



**COLLEGE OF DEVELOPMENT STUDIES
CENTER FOR REGIONAL AND LOCAL DEVELOPMENT STUDIES**

**The Role of Urban Agriculture on Women Empowerment in Addis Ababa: The Case of
Vegetable, Dairy and Poultry Production Program Beneficiaries in Akaki Kality Sub
City**

By

Mitke Alemu Legese

Advisor: Filmon Hadaro (PhD)

June 2021

Addis Ababa, Ethiopia



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A Thesis Submitted to Centre for Regional and Local Development Studies, College of Development Studies, Addis Ababa University for Partial Fulfilment of the Requirement for the Degree of Master of Arts in Regional and Local Development Studies

June 2021

Declaration

This is to certify that this thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for the thesis have been properly indicated and acknowledged utilizing complete references.

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Programs Coordinator

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Acronyms and Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
FAO	Food and Agriculture Organization
FDRE	Federal Democratic Republic of Ethiopia
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEM	Gender Empowerment Measure
GTP	Growth and Transformation Plan
HDI	Human Development Index
HIV	Human Immune Virus
MOFED	Ministry of Finance and Economic Development
MSE	Micro and Small Enterprise
NEWP	National Ethiopian Women Policy
PASEDP	Plan for Accelerated and Sustained Development to End Poverty
PPS	Probability Proportionate to Size
SPSS	Statistical Package for Social Sciences
UA	Urban Agriculture
UN	United Nation
UNDP	United Nations Development Program
VIF	Variance Inflation Factor
WB	World Bank
WEAI	Women Empowerment Agriculture Index

Abstract

Urban agriculture considered as a means of women empowerment and poverty alleviation specially minimizing food insecurity of urban poor. Thus this study is aimed to evaluate the role of urban agriculture in women empowerment considering political, social, economic and psychological dimensions among women engaged in urban farming at Akaki sub-city, Addis Ababa. Quantitative research design was mainly employed by complementing it with a qualitative approach to triangulate the findings. A total of 274 study subjects were selected for quantitative study and 14 key informants were selected for qualitative interview. Five dimensions and 10 indicators (5DE) were used to measure empowerment and multiple linear regressions were estimated to assess predictors of empowerment index. Thematic analysis was done for qualitative data and responses with similar ideas were summarised and discussed. The study finding revealed that women farmer in the study area empowered with 80% of empowerment proportion and 0.93 5DE scores. Control over autonomy in production, control over income, and decision on Purchase, sale, or transfer of assets were the three top contributing indicators for women empowerment. However, access to loans or credit was the least contributing indicator. Money-saving habits, years of stay in the activity, and women's education status were some of the factors which were positively linked with the empowerment of women. Based on the qualitative finding women are highly benefited from their participation in urban agriculture in terms of getting access to income, having a good social cohesion, and access to fresh food. Adequate land, waste disposal site, and inadequate support from governmental bodies, inadequate working land, and lack of finance were challenging situations for urban women farmers. Generally, urban farming highly contributes to women's empowerment therefore government should provide different support for women farmer to sustain women empowerment.

Keywords: Urban Agriculture, Women Empowerment, Challenge agricultural production,

CHAPTER ONE

1. Introduction

1.1 Background of the Study

Urban farming is a potential program to achieve the 11th SDGs target in 2030, which is to manage sustainable slums and manage urbanization which is part of urban settlement planning through women empowerment (Kinanti, et al, 2021). Urban Agriculture (UA) has emerged as an important academic field of research and policy application related to urban sustainability, greening, and land use. Yet, the conceptualization and definition of urban agriculture have not been unanimous in the empirical literature. Dezeeuw et, al 2011) and Veenhuizen (2014), for instance, put its working definition as the growing, raising, processing, and distribution of a variety of food and non-food farm products close to a city or town (intra-urban), or on the fringe of a city or town (peri-urban).

In the last sixty years, urban agriculture has become a worldwide phenomenon. A history of modernization and structural adjustment programs from the 1980s and 1990s, combined with ongoing globalization processes are often criticized for instigating a surge of rural-urban migration, shaping a flourishing informal sector in cities, including a growth of urban agricultural activity led by rural migrants. In many cities, urban households grow crops and raise livestock in order to produce food to supplement their incomes (Elizabeth, 2014). Urban Agriculture is an age-old tradition in Sub-Saharan Africa (SSA), but since the 1970s, there has been more rapid growth attributed to escalating urban poverty and rising food prices or shortages. Women and poor households are actively involved in urban agriculture throughout world because urban agriculture practice require less initial capital and minimum knowledge required than other sectors in addition to this urban agriculture can be apply within small plot area (Hovorka, 2009).

Women empowerment in this study considers social, economic, physical, and psychological dimensions(Mandal, 2013)When operationalizing empowerment, this study refers to changing power relations in favour of those who are marginalized and on whom the domination of previously exercised practices had an impact and give the power (space) over their own lives (in social, economic, physical and psychological indicators).This thesis operationalizes women empowerment as a positive change that manifests in the improvement of women's strategic and practical opportunities (creating a fall-back position and bargaining

power within the existing Ethiopian patriarchal structure) and maintaining the multiple causal pathways of change in the benefit of women in the society. This operationalization considers the context for the research gap of this study.

A plenty of researches in Africa have conducted on the contribution of urban agriculture to women empowerment. For instance, a study by (Hovorka, 2019) in Botswana and Zimbabwe showed that urban agriculture addresses the practical and strategic needs the majority of women who are practicing urban agricultural activities support their family on a daily basis (as a source of food and income). Engagement of women in urban agriculture helped them to build supportive social networks and that such networking unlocked the benefited in building social cohesion (Olivier & Heinecken, (2017) and (Gallaher et al, 2013). According to (Slater, 2013) studied in Cape Town, claim that, urban agriculture Contribution for women is beyond economic benefits. Urban farming is also a means for escaping from stress and feeling of trauma in these time women go to their gardens to reassert themselves, establish their identity as women and re-establish their self-worth. As slater, 2013 indicated UA increasing sense of stability and opportunities for the development of social networks.

In Akaki-Kality sub-City, several types of urban agriculture are practiced. Various types of urban agriculture are practiced in Akaki-Kality sub-City, such as poultry production, livestock production, dairy production, beekeeping, pig breeding, crop production, and vegetable production (Berhe, 2015). The researcher is motivated to did this study as the researcher live in the sub city, the situation of the women well known most women in the study area are less educated and it is difficult to involve in formal sector and mostly they engaged in non-formal economic activity like selling traditional drinks like *Tela* and *Tej*. Some of women are engaged in preparing food items products *called Baltina* . Some women are working in factory with minimum salary and some of them are engaged in safety net program which help unemployed people to cleaning the environment. Due to this situation they have subordinate position in the household as well as community they are also economically dependent on their husbands then their decision making power is less. So currently the government gives much emphasis for the sector and the researcher believed that urban agriculture participation has the capacity to solve the above problems of women in the study area. Akaki Kality was selected as a study area because of as the area found at the edge of the Addis Ababa city urban agricultural activities are highly practiced and it benefited several poor households in the area.

1.2 Statement of the problem

As rapid urbanization persists throughout the majority of today's large cities, concern over access to sufficient foodstuffs, employment and basic resources within urban areas has also grown. An increase of low-income and urban poor populations experience first-hand some of the growing pressures in acquiring sufficient and healthy food and livelihoods in today's largest cities (Elizabeth, 2014). Women and girls in Ethiopia are highly disadvantaged compared to boys and men in many areas, including literacy, health, livelihoods, and basic human rights; they also suffer from low status in their society and lack of participation in social support networks and also women have a higher unemployment rate than men in addition to these women also make up the majority of the lower paid, unorganized informal sector of most economies. And the causes of their disadvantage position is considered as manifested by cultural, religions, patriarchal and societal barriers (UN Women, 2015). Even though, Empowerment of women and gender equality are prerequisite for achieving political, social, economic, cultural and environmental security among people.

As stipulated by Article 25 of the constitution, everyone is equal before the law, and discrimination based on sex is forbidden. Similarly, Article 35(8) states that men and women are treated equally in employment, promotion, pay, transfer, and pension benefits. Women in Ethiopia live in poverty despite the Ethiopian Government's efforts to promote gender equality (Bekana, 2020). Gender mainstreaming is also implemented in different sectors in Ethiopia all these instruments are put into practice to close the gender gap in Ethiopia. But the problem of gender disparity is still persistent in Ethiopia. As the global gender gap indexes revealed, Ethiopia is found on the lower rank in terms of education, employment, political participation, and health (Dea, 2016). Most of the time, women participate in the informal sector and make up 60% of those employed there. Women are less likely than men to work in industries and government. Around 65% of them operate micro-enterprises and 26% of them operate small manufacturing enterprises; their lower participation in manufacturing is due to their low level of education and training, lack of access to business opportunities, lack of financial and human capital, and the lack of ownership rights for collateral purposes (Bekana, 2020). Specifically, the thesis identifies the benefits accrued to the participation of women in the urban agriculture program implemented by the city administration, in the case of selected Wereda's of Akaki Kaliti Sub City.

This research aimed to figure out the contribution of UA for women farmer's empowerment multidimensional empowerment in study are and the role of UA in addressing their practical and strategic needs. The study tried to examine how it increases their autonomy or sense of power. In addition to this the study identified the major benefits that women farmers gained from their involvement in urban agriculture and also this study identified major challenges that women farmers facing.

Studies in Ethiopia, regarding the contribution of urban agriculture to the general public, are documented as follows. Mesay, (2010), for instance, has studied the role of urban agriculture in improving food security in Adama city. Similarly, (Eshetu, 2011) has studied the same issue in Bishoftu town and has found that urban agriculture helped households that engage in it to enhance household food security. (Endale, 2011) in his study at Akaki Kality sub-city, also asserted that urban agriculture is used as alternative food security and coping mechanism (survival strategy) by households that experience shocks (income and food supply). Sophia Berhe (2015) also conducted a study on the contribution of urban agriculture on the food security status of poor households in selected *Wereda's* of Akaki Kality sub-city and has found that households who engage in urban agriculture have earned additional food for consumption and cash income. A study by Girma Kebede (2010) at Addis Ababa city with also revealed that urban agriculture significantly contributed to the livelihoods of the participants. Kassahun, (2017) has conducted a study at Harar Town and has found that urban agriculture is identified as a source of employment for heads of households in a study area.

This research is not the first inquiry to study the urban agriculture and its importance. As different scholars have conducted and indicated urban agriculture as a tool for poverty reduction strategy. However, previous study did not consider urban agriculture as a holistic women empowerment means in different dimension such as economic, social, psychological and political. So this study focused research gap in identifying factors that affect empowerment of women in their participation and measuring their level of empowerment particularly taking Akaki Kality sub city that many poor women are found who are vulnerable for economic dependency less economic status.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study is to examine the role of urban agriculture on women empowerment and its associated factors in selected Woredas of Akaki Kality sub-city.

1.3.2 Specific Objectives

- Assess the types of farming activities employed by women in the selected Woredas;
- Evaluate the level of women's empowerment engaged in urban agricultural activities in the selected Woredas;
- Analyse factors that affect the empowerment of women participants in urban agriculture;
- To explore the benefits of women from participating in their chosen farming activities;
- Assess the challenge(s) of women participants in the urban agriculture packages.

1.4 Research Questions of the Study

The main research question of the study was whether urban agriculture implemented in the selected Woredas of Akaki Kality Sub City contributed to the empowerment of beneficiary women. To answer the main research question, the following specific research questions were identified.

- ❖ Why and which farm activities are employed by women farmers in the selected Woredas?
- ❖ What is the level of empowerment among women engaged in a farming activity?
- ❖ What factors affected the empowerment of women participants in the program?
- ❖ In what ways does the program improved (benefitted) participating women households
- ❖ What challenge(s) are faced by women participants in the urban agriculture activities

1.5 Significance of the Study

In Ethiopia, like in other African countries, although urban agriculture is significantly contributing to fulfilling the basic demands of women, it still lacks proper consideration and policy support by policymakers, urban planners, and authorities. In consideration of the demand and the importance of urban agriculture, there is a need to document policy information, dialogue for recognition of the sector, and frameworks for the development of

the sectors based on empirical evidence and knowledge. By doing so, policy advocacy could dwell on appropriate policy priorities and improve the benefits of urban agricultural activities (Eshetu, 2011). The policy advocacy for inclusive interventions should also dwell on scholarly evidence and recommendations for action. In terms of the above justifications, this study would contribute to add empirical knowledge to existing empirical evidence and the gaps of academic understanding regarding the contribution of urban agriculture. In doing so, the study would trigger further research in the area of holistic women empowerment in context. Besides this, the study is socially significant and it would add information on the situation of women and serve as a voice for inclusive urban agricultural intervention that focuses on holistic women empowerment. In addition to the above significance, this study would inform the government to initiate and document evidence for informed ways of formulating gender-sensitive strategies that focus on inclusive urban agriculture for urban development.

1.6 Scope of the Study

Regarding the research objectives, this is a specific study, in terms of time, thematic focus, and geographic coverage. Thus, the scope of this study is delimited to: as to the unit of data collection and analysis, the study was focused on women engaging in urban agricultural activities, as beneficiaries of urban agriculture programs, in the study area. And as to the farm activity category, the study was focused on women participants who are engaged in three urban agriculture activities those are, poultry, dairy production, and vegetable production. These categories from the urban farm sub-sector were selected due to a large number of women are involved in the three categories based on the preliminary data gathered from the Akaki Kality urban agriculture office. as to the geographic coverage: out of Addis Ababa sub-cities, the study focussed on Akaki Kality five (5) weredas due to the predominance of the farm activity employed by women. Moreover, methodologically this study is a cross-sectional research design, bedside to this the study followed a mixed research approach that incorporates both quantitative and qualitative method of data collection and analysis. Specifically, the relevant data was gathered from women beneficiaries from Five (5) weredas in the sub city through a survey, In-depth interview, key informant interview, observation finally the relevant data are collected and analysed.

1.7 Limitation of the Study

The study aimed to assess the role of urban agriculture in empowering women and the challenge that they encountering in their participation in the program in the case of Akaki Kality women farmers. Therefore, the study was conducted in a comprehensive way to address the study objectives. However, in line with the achieved aims, the study has the following limitations.

One of the limitations before the data collection the scope of the study was to address four urban agricultural activities in the study area those are vegetable, poultry, diary production, and cattle fattening but because of the small number of women producers in the cattle fattening activities the study addressed only the three (3) activities.

1.8 Organization of the Paper

This thesis was organized into five chapters. Introduction, statement of the problem, objectives, research questions, scope, and organization of the study was incorporated into Chapter one. A discussion of related literature and an illustration of the conceptual framework was presented in Chapter two. Chapter three introduces the research setting (scenario of the problem and context of the study sites, justifications for the selection of the research sites) and the research methodology. Chapter four was concentrated on the analysis of the result and discussions of the findings. Chapter five dealt with conclusions, recommendations for stakeholders, and indicators for further study.

CHAPTER TWO

2. Review of Related Literature

2.1 Introduction

2.1.1 Theoretical perspective in Women Empowerment

Concerning the generalization of the investigation, Adams et al. (2007) stated that:

The ability of any research design to produce findings that are (mostly) applicable to other situations, organizations, countries, and other people are dependent on the quality of underlying theory which allows us to interpret the „world“ in the context of a given research problem. (p.240)

In line with this bold statement, this study was guided by the theoretical framework of the Empowerment Approach. Theoretically, Empowerment Approach provides a foundation for the explanation of the place of women in development activities and the role they need to play in the same. The approach emphasizes women's power from the empowerment perspective. Empowerment in this context is related to the word power. Power can be defined as control over material assets, intellectual resources, and ideology. Material assets can be physical, human, or financial; intellectual resources are knowledge, information, and ideas; and control over ideology signifies the ability to generate, propagate, sustain and institutionalize specific sets of beliefs, values, attitudes, and behaviour.

Thus power accumulates to those who control or can influence the distribution of material resources, knowledge, and the ideology that governs social relations in both public and private life. The extent of power held by individuals or groups is proportionate to the number of kinds of resources they can control, and the extent to which they can shape prevailing social, religious, or political ideologies. This control is in turn relative to the power of decision-making (Batliwala, 1994). In other words, the empowerment approach considers development as a multidimensional phenomenon, unlike the Efficiency Approach that fails to understand development as a multidimensional phenomenon; instead the approach revolves around the economy to explain social and cultural aspects. These and other basic tenets of the Empowerment Approach were, therefore, be used to analysed and discussed the study results concerning the available kinds of literature on the issue.

2.1.2 Concept of Women Empowerment

Empowerment is a term widely used by academics, policymakers, and development workers, which has made the term vague and contested in conceptualization and methodology (Leder, 2006). The term empowerment is used to refer to self-reliance and self-respect to enable each person to reach his/her God-given potential and they also state that empowerment is about change, choice, and power. Empowerment is also considered a process of change by which individuals or groups with little or no power gain the power and ability to make choices that affect their lives (Cheston and Kulm, 2002) as cited in (Haileselassie, 2007). The concept of empowerment includes many different aspects, ranging from women understanding the causes of their suppression to act collectively as a group for social change. Participation in small groups with a collective agenda is the first step toward women's empowerment (Alkire et al., 2013). Individual and collective agency is thus crucial in the development of women's empowerment (Stromquist, 2015) as cited in (Haileselassie, 2007).

Women empowerment is previously defined based on different fields of study. In the field of development economics, women's empowerment is defined as the process through which women acquire the ability to make strategic life choices in a context where this ability was previously denied to them (Kabeer, 1999 as cited in (Huis, et al 2017)). As (Kabeer, 1999) stresses that the ability to exercise individual choice is based on three interrelated elements – resources, agency, and achievements. Resources refer to material, human and social expectations, and allocations. Agency is the ability or sense of ability to define one's goals, act upon them, and decide on their strategic life outcomes. Achievements include a variety of outcomes ranging from improved well-being to achieving equal representation of women in politics. Women's empowerment is being understood as a method for obtaining and positively using resources to achieve specific goals. Similarly, research suggests that empowerment refers to the ability to act on and improve issues that are important for individuals, communities, and organizations (Bandura, 1986; Czuba, 1999; Maton, 2008; Cattaneo & Chapman, 2010 as cited in (Huis, et al 2017)).

2.1.3 Analytical Framework of the Study

According to John Hopkins Bloomberg School of Public Health (2006), the conceptual framework is a set of coherent ideas or concepts organized in a manner that makes them easy to communicate to others and an overview of ideas and practices that shape the way work is done, and the way it is influenced by the ideas and research of others. Accordingly, the

conceptual framework of this particular study is developed after reviewing literature relevant to the topic. A simple linear association is considered for the same, and it is explained within the context of patriarchal culture. Research in Cape Town by (D. W. Olivier & Heineken, 2017) Society in the study area, which is made up of many cultures, is largely patriarchal. Domestic violence may result when households become economically dependent on male breadwinners (Rogerson 2003 as cited by (Olivier & Heineken, 2017)). A central component of the urban agriculture concept in Cape Town is to promote female leadership and improve their managerial skills to counteract patriarchal structures.

In Cape Town, for instance, it is widely accepted that most cultivators are women. (Tembo and Louw 2013), but fieldwork additionally revealed that women are also in the majority among extension officers, garden center managers, and formal group leaders. It has important implications for women's empowerment in this sector. In line with this woman in Ethiopia highly experience urban agriculture, it helps them to exercise leadership position among the different farming group, to be economically independent in their household. Generally, urban agriculture has a huge role in fight patriarchal culture and empowering women, As illustrated below, Economic, social, political, and psychological dimensions are considered as an outcome of various policies, strategies, which means urban agriculture and related programs are input for women empowerment and.

These dimensions are mentioned along with their major indicators. Policies, strategies, and urban agriculture-related programs are processes that work towards the outcome, women empowerment. Empowerment has an association and economic empowerment is improving women's self-confidence and self-esteem, which leads to their willingness to take on community responsibility even to lead the farming group, and becoming a decision-maker on different work-related and household issues. In addition to this economic power also motivated them to engage in different formal and informal associations like self-help groups to support each other by sharing knowledge and advanced technology and farming experience.

2.1.4 Dimensions of Agricultural Women Empowerment

A review of the literature suggests that in the existing studies, there are limitations to quantitative measurement of women's empowerment. UNDP (1997) as mentioned in (Biswas, 2004) defines a gender empowerment measure considering three variables those are women and men's share of administrative and managerial positions, professional and technical jobs, and parliamentary representation. This measure is mainly useful to compare country-wise differences it is difficult to determine women empowerment at the village level (Biswas, 2004). On the other side, Jahan (1995) uses three main criteria to determine the empowerment of women strengthening of the women's movement, participation in public activity, and involvement in national and local decision-making bodies, but these three criteria alone are not enough to assess empowerment. More socio-economic indicators are needed to assess the overall empowerment level. Hashemi; Schuler and Riley (1996) as stated in (Biswas, 2004) consider different indicators for measuring women's empowerment.

The early literature on empowerment generally used one worldwide degree for empowerment. For example, parents' training changed into regularly used to degree employer or decision-making in the household (Alkire 2007); husband's age and academic seniority have additionally been used to connote male manage over women (for example, Cain 1984; Miller 1981). However, it's miles viable that employer differs throughout distinct spheres of lifestyles and might exist concurrently in distinct ways. For example, someone may be completely hired as a spouse and mother, excluded from the exertions pressure with the aid of using social conventions, and currently empowered to vote with the aid of using political processes. Because such differences have coverage relevance, it's miles critical to pick out and examine employer achievements in distinct domain names in preference to in a single alone (Alkire 2007, 166). Because employer and empowerment are skilled with distinct duties and may be defined and measured with distinct domain names, Alkire (2005) indicates that maximum measures of employer and empowerment must be area specific. For the WEAI, USAID to begin with described 5 domain (5DE) names that pondered priorities from its agricultural programs, as follows:

i. Production:

Decisions about agricultural production are part of this dimension. It refers to sole or joint decision-making about food and cash crop farming, livestock, and fisheries, as well as autonomy in agricultural production, without judging whether sole or joint decision-making was better or reflected greater empowerment (Alkire et al., 2013).

Two indicators are used in this domain. Input into productive decisions is derived from responses to questions regarding participation in decision-making: (1) whether the individual had sole or joint input into decisions about (a) food crop farming, (b) cash crop farming, (c) livestock raising, and (d) fish culture, and (2) If the individual feels that he or she can decide any of the following aspects of household life, it will include: (a) agricultural production, (b) inputs to buy, (c) when to take or who would take crops to market and (d) the individual's outlook. (e) whether to engage in livestock raising. An individual has adequacy in this indicator if he or she participates and has at least some input in decisions or if someone else makes the decisions but the individual feels he or she could (Alkire et al., 2013).

The second is a measure of autonomy that reflects a person's ability to act on what he or she values. A subindex is constructed from answers to the following: (1) My actions in [area of decision-making] are partly because I will get in trouble with someone if I act differently, (2) Regarding [area of decision-making] I do what I do so others don't think poorly of me, and (3). Regarding [area of decision-making] I do what I do because I think it is the right thing to do. The areas of decision-making refer to (1) agricultural production, (2) which inputs to buy, (3) which types of crops to grow, (4) when to take or who would take crops to market, and (5) livestock production. An individual is adequate on autonomy if his or her actions are relatively more motivated by his or her values than by coercion or fear of others' disapproval.

ii. Resources:

This dimension concerns ownership of, access to, and decision-making power about productive resources such as land, livestock, agricultural equipment, consumer durables, and credit. Three indicators comprise this domain: (1) ownership of land and assets; (2) decisions regarding the purchase, sale, or transfer of land and assets; and (3) access to and credit decisions.

The first indicator examines whether an individual reports having sole or joint ownership of land and assets (including agricultural land, large and small livestock, fishponds, farm equipment, house, household durables, cell phone, non-agricultural land, and means of transportation). A person is considered to have adequate achievements if he or she reports having sole or joint ownership of at least one major asset (that is, not including poultry, non-mechanized equipment, or small consumer durables).

The second indicator, defined with similar assets, asks who the person is who can make decisions regarding the purchase, sale, or transfer of land and assets. This recognizes that in many societies, full ownership of assets may not apply, but holding other bundles of rights especially rights of control over purchase and disposal of assets can also be empowering.

The third indicator examines decision-making about whether to obtain credit and how to use the proceeds from credit from various sources (nongovernmental organizations, formal and informal lenders, friends or relatives, rotating savings, and credit associations). To have adequacy on this indicator, a person must belong to a household that has access to credit (even if they did not use credit), and if the household used a source of credit, the person participated in at least one decision about it (Alkire et al., 2013).

iii. Income:

This dimension concerns sole or joint control over the use of income and expenditures. This domain is commonly covered by such nationally representative household surveys as DHS. The single indicator for this dimension measures the degree of input into decisions about the use of income generated from (1) food crops, (2) cash crops, (3) livestock production, (4) nonfarm activities, (5) wage and salary work, and (6) fish culture, as well as the extent to which the individual feels he or she can make his or her own decisions regarding wage or salary employment and major and minor household expenditures.⁹ A person is considered adequate on this indicator if he or she has input into decisions about the income generated, conditional on participation in the activity

iv. Leadership:

This dimension concerns leadership in the community, here measured by membership in economic or social groups and comfort speaking in public. This domain comprises two indicators: (1) whether the person belongs to an economic or social group and (2) whether the

person feels comfortable speaking out in public. Recognizing the value of social capital as a resource, the group member indicator shows whether the person is a member of at least one group, encompassing a wide range of social and economic groups. And whether the person is comfortable speaking up in public consists of responses to questions about the person's ease in speaking up in public to help decide on infrastructure (like small wells, roads) to be built, to ensure proper payment of wages for public work or other similar programs, and to protest the misbehaviour of authorities or elected officials.

v. Time:

This dimension concerns the allocation of time to productive and domestic tasks and satisfaction with the time available for leisure activities. This domain consists of two indicators measuring the allocation of time to productive and domestic tasks and satisfaction with the time available for leisure activities. The first indicator, productive and domestic workload, is derived from a detailed 24-hour time allocation module based on the Lesotho Time Budget Study (Lesotho 2003). The individual is considered inadequate (have an excessive workload) if he or she worked more than 10.5 hours in the previous 24 hours, with hours worked defined as the sum of the time in work-related tasks as the primary activity plus 50% of the time in work-related tasks as the secondary activity.

The last indicator asks whether the individual is subjectively satisfied with his or her available time for leisure activities such as visiting neighbours, watching TV, listening to the radio, seeing movies, or doing sports. A person is adequate on this indicator if he or she is satisfied with the time available for leisure. The 5DE are measured using 10 indicators with their corresponding weights, which the remainder of this section introduces (Alkire et al., 2013).

Various measurements of women empowerment are discussed above, and thus for this study, the women empowerment in agriculture is used as a measurement of the empowerment level of women in Akaki Kality sub-city who are engaged in urban agriculture activities such as poultry, dairy production, and vegetable production.

2.2 Urban Agriculture Concepts and Definition

It is estimated that, by 2050, about 70% of the world's population is expected to live in urban areas (ECOSCO 2014). However, while urbanization brings several socio-economic benefits, the rapid increase in urban population leads to several challenges due to this it is difficult for urban authorities to provide adequate services such as housing, infrastructure, facilities, and employment, and cities are facing challenges of unemployment and poverty, to alleviate or tackle this problem many countries in the world are adopting urban agriculture as a strategy (Gonfa, 2019). In addition to providing fresh food from backyards and generating income by selling surplus household produce, urban agriculture can help disadvantaged segments of the society such as elderly people, women, HIV/AIDS victims, disabled people, and many unemployed youths.

The concept of urban agriculture (UA) has been defined in many ways. "Urban agriculture is an industry where food and non-food products are grown, processed, and distributed within (intra-urban) or (peri-urban) cities, (re)using human and material resources in the process and providing the same material resources and products to that neighbourhood or city. (Sivashankar, et al 2015). According to (Leshner, 2006 as cited in (Robertson, 2013) The term 'urban agriculture' (UA) refers to processes that produce foods for subsistence, nutrition, or commercial gain, or other products that are cultivated within urban areas or nearby peri-urban regions. Urban agriculture is a source of food and income for African's people and as Simiyu stated that in recent years, urban agriculture has gained recognition for its importance to the well-being of urban households including individual male and female farmers, as well as its significance to the urban economy and the environment in Sub-Saharan Africa (Simiyu,2012). For instance, in Nairobi, there are an estimated 300,000 households that are partially dependent on urban agriculture for food and nutrition security and income(World Bank, 2013). In line with this (Gonfa, 2019), and (Gittleman,2009) claimed that urban agriculture support food security and nutrition provides employment and generates income for the urban poor in general and the disadvantaged groups such as women, the disabled, the elderly, and also the unemployed youth in the cities are benefited.

The majority of cultivators on the Africa continent are women who rely on urban agriculture to support their families (D. W. Olivier & Heineken, 2017). As women tend to be disadvantaged in the formal sector of several societies, some aspects of urban agriculture like backyard gardening and small-scale animal husbandry are dominated by women (D. W.

Olivier & Heinecken, 2017). This is because urban food production offers opportunities to be integrated into other household activities where women uphold the responsibility for household food security, while men dominate the commercial urban food production FAO (2002) as mentioned in (Mpofu, 2013). There are some countries where children are also mainly involved in weeding and watering. As much literature indicated that urban farmer workers in cities are not homogeneous; urban farmers include women, men, the wealthy and the poor, locals and immigrants (Gittleman, 2009);(Smit et al 2001) and (Hovorka, 2005).

Due to the male dominance and the low economic status of women, urban agriculture has a great contribution to urban poor households. These women are highly vulnerable to inadequate food access, income, or employment opportunities, lack of decision-making power, and lack of ownership of the basic asset for agriculture production. As much research indicated urban agriculture has many contributions regarding their economic, political, psychological, social, and physical empowerment. (Gonfa, 2019) (R. Simiyu & Foeken, 2014). One study in Sri Lanka revealed that According to urban women farmers, participating in urban agriculture enables them to maintain good landscaping and reduce stress levels caused by a stressful lifestyle (M. Gamhewage et al., 2015).

2.3 Origin of Urban Agriculture

Urban agriculture has been practiced in the world for a long time within and just beyond cities; the concept of local culture and community involvement is deeply ingrained in this tradition. (Smit et, al 2001). As literature indicated that, The first French accounts of (intra- and peri-) urban agriculture (UA) were published in Central Africa in the 1960s. Since then, scattered and isolated UA surveys by individuals have gradually given way to institutionalized projects conducted by multidisciplinary teams as a result, more and better information is now available in a larger number of regions, countries, and cities around the world. And currently, the urban governments are now seeking to exchange policy and technical experiences to better deal with a spreading phenomenon in their city (Mougeot, 1994).

Based on a comparison of urban agriculture across continents, Latin America is a leader in innovative agriculture techniques, such as small-scale hydroponics and small livestock rearing (Orsini et al., 2013). There is less innovation in Asia, where urban agriculture is practiced most extensively, but governments there are comparatively more supportive on a

day-to-day basis than governments everywhere else. European and North American governments provide substantial support for rural farming but less so for urban agriculture(Orsini et al., 2013).

Urban agriculture in Africa traces its roots to the colonial era when urban farming served the needs of bureaucrats, settlers, and other elite groups(Robertson, 2013). Globally, urban agriculture has gained importance dramatically since the 1980s and 1990s. (Smit, 1996). Surveys in Moscow in 1970 and 1991 indicated a shift from 20 percent to 65 percent of families engaged in agriculture(Jac Smit, et al 2001).

Many governments of African countries focused on rural agriculture at the neglect of urban agriculture(UN Economic Council, 2007). However, Abera et. al (2017) asserted that Most governments now have agencies responsible for managing urban agriculture. Ethiopia, Malawi, Kenya, Tanzania, Uganda, Nigeria, and Zimbabwe are among the many countries. Even though Sub-Saharan Africa has the minimum government support, it also has the most dramatic increase in urban agriculture. Subsistence gardening considered an essential component of urban survival in much of Africa which may be one possible reason for the surge in participation (Robertson, 2013)

There are several stakeholders, including the government, in Ethiopia started giving attention to urban agriculture in the form of creating institutional support and It could be said that the institutionalization of urban agriculture in Ethiopia and study areas, in particular, is a new development.

2.4 The Reasons Women Engage in Urban Agricultural Activities

The urban poor experience urban agriculture as being insufficient and having irregular access to food in addition to being unable to purchase food items as a result of urban agriculture (Gonfa, 2019). Most cities in developing countries are unable to generate sufficient income and employment for their citizens due to rapidly growing populations(Venables, 2015). The decision to engage in UA and the level of effort spent doing so is not related to income, wages, prices, or employment opportunities. According to Nugent (2000), Almost all urban farmers are concerned about food insecurity or the perception of food insecurity. Urban farming is a household activity across the income scale (with some country exceptions and commodity variation), but household income does affect the amount of effort devoted to

urban farming (Nugent, 2000). The top three reasons for engaging in UA are economic crisis, income enhancement, and participants engaged in UA for household food consumption(Nugent, 2000).

UPA is practiced by women for a variety of reasons worldwide. In a study by Maxwell (1994) in Kampala as cited in (Mesay, 2010) women have participated in urban agriculture because of two major categories of reasons for households to be engaged in UPA: commercial production and household food self-sufficiency. Additionally, Addis Ababa practices UPA for household consumption, and limited enterprises such as ELFORA Agro-Industries perform it for commercial purposes. Because of this, the UA significantly alleviates urban household food insecurity by providing access to a variety of fresh and affordable food products. Furthermore, it plays a crucial role in urban greening, waste recycling, and microclimate regulation (Mpofu, 2013).

According to (Orsini et al., 2015) Urban agriculture is seen as a tool for social inclusion and reducing gender inequalities, with 65% of farmers are women but they are excluded from agricultural production or considered to be supporters despite their potential (Tegegne, 2012).

The decision to engage in UA and the level of effort spent doing so is not related to income, wages, prices, or employment opportunities. Nugent (2000) argues in her study the top three reasons for engaging in UA are economic crisis, income enhancement, and participants engaged in UA for household consumption as mentioned in Robertson, (2013). Research in Kenya revealed that urban women crop cultivators were encouraged to participate in urban agriculture primarily by the need to improve the household food security and to get nutritious food, and also they want to sell the surplus product to the market and save some income. As the study showed in addition to this women's need to be economically independent, the other reason also the availability of open space in their locality, some of the respondents explained their reason because they don't have other occupations and, to a more limited extent, due to their farming customer experience(Simiyu & Foeken, 2014). as the study revealed women, the Urban farmer who are work in Akaki Kality, their reason to engage in urban agriculture revealed that urban dwellers are practicing UA due to low food supply at the household level, unemployment, and low income for the families(Endale, 2011a).

2.5 Women and the Benefits of Urban Agriculture

Across the globe, the average (population-weighted) distance completed to parity is 68.6% the report indicates that even though countries perform well, there is still a 31.4% average gender gap that needs to be closed globally, and that the disparity in political empowerment is greater than other empowerment factors and As for Economic Participation and Opportunity, 57.8% of this gap has been closed so far, and a slight showed improvement from last year. In recent years, there has been progressing in closing the Educational Attainment gap and the Health and Survival gap (Addis Ababa City Administration, 2013).

UA is one of several options for household food security in urban environments; similarly, it is one of several tools for making productive use of urban open spaces, treating and recovering urban solid and liquid wastes, saving or generating income and employment, and managing freshwater resources more efficiently. (Mougeot, 1994). Many research assured that urban agriculture positively contributes to many problems affecting the urban environment.

Urban agriculture has a lot of benefits for women, who often face greater constraints than do men in urban areas. UA enables women to blend successfully multiple roles like domestic work, subsistence production, income generation, and conservation of the environment as a key coping strategy (Hovorka, 2019). UA is particularly significant for women with larger families to feed and/or support there is evidence that UA can give women greater control over household resources, budget, decision-making, and benefits (Mougeot, 2000).

women are re-investing their Savings into children's education, into upstream enterprises (bulk purchasing and retailing of manure in Haiti) or downstream enterprises (food processing and street vending in Nairobi) as well as into other small businesses(Mougeot, 1994). Olivier & Heinecken claimed that Throughout Africa, and particularly Women in Cape Town who are with low incomes and who have migrated to the city they considered urban agriculture as a culturally relevant food source. (D. W. Olivier & Heinecken, 2017).

2.5.1 Food Security and Nutrition

Social improvement is achieved by urban agriculture. majority of urban farmers are among the poorest members of society, and they spend up to 85% of their income on food. In African countries such as Accra in Ghana and Kampala in Uganda, for example, despite

spending more on food, the food consumed is of poor quality and quantity (Drescher 2004) as cited in(Orsini et al., 2015).

Urban agriculture has contributed to food and nutrition security because it has provided food for the poorest in cities and filled an essential portion of their nutritional requirements. (Armar-klemesu & Maxwell, 1992, (Orsini & Kahane, 2013),(Mougeot, 1994),(Smit, 2001),(Egal et, al 2003) also claimed urban agriculture contributes to food availability in cities and therefore to the diet of urban consumers. Urban agriculture enhances a certain degree of local production of food. It contributes to the local production of food to a certain extent and this local food production and local markets increase food security by ensuring a more affordable and accessible supply of food, improve nutritional balance and supply of food, and reduce poverty. (Abera et. al, 2017).

According to Smit, et al 2001, At all times, urban agriculture has played some role in ensuring a food supply for urban residents. Ancient civilizations developed urban agriculture systems all around the world, devising many innovative ways to produce food and manage land, water, and other resources efficiently. It was intensive food production that allowed societies to create cities and civilizations. For example, intensive production of perishables, small livestock, fish, and poultry is essential to city life in Ghana, China, India, Iraq, Java, Pakistan, Guatemala, Mexico, Myanmar, and Peru. Shipments of grain, fruits, and vegetables are made from the surrounding countryside and in certain cultures, a few crops, like mushrooms and medicinal and culinary herbs, were developed specifically for urban areas. (Smit, et al 2001).

In situations in which women control the destination of products and profits, improving conditions for peri-urban and urban families to produce and market vegetables, fruits, livestock products, and fish can positively impact nutrition and health in vulnerable urban groups. (Eco culture,1998). Similarly, Mpofu has studied the importance of urban agriculture. This study found that urban farmers in Addis- Ababa produced about 16,220 tons of different vegetables within an area of 433 ha. It is estimated that the City grew 6,692 tons of variety of vegetables in 2002 and that is a steady increase from the current figure of 335 ha or about 3% of the total vegetable demand (Mpofu, 2013). The Addis Ababa Urban Agriculture Department also confirmed that vegetable production had increased to 11, 956 tons and that the area under vegetables had also increased to 396 ha of land in 2006. Urban agriculture

contribute health benefit for easier access to safe and nutritious food (mainly fresh products) it helps to improve the health conditions of the urban poor(Orsini & Kahane, 2013).

2.5.2 Development of the Local Economies and Employment Opportunity

According to Nugent, as cities grow, they add jobs and services, becoming more complex economically and physically. The demand for new jobs places huge demands on cities that often struggle to provide the public services required to accommodate growth, even in the face of existing unemployment. There are many new jobs needed in the developing world, both for migrants and for those born in cities, that are unskilled and relatively uneducated (Nugent, 2010). Urban farming is a source of income for many urban poor, and it allows reducing the costs of food purchase since it is estimated that that urban poor spends between 60 and 85 % of their income just to feed themselves (Orsini & Kahane, 2013). UA contributes to poverty alleviation both through a reduction of expenditures and through an increase in income. And the income earned is usually spent on non-food items (e.g. transport, housing, school fees, and health costs) and to a lesser extent, and especially by female producers, on food items (Egal et al, 2003).

Market-oriented urban agriculture generates net incomes that in most cases are equivalent to or better than the minimum urban wage. Not only market-oriented Subsistence-oriented urban agriculture leads to important cash savings since food is by far the largest component of household expenditures; as a result, a significant portion of family income becomes available for non-food expenditures. Urban farming also provides a source of employment, not only for urban farmers themselves but for hired laborers and workers in related micro-enterprises such as the production of compost, herding, collection and selling of grass or manure, processing of agricultural produce, and street vending of food (Njenga et al, 2009).

The study in Addis Ababa by Mpofu (2013) revealed that one of the economic benefits of urban agriculture in Addis-Ababa has been its capacity to generate income and create employment opportunities. On average, three vegetable-growing cooperatives gained an annual income of 157,005.31 Birr, giving an average monthly income of 581.00 Birr per member of the cooperative. This was equivalent to the middle income of the group in Ethiopia (In 2011, US\$1.00 was equal to 20 Birr) (Mpofu, 2013). Regarding job opportunities, Mpofu found that there were about 16,000 people engaged in producing

vegetables in Addis Ababa. Out of these, about 7,454 families were organized into 11 farmer's cooperatives. The study identified 957 vegetable farmers with a total family size of about 7,454 people. Thus, it could be said that the sector secured permanent and/or part-time employment for around 5,057 household heads or 27,954 members of their families (Mpofu, 2013). Similarly (Abera et. al, 2017) claimed that urban agriculture plays a decisive role in generating household income, serve as employment opportunities and economic use of land. Similarly, Mamo has studied the urban agriculture contribution for employment in Ethiopia, Harar town and it revealed that urban agriculture has high potential to serve as a source of employment for household's heads and benefits their families (Mamo, 2017).

2.5.3 Environmental Benefits of Urban Agriculture

Now a day because of the complexity of the world and population growth and climate change in urban areas the environmental are problems are increasing. Urban agriculture also contributes to a healthier living environment by reusing organic waste and urban-waste water. The "greening" of open land spaces through horticulture and urban forestry may also improve the quality of life as well as providing easier access to fuel wood (Egal et, 2003). Similar studies in Ethiopia stated that urban agriculture contributes to environmental improvement and beautification of a town, as well as solid waste management. (Abera et. al, 2017). Further, urban agriculture contributes significantly to waste management problems by turning urban solid waste into agricultural inputs such as compost and treating waste water as irrigation systems. These effectively improve the urban micro-climate, increase biological diversity, and enhance the aesthetics and recreational appeal of cities. (Mpofu, 2013).in addition to this environmental enhancement, beautification of the town and solid waste management are the major roles of urban agriculture in the area (Abera et. al, 2017).

2.5.4 Social Cohesion Benefits of Urban Agriculture

Bellows et al. (2004) found that as mentioned in (Robertson, 2013) gardeners in North America reported one of the reasons that they grew food was to share with friends, families, neighbours, and/or needy members of their community. In this way, gardening was empowering its participants by bringing people together, building community, and improving neighbourhoods. Many studies have looked into social engagement, and have found that it is positively correlated with personal attention to health care and wellness (Bellows et al., 2004) cited in (Robertson, 2013). A neighbourhood's beautification builds a collective consciousness, and vegetable gardens in inner-city neighbourhoods are positively correlated

with decreases in crime, garbage dumping, juvenile delinquency, fires, violent deaths, and mental illness (Bellows et al., 2004).

2.5.5 Psychological Benefits of Urban Agriculture

The lower-income segments of the societies including women are highly benefited from the greatest advantages from urban agriculture (Jac Smit, et al, 2001). UA has traditionally been promoted for its potential to improve the socio-economic situation of the poor, however, there are additional benefits "that may ultimately be the most significant in shaping a positive future for Third World cities" (Wade 1986, as cited in Rogerson, 1993:21). This is about the deep, psychological impact of successful community-based efforts at food production (Wade, 1987, as cited in Rogerson, 1993). Slater's account of women's life histories illustrated how after apartheid, people began to cultivate small gardens, many for whom this was their first time. "Women put down roots in the city both literally as they began to till the soil and symbolically as their investment in gardening symbolized their sense of security in the city. These women were willing to invest in gardening only at a time and place where they felt they, at last, had some security of tenure in the city (Slater, 2001b). In addition, many women find so lace from the personal trauma they have experienced as well as the daily stresses of township life through their gardens.

Another Slater's (2001) studies found that through gardening, women were becoming conscious of different domains of society over which they had power or control. Their gardens provided an area where they had control where they could be alone in a place that is their own. Slater's study documented women's lives in Khayelitsha, Langa, and Lower Crossroads all areas in Cape Town where data was collected for this study on gender and UA. Bellows et al. (2004) as cited in illustrates how this is seen in North America as well. Health professionals have discovered that plants and gardening help patients of different ages with mental illnesses improve social skills, self-esteem, and use of leisure time. It has been shown to encourage relaxation and to reduce stress, fear and anger, blood pressure, and muscle tension.

As the third Millenium development goal indicated promoting gender equality and empowered women agreed by the world countries and it identified three-domain to achieve the goal. the first one is capability domain to facilitate access to education, training, and health for girls and women's; the second, access to resources, means to have assets, including land and finance; and employment; third, security domain: protection from the violence of all

sorts (political, criminal and domestic) (United Nations, 2010). There has been improvement globally. For instance, in capability domain as (UNDP) shows that there is a growing gender gap in educational attainment everywhere: in 1970, in South Asia, it was 0.2, and in 2010, it was nearly 0.6; in Africa, 0.65; and within Latin America, 0.75. Even so, there is still a huge gap between the sexes. In Pakistan, for instance, the female literacy rate is 40 %, whereas the male literacy rate is 77 %; in Uganda, it is 66 %, and in Ethiopia, it is 23 % (United, 2010).

Regarding the second domain, on access to resources: in many world countries, women traditionally had no land ownership rights; and financial credit loans most of the time exclusively available for males only. There has been a good achievement in the last decade many countries introduced land reforms to guarantee women's right to own or inherit the land and prohibiting gender-based discrimination, e.g. the 2004 Family Law in Mozambique; a 2003 law in Vietnam; and reforms in India and Rwanda. But many of these reforms are theoretical than real, and women are limited from exercising their rights by custom and hierarchies indeed, Better access to law and creation and strengthening of women's associations are needed to help women improve their access to land rights.

(Boserup, 1970) distinguished three types of agricultural systems: female, male, and mixed. Several African and Latin American countries and certain parts of India have female-dominated farming systems based on slash and burn agriculture, communal land ownership, and the use of the hoe. Most of the work, except for land clearing, is done by women who support themselves and their children. Women in this group tend to be economically independent and mobile. To supplement subsistence earnings with cash income, they engage in trade when they have an agricultural surplus (Buvinic & Mehra, 1990).

2.6 Women and the Challenges of Urban Agriculture

Women have a lower HDI value than men across regions and face particular barriers to empowerment all through life. The average HDI value for women around the world (0.705) is 5.9 % lower than that for men (0.749). Across many countries, women have lower incomes and educational attainments, which contribute to the gap. The gender gap is widest in low-human-development countries, where the average HDI value for women is 13.8% lower than for men. Within developing regions, Latin America and the Caribbean have the narrowest gender gap (2.3%) and South Asia has the widest (16.3%) and the Arab States have the

narrowest (14.5%) (Forum, 2020). On average the GDI value of the SIDS is 0.948 compared to a world average of 0.941 and the average for developing countries of 0.917. It means that the female HDI value is, on average, only 94.8% of the HDI for males (UNDP 2018).

Over the past decade, recognized that, the majority part of the urban farmers consists of women has become increased. Literature shows that the predominance of women in agriculture can be found in many parts of the world, including Kenya, Uganda, Tanzania, Mozambique, Zambia, Zimbabwe, Ethiopia Senegal, Poland, and Thailand (Hovorka, 1998; Maxwell, 1995;(Mougeot, 2000); UNDP, 1996). The literature recognizes that the predominance of women in this group can be ascribed to two factors. Firstly, it is still the women that bear the first responsibility for household sustenance and well-being and secondly, women tend to have lower educational status than men and therefore more difficulties in finding formal wage employment (Hovorka 2003 as cited in (Wilbers, 2003). Hovorka (2001) stated that the first factor is that women still endure the majority of the responsibility for household sustenance and well-being. Secondly, women tend to have lower educational status than men and therefore encounter greater difficulty finding formal wage employment (Hovorka, 2001, as cited in Wilbers, 2004).

The main problems in urban agriculture as mentioned by the producers in Ghana are land both in terms of access and tenure security, which is at the top of the list of most groups, although this is less of a constraint for keeping small livestock theft of crops grown far from the household; marketing, both physical space for the activity and the organizational arrangements necessary to permit and promote direct farmer-consumer selling are mentioned (Armar-klemesu & Maxwell, 1992). The challenges of urban agriculture are varied from place to place as a study in Ethiopia Oromia region in Bedele town indicated that the challenges of urban agriculture in the study are numerous among those, Access to inputs, Inability to get land and its granting system, Absence of allotment gardening, Priority to non-edible trees in urban areas, Seasonal rain, Disease, Fragmentation of members group gardening, Market Accessibility, Availability and access to credit, Health risks, Lack of technical support from the concerned body, Lack of training are mentioned as a challenge in Bedele town (Abera et. al, 2017).

The same as a general challenges facing women who want to participate in urban agriculture are numerous. For instance, women face severe constraints in accessing, using, controlling land in cities, compared with their male counterparts. Men tend to have the first choice of any available vacant land, leaving women with low-quality or less secure plots of land, often located at a considerable distance from home. Even within households with adequate land resources, wives may be at a disadvantage in terms of access to these plots (Hovorka, 1998 as cited in H. Dezeeuw. et, al 2011). Distance is a related challenge: women are often left to travel extensive distances to marginal lands, their journeys requiring considerable time, physical effort, and financial expense for transportation if it is available. The above constraint is evident in Ethiopia's cities previously women are restricted by law to the ownership of land.

Women also face constraints in terms of urban agriculture production itself. Women often lack inputs and working capital, as well as access to knowledge and information on the use of modern inputs and technologies. The latter is partly due to women's limited exposure to commercial urban agriculture or their limited access to training courses offered by institutions or nongovernment organizations. Women are less likely to benefit from research or extension services that fail to consider gender-specific differences when selecting technologies and working methodologies. The other constraint is limited labour time available to urban women; it is obvious that women have a big responsibility in domestic affairs (Njenga et al, 2009).

Urban farmers in the Akaki Kality don't have sufficient access to appropriate agriculture technologies, training and technical support, and agriculture inputs like improved seeds, seedlings, pullets, fertilizers, and pesticides.

2.7 Evidence and Experience of Urban Agriculture in Addis Ababa

Urban agriculture is proven to be a means of livelihood and source of food for many urban dwellers, particularly low-income households in developing countries (Gete et al., 2007). The case is true in Addis Ababa. However, its contribution towards urban food security or livelihood has never clearly been recognized, simply because urban agricultural practices are largely assumed a replacement for rural agricultural activities therefore not encourage and bound to fizzle out as cities develop. As a result, the sector has never received the support it

deserves. But in recent years in Ethiopia urban agriculture is gaining popularity and being promoted as a means of sustaining the livelihood of poor, unemployed urban dwellers (Mandefro, 2009). a study by the Ministry of Trade and Industry Development, (MTID, 2006) reveals that the contribution of the urban agriculture outputs to the GDP of Addis Ababa is less than 1 %. Further, the employment and unemployment surveys of CSA in the following years 2006, 2007, 2008, and 2009 show that the share of employment from urban agriculture is declining as the urban population increases (Jonga and Nyamweno, 2015).

The main agriculture activities in the city are crop production (field crop and vegetable production), animal raising, bee keeping, etc. This sector provides employment opportunities, food security, and enhances nutrition at the household level through the production of fresh vegetables, dairy products, etc. within the city (Gete et al., 2007). The city has suitable agro ecology for vegetable production thus, urban agriculture activities can be practiced in all the ten sub-cities of Addis Ababa, although the potential varies from sub-city to sub-city. Sub cities like Akaki Kaliti, Bole, Nefase Silk Lafto, Kolfe Keranyo, and Yeka have relatively the highest potential to practice urban and peri-urban agriculture, whereas the rest of sub-cities have somehow low potential due to congested settlement patterns (Mandefro, 2009).

According to the urban agriculture department unpublished report, (2006), in Addis Ababa vegetable production has been conducted at the association (have legal right and bylaws to conduct urban farming), group, and household levels. The report further revealed that in the city there are 53 vegetable producer associations, which comprise 1476 members (859 male & 617 female), there are also 9 vegetable producing groups involving 171 individuals (70 male and 101 female). The report adds beside associations and groups 4382 households are practicing urban gardening in their backyard, vacant lots, riversides, etc. And 60-70% of the city's leafy vegetable demand is covered by the vegetable produce in intra-urban and peri-urban areas of the city. The report further confirmed that in the city there are 350, 000 local and cross-breed poultry, 1,546 beehives, and 31,000 heads of cross-breed cattle which contribute to about 71 % of the total milk supply.

2.8 Conceptual and Analytical Framing of Women Empowerment

Since the research inquiry is based on urban agriculture as its key policy construct and holistic women empowerment as its social construct, the framework of analysis above is based on women empowerment in the agriculture index (model). This model (index) fits the

key constructs identified. The measures (indicator variables) in this model include access to policy support services (inputs such as credit, gender-sensitive technology, inclusive targeting, and packages), land ownership and availability (as key farm asset), enabling institutions (participatory saving and market associations), awareness (knowledge, skill, awareness, inclusive training platforms, information sources and confidence building), and support to using care and leisure time. The analytical framework above is based on this model

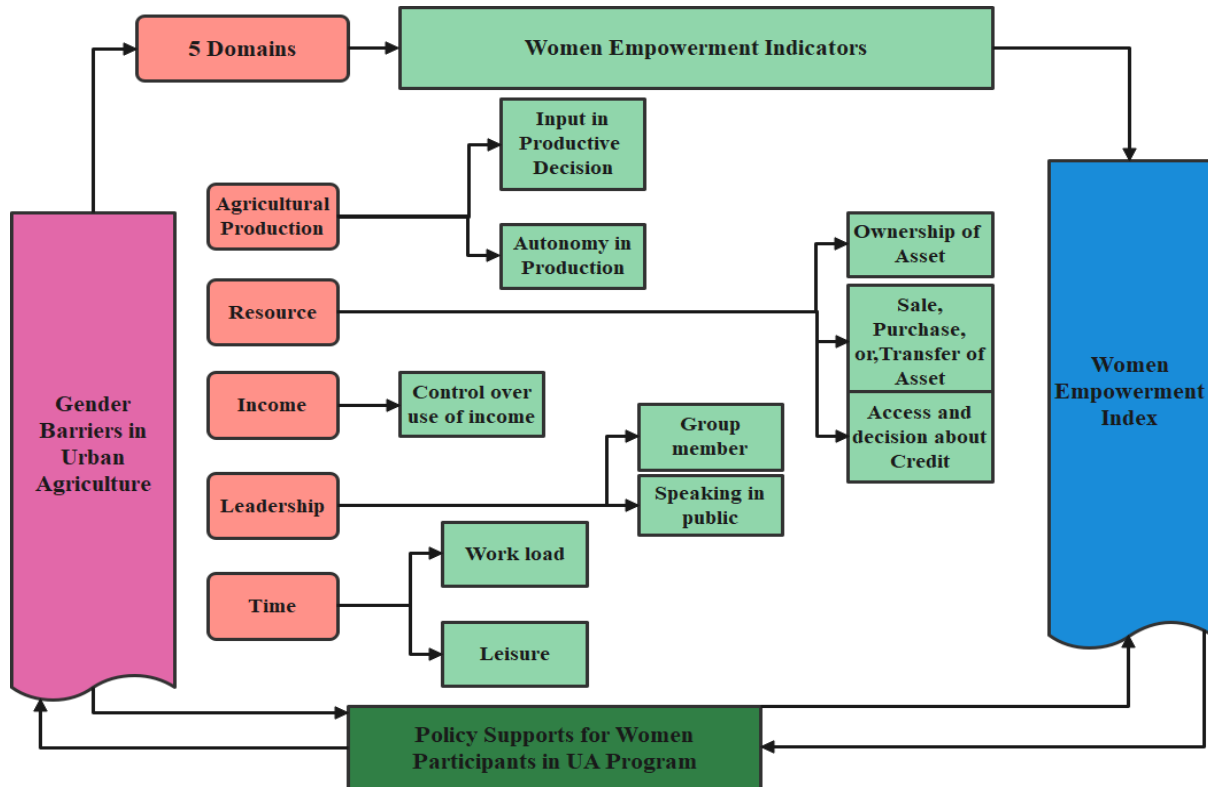


Figure: 2.1 Conceptual framework of the study Adopted from women empowerment in agriculture index (WEAI)

CHAPTER THREE

3. Research Methodology

This section presents the description and justification of research methodology. It begins with providing detail information about the study area and followed describing detail about the research methodology and presents, specifically, the application of the philosophical foundation, the research design, sources and tools of data collection, sampling procedures, sampling technique and sample size determination, techniques of data presentation and analysis. In this section, since this is gender research, procedures on ethical considerations are presented. The methodology issues are explained along with their strategies (steps, sequencing of approaches, and procedures of application). The methodology discussion includes the rationale behind employing each of the methods, tools, data sources, sample population, data analysis, and interpretation.

3.1 Description of the Study Area

3.1.1 The Geographic Location of the Study Area

The study area, the Akaki Kality sub-city, is part of the Addis Ababa city administration. The study was conducted in the weredas of the mentioned sub-city. Among the eleven (11) weredas located in the sub-city, five (5) were considered for the study; the rest will not be considered in the study because based on three criteria. The sub-city is situated in the southeast part of Addis Ababa and shares boundaries with Bole and Nefas Silk Lafto sub-cities in the northeast and northwest directions respectively, and beyond this, it is surrounded by a special zone of the Oromia region.

3.1.2 Demographic Features

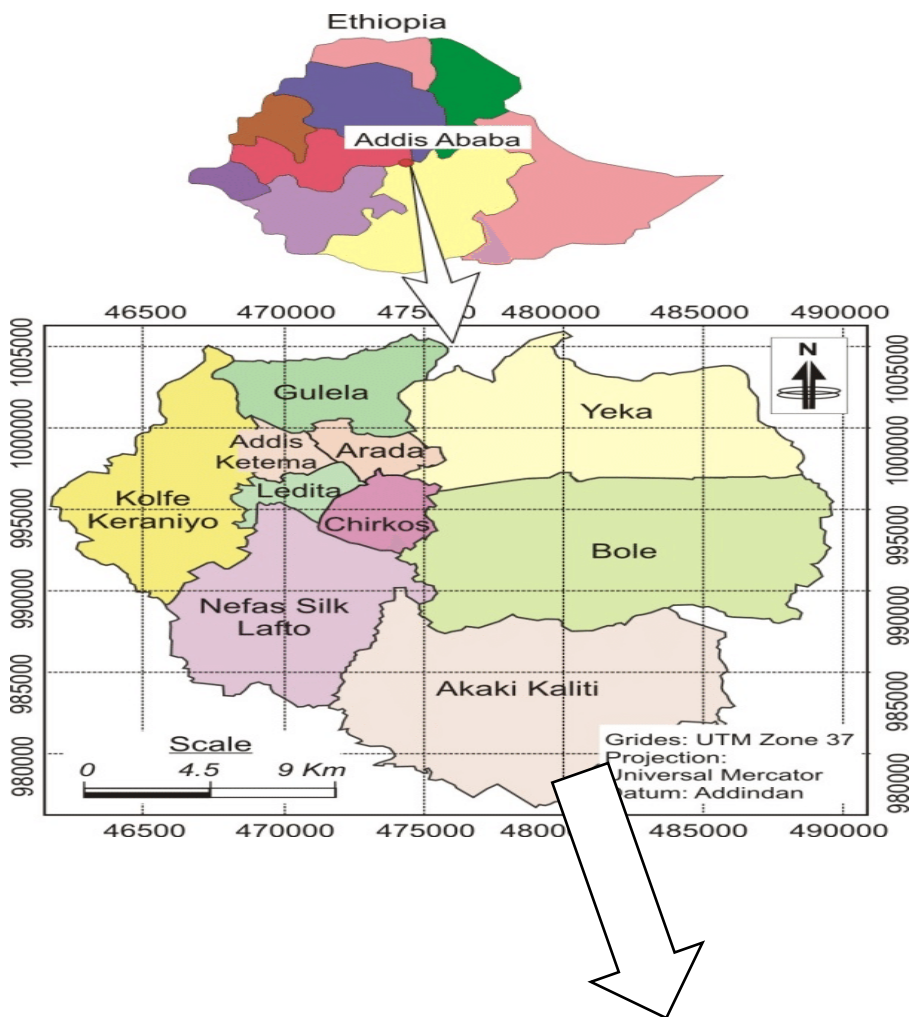
Addis Ababa is one of the two city administrations of FDRE and is the capital city of Ethiopia. It is the largest city in Ethiopia, and as to the 2007 census, its population is 3,384,569. Administratively the city is subdivided into ten sub-cities and the sub-cities are subsequently subdivided into 116 weredas, the smallest administrative structure in the city. Among these sub-cities, the study area, Akaki Kality sub-city, is populated with a total of 220,740 inhabitants out of whom 106,645 are males and 114,095 are females.

3.1.3 Biophysical Characteristics

According to the CSA (2007) data, Addis Ababa has a cultivated area of 10,586.2 hectares of the total city area, while forest and rangelands cover 7,900 and 2,943 hectares, respectively.

The sub-city is endowed with abundant soil and water resources suitable for crop and livestock production. Two perennial rivers named Akaki and Fanta (Tinishu Akaki) flows across the sub-city along with 120 hectares of land covered by irrigation. Akaki Kality is an expansion area 60% of proposed land use in the sub city farms field which include industry, Truck & Rail freight terminal, mixed use buildings, housing development, & treatment plant and services such as hospital, higher education & festival ground as part of Akaki Kality major sub center about 70% of the action area is an open space being used for agriculture. Based on the existing land use analysis; 60% of the farmland accommodates farmers whose livelihood dependant on agriculture & 20% of the action area comprises of residence & 20% industry area. For ease of implementation, development priority of Kality major center is the vacant farmland and development demand along Debrezeit road may raise the interest in parallel (Nuredine, 2020).

The subsequent map depicts the geographical location of the study area:



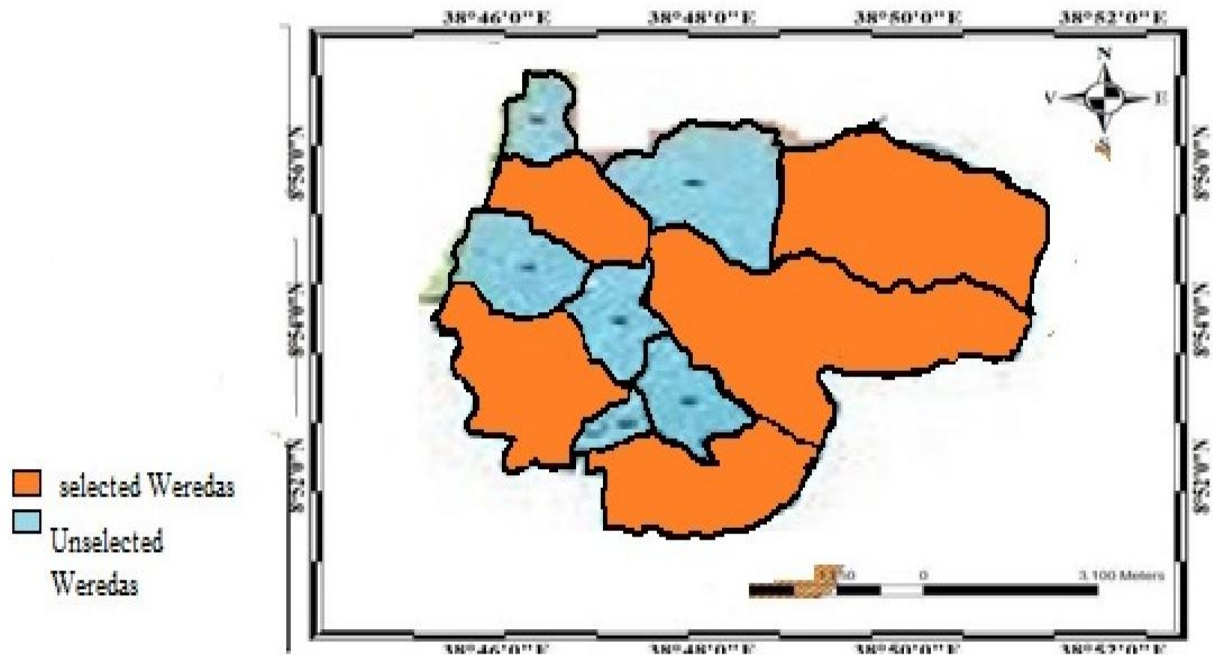


Figure: 3.1 Location map of Akaki Kaliti sub-city and selected wereda

3.2 Research Design and Approach

In order to address the objectives of the study and exploratory research design was employed. In line with this, the study employed a cross sectional research design the relevant data would be collected at the one-time point and there was one time contact with the study participants Creswell (2009,p123). The study was based on the positivist (i.e. quantitative) view in capturing the reality to be studied and depended on respondents' perception (i.e. qualitative) in capturing data on some realities of the study under consideration. It is, therefore, based on this general research philosophy that the study's design was framed. A mixed-method research design was employed to examine the proposed research objectives. This design addressed both the descriptive and explanatory functions. The utilization of both approaches and mixed design is highly recommendable to capture the current dynamics of world reality. Sarantakos (2005. p3) as cited in Abera et. al (2017), stated that the existing social world is best studied using several analyses and points of view, which means diverse methodologies are the most excellent ways of expressing and assessing the social world. In other words, the integration of quantitative and qualitative methods allows coming through the respondent's objective and interpretive views. Among the mixed methods strategies, the Concurrent Triangulation Strategy was utilized. According to Creswell (2009,p123)

As part of a concurrent triangulation approach, the researcher collects both quantitative and qualitative data concurrently and compares the two databases to determine whether there are differences, convergences, or both. Such a strategy uses separate quantitative and qualitative methods as a means to counterbalance the weaknesses inherent within one method with the strengths of the other. Thus, the quantitative and qualitative data collection is concurrent, happening in one phase of the study. Creswell (2009 p 123) added that the weight is equal between the two methods, but often in practice priority may be given to one or the other.

3.3 Data Sources and Methods of Data Collection

Both primary and secondary data were collected for the study. The study mainly utilized primary data that was collected from the women engaged in UA in the study area. Since the unit of analysis is a household, the primary data were collected mainly from women heads of households via questionnaires, interview guides, and observation checklists. As supplementary primary information, qualitative data was also collected from various stakes via key informant interviews and observation. Secondary data was also collected from various stakeholder offices participating in the implementation of UA in the study area.

3.4 Data collection Tools and Measurements

The study was used the subsequent varieties of data collection tools to triangulate or confirm alike information thereby increasing the validity of the results.

Survey Questionnaire: A structured questionnaire was used as the data collection tool for the second and the third objectives. The questionnaire was compiled by basing the objectives of the study and using information derived from Women empowerment in agriculture index (WEAI) measurements that have also been applied by prior alike researches. To ease the process of conducting the survey, a questionnaire was translated into Amharic (the study area's common local language). Before conducting the survey, questionnaires pre-tested to modify some of the questions that could be either irrelevant, missing, or are out of context.

Key informants' interview: A question guide (i.e. interview checklist) was used for the key informant and expert interviews to capture the first objectives of the study. An expert interview was made with the officers working at various offices that have a stake in the implementation of UA (i.e. with one person at each office, and an expert interview was

conducted with the professionals whose work is directly related to the subject matter of agriculture or UA.

In-depth Interview: in-depth interview was conducted to collect qualitative data to address the fourth and fifth objectives which is related with the benefits that urban agriculture provided for women because of their participation and the challenge that women farmer facing in the study area.

Observation Note: Observation in the study under consideration's context helped to have a close get in touch with the women of the study. Hence, an observation checklist was used to record witnesses and observable UA-related activities being undertaken by the study area's women. Photographs and notes related to the things and/or issues to be observed were taken during the observation.

3.5 Study Population and Sampling Procedure

3.5.1 Description of the study participant

The study population for this particular study was mainly women and some males who are working in urban agriculture office in the sub city were included as key informants. The women respondents are currently engaged and staying in farming activities more than 3 years and those are engaged in different agricultural activities which means involved in vegetable production, dairy production, and poultry production at the study area (Akaki Kality sub-city) those are registered in the selected wereda's urban agriculture offices.

3.5.2 Sampling technique and sample size

Both probability and non-probability sampling technique were used to select the sample for this study. Multistage sampling was used for this study, Akaki Kality sub-city is purposively selected from the ten sub-cities of the Addis Ababa administration. The essence of the purposive selection is presented as follows. First, among the Addis Ababa sub-cities, it has considerable households engaged in urban agriculture; second, the sub-city has abundant natural and socio-economic resources that remain potential for urban agriculture; and studies on the issue of the importance of urban agriculture on women empowerment are scant.

The study subjects were selected by using systematic probability sampling. As sampling is the process of selecting a sample from a population of (Kothari, 2004) the first stage involves the selection of the *weredas from the sub-city*. Based on the stratified sampling method and

based on three (3) criteria one is based on the nature of the place. In the sub-city from wereda, 1-8 are found in the mostly found in the center of the sub-city were as wereda 9, 10. And 11 were found in the edge of sub city then among the three rural weredas, wereda 9 was selected. The second criteria were the number of beneficiaries then wereda 5 and wereda 7 were selected. The third criterion was a long period of existence in the sector then wereda 3 and wereda 8 were chosen. Following this, among the eleven (11) weredas of the sub-city, the practice of urban agriculture has been under implementation in all weredas The Three types (i.e. vegetable, poultry, and dairy productions of urban agriculture activities are found to be the common engagements in the five(5) weredas. Due to this, the study was mainly covering all these activities with the assumption to have a full representation of the urban agriculture activities in the study area. In addition to ensuring due representation of these activities, such an approach allowed the researcher to make a comparison of the activities related to their role in empowering the study area's women.

After identifying these weredas, the quantitative part was, thus, employ a mix of stratified and systematic sampling; the qualitative part, whereas, employs a purposive or judgmental sampling strategy. To this end, the actual study sites (i.e. the study weredas) were considered as strata; in other words, the study area women were stratified based on their respective weredas. Finally, a sample unit of analysis (i.e. women as a representative for their respective households) was selected by a means of systematic sampling using lists of women who engaged in urban agriculture as a sampling frame. The sampling frame of 745 women engaged in urban agriculture has already been obtained from the respective offices of urban agriculture.

The following table portrays the distribution of the women with the types of urban agriculture upon which samples were selected:

Table: 3.1 Household Participation by Types of Urban Farm Activities

Weredas	Women Heads of Households Engaging in Farm Activities	Vegetable Production	Poultry Production	Dairy production
3	118	33	18	67
5	174	77	73	24
7	136	46	52	38
8	81	38	23	20
9	236	120	53	63
Total	745	314	219	212

3.5.3 Sample Size

The sample size for the study was determined by using Yaman's (1967 as cited in (Haileselassie, 2007)) formula because he suggested a simplified formula for calculation of sample size when population size is finite. As to him, for a 95% confidence level and 0.5 p (the population proportion assumed to be 0.5 since this would provide the maximum sample size), the size of the sample should be:

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

Where n = is the required` sample size,

N = is the population size (745 women engaged in UA

e = is an acceptable margin of error (or the desired level of precision), which is 0.05.

$$n = 745 / (1 + 745(0.05^2)) = 260$$

Based on this formula, the sample for this study is 260 women. This figure is allocated across weredas by employing stratified sampling. Because of the unequal number of women in each stratum, probability proportionate to size (PPS) is used to decide the number of women to be selected in each *wereda*. Lastly, systematic sampling was employed to select the subsequent number of sample women per *Wereda*.

Table 3.2: Proportion of Sample Women Household Heads Engaging in Farm Activities

Weredas	Women HH Head	Vegetable		Dairy		Poultry	
		Population	Sample	Population	Sample	Population	Sample
3	118	33	10	18	7	67	25
5	174	77	22	73	26	24	12
7	136	46	14	52	18	38	16
8	81	38	12	23	10	20	9
9	236	120	32	53	21	63	26
Total	745	314	90	219	82	212	88

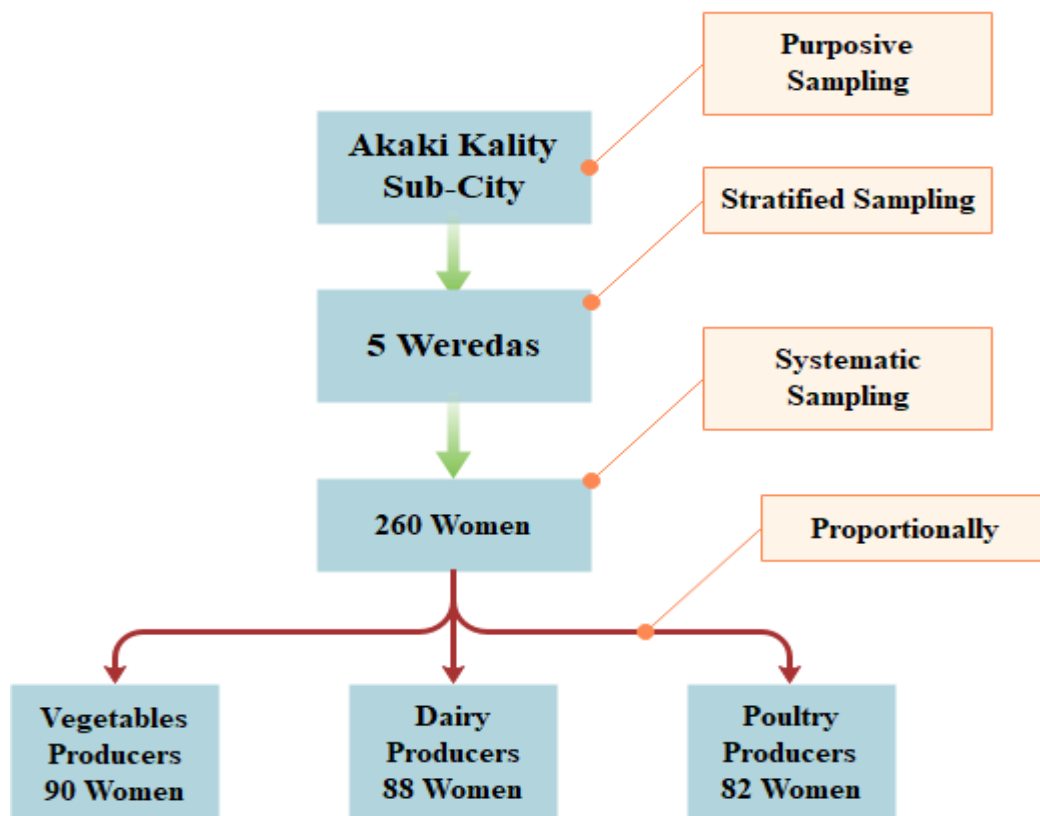


Figure: 3.2: Sampling Procedure

3.6 Method of Data Analysis

The study was used both quantitative and qualitative approaches to data interpretation and analysis. The quantitative data gathered from the survey questioner were analyzed by using SPSS version 21. Descriptive statistics such as mean, percentile, frequency distributions, bar charts, pie charts, ranges, variations, and standard deviations were employed to characterize women in terms of their demographic information. Inferential statistics such as multiple linear regression and ANOVA were conducted to evaluate factor influence women empowerment and to differentiate the specific characteristics of women in line with the types of urban agriculture they engaged in. Women empowerment in agriculture index (WEAI) constructed using 5DE indicators was also used to measure the empowerment of women who are engaged in urban agriculture by using the five domains of empowerment (5DE). Qualitative data were analyzed using thematic analysis, in this method idea that has similar meaning were categorized into the similar theme and description was provided.

3.7 Description of Study Variables

3.7.1 Dependant Variable

Women empowerment is dependent variable measured by women empowerment in agriculture index by measuring women's empowerment by five domains those .production, resource, income, leadership, and time this domain has 10 indicators and those are input in productive decisions Autonomy in production, Ownership of assets, Purchase, sale, or transfer of assets, Access to and decisions about credit, Control overuse of income, Group member, Speaking in public, Workload, and Leisure (Alkire et al., 2013).

Explanatory variable: women empowerment as a dependent variable of the study was expected to affect by the following explanatory variables.

3.7.2 Independent Variables

- **Age of the women (AGE):** Age is a continuous explanatory variable and It is hypothesized that increasing age in women increased their empowerment (Greene, 2009).Therefore the older women would be more empower than the young aged
- **Household Size (HHS):** it is a continuous variable and however, there was no formulated finding regarding agricultural empowerment, having fewer children is

associated to improve the economic empowerment of women(Atake & Gnakou Ali, 2019).

- **Education status of women:** it is Discrete variable (uneducated (Yes=1, No=0) Urban agriculture is predominantly exercised by illiterate women than educated women. Moreover, the higher the education the more empowered the women is proposed hypotheses(Girma, 2010).
- **Saving money:** it is a binary (dummy) variable with (Yes=1, No=0). And it is hypotheses that money-saving was positively associated with women empowerment (San et al., 2019).
- **Year engaged in the farming:** this variable is considered a continuous variable and measured by several years. Anthe more years they engaged the better the empowerment (UNCEF, 2018). Therefore, year engagement and empowerment were positively associated.
- **Land ownership:** this variable was considered as binary(dummy) yes=1, No=0 and it is hypothesized as helping women to secure their land rights and land ownership is positively linked with Empowering women(Mishra & Sam, 2016).
- **Types of farming engaged:** this variable was considered as discrete as (vegetable, poultry and dairy). According to the previous finding, vegetable farming was positively linked with empowerment however, there was inconsistency between different study areas(Patalagsa et al., 2015).
- **Another source of income:** It is a dummy variable represented by yes=1, No=0. It is hypothesized positively associated with women's empowerment(Krishinan et al., 2017).

Table: 3.3 Summary of associations of variables

Variables	Measurement & interpretation	Relation to the dependent variable
Age of the household	Continuous variable(in Number)	Old age-positive: young age negative
Education status	Discrete variable	Educated positive, uneducated negative,
Household Size	Continuous variable(in number)	Small size positive, large size negative,
Income	Continuous variable(in number)	Participation increase income has a positive association,
Saving	Dummy	The more they save increase empowerment; positive relationship
Years engaged in farming	Continuous variable	Long staying years, positive less negative

3.8 Ethical Considerations for the Study

The respondent and responsible officials at all levels was contact and permission was obtained Once it was permitted, the general purpose of the study, their right to decide whether or not to participate in the study without any penalty or negative consequences, the time of duration, the participants right to stop at any time they want was carefully described for the women producers so that they can feel free and decide to participate or not. The study units were also informed that the information they release is confidential. Generally, the study was after the aforementioned explanations were briefed, and then the quantitative data respondent written consent, and the interviewee's verbal consent acquired. To avoid plagiarism proper citation and paraphrasing the document done in this study.

CHAPTER FOUR

4. Research Findings and Discussion

4.1 Socio-Demographic Information of Respondents

In this study, a total of 274 respondents were included. Among them, fourteen (14) are purposely selected key informants for qualitative data collection. The rest 260 are survey participants are randomly selected women farmers who are engaged in Three (3) urban agricultural activities those are vegetable production, poultry production, and dairy production.

The mean age of study participants was 48.4 ± 7.86 years and the family size of the women on average of 4.56 ± 2.18 live in the respondent's family. The mean length of staying years on the farming was 9.36 ± 3.54 years as described below in the table.

Table 4.1: Descriptive statistics of the study participant

Variable	Mean	Standard deviation
Age	48.4115	7.86885
Family size	4.5654	2.18090
Number of years engaged in farming	9.3654	3.54687

Source: (Survey compilation, 2020)

The marital status of the sample households also varies. The majority (71.2%) of the total respondents are married and nearly one-third (31.9%) were illiterate. This study focused on the three major agricultural activities which are women farmers mostly engaged. Thus, vegetables constitute (34.6%), dairy (33.8% and 31.5% were engaged in poultry production.

Table: 4.2 Study participant’s socio-demographic information of the participants

Variables	Category	Frequency	Percentage (%)
Marital status	Single	7	2.7
	Married	185	71.2
	Divorced	51	19.6
	Widowed	17	6.5
Education level	Illiterate	83	31.9
	Grade 1-8	81	31.2
	Grade 9-12	77	29.6
	Collage /university	19	7.3
Farming type	Vegetable	90	34.6
	Dairy	88	33.8
	Poultry	82	31.5

Source: (Survey compilation, 2020)

4.2 Types of farming Activities employed by women household in Akaki Kality

This study found that the trend in urban agriculture in Akaki Kality is a recent phenomenon. That means to implement as a structured strategy it was implating before seven or eight years. during that time it was organized under the trade and industry bureau as one extension agent(Addis Ababa City Administration, 2013). According to wereda, Addis Ababa UA commission commissioner explanation, the experts sometimes visited the urban producers and they shared little knowledge otherwise there was a less practical achievement of the program and also most of the time the individuals are doing the activity by their capacity which means the government support was little or insufficient regarding supply ied, financial support, and training and technical support and animal medication and so on. but nowadays the government highly emphasize for this sector by stating the slogan called “*no one land should not be heath*” and provide different services like providing improved seeds for low-income households who have open space in their home to assured food security by making their food from their backyard because it is a major tool to alleviate food insecurity, and also an income-generating activity for disadvantaged group of the society like women, disabled people old aged people. In addition to this, the government organized the industry that is working there to use the factory wastes for animal food like wastes from floor and oil factories to minimize costs because now a day the price of animal food is very expensive.

This claim also supported by wereda 03 experts in this way” *In the past time the focus on the urban agriculture was not satisfactory, but now a time the government official starting from our prime minister shows an interest for this sector. Our leaders took evolutionary activity like a “Green Legacy” to improve the environmental balance of the country. The mayor of Addis Ababa also gives very good leadership related to urban agriculture.*

According to the data from the Addis Ababa urban agriculture commission commissioner, the practice of urban agriculture was established in 1960 in Ethiopia. Due to the expansion of urbanization and population growth, people have highly demanded the food around their locality. But the urban agriculture as a core process was established recently but for the past many years working under the trade and industry office. Currently, this office has two missions one is renewing the farmers who are displaced from their land due to development, the second one also expands and modernizes the urban agriculture practice in Addis Ababa. Currently, all types of urban agriculture activities are practicing in Addis Ababa sub-cities. According to (Addis Ababa City Administration, 2013).

In Akaki Kality mostly urban agriculture activities are classified into two major categories such as animal husbandry and vegetable production. In the former categories the dairy production, poultry, cattle fattening, beekeeping, pig breeding are practicing. In the later categories, mushroom production, crop production, vegetable production seedling, as Addis Ababa is found in highland area fruits like apple, avocado, prime are grown in the area generally the above activities are supporting in the sector. As the commissioner explanation, there is a difference in the type of farming in the Akaki Kality sub city’s weredas.

For instance, the situation of farming type in wereda 05 as expert disclosed that wereda urban agriculture office experts stated that they practiced urban agricultural activities which are suitable for the urban area which means as the land scarcity is a major problem they practice urban agricultural activities which are possible in a small area among animal category, poultry, dairy production, cattle fattening vegetables and fruits are the major urban agriculture activities which are practiced in wereda 05. Beekeeping also practiced by some people the other activity is pig production was practiced in the wereda currently the enterprise was withdrawn because this activity should be outside the village because the pigs have a bad smile which affects the hygiene or health of the community and also they have damaged the people’s home fence and so on. Mushroom production is included in the package in this

wereda in the future because it requires technical knowledge and large investment in this activity we don't have professional worker even we lack knowledge regarding mushroom production.

As wereda 09 urban agriculture office experts revealed that recently due to the Covid19 pandemic the government gives more emphasis for urban agriculture especially vegetable production because people were spent more time at home so they used their time by planting edible plants at home and it has a great contribution for access to fresh food from their backyards. In addition to this government create job opportunity for young and unemployed.

According to wereda 09 expert, *“the government is highly working on urban agriculture to minimize food insecurity and to reduce the unemployment rate and in our wereda by this year 2020 allocate 18,000-hectare lands for different urban agricultural activities and it can be created job opportunity for 1206 beneficiary among them 70% were women majorities are organized in a group by 1 to10 in this regard almost 24 enterprises are registered”*

Generally, as the data from the key informant's interviewees, indicated many types of urban agricultural activities are practiced in both crop production and animal husbandries in the sub-city. poultry production, dairy production, vegetable production, cattle fattening, beekeeping, pig production, crop production, silk production, mushroom production, and seedling are the major urban agricultural activities practicing by the urban farmer in the sub-city. The study in Akaki Kality found similar findings on the types of urban agriculture activities in the sub-city(Berhe, 2015).

The majority of urban agriculture beneficiaries in Addis Ababa and also in Akaki Kality weredas are women. Urban agriculture is focused on household food consumption, supply to the market, and job opportunity creation. As the Addis Ababa urban agriculture commissioner explanation women beneficiary in Akaki Kality, mostly engaged in dairy production, poultry, and vegetable production the reasons are one, women by their nature they have a carrying character, and the above urban agricultural activities go with other women domestic work like carrying their children and cooking meals for their family.

Similarly, in wereda 09 experience women are predominantly practicing urban agriculture than men. Most of the time women are participating in vegetable production because vegetables are like a child they need cosher so women have a caring nature and women take

75% among the beneficiary who are engaged in vegetable production in the wereda. In the same way, women are dominating the poultry and dairy production activities almost 65% of beneficiaries are women in poultry production.

According to the data from the key informant interviewee, the reason that women tend to engage in the three (3) activities, require less knowledge, less capital, minimum working space, and also it needs less human power.

There is a similar experience with wereda 07 as experts disclosed “*In addition to the large farm women are practice urban agriculture in their home for household consumption and they collect the plastic pot and plants different plants on a small area. We share this experience by implementing in our office as you can see and women are motivated to do what we advise but men tend to abnegate the urban agricultural activities.*”



Figure 4.1: Experience of Wereda 07 Office

Source: (field photograph of the researcher, 2020)



Figure: 4.2 Cultivating vacant space in the youth center in wereda 07

Source: (field photograph of the researcher, 2020)

In addition to this urban agriculture can practice with a small plot area and by using dilapidated material found around which make the environment contaminate. The wereda 07 experts revealed

“The other issue is space it is obvious that land is scarce in an urban area. urban agricultural activity is can apply in small plat areas by using different modern technologies for instance beekeeping and poultry production can practice in a small area and a small amount of money but we didn’t give more emphasis on this activity. in addition to this, Urban agriculture can be done by using dilapidated materials like plastic, car’s tire and so on. As you see in the office compound we planted different types of vegetables by using old plastic material and tires because to give a lesson for the youths the tire can be used for preparing food at home than disturbing the environment by burning the tire”.



Figure: 4.3 Urban agriculture practice of wereda 07 by using dilapidated materials

Source :(field photograph of the researcher, 2020)

4.3 Level of women Empowerment in Urban Agriculture based on 5DE

The women farmer empowerment in the study area is assessed in this research based on this 5DE index. The 5DE are measured using 10 indicators with their corresponding weights, which the remainder of this section introduces. The index has five domains and ten (10) indicators which are developed by Alkier and Foster (2012) so it is applicable to measure women's empowerment level in the agriculture sector. The five domains are production, resource, income, leadership, and leisure.

Table: 4.3 The domains, indicators, and weights in the Women’s Empowerment in Agriculture Index

Domain	Indicator	Score	Weight
Production	Input in productive decisions	.9885	1/10
	Autonomy in production	.8769	1/10
Resource	Ownership of assets	.9808	1/15
	Purchase, sale, or transfer of asset	.9885	1/15
	Access to and decisions about credit	.2154	1/15
Income	Control over use of income	.9038	1/5
Leadership	Group member	.9846	1/10
	Speaking in public	.9923	1/10
Time	Workload	.9923	1/10
	Leisure	.9269	1/10

Source: (Survey compilation, 2020)

4.3.1 Agricultural Production

This domain measures women's empowerment level using two indicators input and autonomy indicators. The mean agricultural production score was 3.09 ± 0.32 . In this study, 39.6% had input into all decisions regarding the agricultural productive decision. And 37.7% had a high extent to make own personal decisions regarding household life. Regarding the autonomy of women in the study, most (76.4%) had confidence that their agricultural production won't be in trouble if they even act differently with someone. In terms of agricultural productivity, 45.8% of the women were responded that people do not judge them negatively whatever they produce and do. However, only 4.3% of women responded they do whatever they believe is right without any kind of fear and 49% responded somewhat true.

Table 4.4: Description of the domains and indicators, of production in the Women’s Empowerment in Agriculture Index

Input	Frequency	Percentage
Makdec		
No input	2	.8
Input into very few decisions	7	2.7
Input into some decisions,	50	19.2
Input into most decisions,	97	37.3
Input into all decisions	103	39.6
Decextent		
Not at all,	4	1.5
Small extent,	33	12.7
Medium extent	120	46.2
To a high extent	98	37.7
Average Input score	3.6732	.54402
Autonomy		
Autonomy1		
Never true	191	76.4
Not very true	46	18.4
Somewhat true,	11	4.4
Always true	2	.8
Autonomy2		
Never true	2	.8
not very true	29	11.2
somewhat true,	105	40.4
always true	119	45.8
Autonomy3		
Never true	11	4.3
Not very true	119	46.7
Somewhat true	125	49.0
Always true	11	4.3

Average autonomy score	2.6943	.34850
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Source: (Survey compilation, 2020)

4.3.2 Access to and Control of Productive Resources

Three indicators comprise this domain: (1) ownership of land and assets; (2) decisions regarding the purchase, sale, or transfer of land and assets; and (3) access to and credit decisions. The first indicator examines whether individual reports having sole or joint ownership of land and assets (including agricultural land, large and small livestock, fishponds, farm equipment, house, household durables, cell phone, non-agricultural land, and means of transportation), In this study, all of the women have assets in their household. The second indicator, defined with similar assets, asks who is the person who can make decisions regarding the purchase, sale, or transfer of land and assets, Thus, in this study, 36.2% of the women had input into all decisions regarding participation in decision making on selling, buying, and transferring the household asset. The third indicator examines decision-making about whether to obtain credit and how to use the proceeds from credit from various sources (nongovernmental organizations, formal and informal lenders, friends or relatives, rotating savings, and credit associations). In this study, nearly three-fourths (72.3%) did not take a loan within 12 months and the rest 22 % was taken a loan.

Table 4.5: control over the resource and the domains and indicators in the Women’s Empowerment in Agriculture Index

Assetown	Frequency	Percentage
Yes	260	100%
Assettransfer		
Input into very few decisions	3	1.2
Input into some decisions	35	13.5
Input into most decisions	128	49.2
Input into all decisions.	94	36.2
Deccredit		
No	188	72.3
Yes	56	21.5
Average resource score	2.4784	.26704

Source: (Survey compilation, 2020)

4.3.3 Control Over the Use of Income

The single indicator for this dimension measures the degree of input into decisions about the use of income generated from farming activities that incorporate numerous questions. In this survey, one-third of the women had input into all decisions regarding the use of income generated from the agricultural activity and half (50.1%) of them had a decision to a high extent.

Table 4.6: control over the use of income descriptions of the domains and indicators

Decinc1	Frequency	Percentage
No input	50	19.1
Input into some decisions	17	6.5
Input into most decisions	110	42.3
Input into all decisions.	83	32.1
Decinc2	Frequency	Percentage
Not at all	5	1.2
Small extent	19	7.3
Medium extent	103	40.3
To a high extent	131	51.2
	4.021±1.609	

Source: (Survey compilation, 2020)

4.3.4 Leadership

The fourth domain comprises two indicators: (1) whether the person belongs to an economic or social group and (2) whether the person feels comfortable speaking out in public. The first indicator shows whether the person is a member of at least one group, encompassing a wide range of social and economic groups. In this study, 98.5% of the women are active members of different social groups or associations. The second one is all about public speaking in the community. Thus, 45 % of the respondent scored yes but with little difficulty, 26% of them scored yes but a great difficulty 25% of them scored yes fairly comfortable and only 3.8% were very comfortable in public speaking.

Table 4.7: Leadership descriptions of the domains and indicators, of in the Women’s Empowerment in Agriculture Index

Groupmemb	Frequency	Percentage
No	4	1.5
Yes	256	98.5
Comspeak		
Not at all comfortable	2	.8
Yes but with a great deal of difficulty	67	25.8
Yes, but with a little difficulty	117	45.0
Yes fairly comfortable	64	24.6
Yes very comfortable	10	3.8
	3.0500	0.821

Source: (Survey compilation, 2020)

4.3.5 Time Allocation

Two indicators measure the allocation of time to productive and domestic tasks as well as satisfaction with leisure time availability. The first indicator, domestic and productive workload, is derived from a detailed 24-hour time allocation module based on the Lesotho Time Budget Study (Lesotho 2003). In this study, 99.2% of the women spent <10.5 hours in agricultural activity within 24 hours and 78.3% of them are very satisfied 16.5% of them are answered neither satisfied nor dissatisfied 5% are not satisfied.

Table: 4.8 Time allocation domains and indicators, in the Women’s Empowerment in Agriculture Index

Time	Frequency	Percentage
Wload		
>10.5 hours	2	.8
< 10.5 hour	258	99.2
Leisure		
Not satisfied	13	5.1
Neither satisfied nor dissatisfied	42	16.5
Very satisfied	199	78.3

Source: (Survey compilation, 2020)

4.3.6 Contribution of the 10 indicators

Control over autonomy in production (87.7%), control over income (86%), and decision on Purchase, sale, or transfer of assets (85%) were the three top contributing indicators for women empowerment. However, access to loans or credit (53.6%) was the least indicator. A consistent finding was reported from a study in Guatemala Further, the variable “autonomy” showed even greater (and statistically significant) differences between those who are empowered in agriculture and those who are not. Also Similar to the data from Uganda, the variable “autonomy” showed even greater differences between those who are empowered in agriculture and those who are not. (Frida Lundström, 2017).

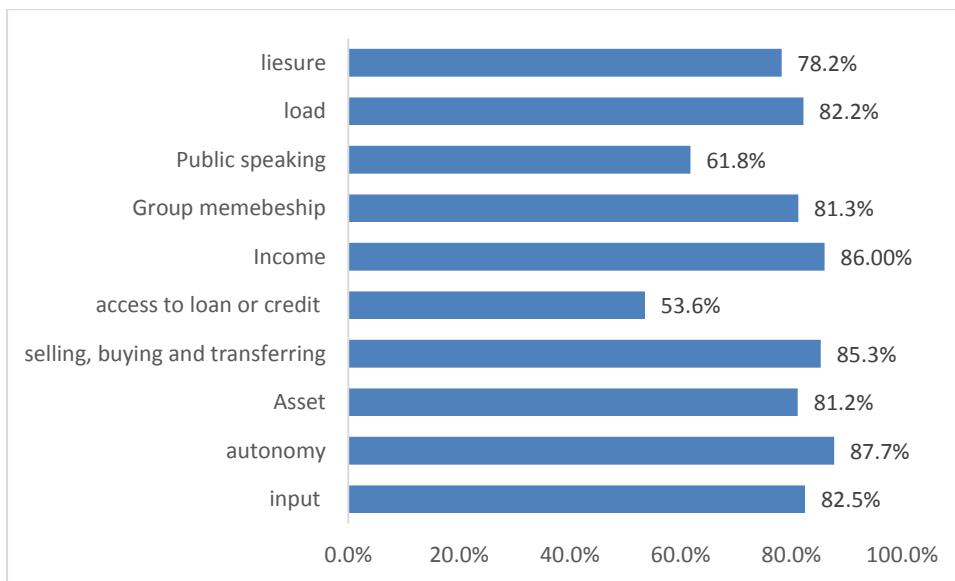


Figure: 4.4 Contribution of the indicators in the Women’s Empowerment in Agriculture Index

4.3.7 Overall women empowerment and 5DE score.

Overall women's empowerment was measured based on five dimensions (5DE) considering inadequacy cut-off point for each of the dimensions and indicators. The 5DE conveys the percentage of women who are empowered and the intensity of disempowerment. An individual who has achieved ‘adequacy’ in 80% or more of the weighted indicators was considered an empowered woman.

The inadequacy score is computed for each individual based on the inadequacies across all indicators. Each person's inadequacy score is calculated by summing the weighted inadequacies experienced so that the inadequacy score for each person lies between 0 and 1. The score increases as the number of inadequacies of the person increases and reaches its

maximum of 1 when the person experiences inadequacy on all 10 indicators. Therefore average adequacy score of the women in this study was 0.77 ± 0.11 and 208 (80%) of the women had adequacy of cut off of 0.8 and above. Only 20 % of the women are not empowered and the total average inadequacy score of below 0.8. And average percentage (score) of dimensions in which disempowered individuals have adequate achievement was 69.1% (0.691). Thus, most of the disempowered women had adequacy in three of five domains.

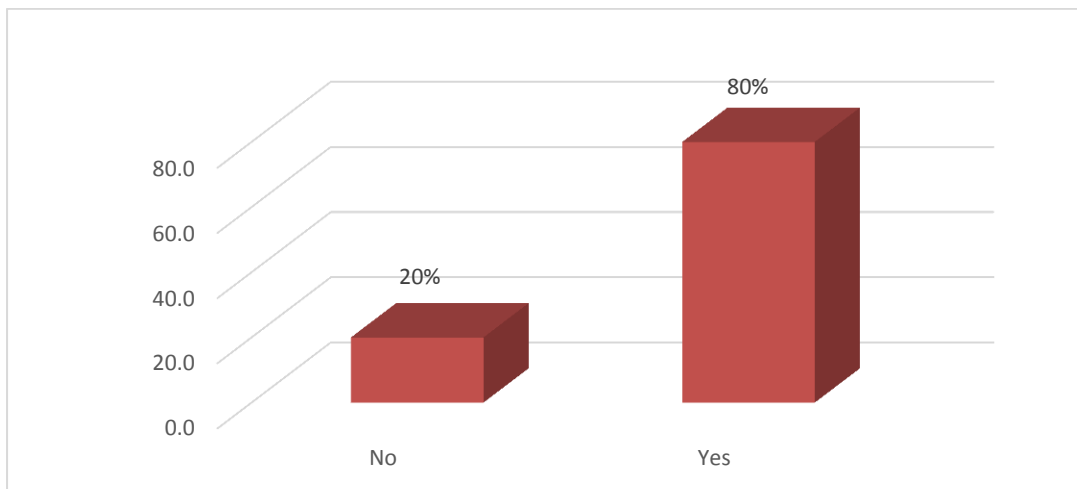


Figure: 4.5 Percentage of empowered and disempowered women

However, to estimate the 5DE empowerment index score, the following formula is used (Sabina Alkire, et al, 2012)

$$5DE = H_e + (H_n \times A_e)$$

Where:- H_e is % of women who are empowered ;

H_n is % of women who are not empowered ($1 - H_e$);

A_e is the % of diementions in which disempowered individuals have adequate achievement.

Therefore, considering the estimate provided above in this study, that is $H_e = 0.8$, $H_n = 0.2$ and $A_e = 0.691$

$$5DE \text{ score of this study} = 0.8 + (0.2 \times 0.691) = \mathbf{0.938}.$$

The finding in this study is higher than a report other study conducted in Ethiopia that reported 73% women empowerment (Abebe et, al 2016) and 71.3% reported from another similar study conducted on the empowerment domains (Belainew & Surafel, 2020). The finding was higher than most of the empowerment indexes reported in other similar studies.

Thus, in the study done Bangladesh Integrated Household Survey (IFPRI) 0.634 of 5DE was reported (Agnes et al, 2013), Malawi (IFPRI) (0.759), Nepal (IFPRI) (0.760). Moreover, average inadequacy score. Also, the report from Uganda revealed three times lower empowerment percentage as compared to this research's finding and 62.7 percent of women who are not yet empowered. The possible reason for this difference is that women in the current study had longer farming experience and had support from the governmental office.

This research revealed that the highest empowerment index of women engages in urban agriculture activity (80%) with 0.93 average empowerment 5DE score. Another study conducted in Ethiopia reported 73% women empowerment (*Abebe et, al 2016*). *Other similar study* empowerment analysis showed women in the study area were disempowered (empowered only in 71.3%) of the empowerment domains (Belainew & Surafel, 2020). The finding was higher than most of the empowerment indexes reported in other similar studies. Thus, in the study done Bangladesh Integrated Household Survey (IFPRI) 0.634 of 5DE was reported (Agnes et al, 2013), Malawi (IFPRI) (0.759), Nepal (IFPRI) (0.760), Zambia (IFPRI)(0.700). However, average inadequacy score. Also, the report from Uganda revealed three times lower empowerment percentage as compared to this research's finding. The 5DE for the pilot districts in Uganda shows that 37.3 percent of women are empowered. The 62.7 percent of women who are not yet empowered, on average, have still achieved empowerment in 64.4 percent of dimensions, and the overall 5DE is 0.812.

4.4 Factors affecting women empowerment in the study area

4.4.1 Multiple linear regression

Multiple linear regression was employed to identify factors that influence the 5DE index. Before fitting into a regression model, essential assumptions such as multicollinearity, model good of fitness, independence of error, residual normality were evaluated. To test for the presence of multicollinearity, all variance inflation factor (VIF) values were assessed and they were less than 10. This suggests that there is no major Multicollinearity concern among independent variables. The overall goodness of fit of the numerous linear regression models is tested using an ANOVA table with an F value. The F-value for this model from this study is (df(12)=4.500, P<0.001), as a result, the model is a good fit. The test for independence of error was assessed using the Durbin Watson test of independence. The test statistic can vary

between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. In this study, the assumption was fulfilled since Durbin Watson was 2.011. since values less than 1 or greater than 3 are cause for concern; however, values closer to 2 may still be problematic but, not significant influence on the estimate.

In multiple linear regression, variables are coded as follow:- vegetables (yes=1, No=0), poultry (yes=1, No=0); saving money Yes=1, No=0; another source of income Yes=1, No=0; land ownership (Yes=1, No=0); education (1-8) (Yes=1, No=0); education (9-12) (Yes=1, No=0); education (college above) (Yes=, No=0).

In multiple linear regressions, saving money, years engaged in farming, and educational level of grade 9-12 and college and above were significantly associated with the 5DE index. Thus, saving money would raise the women empowerment index of women in urban agriculture (5DE) by 2.8% ($\beta=0.028$; 95% CI: 0.010, 0.046). for one year increase of staying in farming activity, the empowerment index will increase by 3.3% ($\beta=0.033$; 95% CI: 0.005, 0.803). The higher the level of education of women the better the empowerment index. Women completed high school (9-12) grade has 2% higher empowerment index ($\beta=0.020$; 95% CI: 0.001,0.039) and going up to college and university would raise the index by 4.9% ($\beta=0.049$; 95% CI: 0.017, 0.081) after controlling for other factors.

In multiple linear regression, variables are coded as follow:- vegetables (yes=1, No=0), poultry (yes=1, No=0); saving money Yes=1, No=0; another source of income Yes=1, No=0; land ownership (Yes=1, No=0); education (1-8) (Yes=1, No=0); education (9-12) (Yes=1, No=0); education (college above) (Yes=, No=0). In multiple linear regression, saving money, years engaged in farming, and educational level of grade 9-12 and college and above were significantly associated with the 5DE index.

4.4.2 Money-saving

Thus, saving money would raise the women empowerment index of women in urban agriculture (5DE) by 2.8% ($\beta=0.028$; 95% CI: 0.010, 0.046). for one year increase of staying in farming activity, the empowerment index will increase by 3.3% ($\beta=0.033$; 95% CI: 0.005, 0.803). Saving money and empowerment were positively linked in this study. Based on a comprehensive review of the literature, analysis of monitoring data from four large East African programs, and primary research in Ethiopia and Tanzania, the study examines the

relationship between Savings Groups and economic independence, confidence and self-worth, decision-making, voice and leadership, time use, mobility, and education (Hovorka, 1998; Maxwell, 1995; Mougeot, 2000). As previously noted, having time, the ability to travel, and the support of one's family are crucial variables for engaging in groups - a crucial avenue to empowerment in agriculture in our case studies. Village savings and loan associations, producer associations, and marketing cooperatives enable women to have access to assets and essential productive resources (such as livestock, credit, knowledge, and other agricultural inputs).

4.4.3 Year engaged in the farm

Year engaged and empowerment was also positively associated. Thus, for one-year increase of staying in farming activity, the empowerment index will increase by 3.3% ($\beta=0.033$; 95% CI: 0.005, 0.803). This could be the more experience they have, the more they understand the way how to manage the activities. Moreover, women who engaged for a longer time adopt the challenges and adopt the strategies to be more productive. However, the most previous study didn't include this variable in their analysis.

4.4.4 Education

The higher the level of education of women the better the empowerment index. Women completed high school (9-12) grade has 2% higher empowerment index ($\beta=0.020$; 95% CI: 0.001,0.039). and going up to college and university would raise the index by 4.9% ($\beta=0.049$; 95% CI: 0.017, 0.081) after controlling for other factors. A similar finding was reported from another study. thus, according to USAID women agricultural empowerment index, 35 percent of women with less than a primary-school education are empowered while 45 percent of those who have completed primary school are empowered however other studies revealed no significant association between the education of women and empowerment (Abebe et, al, 2016). Although the primary school enrolment rate of girls in Ethiopia has climbed from 21 to 91 percent in the last three decades, the majority are unable to transition to secondary and tertiary school due to distance, personal security, and economic challenges. As girls grow older, academic participation becomes increasingly difficult as it takes time away from essential income-generating activities. A similar report was forwarded from a previous study done in Guatemala; most of the women in the sample have either primary education or less. In this context, education level does seem to have a marked, statistically significant influence: only 20 percent of women with less than a primary school education are empowered in

agriculture while 35 percent who have completed primary school are empowered. Moreover, women education is very important because, an educated girl in Ethiopia is more likely to avoid early marriage, seek healthcare and become a more independent and well-off individual. With this independence, a girl will become more involved in her community and prepared for future decision-making (Seleshi, 2019).

Table: 4.9 Multiple linear regression for factors associated with the 5DE empowerment index.

Variables	Unstandardized		Standardized β	t	P-value	Collinearity Statistics	
	B	SE of β				Tolerance	VIF
Vegetable	.016	.017	.119	1.746	.082	.705	1.418
Poultry	.004	.009	.026	.379	.705	.700	1.429
Age	.000	.009	.022	.373	.709	.965	1.036
Saving money	.028	.018	.205	3.053	.003	.735	1.361
Another source of income	.004	.009	.028	.483	.629	.969	1.032
Land ownership	.005	.007	.037	.538	.591	.706	1.416
Years engaged in farming	.033	.009	.146	2.280	.023	.803	1.246
Family size	.000	.001	-.015	-.250	.803	.966	1.035
Primary (1-8) grade education	.005	.002	.037	.542	.588	.706	1.416
Highschool (1-9-12) education	.020	.009	.142	2.103	.036	.720	1.389
collage/university education	.049	.009	.200	2.983	.003	.732	1.366
Constant	.856	.031		27.821	.000		

Source: (Survey compilation, 2020)

4.4.5 One- Way ANOVA

This research revealed that the mean 5DE is significantly different for at least one of the levels of the educational group ($F_{3, 259} = 4.519, p=0.004$). And based on the mean plot below, women who completed college and university were a higher 5DE index.

Table 4.10: One-way ANOVA to test if there is a difference in 5DE between the levels of educational status

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.053	3	.018	4.519	.004
Within Groups	.992	256	.004		
Total	1.044	259			

Source: Survey compilation, 2020

Msean plot of educational level vs 5DE

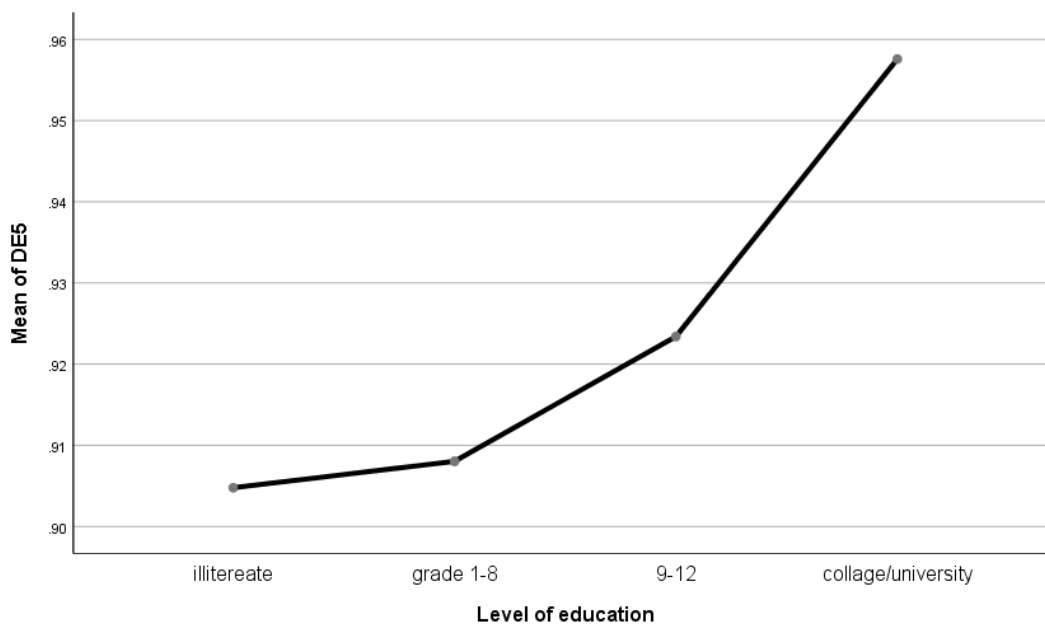


Figure: 4.6 mean plot of 5DE and educational status

4.4.6 Money-Saving Habit, Land Ownership and Other Sources of Income

Among the total study participants women, most (67.3%) were not have a saving habit and almost half (51%) was lack of land ownership. half of the women in this study had no other sources of income.

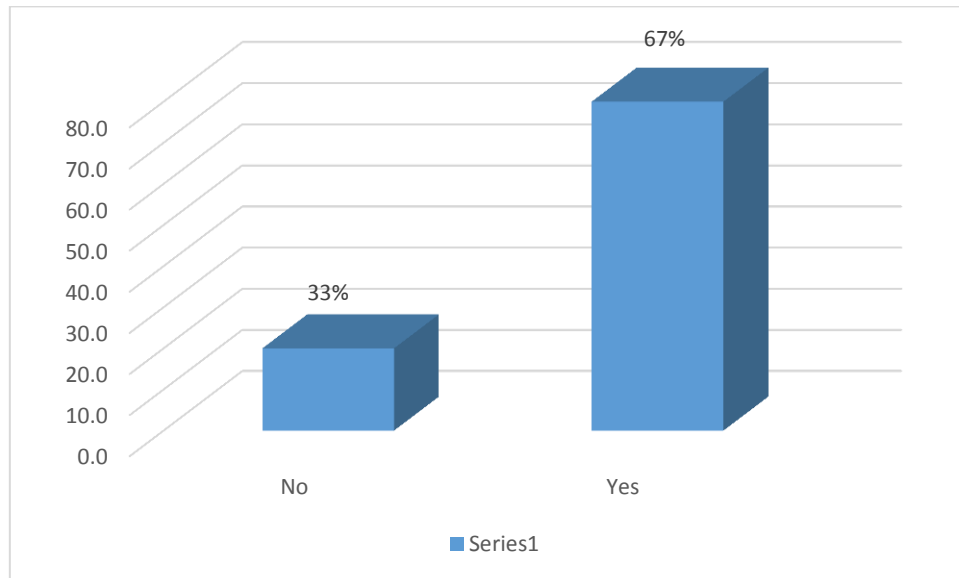


Figure: 4.7 The saving habit of the participants

As the survey, the result indicated the saving experience of the respondents is very poor among the total respondent 67.3% of them are they did not save capital currently only 32.7 % of the respondents are saved money by involving in different means of saving institution. They explained the reason most of them are practicing urban agriculture for the source of food for their family not to sell the market.

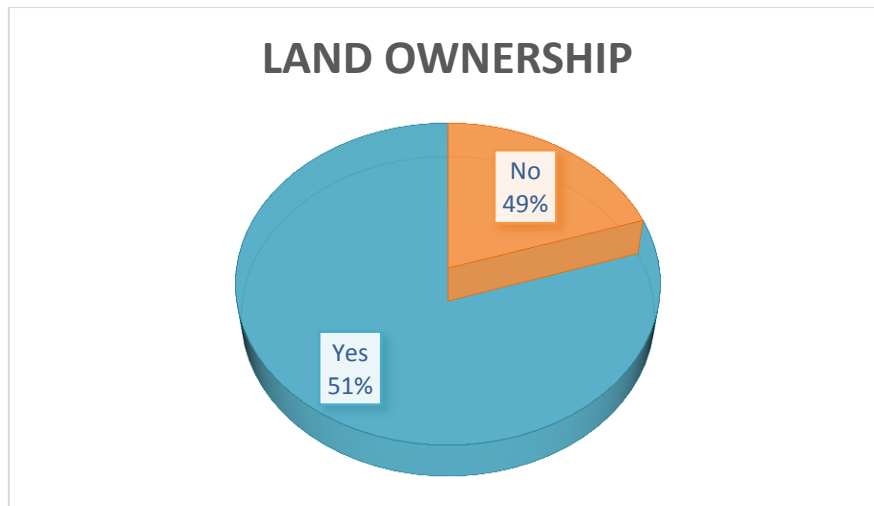


Figure: 4.8 Land ownership of the participants

Regarding land ownership majority of women farmer in this study they don't have their land among the total respondent 51% have no land and the rest 49% have practice urban agriculture in their home within the small plot area.

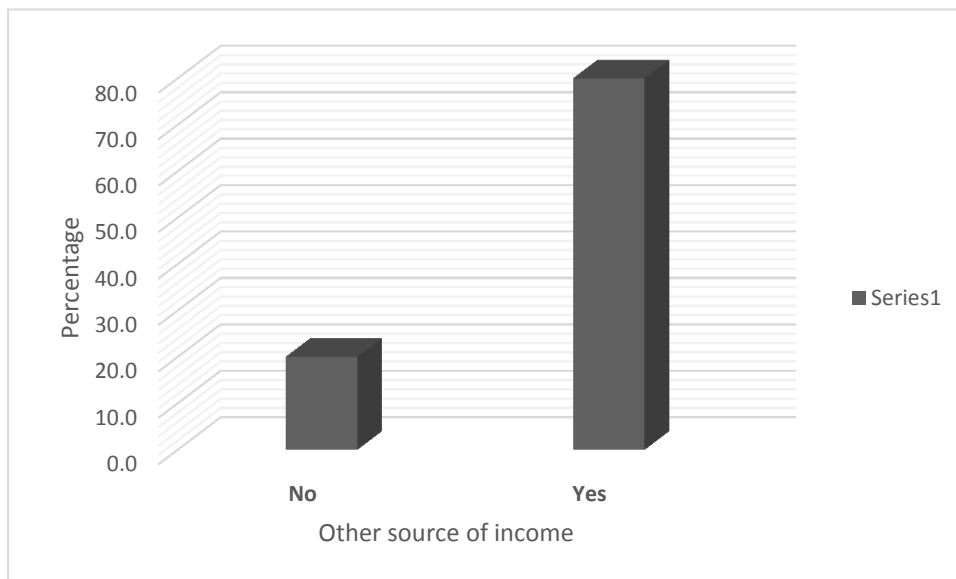


Figure: 4.9 Another source of income of the participants

As the data revealed 51% of the women farmers in the study area have another source of income in addition to the urban agriculture practice. And also their livelihood situation varies some of the respondents are civil servants, some of them are crop merchants and they practice urban agriculture in their leisure time.

4.5 Benefit of participating in Urban Agriculture for women

According to the in-depth interviewee, and key informant urban agriculture has benefited them in and contribute to their economic, political, social, and psychological empowerment. It creates a means of ensuring food security, income-generating activities, creating social cohesion or social bond, and ways of building self-confidence.

4.5.1 Food security benefits of urban agriculture for women

Urban agriculture has much importance the major one is food security benefit and the participant informed that their family consumes more urban agriculture product after they engaged in urban agricultural activities and their food consumption is improved in quality and quantity. In addition to this, their engagement in urban agriculture is minimized their cost which is spent on food items. In line with this, one study in Cape Town on urban agriculture benefits for women showed that it reduces expenses for fresh produce, thereby freeing up some of the household budgets for buying staple foods, such as vegetables, milk, eggs, and meat (Robertson, 2013).

As in-depth interviewee from wereda 07 diary producer explained, *“I can make my household food from my backyard and our consumption is an increase in quality and quantity after I engaged in the dairy production consuming the product like milk butter cheese production. I am a poor woman and I can't buy food like milk and its product but after I engaged in the farm activity my food consumption is improved and maybe it minimizes 2000birr cost for dairy products consumption per month”*.

Olivier & Heinecken claimed that urban agriculture is viewed as a culturally relevant food source for women throughout Africa, and is particularly important for women in Cape Town who have limited income and have migrated to the city (D. W. Olivier & Heinecken, 2017).

Similarly, the studies in Adama city on urban agriculture role of food security revealed a similar finding from the current research. Urban agriculture is playing a crucial in achieving food security for urban households. The majority of the surveyed sample households received the majority of their dietary energy from urban farms alone (Mulugeta, 2010). Urban agriculture's positive contribution to alleviating food insecurity is also found in Akaki Kality sub-city (Berhe, 2015). A similar study confirms our finding that urban agriculture has contributed to food and nutrition security is probably its main strength since agricultural production in cities provides the poorest with greater access to food and filling an essential share of nutritional needs (Armar-klemesu & Maxwell, 1992, (Orsini & Kahane, 2013).

Participants explained urban agricultural activities are beneficial. According to *women farmer in wereda 03 vegetable producer explanation*,

“I have benefited from vegetable production, for instance, I consumed the vegetable for me and my family and the surplus products are supply to the market. And I can get the income and it helps me to buy coffee and I participate in a social association like edir, equib tsiwa Mahiber (traditional religious association).

One poultry producer from wereda 08 also explained the food security benefits of urban agriculture as follows: *“my engagement in Poultry production has many benefits, for instance, we sell the egg and we can get income, and we use the egg for family food consumption and we eat the chicken any time when we want.*

4.5.2 Economic Benefits of urban agriculture for women

Women in the study area are economically benefited from urban agriculture as the in-depth interviewees disclosed that Urban agriculture is in many cases especially effective and efficient for married women with children, or women heads-of-households, because it is often (but not always) performed close to the home and combines well with their household responsibilities. Urban agriculture requires little cash, given that it can be undertaken with relatively low capital, technology, and inputs. It is thus attainable and affordable for women with limited education and resources, and often stimulates the use of indigenous practices.

It is not unusual to find women in urban households earning more from food production than their husbands earn from formal jobs. The ownership of animals and/or independent cash income may strengthen a woman’s social position within the household and the community. Animal rearing can also fulfil an important role as an economic safety net, and plays an important part in certain socio-cultural practices. Urban agriculture not only allows women to secure their daily household needs but provides a potential stepping stone for increased independence, confidence, and opportunity to improve their quality of life.

UA is promoted in several ways as an economic development tool. Women tend to be responsible for food provision in many cultures. Women use UA as their primary strategy in cases like this to maintain livelihoods and safeguard household incomes through subsistence production. The primary goal for urban women farmers in such circumstances is to produce food for household consumption. In addition to avoiding hunger, this eliminates the need to

purchase food (Robertson, 2013). Similarly, this research found that women urban farmers in the study area are generating income from urban agriculture to produce food for household consumption to fulfil other needs of their family beyond food, and also women spent money for other social associations.

As vegetable producer in wereda 09 revealed that *“I am a single mother because I am divorced and my ex-husband didn't help as I feed my children, pay for school, and have other expenses, so I must cover all the expenses myself from the income I gain from farming.* In line with this other dairy producer in wereda 09 explained the benefits of urban agriculture as follows *“In addition to offering milk, butter, and cheese, even the waste of the cow is used as a source of energy. In addition to this, I feel confident psychologically in my ability to earn an income and support my family.”*

Urban agriculture is considered a strategy to alleviate poverty. As the data from the key informant interviews informed that as a general in Ethiopia and Addis Ababa urban agriculture can be an important source of income, jobs, and freshest food for this rapidly growing population and urban poor as the strategy indicated, the country is in deep poverty, rapid population growth and environmental degradation, urban agriculture is a means of a source of employment, household incomes and food source (Karanja & Njenga, 2011). Urban agriculture by its nature is very easy to practice because it doesn't require high education level most of the time low-income people engaged in urban agriculture activities and also other segments of the society like civil servants are involving. The special quality of this sector is anybody can do this in their free time. The other aspect is many products are coming from other countries by foreign currency this affects the economy of our country and also it may affect the health of society. Studies in Zambia confirming this finding urban agriculture can be practiced side by side with other professions (Mupeta et al., 2020). Producing and consuming urban agriculture products at home are very important in a different dimension. In addition to this, the initial capital for practicing urban agriculture is less when compared with other sectors like the manufacturing industry. It also helps the community to buy fresh and healthy products in their locality. Similarly (Mandefro, 2009) claimed that urban agriculture is important for the community not only for the producers.

Urban agriculture has the potential to create job opportunities for unemployed youth and women. According to, Wereda 09, urban agriculture officer, urban agriculture create a job

opportunity “the government is highly working on urban agriculture to reduce the unemployment rate and in our wereda by this year 2020 allocate 18,000-hectare lands for different urban agricultural activities and it can be created job opportunity for 1206 beneficiary among them 70% were women majorities are organized in a group by 1 to10 in this regard almost 24 enterprises are registered”. Similarly several of these food justice projects are located in neighbourhoods where unemployment is high, where they serve as viable employment opportunities and catalysts for entrepreneurship. (Golden, 2013). The USDA's Community Food Projects in Iran have generated an estimated 2,300 jobs and incubated more than 3,600 microbusinesses, supporting this idea. (Mohammadi, 2019).

4.5.3 Social Benefits of urban agriculture for women

The social importance of urban agriculture is many for instance; farms and community gardens in urban areas provide safe recreational and environmental spaces for residents. Gardening and farming beautified neighbourhoods and employed residents to make communities more proud and attached to their surroundings(Golden, 2013).

The similarity is found in this study with the above research, as vegetable producer stated:

“When I take care of the vegetables, I have relaxed. The other thing is when I see the environment covered with green I am very satisfied because it gives aesthetic value to the environment and it will be clean. vegetable production also creates a social relationship there are my friends who produce vegetables so I feel free when I spend time with them then we help each other when it is needed”.(Patel, 1991 as cited in (Golden, 2013). Found that "Giving people a place to call their own for a season" so they could develop a sense of pride and ownership was one of the most important benefits of community gardening. This research found the same result women in the study area are by collaborating in groups and they beautify their environment and they use the land to cultivate different vegetables and trees.

The most observed impact of urban agriculture was its effect on communities and the lives of residents and participants. According a Dairy producer stated that *participating in urban agriculture is important for me, to create a social relationship there are my friends who produce dairy products so I feel free when I spend time with them then we help each other when it is needed”*. The same finding in Kibera revealed that in addition to food production, urban agriculture also catalyses positive community change, which is what makes it so

valuable. In particular, community gardens provided an important space for socializing and gathering (Debela et al., 2020). Similarly, Farmers in Kibera reported that sack gardening had strengthened friendships and cooperation between them. Some farmers found gardening beneficial because they were able to share their vegetables with their friends. Others, however, worked together with others by giving them extra seedlings, helping one another carry soil or build sacks, or by pooling money to buy fertilizer and pesticide. Having a sack gardening program has inspired people to talk more with their neighbours, making for a stronger sense of community. (Gallaher, et al., 2013).

4.5.4 Health and Psychological Benefits of urban agriculture for women

According to the women participating in this study, their participation in urban agricultural activities is helping them to improve their mental and physical health. Additionally, it also contributes to good psychological wellbeing.

The psychological benefits of green space, and specifically gardens, should not be underestimated in discussions of urban ecology. Green space enhances the aesthetics of the urban landscape and improves the quality of life in the city. It is obvious that working with the land is therapeutic, and gardens especially provide a space for meditation and community gathering (Gonfa, 2019).

This study found that women participation in urban agriculture helps women to empower them in decision-making ability and make them a leader in different position as the key informant interviewee from the wereda 08 indicated *“when women are economically independent or powerful indirectly increase their leadership and decision-making power so as I stated earlier if their participation in urban agriculture increases their economic status the leadership and decision making power on different issues will increase.*

In addition to the above benefits women participation in urban agriculture is help them to increase their self-confidence and as women farmer in wereda 03 explained:

“If you have an income you can do whatever you want and you didn’t dependent on your husband so I am independent and I have strong self-confidence. Similarly, as poultry producer in wereda 05 stated that:

“Now I am economically independent which means I spend money when I want in addition to this I am satisfied to engage in this activity it makes me confident in a different situation.

The study in South Africa confirmed and revealed that urban agriculture has a great contribution to enhance women’s psychological empowerment (D. Olivier, 2015).

4.5.5 Urban agriculture Challenges women face in the study area

Even though agricultural activities have benefits for women, a lot of challenges are there. According to the women interviewee and the key informant's responses, there are many challenges because urban agriculture is a recent practice in Ethiopia, and the sector facing challenges related to this practice. Lack of market linkage, limited access to improved seed, insufficient water access, lack of farm credit, limited technical support, limited access, and expensive production inputs, and inadequate farmland are the major challenges the study found that women are suffering.

Women in the study area face severe constraints in accessing, using, and/or controlling land in cities, compared with their male counterparts. Men tend to have the first choice of any available vacant land, leaving women with low-quality or less secure plots of land, often located at a considerable distance from home. Even within households with adequate land resources, wives may be at a disadvantage in terms of access to these plots. Distance is a related challenge: women are often left to travel extensive distances to marginal lands, their journeys requiring considerable time, physical effort, and financial expense for transportation.

As the data from interviewees and key informants indicated, women also face constraints in terms of urban agriculture production itself. They often lack inputs and working capital, as well as access to knowledge and information on the use of modern inputs and technologies. The latter is partly due to women's limited exposure to commercial urban agriculture or to their limited access to training courses offered by institutions or non-government organizations. Women are less likely to benefit from research or extension services that fail to consider gender-specific differences.

Women farmers in the study area disclosed that lack of adequate workplace a major problem and challenges they are facing. Lack of space is also the challenge of women who engaged in poultry and vegetable farming activity. As poultry producer in wereda 08 forward:

*"The challenge that we are facing is adequate working space we want to extend our farms so we need more surface area similar idea forwarded "*According to Addis Ababa urban

agriculture commission commissioner explanations “land, that allocated for urban agriculture is not enough compared to the demand”.



Figure 4.10: inadequate working space at home in wereda 03

Source: (field photograph of the researcher, 2020).

Similar studies are found in Ghana urban farmers, as the study revealed, the main problems in urban agriculture as mentioned by the producers are land both in terms of access and tenure security (Armar-klemesu & Maxwell, 1992).

Women are facing a problem regarding access to finance to improve farming activities. As poultry producer in wereda 03 explained “*The big challenge we facing is lack of access to credit if we have finance we want to extend the farm*” From those challenges lack of financial institutions are the major challenge and they are week do not provide credit for urban agricultural participants in addition to this the raw materials needed for urban agriculture are very expensive, and not easily available. There is another researches found the same result(Girma, 2010). Waste disposal area or landfill is a critical challenge especially for dairy producers.

The other challenges as indicated by 03 urban agriculture officers “*there is no effective market linkage for agricultural products. Sometimes there is no market or buyers there are many producers in some time the vegetable perished.*”

Another challenge forwarded by other interviewees was linked with medical supplies and treatment for cows and the insecticide, and pesticide medications are very expensive. Interviewee in wereda 07 explained that *“lack of medicine some time it cannot available nearby. The shortage of water during the winter season” of the time water not available in the area water is scarce in our farm area.* (Girma, 2010) found that the same result with this research in Addis Ababa vegetable producers. The cost of animal feed is very expensive. As poultry and dairy producers are stated as a big challenge as they explained,

“The price of the animal feed is very expensive at this time; the medical treatment for the cows is not available anywhere due to this factor the cow may have died. the waste disposal area also the other big problem.”

The vegetable producers have explained the challenges regarding the high cost of inputs. Farmers experience the most critical problems due to the rising costs of improved seeds and fertilizers. According to *vegetable producer in wereda 09 explanation*, *“the price of improved seed is very expensive and it is difficult to me”* similarly the study in Addis Ababa around Mekanisa vegetable producers faced a challenge on the high cost of inputs(Girma, 2010).

As diary producer in wereda 05 revealed that she is an old aged woman and she can't do things effectively because of the age factor: as she said,

The challenge facing is as you see I am old and I feel tired when moving from one place to another it becomes difficult to care for the cows indeed there is one guy who takes care of them but he needs cajolery. The other challenge is the corral is decay so I feel fright to hurt the cows by beasts. The other challenges that found from the finding is that the issue of male domination. So as to most of the respondent of the research were married women some of their husbands tend to discouraging their involvement in the activity and they didn't recognized the benefits of urban agriculture for their family. And this way they didn't support in terms of finance and also human labour. Generally, there is a similar finding between the respondents and the key informant response the literature also confirmed and found a similar result with this research.

CHAPTER FIVE

5 Conclusions and Recommendations

5.1 Conclusions

Women play an important and possibly transformative role in agricultural growth in developing nations, but they confront persisting barriers and economic restraints that limit their greater engagement in agriculture. The primary goal of this study is to assess types of urban agriculture practiced in the Akaki Kality sub-city, the effects of urban agriculture on women's empowerment, and the factors that influence it. The data from the key informant's interviewees, indicated many types of urban agricultural activities are practiced in both crop production and animal husbandries in the sub-city. poultry production, dairy production, vegetable production, cattle fattening, beekeeping, pig production, crop production, silk production, mushroom production, and seedling are the major urban agricultural activities practicing by the urban farmer in the sub-city. Descriptive and inferential statistics were conducted to evaluate factor affects empowerment and one-way ANOVA was employed to test if there is a difference in empowerment between the level of education.

In this study, the researcher used five dimensions (production, resource, income, leadership, and time) with ten (10) indicators to evaluate women's empowerment status in urban agriculture. And the study revealed that the highest proportion of women engaged in an urban farming activity are empowered with 80% of empowerment proportion and 0.93 5DE scores. Control over autonomy in production, control over income, and decision on Purchase, sale, or transfer of assets were the three top contributing indicators for women empowerment. However, access to credit was the least contributing indicator. Money-saving habits, years of stay in the activity, and women's education were some of the factors which were positively linked with the empowerment of the women. Moreover, women with educational levels above high school have higher empowerment scores.

Based on the qualitative finding the study demonstrated that urban agriculture has benefited them and it contributes to their economical, political, social, and psychological empowerment. It creates a means of ensuring food security, income-generating activities,

creating social cohesion or social bond, and ways building self-confidence and the study also disclosed that women engaged in urban farming have been facing many challenges such as insufficient working place, inadequate medical service, lack of waste disposal area the waste from the animal especially from the poultry and dairy producers face this challenge in this area there is no biogas as technology in the wereda. In addition to this especially in the dairy and cattle fattening production shortage of input supply is stated as a challenge. Some of the women argued that they got inadequate support from governmental bodies, while the others especially women engaged in poultry activity revealed they had technical support from agricultural extensions.

5.2 Recommendations

Based on the research finding the following issues are forwarded and as a recommendation to solve problems on urban agriculture in the study area.

- ❖ The Akaki Kaliti sub-city urban agriculture office should facilitate access to working Land, financial credits, and technical assistance are required appreciation activities that must be provided for women. Furthermore, women's education, boosting saving habits among women, and giving credit would benefit because in percent access to credit was the least contributing indicator. Women would be more empowered if they had a greater possibility of getting credit service. Prioritize improved access to land, water, seeds, credit, knowledge, and innovation, and empower women through capacity development facilitating their role as leaders and active agents of change, and assisting them in engaging in more profitable economic activities through agriculture is crucial.
- ❖ The weredas experts should be provided technical support for women because lack of adequate knowledge affects women's productivity. In addition to this, supports must be facilitated on technology which is important for productivity.
- ❖ The waste disposal area is the major problem of women in the study area especially dairy producers, so the government should be provided adequate landfill area and also the biogas technology in the farm area is the best solution and also and the waste also reuse for other products.
- ❖ The cost of animal feeds currently is very expensive and inaccessible so weredas urban agriculture office should regulate the cost and create a link with the producers.
- ❖ Based on these research findings and literature indicated, there are huge gaps in the policy or urban agriculture strategy to empower women in the sector so the policy should formulate specific policy guidelines to provide more support for women beneficiaries.
- ❖ The way forward: future researchers should study the challenge of the urban agriculture situation in the micro-scale enterprise (MSE). The researcher observed during data collection there are gaps in benefiting women in the enterprise and the male domination is a cause for the problem so the researcher recommends researchers give attention to this scenario.

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Appendixes

A. Demographic and Socio-Economic Information

<i>Variable</i>	<i>Measure (Short Note)</i>	<i>Remarks</i>
1.Position in HH		
2.Age		
3.Marital status		
4.Level of education		
5 . Family size		
7.Years engaged in farming		

1. Production	Input	<p>How much input did you have in making decisions about farming related issues?</p> <ol style="list-style-type: none"> 1. no input, 2. input into very few decisions, 3. input into some decisions, 4. input into most decisions, 5. Input into all decisions.

		<p>To what extent you feel you can make your personal decisions regarding household life?</p> <ol style="list-style-type: none"> 1. not at all, 2. Small extent, 3. Medium extent 4. to a high extent
	Autonomy	<p>Q1 My actions in agricultural production are partly because I will get in trouble with someone if I act differently</p> <ol style="list-style-type: none"> 1. never true 2. not very true 3. somewhat true, 4. always true <p>Q2 Regarding agricultural production I do what I do so others don't think poorly of me,</p> <ol style="list-style-type: none"> 1 = never true 2 = not very true 3 = somewhat true, 4 = always true <p>Q3 Regarding agricultural production I do what I do because I think it is the right thing to do.</p> <ol style="list-style-type: none"> 1 = never true 2 = not very true 3 = somewhat true, 4 = always true
2. Resource		<p>Do you have any assets in the household?</p> <ol style="list-style-type: none"> 1 no 2 yes <p>Do you participate in decision-making on selling, buying, and transferring household assets?</p> <ol style="list-style-type: none"> 1. input into very few decisions

		<ol style="list-style-type: none"> 2. input into some decisions 3. input into most decisions 4. Input into all decisions.
		<p>Have you taken a loan or credit for the past 12 months?</p> <ol style="list-style-type: none"> 1 no 2 yes
5. Income		<p>To what extent you feel you have the ability to make your personal decision regarding salary or income and major and minor household expenditure?</p> <ol style="list-style-type: none"> 1. Not at all 2. Small extent 3. Medium extent 4. To a high extent
		<p>How much input did you have in the decision about the use of income generated from the agricultural activity?</p> <ol style="list-style-type: none"> 1. No input 2. Input into very few decision 3. Input into some decision 4. Input into the most decision 5. Input into all decision
4 Leadership		<p>Are you an active member of different social groups or associations?</p> <ol style="list-style-type: none"> 1. No 2. Yes

		<p>Are you comfortable when speaking about the community issue?</p> <ol style="list-style-type: none"> 1. Not at all comfortable 2. Yes but with a great deal of difficulty 3. Yes, but with a little difficulty 4. Yes fairly comfortable 5. Yes very comfortable
<p>5 Time</p>		<p>How much time did you spend in agricultural activity within 24 hours?</p> <ol style="list-style-type: none"> 1. >10.5 hours 2. < 10.5 hour
		<p>How satisfied are you with your available time for leisure activities?</p> <ol style="list-style-type: none"> 1. Not satisfied 2. Neither satisfied nor dissatisfied 3. Very satisfied

Thank You!!

Interview Guidelines

In depth interview question for beneficiary women

1. Position in HH:
2. Age:
3. Marital status
4. Level of education
- 5 . Family size
7. Years engaged in farming
8. In which type of farm activity you involve?
9. Why are you engaging in this farm activity?
10. What benefits did you get from the farm activity?
11. Did the farm activity improved your food income?
12. Are you participating in labor, credit, and saving groups related to the farm activity?
13. What are the economic benefits of your farm activities?
14. Is your asset holding status improved? If yes, what assets?
15. How does this farm activity improve your health and fitness?
16. What are the challenges you encounter related to engaging in the farm activity?
17. What support does the government provide in terms of your farm activity?

Thank You inadvance!!

The key informant interview guideline

1. What are the urban agricultural activities mostly practiced and supported by the city government?
2. Why and which farm activities are employed by women and men headed households in the city?
3. What are the gaps in support programs in the sub-city regarding women's strategic and practical needs?
4. What are your opinions on the trend and experience of urban agriculture in the city?
5. Why was urban agriculture considered as a strategy to alleviate poverty than other sectors by the city?
6. In what ways does the support program improve women's access to and control over assets and services?
7. How does urban agriculture contribute to women's access to leadership and decision-making roles?
8. What policies on urban agriculture are implemented to narrow the gender gap that exists in the sector?
9. What challenges do women face in participating in the farm program in the city?
10. How do land, appropriate technology, and productivity improvements ensured for women participants?

Thank you inadvance!!