found that about 97% of disempowered women were non-members of agricultural cooperatives, whereas over two-thirds of the empowered belonged to an agricultural cooperative

The principles of cooperatives can therefore be said to permeate social life and improve equality, harmony, shared values and goals for women (ICA 2015). When female farmers are able to join

agricultural cooperatives, they are better able to acquire resources, gain confidence and leadership qualities, improve production, and increase their income. This in turn makes them promoters of socio-economic transformation in their communities (Akire et al. 2013; International Year of Cooperatives 2012; Tesfay & Tadele 2013).

6 CONCLUSIONS

The purpose of the study was to examine the effect of joining agricultural cooperatives on women's empowerment, with 106 female farmers in the rural part of Ashanti Region as the unit of analysis. Several conclusions can be drawn from the study based on the objectives of the study.

First of all, findings showed that the majority of female farmers, whether they did or did not belong to agricultural cooperatives acknowledge that there are benefits when farmers become members of agricultural cooperatives. Amongst them, the benefit of access to agricultural inputs such as seeds, fertilizers and chemicals was found to be the most significant benefit for the female farmers. Other benefits, some of which include capacity training, extension services, acquisition of modern systems of food storage, and also acquisition of social and professional skills, were highlighted by the female farmers. These benefits, among others show that indeed, agricultural cooperatives could fulfil several roles, and can help to meet the short-and-long-term needs of female farmers for the purpose of economic and personal empowerment. Agricultural cooperatives are thus increasingly being valued within the rural context and can grant the capital needed for transforming not just the agricultural sector, but also rural women's empowerment.

The findings also showed that several socio-economic, demographic and farm characteristics, along with perceived constraints and benefits played a role in influencing the decision to join an agricultural cooperative. In fact, female farmers who are in the working age group (15 to 64 years), are in larger household sizes (more than 3 members), Christians and those with no religious affiliation, higher levels of education, have a secondary occupation and live at or above about 420 GHC per month joined agricultural cooperatives. In addition, other factors such as increasing farm sizes, owning land, having higher perception of benefits associated with joining, and lower constraints to joining also determined one's decision to join agricultural cooperatives. It can be

inferred therefore that it is important to consider such determinants in the creation of agricultural cooperatives. Female farmers should be able to have access to different platforms or cooperatives, and not one just lumps them together, as such deters female farmers from experiencing the full benefits to joining an agricultural cooperative.

Also, the presence of personal and cooperative related constraints to joining cooperatives, found in the study must be assessed. The female farmers reported constraints, some of which included lack of time and trust in cooperatives. As higher levels of constraints influenced one's decision to join, it becomes imperative to put in efforts to boost activities of agricultural cooperatives. Leadership of such cooperatives, when held accountable, could go a long way to reducing hindrances and increasing trust in cooperatives.

Lastly, agricultural cooperatives can indeed empower female farmers, and as such, higher efforts need to be put in place, especially by the government to improve participation of female farmers in agricultural cooperatives. Being included could improve production, income, leadership qualities and resources, for female farmers. The latter is important as the study showed that resources, be it agricultural or non-agricultural assets, as well as access to agricultural technology, information and extension services were not available to the women in general. Putting in more effort and ensuring accountability of cooperatives could therefore enhance participation, and also improve women's access to productive resources needed to improve upon their current levels of empowerment. The design of programmes to include female farmers in cooperatives should thus not only include the creation of multi-actor platforms, but also needs to strengthen current cooperatives by equipping them with the needed tools and resources to transform the agricultural sector in the country. This, in turn, would enhance the delivery of extension services and resources

in a rapid and cost-effective manner, while increasing income and productivity of female farmers, for the purpose of achieving overall empowerment.

7 RECOMMENDATIONS

From the conclusions drawn from the study, several recommendations are drawn. First, given that a fifth of the female farmers reported not knowing any benefits associated with joining cooperatives, it calls for more education on the benefits. This could be initiated by cooperatives and non-governmental organisations who have direct communications with the communities. Continuous discussions coupled with understanding the needs of female farmers would help in creating sustainable agricultural cooperatives that empower the female farmers in the rural communities. The needs of female farmers would motivate them to join, and when several platforms are created, it will become easier for female farmers to choose what best works for them.

As this is academic research however, several recommendations for future studies have been drawn. Studies on agricultural cooperatives and women's empowerment could make use of both qualitative and quantitative methods. The qualitative could inquire from leaders of cooperatives, communities, as well as farmer-based organisations to expand knowledge on the specific roles that agricultural cooperatives could play to enhance empowerment. Qualitative studies could also draw out and provide insight into why there are variations in the various factors that motivate female farmers into joining agricultural cooperatives. There should also be an exploration of regional differences in empowerment of female farmers through agricultural cooperatives. Studies could assess this through comparative studies (example in matrilineal and patrilineal societies) to better understand the subject.

Appendix

WOMEN'S EMPOWERMENT THROUGH AGRI-COOPERATIVES IN RURAL GHANA

A. INFORMED CONSENT

You are invited to participate in this study, which is about empowering women through agricultural cooperatives in rural Ghana. As part of the requirements for (**MSc Agrifood System and Rural Development**), Bernice Adu-Boahen is conducting the study among female farmers in rural Ashanti Region. Participation in the study is voluntary and the survey centres on the benefits, motivations, and constraints of joining agricultural cooperatives, and the effects of agricultural cooperatives on women's empowerment. The information you will share with us if you participate in this study will solely be used for academic purposes and will be kept completely anonymous. Your information will be assigned a code number that is unique to this study. The list connecting your name to this number will be kept in a locked file and only the researcher would be able to see the survey you participated in.

Please note: You must be 18 or older to participate in this study. Please feel free to seek clarifications at any point in time from the researcher: Bernice Adu-Boahen (+233501356733). By completing this survey, you are consenting to participate in this study.

WOMEN'S EMPOWERMENT THROUGH AGRI-COOPERATIVES IN RURAL GHANA

B. QUESTIONNAIRE

A. BACKGROUND CHARACTERISTICS

S/N	Questions and Filters	Response Categories	Code	Skip
A01	How old are you now?	(Record age in years)	<input type="text"/>	
A02	What is the size of your household?	(Explain household to her)	<input type="text"/>	
A03	What is your highest level of formal education?	No formal education Primary school JSS/JHS Middle School Other	[] 1 [] 2 [] 3 [] 4 [] 5	
A04	What is your current marital status?	Never married Consensual Union Married Separated Divorced Widowed	[] 1 [] 2 [] 3 [] 4 [] 5 [] 6	
A05	What is your religious affiliation?	None Christianity Islam	[] 1 [] 2 [] 3	
A06	What is your total estimated monthly expenditure?	<input type="text"/>		
A07	What is your primary occupation?	Farming Trading Food Selling Waitressing Other, specify	[] 1 [] 2 [] 3 [] 4 [] 5	
A08	Do you have a secondary occupation?	No Yes	[] 1 [] 2	
A09	For how long have you been involved in farming?	<input type="text"/>		
A10	Size of Farm actively worked on in acres	<input type="text"/>		
A11	Type of farming	Subsistence Commercial Pastoral/Livestock Mixed Farming Plantation farming	[] 1 [] 2 [] 3 [] 4 [] 5	

		Other	[] 6
A12	Agricultural produce	Vegetables	[] 1
		Crops	[] 2
		Livestock	[] 3
		Other	[] 4
A13	Land ownership status of farm	Owned	[] 1
		Not owned	[] 2
A14	How long have you lived (continuously) in this area?	(Record response in years)	<input type="text"/>

B. BENEFITS TO JOINING AGRICULTURAL COOPERATIVES

S/N	Joining agricultural cooperatives	No	Yes	Skip
B01	Has no benefits	[]	[]	C01
	Allows one to gain access to extension services	[]	[]	
	Allows one to obtain agricultural inputs for members	[]	[]	
	Makes it easy to sell products of members	[]	[]	
	Improves production output/yield	[]	[]	
	Reduces production costs	[]	[]	
	Improves bargaining power of products	[]	[]	
	Creates employment	[]	[]	
	Improves savings	[]	[]	
	Increases income	[]	[]	
	Enhances participation in other rural projects	[]	[]	
	Provides access to capacity training	[]	[]	
	Enables one to acquire modern system of storage and food preservation	[]	[]	
	Enables one to acquire professional and social skills	[]	[]	
Provides credit services/financial assistance	[]	[]	B02	
B02	Does the agricultural cooperative	Lend loans directly	[] 1	
		Play an intermediary role for accessing loans	[] 2	
		Do both	[] 3	

C. CONSTRAINTS TO JOINING AGRICULTURAL COOPERATIVES

S/N	Questions and Filters	Response Categories	Code	Skip
C01	Do you join any agricultural cooperative?	No	[] 0	C06
		Yes, just 1 cooperative	[] 1	C02
			[] 2	C02

		Yes, more than 1 cooperative	
C02	For how long have you joined the cooperative?	(longest membership if multiple)	<input type="text"/>
C03	Is your cooperative	Women only Both men and women	<input type="checkbox"/> 1 <input type="checkbox"/> 2
C04	What is the type of cooperative(s) you join?	Farm supplies coop Machinery maintenance and repair coop Agricultural multi-purpose coop Other	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
C05	What is your position in the cooperative society?	Member only Board Member Committee Member Chairperson Other	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5

S/N	My constraints to joining agricultural cooperatives include	No	Yes
C06	Inadequate capital for production	<input type="checkbox"/>	<input type="checkbox"/>
	Insufficient fees to joining cooperatives	<input type="checkbox"/>	<input type="checkbox"/>
	No awareness of cooperative in area	<input type="checkbox"/>	<input type="checkbox"/>
	They do not provide access to loans	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of time to join cooperatives	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of trust/confidence in the cooperatives as cooperatives do not work for the benefit of farmers	<input type="checkbox"/>	<input type="checkbox"/>
	Cooperatives are short lived and so there is a fear that they may not be authentic	<input type="checkbox"/>	<input type="checkbox"/>
	People are unaware of the benefits to joining cooperatives	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of trust in cooperative management as leaders do not fairly distribute products to farmers	<input type="checkbox"/>	<input type="checkbox"/>
	Other	<input type="checkbox"/>	<input type="checkbox"/>

D. AGRICULTURAL COOPERATIVES AND WOMEN'S EMPOWERMENT

Please indicate which of the following statements currently apply to you

Domain	Indicators	No	Yes
Production	I have sole input into making decisions about food crop farming	<input type="checkbox"/>	<input type="checkbox"/>
	I can make my own personal decisions about the following aspects of household life if I wanted to:		
	Agricultural production	<input type="checkbox"/>	<input type="checkbox"/>

	Which inputs to buy	[]	[]
	Which types of crops to grow for agricultural production	[]	[]
	When to take or who would take crops to the market	[]	[]
	Engage in livestock raising	[]	[]
Resources	I have sole ownership of agricultural land	[]	[]
	I have sole ownership of assets (including farm equipment, house, household durables, cell phone, non-agricultural land, and means of transportation).	[]	[]
	I make decisions regarding the purchase, sale, or transfer of land and assets	[]	[]
	I have access to credit and how to use credit from various sources (non-governmental organizations, formal and informal lenders, friends or relatives, rotating savings, and credit associations).	[]	[]
	I have access to extension services	[]	[]
	I have access to training	[]	[]
	I have access to agricultural information	[]	[]
	I have access to agricultural technologies	[]	[]
Income	I have input into decisions about income generated, conditional on participation in the activity	[]	[]
	I have control over the use of my income	[]	[]
	I am in charge of managing the household budget	[]	[]
Leadership	I am a member of at least one social or economic group, including Agriculture producers' or marketing groups, Mutual help group Trade and business associations, Local government groups, Religious groups, Credit or microfinance groups, or other women's groups	[]	[]
	I feel and am comfortable when speaking in public	[]	[]
Time	I am satisfied with the time I have allocated to productive and domestic tasks	[]	[]
	I am subjectively satisfied with my available time for leisure activities such as visiting neighbours, watching TV, listening to the radio, seeing movies, or doing sports.	[]	[]

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