THE ROLE OF NON-GOVERNMENTAL ORGANIZATION IN PROMOTING FOOD SECURITY THROUGH URBAN AGRICULTURE: THE CASE OF ABCD PROJECT IN HAWASSA CITY

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THE ROLE OF NON-GOVERNMENTAL ORGANIZATION IN PROMOTING FOOD SECURITY THROUGH URBAN AGRICULTURE: THE CASE OF ABCD PROJECT IN HAWASSA CITY

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DECLARATION

I hereby declare that this MA thesis is entitled **"The Role of Non-Governmental Organization in Promoting Food Security Through Urban Agriculture: The Case of ABCD Project in Hawassa City"** is my original work and has not been presented for a degree in any other university, and all source of materials used for the thesis have been appropriately acknowledged.

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This thesis entitled **''The Role of Non-Governmental Organization in Promoting Food Security Through Urban Agriculture: The Case of ABCD Project in Hawassa City''** submitted in partial fulfillment of the requirements for the degree of Master of Arts in Community Development, and carried out by **Alehlign Melkamayehu,** under our supervision. Therefore, we recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department for defense.

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We, the undersigned, members of the Board of Examiners of the final open defense by **Alehlign Melkamayehu** have read and evaluated his thesis entitled **The Role of NGO in Promoting Food Security Through Urban Agriculture: The Case of ABCD Project in Hawassa City** and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree of Master of Arts in Community Development.

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ABBREVIATIONS AND ACRONYMS

ABCD: Action for Bushulo Child Development

CSA: Central Statistical Agency

FAO: Food and Agricultural Organization

FGD: Focus Group Discussion

FS: Food Security

HFIAS: Households Food Insecurity Access Scale

KII: Key Informant Interview

MFI: Micro Finance Institution

NGO: Non-Governmental Organization

SPSS: Statistical Packages for Social Science

UA: Urban Agriculture

ABSTRACT

The study examined the role of non-governmental organization (NGO) in promoting food security through urban agriculture in Hawassa City. In the study, a concurrent embedded design was employed. This mixed-methods approach involved the simultaneous collection of both quantitative and qualitative data, with quantitative data taking a primary role and qualitative data providing supportive insights. Both probability and non-probability sampling methods involving a multi-stage sampling techniques such as purposive, simple random and proportional sampling techniques were employed to select representative samples from each kebele. From a sampling frame comprising 645 project beneficiaries, a total of 247 samples were randomly selected with 0.05 margin of error and 95% confidence level. The quantitative data was collected from 247 ABCD project beneficiaries via both structured and semi-structured interview schedules. Qualitative data was obtained through Key Informant Interviews (KII) involving staff members of NGO. Additionally, Focus Group Discussions (FGD) were conducted with the beneficiaries of the project. These methods served as a means to triangulate and enhance the insights derived from the quantitative data. The ordinal logistic regression model was used to examine the significance of the NGO intervention strategies on the level of project beneficiaries' food security status. Statistical Packages for Social Science (SPSS) was used to analyze quantitative data. The descriptive statistics findings suggest that approximately 62% of the respondents were involved in both crop production and animal husbandry. The primary strategies of NGO intervention, as revealed by the descriptive statistics, included training, agricultural inputs provision, financial support, MFI linkage, pest management, market facilitation, and water pump provision. The ordinal regression analysis highlighted several factors significantly influencing the food security status of the project beneficiaries. Positive associations with improved food security outcomes were found for MFI linkage, pest management, agricultural inputs, financial assistance, and training. However, water pump availability and market facilitations did not demonstrate a significant correlation with the food security levels of the project beneficiaries. Based on the overall findings, the study recommends several actions. These include integrating education with agricultural interventions, enhancing understanding of animal husbandry, diversifying urban agriculture activities, water resources management, and reevaluating the NGO intervention strategies. Implementing these actions would enable the project to make significant contributions to enhancing food security among households.

Key Words: animal husbandry, crop production, food security, intervention strategies, non-governmental organizations, urban agriculture.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

In an era marked by rapid urbanization, the landscape of global poverty and food security is undergoing a significant transformation. The relentless march of urbanization is projected to continue over the next three decades, with the urban population expected to rise from 56% to 68% by 2050 (The World Bank, 2022; UN Habitat, 2022). This demographic shift is particularly pronounced in Asia and Africa, where urban growth rates surpass 4% per year, signaling a profound change in the socio-economic fabric of these regions (UNDESA, 2019).

The phenomenon of urbanization brings with it the "urbanization of poverty," as poverty migrates from rural to urban settings. Urban centers, especially in developing countries, are witnessing a surge in the number of residents living in extreme income poverty. Reports indicate that in certain African countries, over 20% of people living in cities experience extreme poverty (UN Habitat, 2022).

This shift has profound implications for food security. In urban contexts, access to sufficient, safe, nutritious, and adequate food is mediated by cash transactions, which are often at odds with the realities of employment instability, irregular housing, and pervasive poverty (FAO, 2018). The resulting food deserts not only signify a lack of access to healthy food options but also exacerbate social exclusion, particularly among those with limited purchasing power.

Urban agriculture (UA) has been identified as a key strategy to address the challenges of urban food insecurity. It is increasingly viewed as a new frontier for food production, with the potential to significantly contribute to feeding the burgeoning urban populations (Zezza and Tasciotti, 2010; Cecila et al., 2014). UA contributes to food security and nutrition in various ways, it provides for family self-consumption, generates income through the sale of surplus produce, and improves the supply of local markets with fresh, nutrient-rich foods at competitive prices (FAO, 2008).

The role of urban agriculture in the context of food security has garnered the attention of various stakeholders, including governments, civil society, and non-governmental organizations (NGOs). NGOs have been instrumental in promoting urban agriculture in developing countries through interventions such as training, seed provision, technological diffusion, and financial support (Farm Africa, 2023).

Ethiopia is no exception to these trends. The country is currently undergoing rapid urbanization, with the urban share of its population consistently increasing with its urban population constituting 23% of its over 110 million people (The World Bank, 2023). However, this high urbanization rate, coupled with food price inflation, reaching 43% as of 2023 significantly complicates the state of food security in Ethiopia (Ibid). Consequently, Ethiopia ranks among the most food-insecure countries globally with over 24 million its people considered food insecure, with at least 11.8 million requiring emergency food assistance in 2021/22 alone (WFP, 2023).

In response to the food insecurity in Ethiopia, several local and international NGOs are actively implementing projects to promote food security through urban agriculture. Notable organizations such as Farm Africa, Care Ethiopia, SOS Ethiopia, Common Vision for Development Association (CVDA), ENDA Ethiopia (Environmental Developmental Action), and Progress Integrated Community Development Organization (PICDO) are currently engaged in urban agriculture initiatives across various cities in the country. Their primary intervention strategies include providing training for households, introducing high-yield variety seeds, supporting agribusiness ventures, and facilitating start-up capital provision (Farm Africa, 2023).

Hawassa City, one of Ethiopia's fastest-growing urban centers, has experienced rapid expansion. From a mere 4.98 km^2 in the 1980s, it now covers approximately 42.35 km^2 of built-up area as of 2018 (Hawassa City Administration, 2023). This growth extends beyond the municipal boundary, encroaching on agricultural land and natural systems. UN-Habitat (2018) projections indicate that by 2030, the city's population will reach 818,260 due to a local urban annual growth rate of 5.48%. Given this rapid urbanization and other challenges, enhancing food accessibility for low-income households becomes crucial. Understanding NGO-led urban agriculture intervention strategies can play a significant role in bolstering food security.

1.2. Statement of the Problem

Ethiopia emerges as one of the most food-insecure nations globally, with a rising number of chronically food-insecure individuals. As of 2023, over 20.1 million people faced food insecurity in various regions of the country, including 2.73 million internally displaced persons (IDPs) and 1.88 million returnees (OCHA, 2023; WFP, 2023). Combination of factors including the rapid urbanization observed in the country is contributing to the rising concerns of food security issues in urban areas (Concern Worldwide, 2023 & Farm Africa, 2023)).

Hawassa city is undergoing rapid urbanization, with an annual growth rate of 5.48% (UN Habitat, 2018). Uncontrolled and unplanned urbanization pose threats to exacerbating food insecurity, underscoring the critical importance of sustainable city growth and planning. The city administration, in collaboration with NGOs, has implemented various intervention policies, programs, and projects focusing on food security, with urban agriculture emerging as a key strategy (UN Habitat, 2018).

Several NGOs, including Care Ethiopia, Progress Integrated Community Development Organization, Common Vision for Development Association, and SOS Children's Village Ethiopia, are actively engaged in implementing urban agriculture projects in Hawassa city. These initiatives aim to enhance food security among the city's residents, particularly targeting vulnerable groups such as the elderly, female-headed households, and people living with HIV. While each NGO adopts unique approaches to their projects, they also share common strategies in urban agriculture interventions, such as providing tailored training, introducing climate-smart technologies and seed varieties, and conducting continuous follow-ups and monitoring (Farm Africa, 2023).

Urban agriculture holds significant potential to alleviate food security challenges by enhancing and diversifying household incomes and promoting the capacity to produce and consume nutritious foods (FAO, 2018; Farm Africa, 2023). The role of urban agriculture in improving the food security status of Hawassa city dwellers has gained considerable attention from academics. Researchers such as Firew (2021), Mahteme & Fedilu (2020), Birehanu (2020), and Gezahegn et al. (2022) have investigated its nexus with urban poverty alleviation, livelihood improvement, waste management, and city

greening. Additionally, Reta (2016) examined the contribution of plant species diversity in home gardens to household food security and income generation.

The findings from the studies mentioned in the above paragraph highlighted the positive impact of urban agriculture on poverty alleviation, livelihood improvement, city greening, and food security. However, the existing literature lacks coverage on the role of NGOs in promoting food security through urban agriculture in Hawassa city. This study aims to fill this gap by assessing the role of NGO, named the SOS Children' Village Ethiopia's ABCD project, in enhancing food security at the household level in Hawassa city. The findings will offer valuable insights into the role of NGO interventions in urban agriculture and their implications for food security among urban households.

1.3. Objectives of the Study

1.3.1. General Objective

The general objective of the study is to examine the role of NGO named SOS children village Ethiopia in promoting food security among ABCD project beneficiaries in Hawassa city.

1.3.2. Specific Objectives

1. To identify the main types of urban agriculture practices employed by the project beneficiaries in the study area
2. To assess the main urban agriculture intervention strategies employed by ABCD Project in the study area
3. To examine the effect of NGO interventions on the food security status of households in the study area.

1.4. Research Questions

1. What are the primary types of urban agriculture practices utilized by project beneficiaries in the study area?

2. What are the main intervention strategies employed by the ABCD project to promote UA among the households?

3. How do NGO interventions influence the food security status of households in the study area?

1.5. Hypotheses

Null Hypothesis (H0): There is no significant relationship between NGO interventions and the food security status of households in the study area.

Alternative Hypothesis (H1): NGO interventions have a significant impact on improving the food security status of households in the study area.

- **Hypothesis 1**: Households that receive water pump provision from NGOs are more likely to be food-secure compared to those that do not.
- **Hypothesis 2**: Training provision by NGOs is positively associated with higher levels of household food security.
- **Hypothesis 3**: Support for pest management from NGOs is associated with a decrease in the likelihood of households being food insecure.
- **Hypothesis 4**: Market facilitation by NGOs increases the odds of households achieving food security.
- **Hypothesis 5**: Households with MFI linkage facilitation by NGOs are less likely to be food insecure.
- **Hypothesis 6**: The provision of agricultural inputs by NGOs is positively related to household food security status.
- **Hypothesis 7**: Financial support from NGOs is associated with a lower probability of households being food insecure.

1.6. Significance of the Study

Urban agriculture, the practice of cultivating crops and raising livestock within cities, has gained prominence as a strategy to address food insecurity. In urban contexts, limited access to land, water, and other resources poses challenges for agricultural

production. Non-Governmental Organizations play a crucial role in promoting urban agriculture and improving food security among vulnerable populations. This study investigated the effects of NGO interventions on food security status of the households in the study area by focusing on identifying the main types of urban agriculture practices adopted by project beneficiaries, evaluating the urban agriculture intervention strategies employed by the ABCD Project and how these interventions on can help promote urban agriculture as a means to increase food security among project beneficiaries.

The first objective centers on identifying the main types of urban agriculture practices adopted by project beneficiaries. Understanding the diversity of practices whether it involves small-scale vegetable cultivation, poultry farming, or vertical gardening provides insights into feasibility, scalability, and potential benefits. Recognizing successful practices provides additional inputs for informed policy recommendations and encourages sustainable urban agriculture adoption.

The second objective of this study is to evaluate the urban agriculture intervention strategies employed by the ABCD Project. By examining these strategies, we can understand their effectiveness, resource allocation, and overall impact. The ABCD Project utilized various intervention strategies which are grouped into two categories namely provisions and facilitations. Assessing these strategies and understanding their effectiveness may inform future program design and ensure efficient resource utilization.

The third objective explores the effect of NGO interventions on household's food security status. By analyzing data related to food access we can determine whether the ABCD project's efforts positively influence food security outcomes. This examination is expected to provide alternative insights for refining NGO strategies, advocating for supportive policies, and ultimately improving the well-being of vulnerable households in urban areas.

This study also aspires to contribute to knowledge generation as well as it attempts to make further empirical contribution to the previously conducted research on the role that NGOs could play in promoting food security among urban households through the practice of urban agriculture. The study also can serve as an entry point for further studies.

1.7. Scope of the Study

The study focuses on the contributions of non-governmental organizations (NGOs) to food security within the urban context of Hawassa City, specifically in three kebeles of Tulla sub city through the implementation of the ABCD project. The study aims to evaluate the effectiveness of the NGO initiatives as a strategic approach to mitigate food insecurity issues in urban settings.

The research encompasses a detailed examination of the ABCD project's strategies, activities, and outcomes related to food security status of the project beneficiaries. It investigates how these efforts align with the broader goals of enhancing food focusing on the accessibility dimension of FS among the urban population. The study also explores the types of UA activities engaged by the project beneficiaries.

Regarding research methodology, the study adopted a mixed-methods approach, combining both qualitative and quantitative techniques to provide a comprehensive analysis based on the research objectives. Qualitative methods, such as key informant interviews and focus group discussions, are utilized to gain insights from ABCD project staff. Quantitative method, such as survey was employed to gather information from the sample population.

1.8. Limitations of the Study

During this study, several limitations were encountered that impacted the depth and breadth of the research. One of the primary challenges was the scarcity of previous studies specifically addressing the role of NGOs in promoting food security through urban agriculture in Hawassa city. Consequently, the study had to rely heavily on primary data, which, while valuable, constrained the ability to compare results.

In addition to the limited literature, the study's methodology does not include a control group, which would have allowed for a more rigorous assessment of the project's impact. Without a comparison to a similar group not receiving NGO intervention, it is challenging to attribute observed changes in food security directly to the ABCD project interventions. This limitation highlights the need for further research employing experimental or quasi-experimental designs to establish causality more firmly.

Thirdly, the study limited to examining the effects of NGO interventions on the FS status of the project beneficiaries, it does not capture the other factors influencing food security in urban settings. Factors such as related with socio economy, infrastructure, policy, and environmental conditions may play a significant role in food security status of the households but not represented in the study. This oversight could lead to an incomplete understanding of the results associated with the findings.

Despite these limitations, the study provides valuable insights into the role ABCD project in promoting FS through urban agriculture in Hawassa city. While the study provides valuable insights into the role of NGO in enhancing food security through urban agriculture, these limitations must be considered when interpreting the results. They also offer directions for future research to build upon the findings and contribute to a more nuanced understanding of the interplay between NGOs, urban agriculture, and food security.

1.9. Organization of the Thesis

This study is organized into five chapters. The first chapter introduces the study by outlining the background, articulating the problem statement, delineating the study objectives, questions, hypotheses and discussing the significance. It also defines the scope, and limitations of the study. Chapter Two offers a comprehensive literature review, examining pertinent and related scholarly works. Chapter three is dedicated to the research methodology, description of the study area, research design, detailing the data sources, target population, sample size, sampling methods, data collection procedures, instruments used, and the validity and reliability of these tools. It also describes the analytical techniques employed and the ethical considerations adhered to. Chapter four delves into data analysis and interpretation, presenting the findings in a coherent manner. Finally, chapter five sum up the study with a summary, draws conclusions, and puts forward recommendations based on the research findings

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Introduction

The concept of food security, particularly within the urban context, is a multifaceted issue that has garnered significant attention from scholars, policymakers, and practitioners alike. The literature review herein delves into the existing body of research that explores the intersection of urban agriculture, food security, and the pivotal role of non-governmental organizations (NGOs). It aims to dissect the theoretical underpinnings and empirical findings that inform the current understanding of how urban agricultural practices can be leveraged to combat food insecurity.

2.2. Conceptual Literature

2.2.1. Urban Agriculture

Urban agriculture refers to various practices of cultivating, processing, and distributing food within urban areas. It encompasses not only the cultivation of crops but also activities related to animal husbandry, aquaculture, beekeeping, and horticulture within city limits. Unlike peri-urban agriculture, which occurs on the outskirts of suburbs, urban agriculture takes place directly within the cityscape. It can manifest at different levels of economic and social development, driven by motivations such as food security, nutrition, income generation, and environmental sustainability (FAO, 2023).

For this study, urban agriculture (UA) can be defined as the growing and distribution of food products through plant cultivation and raising livestock (such as poultry, sheep and goat) in cities for feeding the household members.

2.2.2. Food Security

Food security is the state in which all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2018). It encompasses not only having

enough food available but also ensuring that individuals can afford and access it. The concept of food security encompasses four main dimensions: such as availability, access, utilization and stability.

The availability of food is concerned with supplies of food from domestic production, imports, food aid and national stock. It Addresses the “supply side” of food security. It is determined by factors such as food production levels, stock availability, and net trade. This dimension ensures that a household has a consistent and reliable supply of food through production or purchase.

The access dimension of food security is concerned with the physical, economic and social aspects. The physical aspect is a logistical dimension concerned with whether food is available at the location where households actually need it. The economic aspect concerned with whether food commodities are available where people need it and households have the financial ability to regularly acquire adequate amounts of food to meet their requirements. The social aspect of accessibility refers to the fact the food commodities may be available, physically near to the consumer that may have the required resources to acquire them but that there may be socio-cultural barriers limiting the access to food, in particular to some groups of the population for social reasons for example. Households must have the means to acquire appropriate foods for a nutritious diet. This includes having enough money or resources to buy or barter for food.

Food utilization is concerned with whether the food is safe and nutritious food which meets people’s dietary needs. It is not sufficient that food be available and accessible to households to ensure that people will have a “safe and nutritious” diet. Several elements intervene here such as diversity of food, their conservation and preparation as well as the absorption of nutrients. Food must be nutritious and safe to ensure food security. Stability is concerned with the other three dimensions over time. Households should have stable access to food, without the risk of losing it due to economic or other crises.

2.2.3. Non-governmental Organizations (NGOs)

Non-Governmental Organization (NGO) is a non-profit group functioning autonomously from government influence, typically with the aim of addressing societal or humanitarian objectives across community, national, or global scales. Recognized as

civil society organizations, NGOs engage in diverse operations that span humanitarian assistance, environmental protection, social services, medical support, advocacy for human rights, and educational initiatives (UN, 2023; Britannica, 2023).

NGOs are characterized by their voluntary nature and are typically funded through a combination of private donations, membership dues, and government grants. They may rely on volunteer efforts or employ paid staff, and while they are independent of direct government control, they may engage in policy advocacy to influence government decisions (Britannica, 2023). The term NGO came into use with the establishment of the United Nations in 1945, where it was used to describe organizations that were not part of a government and were not conventional for-profit businesses. Today, NGOs play a crucial role in international development, aid, and philanthropy, contributing to the public good and addressing issues that affect various aspects of society and the environment (Britannica, 2023)

NGOs are Non-Governmental Organizations, serving non-profit based, legally constituted, directly or indirectly reliant on the system of international aid or other assistance and working in civil society (UN, 2023; Britannica, 2023). NGOs are characterized by voluntary; independent; not for profit; not self-serving; may engage in revenue generating activities; not part of government and operate with civil society; registered under an appropriate act; has an administrative structure; has definite aims and objectives; initiated and governed by its own members on democratic principles without any external control (Ibid). They have been recognized for their decentralized role and grassroots engagement with the world's poorest and marginalized, representing their voice and empowering them to break free from the shackles of poverty and alleviating social ills such as illiteracy and poor health (Britannica, 2023).

2.3. Theoretical Literature

2.3.1. The Nexus between Urbanization and Food Security

The phenomenon of urbanization brings severe challenges to ensuring household food security in a context characterized by high rates of unemployment, increasing development of the informal sector, deteriorating infrastructure, overcrowding and environmental degradation. In addition, cities should respond to increasing

globalization; managing the process of decentralization; and providing basic services to the burgeoning urban poor, whose contribution to the economy is not usually matched by their access to basic services. In most cases, urban residents in developing countries are increasingly exposed to the daily challenges, such as lack of safe water, inadequate sanitation and lack of environmental safeguards (air pollution, exposure to toxins and waste), and increased poverty and food insecurity (FAO, 2019).

In developing countries where rapid urbanization is taking place, the cash-mediated nature of access to sufficient, safe, nutritious and adequate food creates specific food security and nutrition challenges, given concurrent pressures from high levels of employment instability, irregular housing and poverty (FAO, 2019). In large cities, access to affordable and nutritious food (e.g., fresh fruit and vegetables) is characterized by high spatial and socio-economic inequality, as evidenced by the expansion of food deserts, which compound deprivation and social exclusion especially in areas of low purchasing power. Access to food is often constrained also by the physical distance between food production areas and consumer (FAO, 2019).

Food security and nutrition are also affected by the safety of the food eaten and the related ability of the consumer to make use of the nutrients and energy contained in the food. In urban contexts, health concerns increase due to lack of adequate water, sanitation and hygiene facilities (FAO, 2019). Urbanization constitutes a challenge to food availability in terms of changing consumption patterns, food production, and supply processes. In the context of growing economies, poor urban dwellers are at risk of consuming inadequate and low-quality food, including street food, which may be unhygienic, thus exposing them to health risks.

Rapid urban growth implies more food will have to be available to people who live in an environment that has traditionally been perceived as inappropriate for agriculture. As urban growth continues, water which is a crucial resource for agricultural production is becoming scarcer and often wasted due to excessive domestic and industrial usage, thus jeopardizing food supplies (UN, 2018; RUAF, 2016). From the above paragraph we can infer that the growing share of urbanization has implication on a food security status of households. Most of city's dwellers depend on cash to purchase foods. Therefore, any issues to the supply of food and higher prices could potentially affect urban households' food security.

2.3.2. Urban Agriculture and Food Security

Globally, a response to the challenge of urbanization for food production has been the increase in urban agriculture in the forms of community gardens and backyard gardens (Zezza and Tasciotti 2010; Tacoli and McGranahan, 2015). Urban areas are currently being viewed as new frontiers for food production and anticipated to contribute significantly to feeding the growing population. The role of UA is boldly underlined in FAO (2019), framework for the Urban Food Agenda, that focuses on supporting decision-makers at global, national, territorial and urban levels to recognize the role of cities and sub-national governments as key strategic sites and actors to address the complex socio-economic and ecological issues that constrain food security and nutrition.

Urban agriculture is considered to increase food security through two main pathways: improved access to food, and increased income (Mougeot, 2006). Home-grown foodstuffs increase the total amount of food available to a household and thus can prevent hunger and malnutrition. At the same time the availability of fresh, home grown food products, in particular fruits and vegetables, advances the nutritional status of household members and thereby improves health. Direct access to food often allows particularly poor households to consume a more diverse diet than they would otherwise be able to afford. Especially, animal husbandry is believed to provide an important source of animal protein, which is commonly limited in poor households' diets due to income constraints.

Recent studies on urban agriculture and its impact on nutrition focus on dietary diversity and kilocalorie consumption as two main aspects which influence the outcome of improved nutrition. For instance, Fryne et.al, (2010) in their analysis on child nutrition and urban agriculture in Kampala, also connected the aspect of maternal care to urban agriculture, arguing that mothers engaged in urban agriculture, as opposed to other forms of non-farm employment away from home, have an increased ability to care for their children. This was in return believed to positively impact levels of child nutrition

UA is also assumed to create an 'opportunity cost' – domestic producers can either save income, via the consumption of home-produced foodstuffs that are cheaper to produce than to buy from the market, and/or increase income by selling or trading their products.

Addressing urban food security therefore requires a balancing act between urban agriculture (the opportunity cost of producing your own food) and more efficient urban food markets (making the food you buy cheaper). The latter may be a result of urban or peri-urban farmers' contributions to the markets. Higher cash income at the household level is then positively linked to food security as households are believed to have greater access to food products, both in terms of quantity and quality (Mougeot, 2006).

2.3.3. NGOs in Urban Agriculture

Non-governmental organizations (NGOs) have become quite prominent in the field of international development in recent decades. NGOs that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development. Like in other countries, non-governmental and civil society actors are visible on the overall institutional landscape of Ethiopian society. Urban Agriculture (UA) programs undertaken by the NGOs are targeting the most vulnerable groups in the society including, Person Living With HIV/AIDS (PLWHA), Orphan and Vulnerable Children (OVC), and women headed households. These socially excluded households engaged in food production and become productive by using very small plots of land, marginal and vacant open places and using different kits (Fekadu, 2011)

A great number of organizations influence and involves in urban farming. They can be categorized into six groups: (i) farmers, (ii) non-governmental organizations (NGOs) and other support entities; (iii) local and national governments and other public authorities; (iv) institutions, including independent and university research centers; (v) private firms; and (vi) international development agencies (Britannica, 2023). These actors can be classified according to the five roles they fulfill: production, regulating, facilitating, providing, and partnering. One organization can fulfill multiple roles simultaneously or through different components. Moreover, actors not only influence urban agricultural activities, but are also affected by them, either unfavorably (as when poor agriculture practices cause health problems that require government intervention) or favorably (as when farmers properly use the sludge from a wastewater treatment plant) (RUAF, 2016). The role of NGOs in urban farming is mainly concerned with facilitating and providing.

Facilitation involves providing technical advice and training; brokering relationships with markets, government, micro finance institutions, and other groups; leading or supporting policy or regulatory changes; eliminating constraints and providing information (Britannica, 2023).

Providing is about the involvement of NGOs in urban agriculture move from facilitating to providing resources and inputs. This assistance includes supplying seeds and agricultural tools. It can also include providing financial resources, such as credit for purchasing inputs or land, or seed money to initiate an endeavor (Britannica, 2023).

2.3.4. Benefits of Urban Agriculture

Urban agriculture is an alternative method of food production that can provide multifaceted solutions to urban communities facing high rates of food insecurity. The Resource Center on Urban Agriculture and Food Security (RUAF) Foundation expects that by 2020, 85 percent of the poor in Latin America, and about 40 to 45 percent of the poor in Africa and Asia will be concentrated in towns and cities. Urban agriculture reduces the poverty and food insecurity resulting from urbanization, while also improving the health of city residents and preserving the environment (RUAF, 2016).

Urban agriculture (UA) has a potential to greatly contribute for achieving sustainable development goals directly or indirectly, particularly Goal 01 End poverty in all its forms everywhere (1.1, 1.4, 1.5); Goal 02 End hunger, achieve food security and improved nutrition and promote sustainable agriculture (2.1, 2.3, 2.4, 2.c); Goal 12 Ensure sustainable consumption and production patterns (12.1, 12.2, 12.3, 12.4,12.5, 12.7, 12.8); Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (15.9) (Ibrahim and Richaela, 2015).

Increased demand for food has followed the acceleration of urbanization in developing countries. Ethiopia is an example of this However, along with urbanization, the number of impoverished urban households has increased dramatically, as has the number of households who cannot afford to buy adequate food for their consumption (Bryceson & Potts 2005).

According to a paper by Thomas (2013), given the correct support, urban farmers could supply more than 42% of Addis-Ababa vegetable demand. According to Firew (2021), urban farmers in Addis Ababa saw urban farming as a method to increase the availability of food and money for their families. Urban agriculture has benefited them by giving self-employment, increasing income through excess production sales, and reducing food expenditures by diversifying their diet through the consumption of locally produced fresh and nutritious food. It also helped to deliver fresh veggies to the local market that were more than family usage. According to FAO (2008), urban agriculture has a key role in enhancing the community's and household's food security by providing food and nutrition, as well as rising purchasing power

Urban farming can also be a good source of income for the urban poor, if it is especially practiced as a formal sector. RUAF (2016) reported that the poor households in developing countries spend 50-70 % of their income to purchase foods; hence, it appreciated the benefits of self-growing crops and/or participating in other forms of urban agriculture by the urban poor. The report also confirmed "in Addis Ababa, above-normal profits are earned by even the smallest-scale backyard producers with very low capital" (RUAF 2016)

Actors in urban agriculture came from various groups of urban society. They can be the poor or the rich, women or men, natives or migrants, and so on. The participation of mostly women and other vulnerable households in the sector draws attention and implies the role of the sector in poverty alleviation and integrating urban societies (FAO, 2008; RUAF 2016).

Now days due to population growth and climate change in urban areas the environmental problems are increasing. Urban agriculture could contribute 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 (RUAF, 2016).

2.4. Theoretical Frameworks

2.4.1. Theory of Food Entitlement Decline (FED)

This theory analyzes food security from both demand and supply side. This theory underlines the importance of the concept of access to food during analysis of food security. In his Essay on Entitlement and Deprivation Sen (1982), underlined that food shortage is not a drop in the quantity of food, perse, but rather as a drop in the ability of certain people to "command" food. Certain members of a population could be short of food or starving while the region or nation still produces or imports sufficient calories to feed everyone. However, if a given person or even whole classes of people do not have the necessary capacity or influence to acquire food, they can still starve.

Sen (1982) asserts that access to food has a significant role to improve the food security status of households. Thus, food availability at a global or national level does not guarantee food security rather access to food also matters. He suggested that for instance, the Wollo famine (1972-74) that happened in Ethiopia was not due to local food availability decline rather it was due to transport services were poor that trade and aid transfer were restricted. Access to food is realized through trade, own production, job opportunity, and social networks (Devereux, 2006).

2.4.2. Sustainable Livelihood Approach (SLA)

The Sustainable Livelihood Framework (SLF) is a holistic and people-centered approach to improving the livelihoods of the poor. It comprises five key components: the Vulnerability Context, which refers to the external environment affecting people's livelihoods; Livelihood Assets, which are the resources people have access to; Policies, Institutions, and Processes, which are the rules and structures influencing access to assets; Livelihood Strategies, which are the ways people utilize their assets to achieve their livelihood goals; and Livelihood Outcomes, which are the results of these strategies. The SLF helps to organize the factors that constrain or enhance livelihood opportunities and shows how they relate. It's used to plan development activities and assess the contribution that existing activities have made to sustaining livelihoods (DFID, 2000).

SLF is a framework that focuses on improving the well-being and livelihoods of people, especially those who are vulnerable to poverty and social exclusion. NGOs (non-governmental organizations) often use this approach to address food security issues in urban areas through urban agriculture initiatives.

Urban agriculture refers to the cultivation of crops, livestock, or other agricultural products within cities or towns. It can help improve food security by providing fresh produce and meat to people who live in urban areas, where access to healthy food may be limited. Urban agriculture can also provide economic opportunities for local residents and contribute to environmental sustainability.

NGOs working with urban agriculture initiatives using the livelihood approach consider the various aspects of people's lives, including their social, economic, cultural, and political factors. This approach recognizes that people's livelihoods are not just about their income but also encompass their social relationships, access to resources, and ability to cope with risks and shocks.

Therefore, these NGOs work towards creating sustainable livelihoods for marginalized communities by promoting urban agriculture as an important source of food security and income generation. They implement activities such as training in sustainable agriculture practices, connecting farmers to markets, developing community-led farming cooperatives, and advocating for policies that support urban agriculture.

Overall, the livelihood approach in relation to NGOs, food security, and urban agriculture focuses on empowering people to create sustainable livelihoods through urban agriculture initiatives. By addressing the different factors that contribute to poverty and social exclusion, these initiatives can help communities become more resilient, self-sufficient, and food secure.

2.5. Empirical Literature

Poverty and food insecurity have been considered for decades to be rural problems, but rapid urbanization in many developing countries has given birth to a large class of urban poor which is creating food insecurity problem. Empirical literature focusing on the urban agriculture, food security and the role of NGO is discussed in this section thematically.

The study that carried out in five East African cities: Addis Ababa; Dares Salaam; Kampala; Kisumu and Nairobi, found that urban livestock keeping, the one segment of urban agriculture, benefits the poor and provides a way of diversifying livelihood activities that are accessible to vulnerable groups such as female-headed households, children, retired people, the sick and widows, as well as providing a source of locally produced food projects for people living near the livestock keepers. The study also revealed that Livestock are kept as social safety nets, retirement policies, deposits for funerals, sources of food and income. Urban livestock keeping is of great relevance to those in need of a social security strategy (Lindahl et,al, 2019).

An empirical study carried out by Tewodros (2007) evidenced the role that urban agriculture plays in the livelihoods of urban farmer households in Addis Ababa city. The role of urban agriculture in household income and urban poverty alleviation, and socio-economic challenges in relation to urban farming were investigated by the researcher. Urban farming in Addis Ababa was found to contribute significantly (65 %) to livelihoods of urban farmers at both sectoral and household levels, for which livestock and crop production accounted for 40 % and 45 %, respectively. The urban farmers produce a variety of crops and livestock for home use and/or market. The fact that mixed farming is the most common activity by many urban farmers in the city implies farmers' options for diversification. Cultivating vegetable crops is the most common practice for crop producers, and this may be associated with the size of landholdings (being small), and suitability of vegetables for cultivation, piece by piece harvesting and their liquidity. Despite its substantial sectoral contribution, livestock production, mostly rearing of milk cattle, is practiced by few urban farmers, and it may be because of capital (credit) constraints since the sub-sector requires high initial investment (Tewodros, 2007).

Messay (2010) found out that urban agriculture contributed to food security improvement among households in Adama, Ethiopia. In 2008/9, urban agriculture accounted for around 43% of total household food grain requirements. The farmers were able to collect 4.19 quintals of food grain per home per year or 0.75 quintals per person. In order of importance, grain purchases were found to be the second most important source of food grain (accounting for 13% of the net quantity required amount).

The study by Zezza and Tasciatti (2010), found out that urban agriculture is particularly important source of employment for people who may be unable to compete for a job in the formal sector, as well as for low-skilled and vulnerable city dwellers. It is estimated that 40% of African city dwellers are involved in some way in urban agriculture or related areas. Urban agriculture contributes to the expansion of the urban economy by giving employment to a large number of impoverished urban-producing households and generating earnings that are equivalent to or higher than the statutory minimum wage rate.

According to Firehiwot and Degefa (2015), found in their research that respondents in the Addis Ababa Yeka sub-City performed urban agriculture in addition to their other employment. According to them, job kinds range from the formal sector, such as public service, to the informal sector, which includes minor commerce, daily labor, and the sale of local beverages. Petty commerce and daily labor were the other sources of income for the majority of respondents (43%) and (47%) respectively. Similarly, Folken and Mwangi (2000), found out that that the majority of farming operations in Addis Abeba areas were carried out on a part-time basis by persons with other jobs.

The findings by Henok (2004) on the socioeconomic impact of in Addis Ababa contradicts with the above findings. According to him, the bulk of respondents (70%) are self-employed on their farms and engaging only in urban agriculture, 1.43 percent work on other private farms, and 1.28% work in non-farm activities.

2.6. Research Gap

Urban agriculture has emerged as a critical strategy for enhancing food security in rapidly growing cities. However, the role of non-governmental organizations (NGOs) in promoting urban agriculture remains underexplored, particularly in the context of developing countries. This essay aims to identify the research gap in this area, focusing on the ABCD project in Hawassa City, Ethiopia.

A review of the existing literature reveals that previous studies on urban agriculture and food security have primarily focused on different elements of the outcomes UA. These studies have provided valuable insights into the benefits of urban agriculture, including increased food access, income generation, and community development. However, they

have not specifically examined the role of NGOs in facilitating these outcomes in the context of Hawassa city.

The limitations of these studies lie in their scope and focus. They have largely overlooked the specific contributions of NGOs, such as providing technical support, resources and the effectiveness of their strategies in enhancing FS status of the households have not been adequately explored. These limitations highlight the need for more targeted research in this area.

Given these limitations, there is a significant gap in our understanding of how NGO interventions in urban agriculture can enhance food security in cities like Hawassa. This gap extends to both the strategies employed by NGOs and their effect on food security status of households. This research will fill this gap by examining the ABCD Project in Hawassa City. By focusing on NGO interventions, food security status, and urban agriculture practices, this study will provide valuable insights into the effectiveness of NGO-led urban agriculture initiatives.

2.7. Conceptual Framework

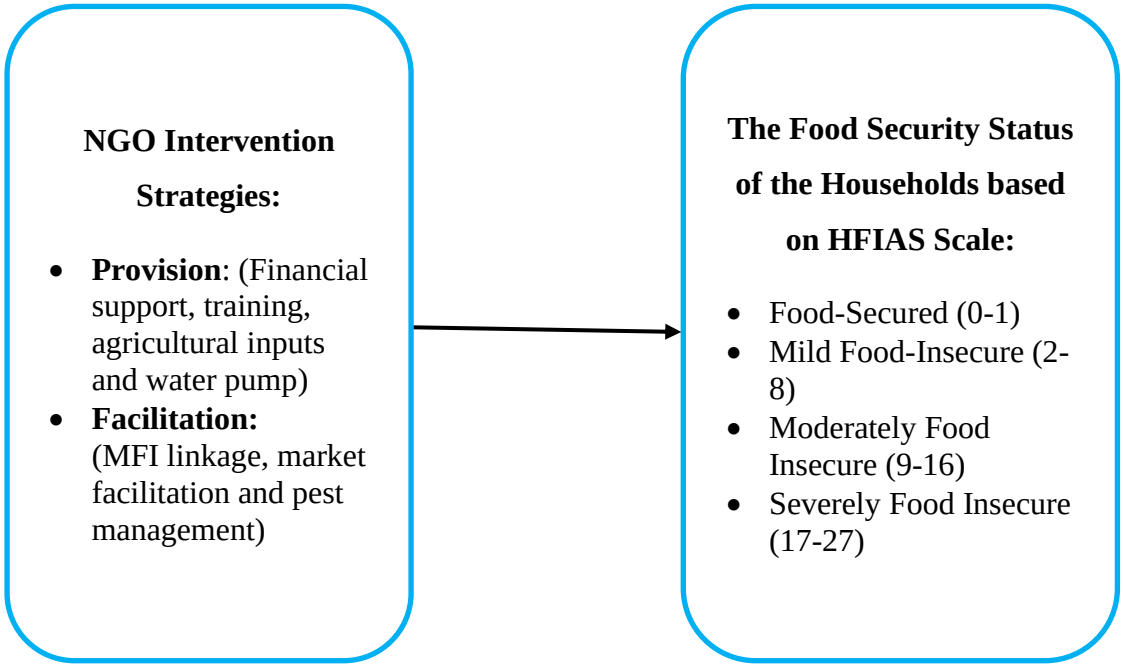
The following conceptual framework of the study is developed based on food entitlement theory and sustainable livelihood approach as theoretical framework and empirical findings of related literature. Urban agriculture benefits households by enhancing improved access to food through own production and increased income when part of produce is sold. The role of the NGO in improving urban households' food security is expressed through their involvement in enhancing the practice of urban agriculture through two broad strategies such as facilitation and provision.

Independent Variables – NGO Interventions: This includes the various strategies and programs implemented by NGOs to promote urban agriculture in the study area through facilitation and provision. It involves activities such training programs, MFI linkage and market facilitation, pest management, provision of agricultural inputs, water pump provision and direct financial supports for agricultural activities.

Dependent Variable – Food Security: This is the main outcome that the study. It refers to the four levels of food security status of the respondents in the study area, which can be measured in terms of access (Food-Secure, Mildly Food Insecure, Moderately Food

Insecure and Severely Food Insecure) based on the HFIAS score. The HFIAS provides a straightforward way to measure the impact of development programs on household food insecurity related to access. It consists of nine questions, each scored from 0 to 3, with 3 indicating the highest frequency of occurrence. By summing the scores, the total HFIAS ranges from 0 to 27, reflecting the degree of insecure food access.

Figure 1: Conceptual Framework: Effect of NGO intervention strategies on food security



Source: Developed through literature review.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

Chapter three outlines the comprehensive methodology employed in this study, detailing the description of the study area, research design, sampling procedures, sources and methods of data collection, data analysis techniques, model specification, tests for reliability and validity, and ethical considerations. This robust methodological framework ensured a thorough and ethically sound assessment of the role of NGO in promoting food security through urban agriculture in Hawassa city.

3.2. Description of the Study Area

Hawassa City, the administrative headquarter of the Sidama Regional State in Ethiopia, is situated on the shores of Lake Hawassa in the Great Rift Valley. Known for its diverse population and dynamic economy, Hawassa is a vibrant urban center and serves as a regional hub for commerce, culture, and education. This makes it an ideal location for examining the intersection of urban development and agricultural practices.

This study was conducted in Tulla sub-city, one of the eight sub-cities within the Hawassa city administration. Tulla is geographically bounded by Lake Hawassa to the west, the Oromia Region to the north, Wendogenet woreda to the east, and Shebedino woreda to the south. It is located between 6.45° and 38.7° longitude east, and between 6.33° and 6.62° latitude north. Covering an estimated area of 11,098.1 hectares, Tulla sub-city comprises 12 kebeles, of which 4 are urban and 8 are rural. The sub-city has a total population of 292,525, with a nearly balanced sex ratio: 48.5% female (141,704 individuals) and 51.5% male (150,821 individuals), making it the most populous sub-city in Hawassa (Hawassa City Administration, 2023). The sub-city receives an average annual rainfall of 1,124 mm and has an average altitude of 1,710 meters above sea level. Temperatures range from a maximum of 32 degrees Celsius to a minimum of 28 degrees Celsius. The dominant crops in the area are maize and false banana, while goats and cattle are the most common livestock.

According to project documents from ABCD (2022), the Action for Bushullo Child Development project has been active in Tulla sub-city since January 2022. The project was extended to a second phase, spanning from January 2023 to December 31, 2025, with the aim of scaling up the results achieved in the first phase. This project addresses various socio-economic challenges in the sub-city, including diseases, lack of education, unemployment, and food insecurity. It employs strategies such as interventions in urban agricultural practices to enhance food security and increase resilience among the beneficiaries.

The ABCD project, implemented by SOS CVE within the sub-city, aims to leverage urban agriculture as a means to improve food security and support sustainable urban development. These initiatives are particularly relevant given the rapid urbanization of the sub-city and the associated socio-economic challenges.

In summary, Tulla Sub City's unique characteristics and the active role of urban agriculture in its socio-economic fabric provide a rich context for studying the contributions of NGOs to food security. The sub city's ongoing development and the ABCD project's targeted efforts offer a practical case for exploring effective strategies to harness urban agriculture for the improved FS of urban communities.

Figure 2: Map of the Study Area

Source: ABCD Project (2022)

3.3. Research Design

In the study, a concurrent embedded design was employed. This mixed-methods approach involved the simultaneous collection of both quantitative and qualitative data,

with quantitative data taking a primary role and qualitative data providing supportive insights.

By integrating qualitative insights within the primarily quantitative framework, the concurrent embedded design enabled triangulation. This approach enhanced the credibility of the study by corroborating findings across different types of data. It also provided a comprehensive understanding of how the ABCD Project promoted food security through urban agriculture, highlighting not only the statistical outcomes but also the underlying mechanisms and participant experiences.

3.4. Sampling Procedure and Techniques

The study employed both probability and non-probability methods, with multi-stage sampling technique. First Hawassa city has been selected through purposive sampling method, because the city has been one of the fastest growing cities in the country with urbanization rate of above 5.48% (UN Habitat, 2023) and urban agricultural projects are being implemented by different NGOs to improve households' food security status. Then, Tulla sub city and three kebeles within the sub-city (Finchewa, Tulo and Alamura) have been selected through purposive sampling. The rationale behind selecting Tulla sub-city and the three kebeles was due to the fact that the livelihood of most of the households in these kebeles are related with urban agriculture. Beside that these are the kebeles where the NGO named SOS Village Ethiopia intervening to promote food security through urban agriculture among poor households with its project entitled ''ABCD.''

In the third stage, simple random sampling was used to draw representative samples from already developed sampling frame. The population and unit of analysis of the study were beneficiaries in those three kebeles who are the target population of ABCD project, and their main livelihood depends on urban agriculture. The sampling frame is developed based on the data obtained from ABCD project which involves 645 households in those three kebeles.

To determine the sample size, the Yemane's (1967) formula was employed because it is a practical and straightforward tool for determining sample size in research with a known, finite population. By incorporating desired levels of precision and confidence,

it helps ensure that the sample is representative, thus enhancing the reliability and validity of the study's findings

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

Where: **n** is the sample size, **N** is the population size, **e** is the level of precision or margin of error.

Thus, N= 645, e = 0.05 with 95 % confidence level

$$n = \frac{645}{1 + 645\,(0.05)^2}$$

$$N = 247$$

In the fourth stage, a proportional allocation method was employed to get representative households from each kebele.

$$ni = \frac{n \times Ni}{N}$$

Where: n= the sample size, Ni = the population size of the ith strata and N= population size.

Table 1: Sampled Kebeles and Proportional Allocation of Samples

Kebeles	Number of Project Beneficiaries	Proportional Sample Size
Finchewa	162	62
Alamura	167	64
Tulo	316	121
Total	645	247

3.5. Sources of Data

In this study both primary and secondary data sources were used. Primary qualitative data were collected through key informant interviews and focus group discussion. Primary quantitative data was collected through interview schedule. Whereas relevant secondary data was collected from project documents, books, articles and websites.

3.6. Methods of Data Collection

For this research, a mixed-methods approach was employed, integrating both qualitative and quantitative data collection methods. Qualitative data were obtained through KII and FGD, which provided contextual insights to complement the quantitative findings. Quantitative data was collected via surveys.

3.7. Tools for Data Collection

To meet the general and specific objectives of the study, both qualitative and quantitative data were gathered from primary and secondary sources. The data collection tools that were used are discussed as follows.

Interview schedule: both structured and semi structured interview schedules were developed in English and interviewed in Amharic and Sidama languages. Four enumerators were oriented to collect data using survey questionnaire. A total of 247 interview schedules were used to collect household data on food security status, types of urban agriculture activities, NGO intervention strategies and household socio-demographic characteristics (e.g. gender, age, educational level, and family size).

Key Informant Interviews (KII): key informant interview was conducted to get additional insights and generate information that may not be fully addressed through survey alone. Semi structured interview was used to get information from purposively selected NGO staff. In general, 5 NGO staff were interviewed using open ended questions to capture data related with the research objective 1 and 2. Interview protocol was used for asking questions and recording answers.

Focus Group Discussion (FGD): at each kebele one FGD was held with the beneficiaries of the project to gather project beneficiaries' opinion and gain more insight on the types of UA practices they practice and the type of assistance they received from the NGO. Eighteen FGD participants involving both sexes were purposively selected, six from each kebele.

3.8. Methods of Data Analyses

The study employed both quantitative and qualitative approaches to data interpretation and analysis. The quantitative data gathered from the interview schedules were analyzed by using SPSS version 26 and qualitative data were analyzed thematically. Both inferential and descriptive statistics such as frequency distribution, percentages and regression analyses were employed.

Objective 1: To assess the main types of agricultural activities practices employed by the project beneficiaries.

Descriptive Statistics: Summarize survey responses (e.g., frequencies, percentages) related to the main types of agricultural activities employed by sample respondents

Objective 2: To assess the main urban agriculture intervention strategies employed by ABCD Project in the study area.

Descriptive Statistics: Summarize survey responses (e.g., frequencies, percentages) related to specific NGO interventions.

Content Analysis: textual data from project documents were analyzed to identify the NGO intervention strategies.

Objective 3: To evaluate the impact of NGO-promoted urban agriculture on the food security status of households in the study area.

Food Insecurity Measurement Scales (the Household Food Insecurity Access Scale – HFIAS): has been used to determine the food security status of households and categorize households into four levels of household food security (access): food-secure, mild food insecure, moderately food insecure and severely food insecure.

The ordinal logistic regression: the ordinal logistic regression model was used to investigate the relationship between the dependent variable which is household's food security status (food-secure, mildly food insecure, moderately food insecure and severely food insecure) with a set of independent variables of NGO interventions.

3.9. Model Specification

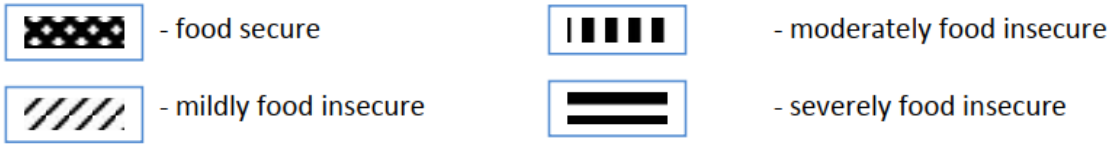
3.9.1. Household Food Insecurity Access Scale (HFIAS)

Household Food Insecurity Access Scale (HFIAS) model was used to evaluate household access to food security. This model captures food preferences, quality and quantity. Every household were asked the nine generic questions and categorized into four food security categories.

The HFIAS consists of two types of related questions. The first question type is called an occurrence question. There were nine occurrence questions that ask whether a specific condition associated with the experience of food insecurity ever occurred during the previous four weeks (30 days). Each of the questions in table 2 were asked with a recall period of four weeks (30 days). The respondents were first asked an occurrence question – that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers "yes" to an occurrence question, a frequency-of-occurrence question is asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks, (Coates et.al, 2007).

Figure 3: Categories of food security (access)

Question	Frequency		
	Rarely 1	Sometimes 2	Often 3
1a			
2a			
3a			
4a			
5a			
6a			
7a			
8a			
9a			



Source: Coates, Jennifer, Anne Swindale and Paula Bilinsky (2007)

Example: 1. In the past four weeks, did you worry that your household would not have enough food? 0 = No (skip to Q2) 1 = Yes 1.a. How often did this happen? 1 = rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks).

The HFIAS indicator categorizes households into four levels of household food security (access): food-secure, mildly food insecure, moderately food insecure and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently (Coates et.al, 2007).

Table 2: HFIAS Score Categories

HFIAS Category	HFIAS Category Score	Ranges of Score
Food-secure	1	0-1
Mildly food insecure	2	2-8
Moderately food insecure	3	9-16
Severely food insecure	4	17-27

Source: Adopted from Coates, Jennifer, Anne Swindale and Paula Bilinsky (2007)

HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. Before summing the frequency-of-occurrence codes, the data analyst should code frequency-of-occurrence as 0 for all cases where the answer to the corresponding occurrence question was “no” (i.e., if Q1=0 then Q1a=0, if Q2=0 then Q2a =0, etc.). The maximum score for a household is 27 (the household response to all nine frequency-of-occurrence questions was “often”, coded with response code of 3); the minimum score is 0 (the household responded “no” to all occurrence questions, frequency-of-occurrence questions were skipped by the interviewer, and subsequently coded as 0 by the data analyst.) The higher the score, the

more food insecurity (access) the household experienced. The lower the score, the less food insecurity (access) a household experienced (Coates et.al, 2007).

3.9.2. Ordinal Logistic Model

Ordinal logistic regression models are the most commonly utilized multivariate technique that examines the relationship between an ordinal category of dependent variable and two or more metric independent variables. In this study the Ordinal logistic regression model was used to investigate the relationship between household's food security status with the independent variables of NGO's intervention strategies. $\log[1 - \mathrm{P}(\mathrm{Y} \leq \mathrm{j})\mathrm{P}(\mathrm{Y} \leq \mathrm{j})] = \alpha\mathrm{j} - (\beta_1 \times \mathrm{WaterPumpProvision} + \beta_2 \times \mathrm{Trainingrovision} + \beta_3 \times \mathrm{MarketFacilitation} + \beta_4 \times \mathrm{MFILinkageFacilitation} + \beta_5 \times \mathrm{AgricultureInputsProvision} + \beta_6 \times \mathrm{PestManagement} + \beta_7 \times \mathrm{FinancialSupport})$

where:

- Y is the ordinal dependent variable (Household Food Security Status: food-secure, mild food insecure, moderately food insecure, severely food insecure).
- *j* represents the cutoff points for each cumulative probability (for each category j).
- P(Y≤j) is the cumulative probability of the dependent variable being less than or equal to category j
- P(Y>j) is the cumulative probability of the dependent variable being greater than category j.
- αj are the intercepts (or thresholds) for category j.
- βs are the coefficients for the independent variables.

3.10. Operational Definition of the Research Variables

3.10.1. Dependent Variable: Food Security Status

Definition: Food security status refers to the level of access to sufficient, safe, and nutritious food that meets individuals' dietary needs for an active and healthy life. It's measured using the Households Food Insecurity Access Scale (HFIAS), which categorize food security status into ordered 4 categories based on the score of 0-27.

Food security status divided into four categories:

Food Secure: Households have reliable access to sufficient, safe, and nutritious food.

Mildly Food Insecure: Households experience occasional or mild anxiety about food sufficiency but do not experience actual food shortages.

Moderately Food Insecure: Households experience reductions in food quality and quantity, affecting diet diversity and food intake.

Severely Food Insecure: Households experience severe reductions in food intake, with adults and children experiencing hunger.

Table 3: Measurement of the Dependent Variables

S/n	Name of the variable	Measurement	Codes	HFIAS Score Description
1	Food-secure	Ordinal	1	0-1
2	Mildly food insecure	Ordinal	2	2-8
3	Moderately food insecure	Ordinal	3	9-16
4	Severely food insecure	Ordinal	4	17-27

Source: Adopted from Coates, Jennifer, Anne Swindale and Paula Bilinsky (2007)

3.10.2. Independent Variables

Non-governmental organization interventions, strategies implemented by SOS Children Village Ethiopia through its ABCD project at Hawassa city to promote urban agriculture in the study area through facilitation (such as MFI linkage, market facilitation, pest management) and provision (such as training, agricultural inputs, water pump, and financial support).

Market Facilitation: Whether the household has received assistance from an NGO in accessing markets for their agricultural products.

MFI Linkage Facilitation: Whether the household has been linked to a Microfinance Institution (MFI) by an NGO.

Pest Management: Whether the household has received support for pest management facilitated by the NGO.

Training Provision: Whether the household has received training in agricultural practices from an NGO.

Agriculture Inputs Provision: Whether the household has received agricultural inputs like seeds, fertilizers, pullets etc., from an NGO.

Financial Support: Whether the household has received financial support from an NGO.

Water Pump Provision: Whether the household has received a water pump from an NGO.

Table 4: Measurement of Independent Variables

S/n	Name of the variable	Measurement	Codes	Description
1	MFI linkage facilitation	Binary	0/1	0=No & 1=Yes
2	Market facilitation	Binary	0/1	0=No & 1=Yes
3	Pest management facilitation	Binary	0/1	0=No & 1=Yes
4	Training provision	Binary	0/1	0=No & 1=Yes
5	Agricultural inputs provision	Binary	0/1	0=No & 1=Yes
6	Financial support provision	Binary	0/1	0=No & 1=Yes
7	Water pump provision	Binary	0/1	0=No & 1=Yes

Source: Own construction 2023/24

3.11. Tests for Data Reliability and Validity

Reliability refers to the consistency and repeatability of the findings if the study were to be replicated under similar conditions. In this study, reliability was ensured through a pilot test involving 10% of the sampled ABCD project beneficiaries who practice urban agriculture in the study area. This pilot test served to identify and address any potential issues with question clarity or phrasing before full-scale data collection. By refining the data collection tools based on the feedback from the pilot test, the study ensured that the responses collected were consistent and reliable. Besides that, the internal consistency of the survey was assessed using Cronbach's alpha coefficient. The values ranged between 0.7 and 0.9 for variables under each objective, indicating a high level of consistency in the responses to the items within each variable. This suggests

that the items reliably measure the same construct and contribute to the overall reliability of the study.

Validity, on the other hand, refers to the accuracy of the findings, or the degree to which the study accurately reflects the specific concept it is attempting to measure. In this study, validity was thoroughly verified through careful design and implementation of the data gathering techniques. The questions were designed to be clear, concise, and directly related to the study's objectives, thereby ensuring that they accurately measured the concepts of interest.

Furthermore, the study used a representative sample of ABCD project beneficiaries, which enhances the external validity or generalizability of the findings. The use of a representative sample ensures that the findings of the study can be generalized to the larger population of ABCD project beneficiaries practicing urban agriculture in Hawassa City.

In conclusion, through careful design, piloting, and implementation of the data collection methods, this study has ensured the reliability and validity of its findings. This lends credibility to the results and the subsequent conclusions and recommendations drawn from the study

3.12. Ethical Consideration

In the process of conducting this research on the role of NGO in promoting food security through urban agriculture in Hawassa City, several ethical considerations have been taken into account. Firstly, informed consent was obtained from all participants involved in the study, including those participating in surveys, key informant interviews, and focus group discussions. They were provided with clear information about the purpose of the research, the procedures involved, and the potential benefits.

Secondly, the confidentiality and anonymity were maintained for all participants. The data collected was anonymized and stored securely to ensure privacy. No personally identifiable information was included in the final report.

Thirdly, the principle of non-maleficence was upheld, ensuring that the research did not cause any harm to the participants. The potential benefits of the research were weighed against any potential risks to the participants.

Fourthly, the research aims to contribute to the understanding of the role of NGO in promoting food security, which could potentially benefit the participants and the wider community in Hawassa City. This aligns with the principle of beneficence.

Lastly, the research adhered to rigorous standards of data collection, analysis, and interpretation phases to ensure the validity and reliability of the results. An appropriate acknowledgment and citation were provided for any concepts or ideas taken from the literature and limitations or potential sources of bias were acknowledged.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1. Introduction

This chapter presents the findings of the empirical investigation conducted within this thesis, wherein the gathered data is systematically analyzed and interpreted to derive meaningful insights and conclusions. By analyzing the data in an organized way, this chapter aims to give a full understanding of the topic being studied, based on the research objectives. Moreover, this chapter serves as a platform for synthesizing empirical findings with existing scholarly discourse, thereby contributing novel perspectives and empirical evidence to the academic domain.

4.2. Socio-Demographic Characteristics of the Respondents

This section of the paper examines the demographic profiles of the respondents, encompassing their gender, age, marital status, household size and educational attainment level.

Table 5: The Gender and Age of Sample Respondents

		Age (Years)						
		15-24	25-34	35-44	45-54	≥55	Total	%
Gender	Female	10	81	21	9	4	125	50.6%
	Male	18	21	61	13	9	122	49.4%
	Total	28(11.3%)	102(41.3%)	82(33.2%)	22(8.9%)	12(4.8%)	247	100%

Source: Survey data 2023/24

Table 5 delineates the composition of the sample population with respect to gender and age divisions. The data indicates a balanced female and male respondents' representation, comprising 125 and 122 respectively. Age distribution analysis reveals a concentration within two age groups, the first is 25–34-year range, accounting for 102 of the total respondents (41.3%). The subsequent leading age category is the 35-44 years group, representing 82 individuals (33.2%). The third largest age group bracket is 15-24, which representing 28 individuals (11.3%). The remaining age brackets, 45-

54 and 55 and above years, exhibit a markedly lower response rate, with 22 (8.9%) and 12 (4.8%) respectively. This demographic breakdown provides insight into the age profile of the study's participants.

The preponderance of some age groups mirrors the composition among Ethiopian primary workforces. Notably, the majority of respondents fall within the 25-34 and 35-44 age brackets, indicating that this cohort is the primary focus of the ABCD project's targeting criteria and it is also the primary working age group. This observation aligns with findings from prior studies, which suggest that individuals in this age category are the more likely targets groups of projects focusing on livelihood interventions, since this age group considered to be the primary working age group in the Ethiopian context (Farm Africa, 2023).

In Ethiopian society, socio-economic responsibilities such as supporting families, raising children, and managing households predominantly fall on individuals in those age ranges. These age groups tend to be more stable and settled, making them more accessible for participation in surveys and research studies compared to younger or older age groups (CSA, 2019). Their central role in societal functions further explains their overrepresentation in survey data.

Table 6: Marital Status of the Respondent

Marital Status	**Frequency**	**Percent**
Single	9	3.6
Married	170	68.8
Divorced	8	3.2
Widowed	60	24.3
Total	**247**	**100.0**

Source: Survey data 2023/24

The fact that 68.8% of the respondents in a survey are married has several implications for urban agriculture activities and project participation. These implications can influence various aspects of urban agriculture, from participation rates to the types of crops grown and the distribution of agricultural responsibilities within households. Married individuals often represent more stable and continuous household units. This stability can positively impact urban agriculture activities as stable households are more

likely to engage in long-term agricultural projects. Stability allows for better planning and maintenance of urban gardens (FAO, 2019).

This finding is consistent with studies demonstrating married households might have greater motivation to engage in urban agriculture to meet the nutritional needs of their families. Urban agriculture can provide fresh and diverse produce, contributing to better household nutrition. Married couples with children, in particular, may prioritize growing vegetables and fruits to ensure a healthy diet for their family members. This focus on household consumption can drive the types of crops grown and the methods used in urban agriculture (Ruel, Garrett, & Yosef, 2017).

The lower percentage of widowed respondents (24.3%) compared to married respondents in the context of the urban agriculture activities and project participation can be related with the needs and capacities of widowed individuals and project participants selection criteria. Project participant selection criteria may give less emphasis to widows, divorcees, and single individuals compared to married individuals for several reason based on the goal of the project. In the context of ABCD project the main goal of the project is protecting children from family separation, thus the project focuses on married couples.

Table 7: Family Size

Family size	**Frequency**	**Percent**
1-2 members	13	5.3
3-4 members	48	19.4
5-6 members	86	34.8
7 or more members	100	40.5
Total	247	100.0

Source: Survey data 2023/24

The prevalence of larger family sizes (5-6 members and 7 or more members) comprising 75.3% of the sample can be attributed to the nature of their livelihood strategies which mainly dependent on agriculture. This finding is consistent with studies that relates the prevalence of larger family sizes in Ethiopia, particularly those with 5-6 members and 7 or more members with variety of social, economic, and cultural factors in Ethiopia. In Ethiopia, the importance of having a large family, which can be seen as a source of pride, social status, and support in old age.

Larger families are particularly prevalent in areas with high unemployment rates and low socioeconomic status, where they serve as an economic strategy for pooling resources and labor (World Bank, 2023). In agricultural regions, larger families are beneficial as they provide more labor for farming activities, which is crucial for both household subsistence and income. Additionally, in communities with limited social services and safety nets, larger families offer a broader network of support (Ibid).

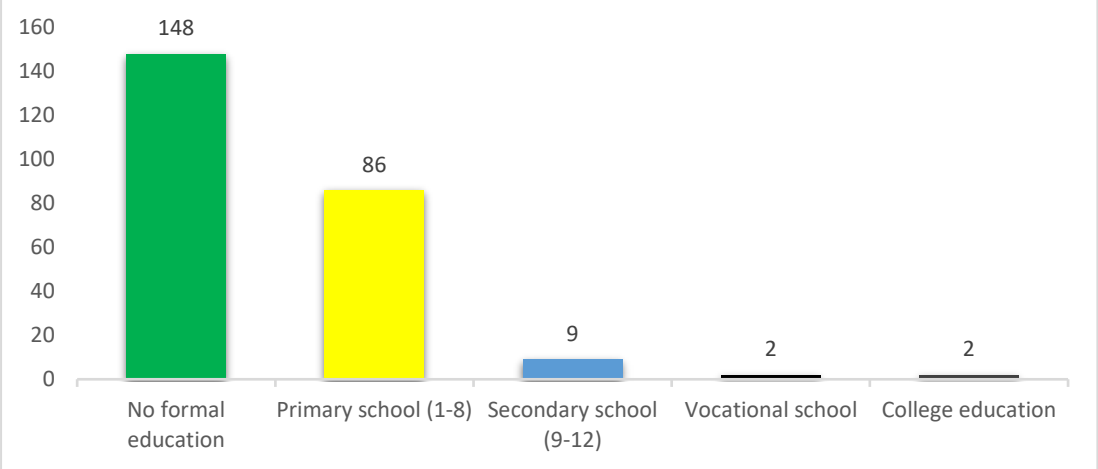
Table 8: Education Level of the Household Head

Level of Education	Frequency	Percent
No formal education	148	59.9
Primary school (1-8)	86	34.8
Secondary school (9-12)	9	3.6
Diploma	2	.8
Degree	2	.8
Total	247	100

Source: Survey data 2023/24

A significant majority of the respondents 148, nearly 60%, have not received any formal education. This high percentage indicates a potential barrier to socio-economic development as lack of education often correlates with limited employment opportunities and lower income levels. In the context of development projects, especially those focusing on skills and knowledge dissemination, this demographic might require foundational training and literacy programs to ensure effective participation and benefit. About 34.8% of the respondents have completed primary school. This substantial portion indicates that a significant number of individuals have at least basic literacy and numeracy skills. Primary education provides a foundational understanding that can be built upon through vocational training or further education.

Figure 4: Education Level of the Household heads



Only 3.6% of respondents have completed secondary school. Vocational education is held by only 0.8% of respondents. This extremely low figure suggests limited access to or uptake of vocational training programs, which are crucial for acquiring specific job-related skills. Similarly, only 0.8% of respondents have attained college education. This figure underscores the rarity of higher education within the sampled population, indicating significant barriers to accessing and completing college education. Individuals with college education are likely to have significantly better job prospects and earning potential. However, their very small number suggests that higher education is not a common achievement among the sample, potentially due to socio-economic barriers, availability of institutions, or cultural factors.

4.3. The Main Types of Agricultural Practices Employed by the Project Beneficiaries

Urban agriculture, the practice of cultivating crops and raising livestock within cities, plays a significant role in addressing food security challenges. To comprehensively assess food security status among urban households, it is essential to understand the specific types of agricultural activities engaged by sample respondents.

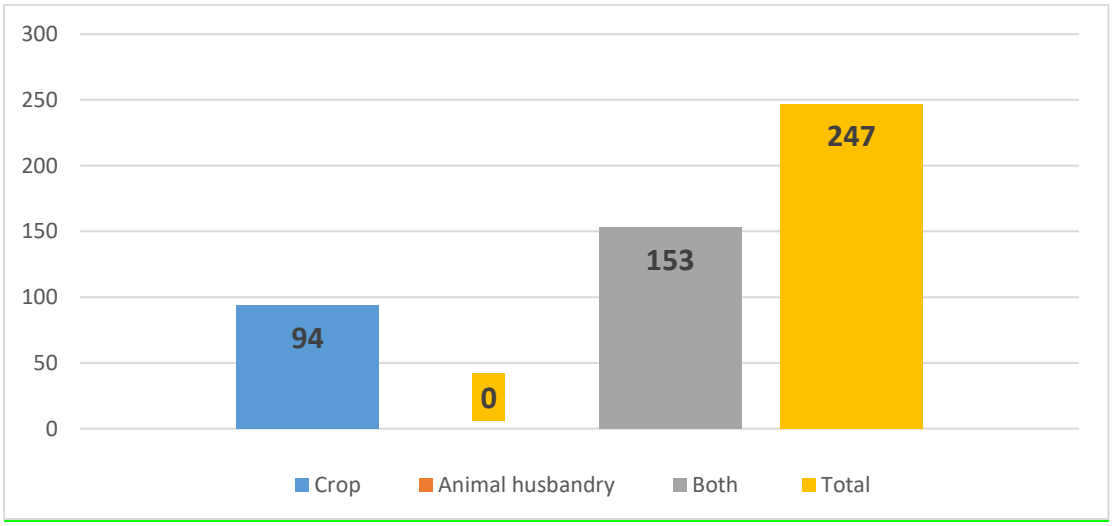
Table 9: Main Agricultural Activities Practiced by the Project Beneficiaries

Variables	Categories	Frequency	Percent
Types of UA activities practiced	Crop production only	94	38.1
	Animal husbandry only	0	0
	Both	153	61.9
	Total	247	100.0

Source: Survey data 2023/24

As table 9 indicates, all 247 respondents reported answered that their urban agricultural activities are supported by the project. Among those engaged in urban agriculture, 94 respondents (38.1%) practice only crop production, while the remaining 153 respondents (61.9%) engage in both crop production and animal husbandry. Interestingly, none of the respondents practice animal husbandry alone. These findings highlight the dominancy of integrated UA within the sample respondents, with a majority combining crop production and animal husbandry. Integrating crop production and animal husbandry within a single farming system offers several significant advantages, including nutrient cycling, diversified income streams, risk mitigation, optimized land use, natural weed and pest control, energy efficiency, and sustainability. Successful integration requires thoughtful planning, effective management, and a solid understanding of both crop and animal husbandry practices.

Figure 5: The Main Types of Agricultural Practices



The above distribution highlights several implications. Firstly, the high engagement in combined practices of crop production and animal husbandry is noteworthy. With 61.9% of respondents involved in both activities, it is evident that integrated farming systems are not only viable but potentially more beneficial within the context of urban agriculture. The preference for these combined practices could be attributed to various factors, including the increased sustainability and productivity that integrated systems offer. By diversifying their activities, urban farmers can better utilize resources, such as using animal waste as fertilizer for crops, thereby creating a more efficient and circular agricultural system (Altieri, 2018). Additionally, the diversification of income sources helps mitigate risks, providing greater economic stability for the farmers (Lin, 2011).

The integrated approach aligns with sustainable agricultural principles and enhances the overall resilience of urban farming systems. However, the complete absence of respondents engaged solely in animal husbandry raises important questions and areas for further investigation. This phenomenon could indicate that the urban environment poses challenges that make exclusive animal husbandry less feasible. Alternatively, it might reflect the project's focus or the preferences of the respondents, who may find it more beneficial to diversify their agricultural activities. Understanding these dynamics is essential for tailoring support to meet the varied needs of urban farmers. Based on findings from key informant interviews, the primary reason for the preference for engaging in both crop production and animal husbandry is more related to the respondents' interests than to the intervention strategies set by the ABCD project.

Table 10: The Major Type of Crops Produced by the Respondents (Multiple Response)

		N	Percent
Types of Crops	False banana	247	100.0%
	Corn	244	98.8%
	Cabbage	242	98.0%
	Haricot bean	226	91.5%
	Pepper	12	4.9%
	Tomato	3	1.2%
	Endive	7	2.8%

Source: Survey data 2023/24

Table 10 indicates that the total of 247 sample respondents are engaged in crop productions. False banana (Ensete ventricosum) emerges as the predominant crop among respondents, with a total count of 247 (100%). This finding underscores the significant role that false banana plays in urban agriculture within the study area. Corn closely follows, with 224 respondents (98.0% of the total) engaged in its production, emphasizing its significance as a staple crop. Cabbage ranks next, with 242 producers, while haricot bean comes in fourth place, with 226 sample respondents (91.5%) involved in its cultivation. The remaining crops, pepper, tomato, and endive are produced less frequently by the sample respondents.

The predominance of false banana, corn, and haricot bean production contradicts the findings of most previous studies on the types of crops and vegetables cultivated by urban agriculturists. For instance, studies by Birhanu (2020) in Hawassa city and Fekadu (2011) in Addis Ababa city identified cabbage, onion, tomato, potato, carrot, and beetroot as the most commonly produced vegetables among urban farmers. This discrepancy in findings regarding crop production within the city may be attributed to variations in the level of urbanization across different sub-cities and kebeles. Specifically, Tulla sub-city, one of the last to be incorporated into the Hawassa city administration, exhibits lower levels of urbanization compared to other areas. Consequently, the livelihoods of residents in the sampled kebeles within this sub-city remain predominantly agricultural. As shown in the above table, crop cultivation in this area is characterized by the production of both long and short-cycle crops such as false banana, corn, and haricot bean, which contrasts with agricultural practices observed in other parts of the city.

Animal husbandry plays a crucial role in the livelihood of many households in study area, providing both economic and nutritional benefits. This analysis examines the distribution and involvement of different types of animal husbandry among 153 households, providing detailed insights and potential areas for development.

Table 11: Major Types of Animal Husbandries Engaged by the Respondents (Multiple Response)

		N	Percent
Types of Animal husbandry	Goat	120	78.4%
	Poultry	109	71.2%
	Cattle	48	31.4%
	Sheep	32	20.9%
	Beekeeping	6	3.9%

Source: Survey data 2023/24

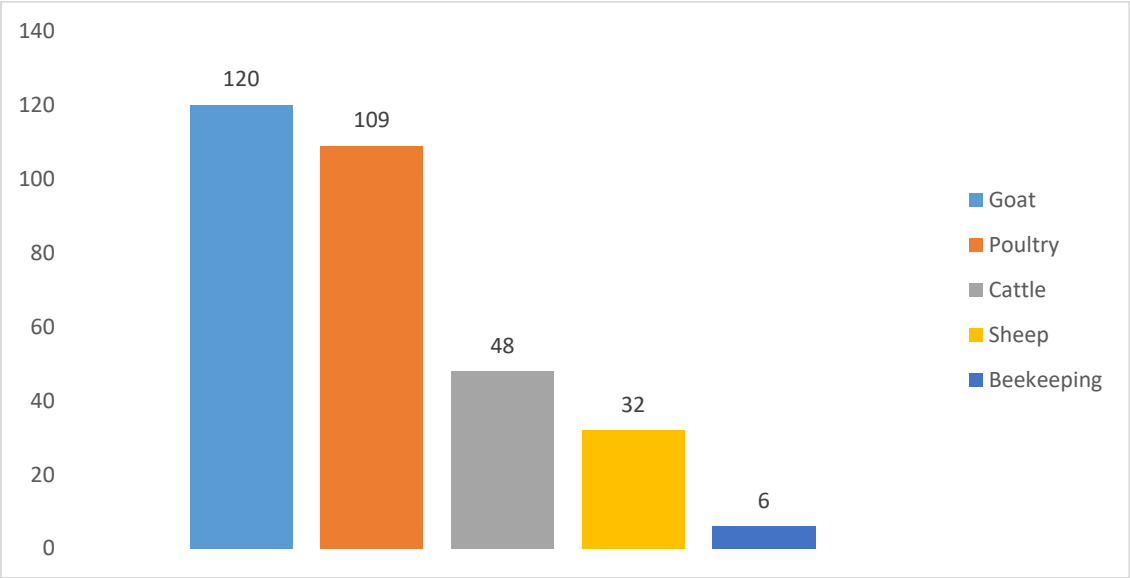
The data from table 11 reveals that goat husbandry is the most popular type of animal husbandry, with 120 households, or 78.4%, engaging in it. This strong preference for goat rearing suggests it is well-suited to the local conditions and possibly offers significant economic benefits. Following closely is poultry husbandry, with 109 households (71.2%). The high involvement in poultry farming indicates it is a common and accessible practice, likely due to its relatively low resource requirements and quick turnover.

Cattle husbandry, with 48 households (31.4%), shows moderate popularity. The lower involvement compared to goats and poultry could be due to the higher resource needs and longer maturation periods associated with cattle. Sheep husbandry is less popular, involving 32 households (20.9%). The relatively low engagement in sheep rearing might be attributed to specific climatic or economic challenges. Beekeeping stands out as the least popular type, with only 6 households (3.9%) participating. This minimal engagement suggests that beekeeping is not widely practiced, possibly due to a lack of knowledge, interest, or necessary resources.

Comparing the different types of animal husbandry, it is evident that goat and poultry farming dominate the landscape. These two types are nearly equally popular, with goat husbandry slightly more prevalent. This dominance indicates that goats and poultry might be more lucrative or better suited to the local conditions. The high involvement in goat and poultry farming likely reflects their roles in food security and income generation. These animals are probably easier to rear, require less initial investment, and have quicker turnover rates, making them attractive options for many households. The above findings are consistent with study conducted by Matawork (2016),

underlining Ethiopian possession of large livestock population including goat and poultry.

Figure 6: Types of Animal Husbandries



In contrast, the limited participation in cattle husbandry may suggest higher costs and longer maturation periods, which could be less attractive to households with limited resources. Insights from focus group discussions reveal that most of the sample respondents expressed a desire to own more cattle. However, they face challenges associated with the high costs of purchasing cattle and the dynamic landscape of their kebeles which becoming more urbanized and shrinking grazing spaces, which makes cattle rearing less viable. Regarding lower involvement in sheep farming, respondents emphasized that the climatic conditions in their kebele are less conducive to sheep farming. Additionally, economic factors favor goats as more feasible options for income generation. Beekeeping, with its minimal involvement, highlights it's an activity that is not widely adopted. This could be due to various barriers such as lack of knowledge, resources, or perceived benefits. However, it also represents a potential area for growth and diversification.

Urban agriculture practices play a crucial role in ensuring household food security. According to the survey responses, 38.1% of households specifically prioritize crop production as an effective strategy. Cultivating crops such as grains and vegetables directly contributes to staple foods and essential nutrients. However, an even more significant proportion (61.9%) recognizes the value of combining both crop production

and animal husbandry. This holistic approach integrates the benefits of crop cultivation with livestock rearing. While no respondents explicitly mentioned animal husbandry alone, it remains implicit within the combined approach. Thus, a balanced strategy that leverages both crops and livestock appear to be the most effective way to address food security challenges in urban settings. The above finding is consistent with other studies conducted in Addis Ababa by Farm Africa (2023), demonstrate the potential of integrated urban agriculture to improve lives, enhance food security, and create sustainable green spaces within cities.

4.4. The Main Urban Agriculture Intervention Strategies Employed by the ABCD Project

Urban agriculture plays a pivotal role in addressing food security, livelihoods, and environmental sustainability within rapidly growing cities. As part of this broader context, the ABCD Project (a non-governmental organization) has implemented urban agriculture interventions in our study area. Urban agriculture plays a pivotal role in addressing food security, livelihoods, and environmental sustainability within rapidly growing cities. As part of this broader context, the ABCD Project (a non-governmental organization) has implemented urban agriculture interventions in the study area. In primary objective of this section to gain understanding of the key strategies employed by the ABCD Project to enhance urban agriculture practices. To achieve this, we conducted a comprehensive data analysis, combining descriptive statistics and content analysis. Specifically, we summarize survey responses related to specific NGO interventions using frequencies and percentages. Additionally, we delve into textual data extracted from project documents to identify the underlying intervention strategies.

Table 12: Changes in UA Involvement (Multiple Response)

Variables	Categories	Frequency (n)	Percent (%)
	Increased the scale of involvement	88	35.6%
	The types of agriculture practiced	141	57.1%
	Knowledge and skills acquired	242	98.0%
	Increased level of yields	171	69.2%
	Increased level of earnings	48	19.4%

Source: Survey data 2023/24

All of the respondents were involved in urban agriculture prior to joining the ABCD Project. Following the survey findings, the researcher conducted an analysis of project documents to determine whether this involvement was a result of the project criteria. According to the project documents, it is not mandatory for households to be agrarian to be included in the project. However, the main reason for the prior involvement of all sampled households in urban agriculture activities appears to be related with their existing socioeconomic and livelihood strategies.

The sample respondents have been engaged in urban agricultural practice before SOS Children's Village ABCD project come to them. Among those who practice urban agriculture prior to ABCD project, they have observed a difference in terms of scale of involvement, types of agricultural activities, knowledge and skills acquired, yield levels, and earnings before and after joining the project.

Education and capacity-building are integral to sustainable urban agriculture. An overwhelming majority 242 (98.0%) of participants acknowledged acquiring new knowledge and skills through the project. Whether through training sessions, or peer learning, the project has successfully enhanced competencies related to soil management, pest control, water conservation, and sustainable practices. These acquired skills empower urban farmers to optimize their yields and contribute to community resilience.

Crop productivity directly impacts food availability and household well-being. About 171 (69.2) of respondents noticed changes in their yield levels after joining the ABCD Project. Improved agricultural practices, access to quality inputs, and better pest management may have contributed to higher yields. Monitoring specific crop yields (e.g., kilograms harvested per square meter) and comparing them before and after project participation would provide valuable insights into the project's effectiveness.

Diversification is a hallmark of resilient urban agriculture. The ABCD Project has evidently impacted the types of crops and livestock activities undertaken by respondents. A significant proportion 141 (57.1%) reported differences in the agricultural practices they engage in. This shift could involve introducing new crops, adopting innovative techniques, or diversifying production to enhance food security and economic stability. Understanding the specific changes in crop choices and livestock management is crucial for informed project evaluation.

Urban farmers often face constraints related to available space, time, and resources. The ABCD Project appears to have influenced the level of involvement among participants. Approximately 88 (35.6%) of respondents reported a change in their engagement with urban agriculture after joining the project. Whether this shift represents increased commitment, expanded cultivation areas, or more frequent activities remains a subject for further investigation. Nonetheless, this finding suggests that the project has encouraged participants to dedicate more time and effort to their agricultural pursuits.

Economic viability is a critical factor for sustaining urban agriculture. While not as pronounced as other aspects, 48 (19.4%) of participants observed increment in their current earnings. Factors such as market access, value addition (processing), and price fluctuations play a role. The project's role on income generation warrants further exploration. Assessing whether participants diversified income sources (e.g., selling surplus produce, value-added products) or improved market linkages would shed light on this aspect.

The ABCD Project has made significant strides in empowering urban farmers. By influencing involvement levels, diversifying agricultural practices, enhancing knowledge, improving yields, and contributing to earnings, the project aligns with the broader goals of sustainable urban development. However, ongoing monitoring, rigorous evaluation, and adaptive management are essential to ensure continued positive impacts. As urban agriculture continues to evolve, projects like ABCD play a pivotal role in nurturing resilient, food-secure cities.

Table 13: Challenges of Implementing Urban Agriculture (Multiple Response)

Variables	Categories	Frequency(n)	Percentage (%)
Challenges	Lack of access to agricultural inputs	178	80.5%
	Lack of access to finance	156	70.6%
	Shortage of agricultural land	77	34.8%
	Lack of appropriate trainings	75	33.9%
	Lack of access to water	10	4.5%

Source: Survey data 2023/24

As data in the table 13 reveals, sampled households has faced different kinds of challenges in their UA activities such as lack of access to agricultural inputs, lack of

access to finance, shortage of agricultural land, lack of appropriate trainings lack of access to water.

Urban farmers often face difficulties in obtaining essential inputs such as seeds, fertilizers, and tools. The data reveals that 178 (80.5%) of respondents identified lack of access to agricultural inputs as the main challenge. Limited access to agricultural inputs hampers productivity and restricts crop diversity. Without quality seeds, appropriate fertilizers, and modern tools, urban farmers struggle to optimize their yields. Addressing this challenge requires collaborative efforts from local governments, NGOs, and private sector stakeholders to ensure affordable and timely access to inputs.

Financial constraints pose a significant hurdle for urban farmers. Approximately 156 (70.6%) of participants reported challenges related to accessing finance. Urban agriculture requires investments in infrastructure, equipment, and operational costs. Whether it's securing microloans, establishing community-based savings groups, or promoting innovative financing models, addressing financial barriers is crucial.

Urban areas are characterized by limited available land. Finding suitable plots for cultivation remains a persistent challenge. The data indicates that 34.8% of respondents face this issue. High land prices, competing land uses (such as housing and commercial development), and land tenure complexities exacerbate the shortage. Urban planners must prioritize allocating land for community gardens, rooftop farming, and vacant lots. Vertical farming and hydroponics offer space-efficient alternatives.

Knowledge gaps hinder effective urban farming. About 33.9% of respondents reported a lack of appropriate training. Urban agriculture requires specialized skills in soil management, pest control, water conservation, and sustainable practices. Training programs, workshops, and extension services play a pivotal role. Water scarcity is a critical constraint in urban agriculture. While only 4.5% of respondents specifically mentioned this challenge, this is mainly due to the presence of lake Hawassa near the sampled kebeles.

From the data one can conclude that, almost all the respondents have faced challenges while practicing urban agriculture. Among the challenges, lack of access to input, pest management issues and lack of finance are the main challenges faced by the respondents to practice urban agriculture effectively. On the other hand, lack access to market, lack of water resource, lack of appropriate training and shortage of land are the

least challenges they faced. The challenges faced by urban farmers are multifaceted, but they are not unstoppable. As cities grapple with population growth and environmental challenges, investing in urban agriculture remains a strategic imperative. By properly understanding and addressing these challenges collectively, we can nurture resilient, food-secure cities where urban agriculture thrives.

Table 14: ABCD Project Intervention Strategies (Multiple Response)

Training provision	166	67.2%
Agricultural input provision	155	62.8%
Direct financial support	106	42.9%
Pest management	79	32.6%
MFI linkage	73	29.6%
Market facilitation	31	12.6%
Water pump provision	25	10.1%

Source: Survey data 2023/24

The data in Table 14 presents the types of assistance received by the sample respondents from the ABCD project, reflecting the project's intervention strategy. Training provision is the most prominent form of assistance reported, with 166 respondents (67.2%) indicating they received various types of training. According to KII, the primary training areas included sustainable urban agriculture (UA) practices, soil management, crop and animal health, financial literacy, and nutrition. The emphasis on these areas reflects a holistic approach aimed at enhancing beneficiaries' overall agricultural productivity and well-being.

Training in sustainable UA practices equipped beneficiaries with techniques for environmentally friendly and resource-efficient farming. The focus was on maximizing the use of limited urban spaces, promoting practices such as vertical gardening, hydroponics, and the use of organic fertilizers.

FGD participants expressed appreciation for these trainings, noting significant improvements in their ability to cultivate in small urban plots. One participant

remarked, "*Before the training, we struggled to make use of our limited space, but now we grow a variety of vegetables using the techniques taught*."

Soil health training was another critical component, with beneficiaries learning about composting, mulching, and other soil conservation techniques. KIIs revealed that these practices were essential for maintaining productive agricultural plots, especially in urban settings prone to soil degradation. FGD participants highlighted the practical benefits of these trainings, with one farmer stating, "*The soil management training has helped us improve our yields significantly. Our soil is healthier, and our crops are thriving.*"

Training on crop and animal health covered disease prevention, pest control, and proper animal husbandry techniques. These sessions were crucial for ensuring high yields and healthy livestock. FGD participants discussed the positive outcomes of these trainings, sharing success stories of reduced crop losses and healthier animals. A participant shared, "*We used to lose a lot of our crops to pests, but the training on pest control has really made a difference*."

Financial literacy training aimed to empower beneficiaries with skills to manage their finances effectively. Topics included budgeting, saving, and understanding credit. According to KIIs, these skills were vital for enabling participants to make informed financial decisions, invest in their agricultural activities, and improve their economic stability. FGD participants echoed these sentiments, with one noting, "*The financial literacy training has helped us manage our money better. We can now save and invest in our farms more wisely."*

Nutrition training focused on educating beneficiaries about balanced diets and the importance of consuming a variety of nutrient-rich foods. This knowledge ensured that the produce from their agricultural activities contributed to their nutritional well-being, addressing both food security and malnutrition. FGD participants reported better dietary practices and improved health outcomes as a result of this training. One participant mentioned, *"Our families are healthier now because we understand the importance of a balanced diet and grow a variety of nutritious foods.''*

Agricultural input provision emerged as the second most common form of assistance, with 155 respondents (62.8%) reporting that they received various types of agricultural

inputs from the project. The survey data indicated that the inputs provided included seeds, seedlings, and pullets, which were crucial for initiating and sustaining agricultural activities among the beneficiaries. However, insights from the focus group discussions (FGDs) provided a deeper understanding of the situation.

Participants in the FGDs elaborated on the types and adequacy of the agricultural inputs they received. The most commonly mentioned inputs were seeds and seedlings for vegetables and staple crops, which helped beneficiaries establish and maintain productive gardens. Pullets, or young hens, were also frequently distributed, aiding in the improvement of household nutrition through egg production and offering potential income sources from the sale of surplus eggs.

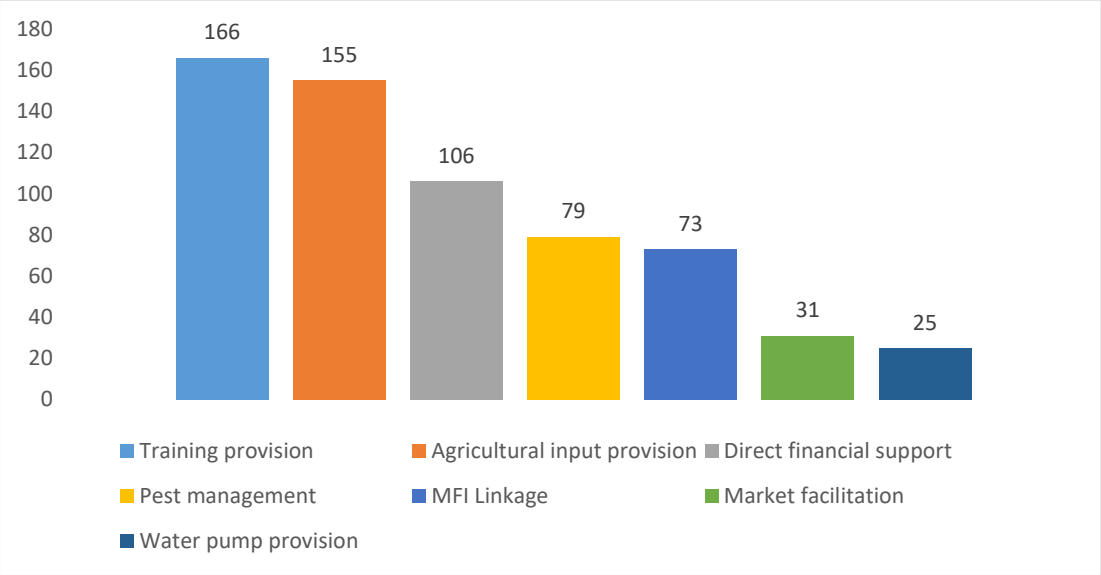
Despite the positive impact of these inputs, respondents in the FGDs highlighted a significant issue, such as the shortage of some agricultural inputs. Most of participants expressed that while the provision of seeds and seedlings was beneficial, the quantities were often insufficient to meet the full scope of their agricultural needs. This limitation sometimes hindered the optimal use of their agricultural plots and the full realization of the project's potential benefits. Moreover, the FGDs revealed that certain inputs, particularly those requiring more specialized care and maintenance, such as pullets, were not always adequately supported with follow-up services. Some respondents noted that additional training and resources were needed to ensure the successful integration of these inputs into their agricultural practices.

Financial assistance from the ABCD project emerged as the third most common form of support, with 106 respondents (42.9%) reporting receipt of such aid. Insights from focus group discussions (FGDs) and key informant interviews (KIIs) shed light on the primary uses of this support, revealing that beneficiaries predominantly utilized it to purchase goats and sheep for rearing and fattening, as well as to initiate small-scale businesses.

The financial assistance provided by the ABCD project enabled beneficiaries to invest in livestock, particularly goats and sheep. These animals served as valuable assets for income generation and food security, as they could be raised and fattened for eventual sale or consumption. FGD participants expressed appreciation for the opportunity to acquire livestock through this support, emphasizing the positive impact on their livelihoods. One participant remarked, "*The financial assistance allowed us to buy*

goats, which we have been raising. It's been a source of income for our family, especially during times of need." Another significant use of financial assistance was the initiation of small businesses by project beneficiaries. With the funds received, individuals were able to start various income-generating ventures, such as retail shops, fruit sales, and other petty businesses. KIIs highlighted the importance of these entrepreneurial endeavors in empowering beneficiaries economically and diversifying their sources of income. Participants in FGDs shared success stories of small business ventures enabled by the financial support, underscoring its role in enhancing financial resilience and self-sufficiency. One participant shared, "*I used the financial assistance to open a small shop selling household items. It's been doing well, and I'm grateful for the opportunity to become self-employed."*

Figure 7: ABCD Project Intervention Strategies



Pest management emerged as another critical form of assistance provided to the sample respondents, with 79 individuals (32.65%) acknowledging receipt of this service. The ABCD project, in collaboration with government agencies and private sector providers, has been actively facilitating pest control measures and veterinary services for project beneficiaries. Based on KII discussions it is underlined that as part of collaborative efforts, the ABCD project has facilitated the provision of pest control solutions and veterinary services to project beneficiaries. This includes the distribution of pesticides, insecticides, and other pest management products to address common agricultural pests and diseases affecting crops and livestock.

Another vital form of assistance provided to the sampled respondents was facilitation with microfinance linkage, with 73 individuals (29.6%) benefiting from loans obtained through these linkages. Notably, during focus group discussions (FGDs), participants emphasized the significance of these microfinance linkages, particularly highlighting their ability to access loans from the Sidama Micro Finance Institution without the need for collateral. The facilitation of microfinance linkages by the ABCD project has emerged as a critical mechanism for empowering project beneficiaries with access to financial resources. Through strategic partnerships with microfinance institution named Sidama Micro Finance Institution, the project has facilitated the provision of loans to urban farmers and entrepreneurs, enabling them to invest in agricultural activities and small-scale businesses without the traditional requirement of collateral.

One of the key advantages highlighted during FGDs was the removal of barriers to access typically associated with formal financial institutions. Participants expressed appreciation for the simplified loan application processes and the absence of collateral requirements, which enabled them to secure loans more easily and expeditiously. This streamlined approach to microfinance linkage has played a pivotal role in promoting financial inclusion and empowering underserved urban communities to pursue entrepreneurial ventures and agricultural enterprises.

The survey results reveal that a minority of respondents, comprising 31 individuals (12.6%), received market facilitation assistance from the ABCD project. Insights from Key Informant Interviews (KIIs) underscored market facilitation as one of the project's key intervention strategies, particularly focusing on facilitating market linkages for surplus urban agriculture (UA) products. Specifically, during harvesting seasons when there is an abundance of produce in the local market, the project steps in to assist beneficiaries in selling their products in Hawassa town, ensuring they obtain better prices. Through its market facilitation efforts, the ABCD project endeavors to address the dual challenge of surplus production and unmet market demand. The participants highlighted during Focus Group Discussions (FGDs) that market-related issues are seldom encountered, attributing this to the existence of unmet demand at the local level for UA products.

Water pump provision emerged as the least represented form of support, with only 25 respondents (10.1%) reporting receiving this assistance from the ABCD project.

Insights from Focus Group Discussions (FGDs) shed light on the significance of water pumps for urban agriculture (UA) practitioners. Participants underscored the critical role of water pumps in enabling year-round UA activities by facilitating access to water from nearby Lake Hawassa. The participants emphasized the importance of water pumps in overcoming seasonal constraints and maximizing agricultural productivity. Access to water from Lake Hawassa through the use of pumps would enable UA practitioners to irrigate their crops during dry seasons, mitigating the impact of water scarcity and ensuring continuous cultivation throughout the year. This, in turn, would contribute to increased crop yields and a more reliable source of income for participating households.

In conclusion, the findings highlight the multifaceted assistance provided by the ABCD project to enhance food security and livelihoods among urban households in Hawassa city. Training provision emerged as a cornerstone of the project's interventions, with a significant majority of respondents benefiting from various training programs. These initiatives, covering sustainable UA practices, financial literacy, and nutrition, underscore the project's commitment to building the capacity of beneficiaries and promoting holistic development.

Agricultural input provision plays a pivotal role in supporting urban farmers, with the majority of respondents receiving seeds, seedlings, and pullets. However, challenges such as input shortages highlight the need for sustained support and resource mobilization to meet the evolving needs of UA practitioners. Direct financial support and microfinance linkage facilitation empower beneficiaries to invest in livestock rearing, small businesses, and agricultural enterprises, contributing to income diversification and economic resilience.

Furthermore, the project's efforts in pest management and market facilitation address critical challenges faced by UA practitioners, enabling them to overcome production constraints and access lucrative markets for their produce. However, there is room for improvement in expanding market linkages and addressing market-related issues to optimize the marketing potential of UA products.

Water pump provision emerged as a crucial yet underrepresented form of assistance, with respondents expressing a strong demand for enhanced access to water resources.

Addressing this gap is essential to unlocking the full potential of UA in Hawassa city, enabling year-round cultivation and enhancing agricultural resilience.

Overall, the ABCD project's diverse interventions demonstrate its commitment to addressing the complex challenges of urban food insecurity and poverty. By leveraging training, input provision, financial support, pest management, market facilitation, and water pump provision, the project aims to empower urban households, strengthen local food systems, and foster sustainable urban agriculture. Moving forward, targeted efforts to address emerging needs and enhance the effectiveness of assistance programs will be crucial to achieving lasting impact and promoting food security and prosperity in Hawassa city.

4.5. The Effects of NGO Intervention Strategies on the Food Security Status of Project Beneficiaries

4.5.1. Household Food Insecurity Access Prevalence

Food security is a critical aspect of public health and socio-economic stability. It reflects the ability of individuals and households to access sufficient, safe, and nutritious food that meets their dietary needs for an active and healthy life. The Household Food Insecurity Access Scale (HFIAS) provides a valuable framework for assessing food security at the household level.

Table 15: HFIAS Category

HFIAS Category	Frequency	Percent
Food Secure	110	44.5%
Mildly food insecure	76	30.8%
Moderately food insecure	61	24.7%
Severely food insecure	0	0%
Total	247	100%

Source: Survey data 2023/24

Thus, the above table presents the prevalence of food security and insecurity among 247 surveyed households, exploring the distribution across four HFIAS categories: food secure, mildly food insecure, moderately food insecure, and severely food

insecure, which in turn would help us to perform the ordinal logistic regression analysis to identify factors influencing household food security.

The findings from table 15, indicate that 44.5% of households are food secure, suggesting that a considerable segment of the population has stable and sufficient access to food. However, the remaining 55.5% of households are food insecure to varying degrees. Specifically, 30.8% are mildly food insecure, characterized by occasional anxiety over food sufficiency or compromised food quality. Another 24.7% are moderately food insecure, experiencing more severe disruptions such as reduced food quantity, meal skipping, or eating less than needed. Fortunately, none of the households fall into the severely food insecure category.

4.5.2. Factors Influencing Food security

The third research objective of this study involves evaluating the role of non-governmental organization (NGO) on promoting food security through urban agriculture within the study area. To achieve this, an ordinal logistic regression model was employed to explore the relationship between the dependent and independent variables. The assessment utilized the food insecurity measurement scales, specifically the Household Food Insecurity Access Scale (HFIAS), which classifies households into four levels of food security: food-secure, mildly food insecure, moderately food insecure, and severely food insecure. These food security statuses serve as dependent variables, while the independent variable comprises various NGO intervention strategies. These strategies include market facilitation, microfinance linkage, pest management, agricultural input provision, direct financial assistance, training and water pump provision.

Before conducting ordinal regression, assumptions related with the model was checked using model fitting, goodness of fit and Pseudo R-square tests.

Table 16: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	359.217			
Final	141.138	218.079	7	.000

Link function: Logit.

The ordinal regression model significantly improves the fit over the intercept-only model, as evidenced by the chi-square statistic (218.079, p = 0.000) in table 16 above. This basically tells us that the model gives better predictions than if we just guessed based on the marginal probabilities for the outcome categories.

The goodness-of-fit measures in table 17 below, including the Pearson chi-square and deviance, suggest that the model fits the data well (p-values of.000 and .689, respectively).

Table 17: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	198.321	99	.000
Deviance	91.592	99	.689

Link function: Logit.

The table 18 indicates that the pseudo-R-square values (Cox and Snell = 0.586, Nagelkerke = 0.665, McFadden = 0.413) which indicates that the model explains 58.6%, 66.5% and 41.3% of the variability in the outcome variable that suggests a strong fit indicate that the model explains a very good fit to conduct ordinal logistic regression.

Table 18: *Pseudo R-Square*

Cox and Snell	.586
Nagelkerke	.665
McFadden	.413

Link function: Logit.

To interpret the parametric statistics in logistic model the researcher used odds ratio. The percentages ratio indicates the effect of every explanatory variable directly on the chances of household food security instead of on log (odds). Estimates of odds ratio greater than 1.0 indicate that the household's food insecurity is bigger than that for the reference category either mildly or moderately.

The result of the ordinal logistic regression in table 19, shows that most of the independent variables, namely, MFI linkage, pest management, agricultural inputs,

financial support, and trainings were found to be statistically significant predictors of household's food security, as their p values are less than 0.05 (95% Confidence level). On the other hand, the result of ordinal regression analysis shows market facilitation and water pump provisions found to be not statistically significant.

Table 19: Parametric Estimates

		Estimate	Std. Error	Wald	df	Sig.	Odds Ratio	95% Confidence Interval	
								Lower Bound	Upper Bound
Threshold	[Food Security = 1]	6.875	.976	49.647	1	.000		4.962	8.787
	[Food Security = 2]	9.726	1.115	76.072	1	.000		7.540	11.912
Location	[Market=0]	1.132	.623	3.297	1	.069	3.1	-.090	2.353
	[Market=1]	0[a]	.	.	0	.		.	.
	[MFI Linkage=0]	2.620	.447	34.371	1	.000	13.7	1.744	3.496
	[MFI Linkage=1]	0[a]	.	.	0	.		.	.
	[Pest Management=0]	1.059	.386	7.540	1	.006	2.9	.303	1.815
	[Pest Management=1]	0[a]	.	.	0	.		.	.
	[Agricultural Inputs=0]	2.398	.351	46.627	1	.000	11.0	1.710	3.086
	[Agricultural Inputs=1]	0[a]	.	.	0	.		.	.
	[FinancialAssistance=0]	1.723	.348	24.458	1	.000	5.6	1.040	2.406
	[FinancialAssistance=1]	0[a]	.	.	0	.		.	.
	[Training=0]	2.140	.346	38.358	1	.000	8.5	1.463	2.817
	[Training=1]	0[a]	.	.	0	.		.	.
	[Water pump=0]	1.082	.654	2.739	1	.098	3.0	-.200	2.364
	[Water pump=1]	0[a]	.	.	0	.		.	.

Link function: Logit.

The analysis regarding market facilitation reveals an estimate of 1.132 for households lacking market facilitation, with a p-value of 0.069. This marginal statistical insignificance suggests a tenuous link between market facilitation and food security, aligning with research that posits the complexity of market dynamics and their indirect influence on food accessibility. The study by Trade alliance (2024), stress that the need for trade facilitation as it plays a vital role in ensuring greater access to global markets and it may encourage the transition from subsistence farming to surplus production.

MFI linkage yields a significant effect with an estimate of 2.62 ($p < 0.001$) and 13.7 odds of ratio in favor of those people with absence of MFI linkage. The estimate of 2.62

and the corresponding odds ratio of 13.7 imply a strong positive relationship between lack of MFI and food insecurity. Specifically, a one-unit increase in the absence of MFI associated with 13.7 times increase in food insecurity security (mildly or moderately) of a family while the other variables in the model are held constant. This finding is consistent with studies such as Mota et.al (2019) indicating that microfinance institutions play a pivotal role in enhancing agricultural productivity and, consequently, food security of households.

Households without pest management support have an estimate of 1.059, with a p-value of 0.006, and odds ratio of 2.9 signifying a meaningful association with improved food security status. The result shows respondents who didn't get pest management service are 2.9 times more in mildly or moderately food insecure compared with those who received pest management services holding other variables constant. This is in harmony with the study by Pretty et.al (2015), advocating for integrated pest management as a sustainable approach to safeguarding crop yields and ensuring food security.

Provision of agricultural inputs has a statistically significant effect on food security with an estimate of 2.398 in favor of those households who were not receiving agricultural inputs ($p < 0.001$) indicates a strong positive association with food insecurity. An odd of ratio 11.0 in table 16 shows a one-unit absence of agricultural input is associated with 11 times more likely to be in food insecurity level. This echoes the sentiment of the studies by Abfita (2020) and Beyene and Muche (2010) emphasizing the criticality of inputs like seeds and fertilizers in bolstering agricultural productivity and food security.

Financial assistant also has a significant effect on food security level of households with an estimate of 1.723 for households who lack financial assistance ($p < 0.001$), and odds ratio of 5.6 suggesting a significant positive impact on food security. The result reveals those respondents who lack financial assistance are 5.6 times more likely in mildly or moderately food insecure level compared with those who got financial assistance keeping other variables constant. This is corroborated by the study by Tigistu and Hagena (2022) that highlights the importance of financial resources/remittances in ensuring households' ability to secure adequate food.

NGO support specifically training provision is another predictor that has significant effect on the outcome variable. As table 16 above shows, individuals who didn't get

training from ABCD Project about urban agriculture were significantly more likely to be in higher categories of food insecurity level compared to those who got training, with an estimate of 2.14 ($p < 0.001$) with an odds ratio of 8.5. The estimate of 2.14 and the corresponding odds ratio of 8.5 imply a strong positive relationship between lack of raining and food insecurity. Specifically, a one-unit increase in the lack of training is associated with 8.5 times increases in food insecurity of a family while the other variables in the model are held constant.

Lastly, an estimate of 1.082 for households without water pump provision ($p = 0.098$) suggests a non-significant relationship with food security. This finding is nuanced by research that underscores the intricate interplay between water availability and food production, suggesting that while water pumps are essential; their direct impact on food security may be mediated by other factors. However, the findings from the study by Jambo et.al (2021) underline that irrigation has a positive and significant impact on household food security.

In conclusion, the empirical evidence and scholarly discourse converge to affirm the multifaceted nature of interventions in determining food security. While some factors like MFI linkage, pest management, and agricultural inputs provision exhibit a direct and robust association with food security, others such as market and water pump facilitation present a more complex picture, necessitating a broader understanding of the socio-economic and environmental contexts in which they operate.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDTIONS

This section provides a comprehensive overview of the research findings, forward the key conclusions derived from the analysis, and offers actionable recommendations based on the study's outcomes. The research aimed to investigate the factors influencing household food security, utilizing ordinal logistic regression to analyze the relationships between various independent variables and food security status. By synthesizing the empirical data and statistical results, this section aims to draw meaningful insights and practical implications that can inform policymakers, stakeholders, and future researchers. The summary expresses the core findings, the conclusion sum-up the significance of these results, and the recommendations propose strategic interventions to enhance household food security.

5.1. Summary of Findings

Hawassa city, amidst its rapid urbanization and escalating food prices, faces challenges in ensuring food security for its residents. Urban Agriculture (UA) emerges as a potential solution, promising to enhance food security, diversify incomes, and foster nutritional practices. However, existing literature overlooks the contribution of NGOs in this regard. This study seeks to fill this gap by examining the role of NGO named SOS CVE, in promoting food security through urban agriculture among its project beneficiaries. Employing a mixed methods approach with a concurrent embedded design, the study sampled 247 households using multi-stage sampling method. Data collection methods included interviews and questionnaires, with rigorous validation of instruments' reliability and validity. Ethical considerations emphasized anonymity and voluntary participation.

Addressing respondents' demographic and socio-economic characteristics, the study found a balanced sex ratio and a concentration of respondents in the 25–34 and 35–44 age groups. Marital status analysis revealed a predominance of married respondents, aligning with the project's focus on family support. Larger family sizes predominated, reflecting livelihood strategies reliant on agriculture. A notable finding was the high

proportion of respondents lacking formal education, highlighting potential vulnerabilities within the community.

The primary urban activities undertaken by the respondents predominantly involved both crop production and animal husbandry. Specifically, 94 respondents (38.1%) were exclusively involved in crop production, while the majority, comprising 153 respondents (61.9%), engaged in both crop production and animal husbandry. The NGO's key intervention strategies aimed at enhancing food security among project beneficiaries primarily included provision and facilitation of various activities. These encompassed pest management, market facilitation, MFI linkage facilitation, training provision, direct financial support, water pump provision, and agricultural input provisions.

The regression analysis revealed several significant findings regarding the factors influencing household food security. Firstly, while market facilitation showed a non-significant association with food security status, MFI linkage, provision of pest management support, agricultural inputs, financial assistance, training provision, and water pump provision were found to significantly impact food security. Specifically, households with MFI linkage, pest management support, agricultural inputs, financial assistance, and training provision exhibited improved food security status. However, the presence of a water pump provision did not demonstrate a significant association with food security. These findings underscore the importance of various interventions in enhancing household’s food security.

5.2 Conclusions

In conclusion, the study conducted in Hawassa City has provided valuable insights into the role of the NGO named SOS CVE in promoting food security through urban agriculture. The findings indicate that the NGO’s interventions, particularly in the areas of MFI linkage, pest management support, agricultural inputs, financial assistance, and training provision, have had a significant positive impact on the food security status of the households involved. These interventions have addressed key vulnerabilities and have contributed to the enhancement of both crop production and animal husbandry activities among the beneficiaries.

Despite the challenges posed by rapid urbanization and rising food prices, the study demonstrates that urban agriculture, supported by targeted NGO interventions, can be an effective strategy for improving food security in urban settings. The balanced sex ratio and the predominance of married respondents in the study suggest that the interventions were well-aligned with the community's demographic profile, particularly in supporting family-based agricultural practices.

However, the study also highlights areas for further improvement. The non-significant association of market facilitation and water pump provision with food security status suggests that these interventions may require reevaluation or additional support to realize their full potential. Moreover, the high proportion of respondents lacking formal education points to an opportunity for the NGO to integrate educational initiatives into their programs, which could further strengthen the community's capacity for sustainable urban agriculture.

Overall, the study affirms the critical role that NGOs like SOS CVE can play in fostering food security and resilience in urban populations. It underscores the need for continued support and innovation in NGO-led urban agriculture initiatives as a means to combat food insecurity in the face of urbanization challenges.

5.2 Recommendations

The recommendations section of the study delineates actionable suggestions derived from the study's findings and conclusions to address the challenges and capitalize on the opportunities identified in enhancing food security through urban agriculture in Hawassa City. Informed by empirical evidence and guided by the overarching goal of improving food security outcomes, the following recommendations are tailored to optimize the effectiveness and sustainability of intervention efforts led by NGOs, particularly SOS CVE. These recommendations encompass a range of suggestions based on the problem identified the through the findings.

- Integrating Education with Agricultural Interventions: The high proportion of respondents lacking formal education presents an opportunity for NGOs to integrate educational programs into their urban agriculture initiatives. Future implications could include the development of adult education and training

programs that focus on agricultural skills, financial literacy, and other relevant topics to empower the community further.

- Enhance Understanding of Animal Husbandry: While no respondents explicitly mentioned animal husbandry alone, it remains implicit within the combined approach. There may be a need to enhance understanding and skills in this area, particularly for households that are currently focused only on crop production.
- Diversification of Urban Agriculture Activities: Exploring the diversification of urban agriculture activities beyond crop production and animal husbandry could be another area for future research. This may include aquaculture, agroforestry, or the cultivation of medicinal plants, which could contribute to income diversification and enhanced food security among households.
- Enhance Water Pump Provision: Given the strong demand for enhanced access to water resources, it is crucial to address this gap. The NGO could consider increasing its provision of water pumps, which would enable year-round cultivation and enhance agricultural resilience. This could involve sourcing more water pumps, providing training on their use and maintenance, and facilitating access to repair services.
- Promote Water Conservation Practices: Alongside the provision of water pumps, the NGO could also promote water conservation practices. This could include training on efficient irrigation techniques, rainwater harvesting, and the use of drought-resistant crop varieties.
- Reevaluate Water Pump Provision: The study found that water pump provision did not have a significant association with food security. This could be due to various reasons such as improper usage, lack of maintenance, or inadequate training. It would be beneficial to conduct further research to understand the reasons behind this and reevaluate the strategy of water pump provision.
- Improve Market Facilitation: The study found that market facilitation did not show a significant association with food security. This suggests that there may be room for improvement in this area. Strategies could include improving access to markets, providing information on market prices, or helping farmers form cooperatives to increase their bargaining power.

In conclusion, the study highlights the positive effects of NGO-led interventions strategies on food security among the project beneficiaries. However, it emphasizes the need for comprehensive NGO intervention strategies that addresses education, diversification of agricultural activities, water resource management, and market facilitation to enhance these effects even further.

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APPENDIX

DATA COLLECTION TOOLS

HAWASSA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF COOPERATIVES

General Information

1. Kebele:
    - Finchewa
    - Tulo
    - Alamura
2. Gender of respondent:
    - Female
    - Male
3. Age of respondent:
    - 15-24 years
    - 25-54 years
    - 55-64 years
    - 65 years and over
4. Marital status of the household head:
    - Single
    - Married
    - Divorced
    - Widowed
5. Family Size:
    - 1-2 members
    - 3-4 members
    - 5-6 members
    - 7 or more members
6. Education Level of the household head:
    - No formal education

- Primary education
- Secondary education
- Diploma
- Degree

7. Are you engaged in urban agriculture assisted by ABCD project?
    - Yes
    - No
8. If your response to the previous question is ‘Yes’, what types of urban agriculture activities you have been involved in through the support of the ABCD Project (Select all that apply)
    - Crop production
    - Animal husbandry
    - Both
9. If you are involved in crop production, which varieties of crops do you commonly cultivate? (Select all that apply)
    - False banana
    - Endive
    - Cabage
    - Haricot bean
    - Carrots
    - Peppers
    - Corn
    - Other (please specify)
10. If you are engaged in animal husbandry, what type(s) of animal husbandry are you involved in? (Select all that apply)
    - Poultry farming
    - Goat farming
    - Sheep farming
    - Cattle farming
    - Beekeeping/apiculture
11. Which urban agriculture practice do you find most effective in terms contribution to your household food security?

- Crop production
- Animal husbandry
- Both

12. Were you involved in urban agriculture prior to joining the ABCD Project?
    - Yes
    - No
13. If your response to the previous question is ‘Yes’, what differences do you observe compared to your current activities? (Select all that apply)
    - Increased the scale of involvement
    - The types of agricultural activities
    - Increased knowledge and skills acquired
    - Increased level of yields
    - Increased level of earnings
14. Have you faced any challenges in implementing urban agriculture practices?
    - Yes
    - No
15. If your response to the previous question is 'Yes,' what challenges did you face implementing urban agriculture practices? (Select all that apply)
    - Lack of access to water
    - Shortage of land
    - Lack of appropriate training
    - Lack of access to market
    - Lack of access to agricultural input
    - Lack of access to finance
16. Does ABCD project assisted you to overcome some of the challenges you mentioned above?
    - Yes
    - No
17. If your response to the previous question is 'Yes,' in what ways ABCD project supported your urban agriculture activities? (select all that apply)
    - Water pump provision
    - Pest management

- Training provision
- Market facilitation
- Agricultural input provision such as seed and pullets
- MFI linkage
- Direct financial support

HFIAS Questionnaire

No.	Question	Response options
1	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1=Yes
1A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3) 1=Yes
2A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
3	In the past four weeks, did you or any household member have to eat a limited variety of foods (less kinds of food on the plate) due to a lack of resources?	0 = No (skip to Q4) 1=Yes
3A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to	0 = No (skip to Q5) 1=Yes

	eat because of a lack of resources to obtain other types of food?	
4A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1=Yes
5A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1=Yes
6A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1=Yes
7A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q8) 1=Yes
8A	How often did this happen?	1 = Rarely (once or twice in the past four weeks)

		2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1=Yes
9A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)

Interview Guide for the NGO Staff

1. What are the main types of agricultural activities and practices employed by the project beneficiaries? How does the ABCD project support and promote these agricultural practices among beneficiaries?
2. What specific intervention strategies does the SOS Children Village Program employ through the ABCD Project to enhance food security via urban agriculture?
3. What types of training programs are offered to beneficiaries through the ABCD project?
4. Could you outline the process of distributing agricultural inputs to project beneficiaries?
5. What challenges, if any, have been encountered in the distribution of agricultural inputs?
6. Who are the main recipients of financial assistance from the ABCD project? How is the financial support utilized by the beneficiaries?
7. What strategies does the ABCD project employ for pest management in urban agriculture? Are there any partnerships or collaborations established for pest management services?
8. How does the ABCD project facilitate microfinance linkages for beneficiaries? What are the criteria for accessing microfinance services through the project?

9. How does the ABCD project facilitate market linkages for urban agriculture products? What challenges, if any, are faced in marketing urban agriculture produce?
10. Can you explain the process of providing water pumps to project beneficiaries? What impact has water pump provision had on urban agriculture productivity?
11. What are the main challenges encountered by project beneficiaries in implementing urban agriculture?
12. How does your organization currently addressing or mitigating the challenge/s you mentioned above?