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COLLEGE OF AGRICULTURE AND NATURAL RESOURCE

DEPARTMENT OF AGRICULTURAL ECONOMICS

A RESEARCH SUBMITTED TO DEPARTEMENT OF AGRICULTURAL ECONOMICS IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE BACHELOR OF SCIENCE(Bsc) DEGREE IN AGRICULTURAL ECONOMICS.

ASSESSMENT OF RURAL HOUSEHOLD POVERTY STATUS IN ANKOBER WOREDA

BY: DANIAL NGATU (ID.NO NSR/0688/14)

ADVISOR: MESFIN AGZA (PHD)

March , 2025

WOLKITE, ETHIOPIA

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March 2025

Wolkite, Ethiopia

DECLARATION

Under signed declare that this research paper is my original work and it has not been presented for a degree in any other university, and all the materials required for the study has been acknowledged.

Student Name_____Signature_____ Date____/____/____

This study research paper has been submitted for examination with my approval as university adviser and Examiner.

Advisor Name _____ Singature_____Date___/___/____

Examiner Name_____ Signature_____Date___/___/___

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ACRONYMS AND ABBREVIATION

BNS Basic Need School (Approach)

CSA Central Statistics Agency

3FGLS Three Feasible General Least Square

FEIV Fixed Effect Instrumental Variable

FGT Foster Thorn Greer Back

FIA Food Energy Intake Approach

HICES Household Income and Consumption Estimation Survey

SDGs sustainable Development Goals

Mo Fed Ministry of Finance and Economic Development

OLS Ordinary Least Square

VEP Vulnerability as Expected Poverty

WB World Bank

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ABSTRACT

This study assessed the vulnerability of rural households to poverty in Ankober Woreda, Ethiopia, using a cross-sectional survey conducted in 2024. A total of 100 households were sampled through a two-stage stratified random sampling technique. The Cost of Basic Needs (CBN) approach was employed to establish the poverty line, set at 1860 Birr per month per adult equivalent. The findings revealed that approximately 68% of the households were vulnerable to poverty, with significant correlations identified between vulnerability and factors such as family size, education level, income, farm size, age, sex, and oxen ownership.

The analysis indicated that larger family sizes and lower educational attainment increased the likelihood of poverty, while higher incomes and farm sizes contributed to lower vulnerability. The study highlighted the pressing need for targeted interventions to alleviate poverty, particularly through enhancing educational opportunities and providing support for off-farming income-generating activities. Recommendations included implementing family planning programs, creating non-farm job opportunities, and establishing oxen health centers to improve agricultural productivity. This comprehensive approach aimed to reduce vulnerability and promote sustainable poverty alleviation in the region.

Key Words: poverty , Cost of Basic Need, off-farming income, income, vulnerability, educational level, family planning

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Poverty refers to the insufficient material possessions or income to meet a person's basic needs. It encompasses social, economic, and political dimensions. Absolute poverty denotes a complete lack of the means necessary to satisfy fundamental personal needs, such as food, clothing, and shelter, with a consistent threshold across different contexts. Conversely, relative poverty is defined by an individual's inability to achieve a minimum standard of living compared to others in their community, with thresholds varying by country.Despite progress in reducing poverty in some regions, millions continue to struggle to make ends meet. In Southern and Eastern Africa, the extent and severity of poverty are increasing due to greater exposure to natural and human-induced shocks, as well as the impacts of health crises like HIV/AIDS. The dimensions of poverty as low-level security are not adequately measured in Ethiopia (Tassew, 2019; World Bank, 2021).

Identifying who is poor and the characteristics of the poor is insufficient for developing effective poverty alleviation policies. "Poverty is a stochastic phenomenon" (Chaudhuri et al., 2001). Thus, effective anti-poverty interventions must consider not only current poverty status but also the risk of households becoming poor in the future. This introduces the concept of "vulnerability to poverty," which reflects the risk that a household will fall into poverty (Suryahadi and Sumarto, 2001).Ethiopia exhibits considerable diversity in terms of topography, agro-ecological zones, cropping patterns, and ethnicities, which affects the livelihoods of its population. The agricultural sector is predominantly composed of smallholder households, responsible for producing over 94% of the agricultural output (Demeke et al., 2020). Approximately 83% of Ethiopians reside in rural areas, where poverty is more prevalent than in urban settings. As of recent estimates, around 25% of the population lives below the national poverty line, with rural poverty rates significantly higher (World Bank, 2022).

According to the 2021/22 HICES, the proportion of poor people (poverty head count index) in the country is estimated to be 38.7. While the proportion of the population below the poverty line stood at 39.3% in rural areas, it is estimated to be 35.1% in urban areas.

Although poverty multi-dimension it has always been studied in world of certainty. Little regarded has been given to the implication of exposure to risk, with some expectation to reduce poverty sustainability, however, reducing the household vulnerability and increasing the household resilience are also necessary (Jose et al 2007). This aspect is often over looked by policy maker.

In Ethiopia there is the difference on the prevalence of poverty among regions those region Amhara is the one which suffers from chronic poverty. The region has a number of zones and woreda's. Among those zones north shewa is the one which includes so many woreda's. Among this Ankober woreda is largest one so the researcher observed the occurrence and the effect of chronic poverty in every year. The researcher would be intended to determine the assessment on rural household poverty status in Ankober woreda.

1.2 Statement of the Problem

In many developing countries, including Ethiopia, poverty reduction is a primary development goal. The country committed to the Sustainable Development Goals (SDGs), specifically Goal 1, which aims to eradicate extreme poverty in all its forms by 2030. Despite significant achievements in reducing poverty in recent years, many indicators remained among the highest in the world. According to the 2011 Household Income and Consumption Expenditure Survey (HICES), the proportion of poor people in Ethiopia was estimated at 29.6% (Mo Fed, 2019).

Determining whether a household is poor is widely recognized as an important indicator of household well-being, reflected in the central role that poverty plays in social protection policy analysis. In recent years, the concept of vulnerability has become increasingly prominent in discussions of poverty alleviation and social protection strategies. Vulnerability has been defined in various ways by researchers. Chaudhuri (2000) defined vulnerability as the ex-ante risk that a household will, if currently poor, remain poor, or if currently non-poor, fall below the poverty line in the future. Building on recent literature regarding consumption and risk-sharing, Skoufias

(2002) characterized vulnerability as the degree to which household consumption co-varies with the growth rate of household income. This definition acknowledges that households may adopt various risk management strategies, such as savings and loans, to protect themselves from potential vulnerabilities.

Regardless of the definitions, it is clear that the term vulnerability proactively addresses the issues of household poverty and risk. Vulnerability differs from poverty in that poverty is an ex-post measure of a household's , while vulnerability is an ex-ante analysis. In this context, poverty is a static concept, whereas vulnerability is dynamic. However, there is a connection between the two, as assessing the vulnerability of different population segments is crucial for understanding future poverty risks. Household vulnerability can be perceived as the probability that a household will experience poverty in the near future, with changes in vulnerability being broadly consistent with trends in poverty (Bidani and Richter, 2001).

The study suggested that rural households in Ethiopia exhibit different segments in terms of demographic and occupational compositions. It aimed to generate a vulnerability profile for these segments, which could serve as a useful tool in discussing policy priorities among the rural population. Previous studies (Siegfried, 2012; Dercon, 2001; Krishnan, 2000) identified rural Ethiopia as particularly vulnerable to poverty but failed to provide comprehensive information on expected poverty profiles using idiosyncratic Most related studies conducted in Ethiopia have focused on poverty at a single point in time and have not thoroughly explained the determinants of rural household vulnerability to poverty. Although a few studies have explored this area, they primarily concentrated on measuring vulnerability without considering the covariates of vulnerability to poverty in urban Ethiopia. Additionally, while many researchers have examined this issue, none have specifically focused on Ankober Woreda. Thus, this study aimed to fill this research gap by assessing the poverty status of rural households in Ankober Woreda using a logistic estimation model.

1.3 Research question

The research points out where the following questions:

- What are the determinants of of poverty in the study area?
- Who is the vulnerable group for poverty in the study area?

1.4 Objective of the study

The research contains both general objective and specific objectives

1.4.1 General objective

The general objective of the study assessment on rural household poverty status in Ankober woreda.

1.4.2 Specific objective

- ✓ To assess the poverty status of households in the study area.
- ✓ To identify the determinants of of poverty in the study area.

1.5. Significance of the study

The study would be a step forward in developing policies, which help not only the peoples who are identified as poor but also those at edge of joining the poor. the study would be a stepping stone for those who have interest in conducting future studies on the area. It would also give open clues about the assessment on rural household poverty status in Ankober woreda.The study would be use full to other researcher who wants to have further investigation in to socioeconomic challenges of rural household Vulnerability. Lastly, completing this study would contribute to the researcher's qualifications by fulfilling part of the requirements needed to earn a BA degree in agricultural Economics.

1.6 Scope of the Study

The study concentrates on assessment of rural household poverty status in ankober woreda using cross sectional analysis. The respondents are only household that livable hold that lives in ankober wereda.

1.7 Limitations of the study

Explicitly mentioning the limitation of the study helps cautiously judge that came out from the analysis. In collecting data the study would concentrated in Ankober woreda only and is not covered other parts of the rural households.

Another limitation of the study emerges from the information collect through structural questionnaire. The questionnaire would be designed in such a way that it would provide inform on the income and consumption patterns of the households in the study area. The study would not include other facilitates and standard living, during the collection of data research would visit only the households. Accordingly the credibility financial of the information collected from the households will depend on their recall.

1.8 Organization of this paper

This paper contains Five chapter, chapter one include introduction, background of the study, statement of problem, research question, objective of the study, significance of study and scope and delimitation of study. Second chapter consist literature survey, definition of basic concepts theoretical literature review and empirical literature review. Third chapter includes description of study area, data source and method of data collection, method of data analyzing, sampling technique and sampling size, empirical model specification and estimation technique and definition of variables and its hypothesized signs and the fourth chapter contains the data presentation through both econometric model and descriptive method and the last five chapter composed of conclusion and recommendation.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Theoretical literature review

The Constance F.etal (1995) defined poverty as economic deprivation. A way expressing this concept is that it pertain the people lack of the economic resource (e.g money, near money income) for consumption of economic goods and service like food, housing, clothing, education and transportation.

Under this analysis of poverty, the definition of poverty in terms of vulnerability has taken various forms by various scholars. The source and the cause for the risk occurrence of deprivation and result derived from incidence of the risk differentiated the meaning of the term. Glewwe and Hall in 1998 identified the vulnerability to be structural and other being market oriented that arise from the interaction of the household characteristics and their earning capacity.

Other scholars defines the term of the vulnerability from a poverty dynamics point of the view as probability of the falling to poverty in the future and at least falling once in to poverty in one the period ahead (pritechetal 2000). And the vulnerability as the measure of "resilience against a shock the likelihood that shock will result in decline in wellbeing "(the world bank 2000)

Chaudhuri in 2003 defines the poverty as a ex posit measure of the well being(or lack three of) "not having enough now of the something valuable" and the term of vulnerability to poverty be thought of as an extant measure of the well being the probability of now of not having enough something valuable in the future. "The presence of risk relates to events possible occurring beyond the direct control of individual and households (Decrcon and Krishan 2000). The fact that the level of future wellbeing is uncertain, distinguishes the concept of the poverty form the notion of vulnerability. "(Decrcon 2007).

Decrcon and Krishan in 2000 defines poverty as intrinsic value of wellbeing that emerges from the philosophy that "being well today is not a guarantee for being well tomorrow" hence they forward a comment on the concept that both alleviation prevention strategies to be instruments needed to adopt simultaneously to effectively tackle poverty in poverty reduction strategies and programs. This subject matter is analogous to treatment of household members be given

community upon disease outbreak. A parallel must be given to these who are already affected and preventive measure to be taken to the others who are at risk.

2.1.1 Definitions terms

Literature's on the definition of poverty provide many different interpretations. Based on different definition, different implications on the incidence of poverty and policy analysis have been drawn. Constance F.etal,(1995)define the poverty as economic deprivation. A way of expressing this concept is that pertain to peoples lack of economic resource.

The world bank (2007) defines the poverty as "inability to attain a minimum standard of living Lapton and ravalion (1993) defines that poverty exists when one more personal fail short of a level of economic welfare believed to comprise a reasonable minimum either in absolute sense or a standard specific society.

Poverty in developing countries, like Ethiopia is too often conceptualized as mass poverty implying a situation where more than half of the total population of the country lives in poverty. In concept in rural and urban areas though have some common sharing, surly have different meanings (Ibid).

2.1.2 School of thought and poverty

In literature there are three main schools of thought concerning the definition and measurements of the poverty. These are welfare school; basic needs school and capability school (Garza 2001 and Yared 2005). Thews schools although perceives poverty differently, there are areas in which they share some common meaning which is all of them judge a person to be a poor whenever he or she is lacking with respect to responsible minimum standard.

A. the welfare's school

These approaches refers to numerous micro economic precepts and postulates that economic actors are rational and that they behave in ways to maximize their benefits, in other words the welfare or satisfaction that they derive from their consumption of goods and services.

In this scene the role of government should be limited, even though it is still possible for the government to implement mechanisms that increase individuals benefit and to measure aggregate so dial benefit. In this sense the welfare approach will be favourable to the implementation of

economic policies oriented primarily towards increasing productivity, employment and income growth (Esubalew, 2006). The welfare school relates definition of poverty to economic well-being of the society. It assumes that when societies are not able attain a level of economic well-being deemed to constitute a minimum by the standard of that society and them a person faces poverty. It sees income as a determining factor for the presence of poverty (Dorothee B., 2004; Yared 2005). Nevertheless, this approach has been criticized in two grounds (Garza, 2001; FitsumT, 2002; Dorthee 2004).

B. The basic need school (BNA)

These schools define poverty when one lacks basic needs (goods and services). It concentrates on the degree of fulfillment of the basic human needs in terms of nutrition, food, health, shelter, education, transport and so on Yared (2005) tried to explain the limitation of basic needs approach as a definition and measure of poverty. He argues that the set of basic goods and services is different individuals depends on age, sex, type activity, etc of basic problems he cited it how to determine the set of basic needs. There is even a high disagreement among professionals on the determination of basic needs.

C. The capability of school

What is emphasized in this school is neither the economic wellbeing nor the basic needs deemed to satisfy the minimum standard by the society; it is nevertheless, human abilities or capabilities to achieve a set of functioning. This is an alternative criterion for the definition and measurement of well-being which tells the extent to which people have capabilities to be and to do things of intrinsic worth. Sen (1987) wrote that that the "value of living standard lies in the living, and not in the possessing of commodities" Such an approach to the definition and/or measurement of poverty suggest a broader set of criteria of assessing poverty than just income and/or consumption. The measure is said to include public provided but noon-market service, like, sanitation, health care, education and life expectancy.

Sen (1987) also introduced the notion of capability in poverty definition and assessments. He defined poverty not only as a matter of low level of wellbeing, but also as lack of ability to chase well-being specifically because of lack of economic means. He favoured the capability to

functioning as criteria for assessing standard living, and implication poverty rather than the utility that must be derived from using that capability.

However, the difficulties of this method lie in the application of the concept of capabilities in practical poverty assessments. This school assumes if one is devoid of the right to participate and does not perform the functioning he/she is considered to e poor.

2.1.3. Poverty lines and types

A poverty line is defined based on a minimum level of consumption, normally as the cost of a bundle of goods (both food and non-food) deemed to ensure that basic consumption needs are met and below which is survival is threatened.

More formally the poverty line for a household may be defined as the minimum spending or consumption (or income or other measure) needed to achieve at least the minimum utility level given the level of prices and the demographic characteristics of household. Therefore poverty measurement generally assumes that there exist predetermined and well defined standards of consumption which must be reached if a person is not be deemed 'poor' (Ravalion, 1992 and WBI, 2005).

The choice of poverty line differs from country to country as it's depends on the use to which it will be put. For international comparisons the $1/day standard is helpful, while the targeting the poor relative poverty line is sufficient. There the proportionate choice of poverty line is a matter of judgment (WBI 2017).

A. Absolute poverty line

It is known as poverty line and is fixed in terms of the standard of living it commands over the domain of poverty comparisons. Absolute poverty line should not defined as rigorous poverty line rather than it should be the one, which is fixed in terms of the living standards indicator being used and over the entire domain of the poverty comparisons with the two persons at the same real consumption (Ravavllion, 1992, Constance F, 2005, Esubalew, 2006, and Anthinyetal 2009).

An absolute poverty line remains fixed over the tin adjusted only for inflation. It is perceived as subsistence below the minimum requirements for physical wellbeing, generally, based on the

quantitative proxy indicator such as income or calories but sometimes taking in to accounts a broader package of goods and services (David H. et al 2001).

An absolute poverty line is indispensable to measures the effect of poverty reduction policies and programs overtimes, or to estimate the impact of projects on poverty legitimate comparisons of poverty rates between the one country and another can only be made if the same absolute poverty line is used in both countries. Thus, the World Bank needs absolute poverty line in order to able to compare poverty rates across countries, which in turn is useful in determining the where to channel resources, and in assessing progress in the war on poverty (WBI, 2017).

One of the common weakness of an absolute poverty line is it does not change with living standards of society in question. Thus peoples are la belled ‘‘poor’’ when some absolute needs are not sufficient satisfied, that is, needs are not related to the consumption pattern of others peoples in given society (Esubalew, 2016).

B. Relative poverty line

Relative poverty line defines how income and inequality is distributed in a society. It perceives poverty as a function of relative deprivation in terms of commodities defining poor households as those that are unable to attain given commodities that are normal for the society (Garaza 2001 and Esubalew 2016). The statement itself is self-intuitive in that this poverty defined by the position of an individual compared to other members of a given society.

Poverty is discussed here as the share of people whose equalized income fails below a poverty line. In practice most popular choice to set poverty line in this method is done by taking certain percentage of mean or median incomes of the population. Therefore, a measure of relative poverty defines “poverty’’ as being below some relative poverty threshold (Salliala et al, 2004, Marduch J; 2006).

In general, poverty in this context is defined as a relative deprivation with respect to various commodities. Hence, households or individuals are said to be “poor” when they lack of certain commodities that are common in the society where they live. Nevertheless, the relative importance of studying poverty as comparative phenomena is justified as modern societies meet head on economic liberalization ageing population. Martial dissolution and increased labour force involvement by women. Relative poverty is a certain concern of developed countries

whereas measuring absolute poverty is the main of least developing countries like Ethiopia (Ravallion 1992).

C. Subjective poverty line

The "subjective" approach to understanding and measuring the poverty argues that poverty and ill being must defined by "the poor" or by the communities with significant members of poor people. The concept of subjective poverty is based on the promise that people are the best judges of their own situation and that their opinion should ultimately be the decisive factor in defining welfare and poverty (Mekonne T; 1999).

The approach explicitly recognizes that poverty lines are inherently subjective judgments of people make about what constitutes a socially acceptable minimum standard of living in their own societies (Ravallion, 1992 and Johannes K, 1996). Subjective poverty measures are therefore based on responses of individuals to attitudinal question on household income and welfare like what level of income do you personally consider as absolutely minimum.

In your inspection is the household income ample to meet the household's needs? There is no guarantee for individuals similar in all aspects to provide similar response to the same question and hence does not insure consistency. Furthermore, the application of this approach has been confined to develop countries .because the concept of income on which the procedure are anchored is hard in a developing countries context, where the rural income is predominately and largely subsistence (Metalign A; 2005)

2.1.4. Setting poverty lines

In the analysis of poverty, the starting point is the identification of the poor from the non-poor. To deal with this poverty line pays as vital role in quantifying the various indicators of wellbeing in to single index (Ravallion, 1992). Even though the choice of poverty lines is always arbitrary from country to country the common argument is that there is a minimum level of consumption of goods and service below which it is difficult to sustain our life. Hence in order to get the poverty line, it demands meticulous work in that the level and type of goods and service must be precisely identified.

Thus, the most popular measures of poverty lines are constructed on the basis of three methods, the cost of basic needs, food energy intake method and direct calorie intake (Fitsum T; 2002, Metalign, 2005, Tassew et al ., 2008 and Anthony et al 2009).

A. Cost of Basic Need Approach

The cost basic need approach beings with a national threshold chosen to reflect minimal needs for the health life, adjustments are then made for non-food expense like housing, clothing and social values and applicable if the price information of goods and service of consumed by the poor is easily available (WBI, 2005 and Morduch J.; 2006).

The definition of basic needs is believed to be a socially determined normative minimum to avoid poverty and the cost basic needs is then closely similar to the legal minimum usage rate. Supposition about the fundamental national requirements vary considerably around the world and almost all adopting national standards set by the world health organization and other also set standards based on inputs from national experts. Therefore, the cost of basic needs approach computation utilizes the following main steps (WBI 2005, Metalign 2005 and Morduch J.; 2006 and gauarD.m et al .., 2006).

- Single out nutritional requirement for good health.
- Specify a consumption bundle that is expected to be adequate.
- Estimation the cost of the bundle for each sub group (urban/rural each region, etc)
- Add non-food component which are expected to be adequate.

Thus, accordingly, basic needs poverty line is the arithmetic sum of food poverty line and non-food poverty line (Ravallion, 1992, Fitsum T; 2002, WBI, 2005 and Morduch J.; 2006).

Mathematically expressed

$P_{L=} P_{LF} + P_{LN}$ Where P_L is the poverty

P_{LF} is the food poverty line and

P_{LN} is non- food poverty line

B. Food Energy Intake Approach (FIA)

This approach places the poverty line as the income or consumption expenditure level just sufficient to meet predestined food energy intake to an individual. The level of FEI, strongly, influenced by so many factors and preference, activities, age, sex of individuals and consumption habit are the most influential ones. The poverty line now can be constructed after treating these differences and valuing the costs of attaining the predetermined FEI level. This could be computed by finding the consumption expenditure or income level at which the person attains the food energy level yet most scholars are argues that consumption will be better indicators of well-being (Esubalew, 2016).

Therefore, the food energy intake method (WBI, 2017) is utilizes as an alternative method to construct the poverty line by researcher if price data are not available. As cost of basic need approach the goal here is to find the consumption of level outlay (or income) that allows the household to obtain enough food to meet its energy requirements.

C. Direct Calorie Intake Method

In this direct calorie intake method the poverty line is defined as the minimum calorie requirement for survival. Individual who consume below a predetermined minimum calorie intake are considered to be poor. However, this approach does not account for the cost of obtaining these calories and ignores non-food needs (Tassew et al .., 2005).Though from the above explained approaches of poverty the researcher will be intended to use income approach method.

2.2. Empirical Literature Review

In Ethiopia there are limited numbers of vulnerability studies found on rural households due to lack of rich panel or cross sectional data for long period of time. One of the recent empirical literature's relates to vulnerability on Ethiopia rural households includes the panel data analysis made by Abraham and Baure in 2012. They have used data from ERHs their own primary data from two villages in analysis the poverty dynamics and vulnerability in the northern highland of Ethiopia.

They decomposed households in to chronic and transient components using panel data (Abraham and Baure 2019). Abraham and Baure also used the methodology of the fixed effect instrumental variables (FEIV) model and the Multinomial model to control for heterogeneity and analyzing the factors affecting the probability that a household is in chronic poverty as opposed to transient poverty. Both used vulnerability as expected approach to enable them to assess poverty dynamics using Foster Greer Thornback (FGT) measures components and approaches that result in that chorionic poverty to be dominant in the study areas compared to transient poor.

Using one USD as poverty threshold and 0.5% as vulnerability thresholds to poverty in the other village and they find out an existence of decline in one village and increase in the other village. Finally, the vulnerability to poverty and its determinants are examined using three steep generalized least square and ordinary least square techniques respectively.

Dercon and Krishman in 2000 contributed a great deal of the poverty measures of the rural livelihood in Ethiopian context. Using data from ERHs and consumption as a welfare indicator and considering nutrition as durable goods. They examined the ability of individuals to smooth their consumption over time and within the household they found that there was a great variation in the consumption, especially for poor and for women in the southern part of country.

They also reported full risk sharing of illness, measured by unpredicted illness shock, with household expect for poor southern households, and were shocks of women were not pooled (Dercon and Krishman). However, even if the data source is the same and their objectives are closely related, if differs from the related studies in that use of food and non-food consumption as dependent variable helps them examine the effects of consumption level of each household on various consumption related explanatory variables.

Recently a review of empirical on vulnerability based on approach developed by Chaudhuri (2019) reveal that a measure of vulnerability called vulnerability as expected poverty is wide used. Suryahadi et al (2002) define the vulnerability as the “risk a household will fail in to poverty at least once in the next few years”. They found out that the number of people predicted to vulnerable are much higher the observed poverty level when poverty line is set at one USD per day. However, the predicted vulnerability and observed become more or less the same when the poverty line is signed to two USD per day.

2.3. Conceptual Framework

The following diagram illustrates the conceptual framework of the major determinants of rural household vulnerability to poverty in which the estimated vulnerability is dependent variable while, (age, sex, family size, education, employment, income, farm size, off-farming income, number of oxen.) are the independent variable.

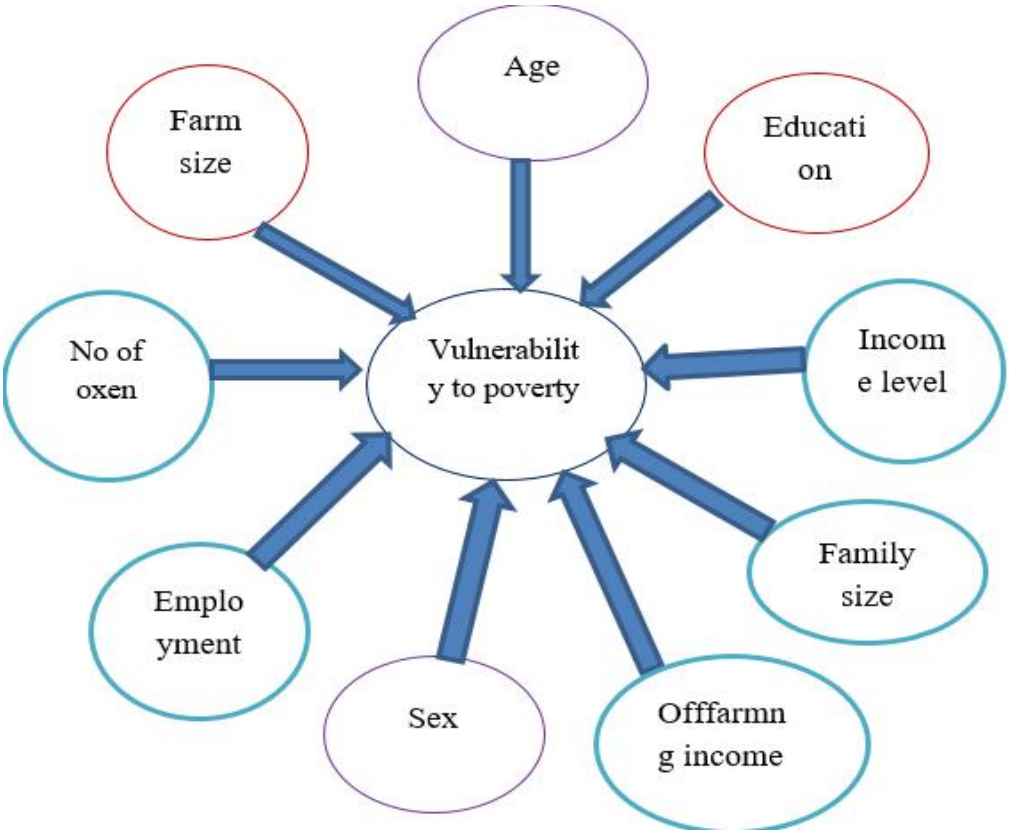


Figure 2.1 conceptual frame work.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Description of study Area

The study will be conducted in Ankober woreda and It is found in Amhara region of north shewa zone. Ankober is located from the east of Debrebirhan town and it's distance is 42 km to the Debrebirhan. The woreda is known by many tourists because there is palace of Menelik and one of the ancient in the region. In this woreda there are so many kebeles which are included to it.

Based on the 2007 census conducted by the CSA, this woreda has a total population of 96367 of whom 55020 are men and 41347 are women. From this only 3,710 or 4.37% of the population are urban dwellers the others are rural households adopted in agricultural sector.

3.2 Data Source and Methods of Analysis

3.2.1 Data Source

To analysis the incidence and assessment on rural household poverty status, the study would use primary data which would be collected using structured questionnaire. The questionnaire would be designed in such away it provide statistics information in households on demographic composition, income, and consumption expenditure, idiosyncratic and co-variate shocks that the households is exposed to the previous years and other important socioeconomic variables. For this unit of observation would be the household defined as group of persons eating and living together for more than a month.

The study would be conducted in 2024 /25 from 100 sample households in Ankober woreda. Secondary data would be also collected from the related literature review, fact documents empirical framework from different office.

3.2.1.1 Method of Data Analysis

The data would be analyzed by using both descriptive statistics and econometrics analysis. The study would use descriptive analysis by tabulation data representation and other techniques. The econometric analyses the study would employees logit Model for analyzing the determinants of vulnerability to poverty by identifying the households the probability to failing poverty in the future. **Logistic model (or logit model**) is used to model the probability of a certain class of

events existing such as pass/fail, win/loss, alive/dead or healthy/sick. **Logistic regression** is a statistical model that in its basic form uses a logistic function to model a binary.

3.2.1.2 Sampling Technique and Sampling Size

These would use two stages random sampling techniques were used to select 100 frame households. In the first stage woreda's categorized in different kebeles based heterogeneous character. There are many kebeles are found in Ankober woreda. Were obtained and used as the sampling frame in order to selected primary sample unit. Then three kebeles are selected randomly. In the second stage frame households in the three kebeles in the first stage are used as secondary sampling unit and using proportionately. Finally 100 unit's frame of household are selected from three kebeles based on random technique using the following (Yemane Taro 1967) formula as follow.

The researchers would use (Yamane formula 1967) to determine sample size since the population number is known and finite.

Ya mane Taro n= $\frac{N}{1+N(e2)}$

Where n= sample size

N= target population households in study area

e= error committed at 10% level of precision

e= (1%, 5% and 10%)

Total household in Ankober woreda is 43,902 and three kebeles is 5,717 each kebeles Zoma kebele 1,250, Gorgo kebele 3,161 and Alyuamba 1,306 respectively.

$n=\frac{43,902}{1+43,902(0.1*0.1)}=100$ n=100

Total number of households in three kebeles would be used to determine the sampling size using table by Glenn D (1992) at 10 the sample size is determined to be 100

Table 1Sample size by kebele

No	Kebele	population	Proportion	100%	Sample proportion
1	Zoma	1250	0.218	21.8	22
2	Alyuamba	1306	0.228	22.8	23
3	Gorgo	3161	0.552	55.2	55
Total		5717			100%

3.3 Model Specification

The research methods used for this study would be discussed with the assessment of determinants rural household vulnerability to poverty. The **logit** model would be employed for assessing the determining the factors of vulnerability to poverty. A brief description is provided below on the respective model that would be employed in this study.

3.3.1 Estimation Techniques'

Ideally, the assessments of vulnerability to poverty require data i.e. records of the same households, over several years however for many developing countries, reliable panel data's are scarce and only cross sectional survey data are available (example Azam Imai 2009). Due the existence of longitudinal data in developing country assessing vulnerability to poverty becomes difficult. However, different scholars have tried to develop different methodologies of measuring vulnerability. Among others, (Chaudhuri etal 2002 Login and Schechter, 2003: Berned and Hanerm, 2009: Dercon and Calvo, 2012 are some of the pioneering individuals in the field particularly, the work of (Chaudhuri etal 2002) came up with a method of measuring the vulnerability from a cross sectional data.

According then study will adopt the methodology proposed by Chaudhuri etal (2002) by assuming vulnerability as expected poverty (VEP). An ex-ante measure. The method has advantages an interim is ability to identify household exposed to risk but who are not poor (example Adepoju and Yusef, 2002). In this approach vulnerability is defined as in the probability of being poor in the future and basically can take on two forms. It is either the ex-ante risk that a household that is currently not poor will fall below the poverty line or a households that is currently poor will remain poor.

3.3.1.1. Vulnerability as Expected poverty

Following the Chaudhuri (2003), for given household the vulnerability is defined as the probability of its consumption being below poverty at time t+1

$Vht = Pr (Cht \leq z^*)$ ---------- (1)

Where =Cht+1 denotes the consumption of the households at time t+1 and

Z^* is the absolute consumption poverty line and

Vht is vulnerability of household time z

For generating per adult consumption expenditure (Ch) of h household is given as

lnCh = Xhβ+eh----------equation (2)

Where xh –represents individual and household characteristics

β- Is vector of parameters

e_h– is the error

Suppose the variance of eh is given by:

$\delta^2 eh = Xh^{\theta}$……equation (3)

To measure β and $^{\theta}$ in equation #3 Amemyia (1997) suggests FGLS producer Chaudhuri etal (2002) first parameter β in the equation #3.2 were estimated using OLS procedure the measure residual from equation #3.2 were used to measure

$\delta^2_{e,h= Xh^{\theta}+uh}$……equation(4)

The predict values of the error term in equation#3is used to transform the same equation in a manner specified below

$\frac{\delta 2ols}{xh\,{}^{\theta}ols} = \left(\frac{uh}{xh\,{}^{\theta}ols}\right)^{\theta} + \frac{uh}{xh\,{}^{\theta}ols}$ .....……..equation (5)

Equation #5 will be measure using the OLS method to obtain on asymptotically efficient FGLS estimated $^{\theta}$FGLS. In this case xh $^{\theta}$FGLS is a consistent estimated of δ^2_{eh} variance of idiosyncratic of households' consumption expenditure. Therefore equation #3.2 is to be transformed with FGLS

$\delta eh = \sqrt{xh^{\theta}FGLS}$ As follow

$\frac{lnCh}{\delta 2eh} = (\frac{xh}{\delta e,h})\beta + \frac{eh}{\delta 2eh}$ ....…… (6)

The estimation equation #3.6 yields a consistence and asymptotically efficient measures of β. Once we get the estimates of Ḃ and $^{\theta}$ we will be able to estimate expected log consumption equation #3.7 and variance of log consumption #3.8 for each household h

Ė (lnch|xh) = xhḂ ---------- (3.7)

And variance of log consumption expenditure for each households is given as:

Ṽ (lnch|xh)=δ^2e, h= $x^{-}h^{\theta}$----------(3.8)

The vulnerability level of h households, which is the probability that household h with characteristics xh will be poor in the future can be estimated by the assuming that household. Consumption expenditure are log normally distributed therefore, suppose (.) denotes the cumulative density of the standard normal distribution vulnerability probability can be computed

ṽh= Pŕ(lnCh<lnZ|xh) = $^{\theta}$(lnZ-xh|√xh^{θ}----------(3.9)

Where the ṽh denotes the vulnerability to poverty that is the probability that are per capital consumption level Ch will be lower than the poverty line (z) condition households characteristics Xh. Meanwhile, $^{\phi}$(.) denotes the cumulative density of standard normal distribution and √xh^{θ} is the standard error of the equation (3.2) where as in z is the log of the minimum consumption (income level beyond which household would be called vulnerable.

3.3.1.2. Selecting the Vulnerability Threshold

According to Chaudhuri et al (2002), a vulnerability threshold of 0.5 indicating that household with the 50% probability falling in to poverty is vulnerable to poverty at least once in the next years.

3.3.2 Determinants of vulnerability

Following the work of Azam and Lmai (2009) Linear regression model or (OLS) ordinary least square estimation procedure is would be used to examine the determinants of vulnerability to poverty in Ankober Woreda using the value of VEP to estimate for each household (from equation 3.9) as dependent variables. Due to fact that the dependent variable is continuous the study would used OLS estimated procedure (Gujarati, 2004). The model expressed as:

ṽi= βxi+Ui …….. (3.10)

Where ṽi-estimated vulnerability level as expected poverty incidence

Xi-vector of explanatory variables

βi- vector of respective parameter

Ui- the error term

$\tilde{v}i=\beta0+\beta1AGE+\beta2SEX+\beta3FAMSIZE+\beta4EDU+B5EMP+\beta6INC+\beta7FARSIZ+\beta8NOOXEN+\beta9NIF+Ui$

Where Age- Age household head

Sex- Sex of respondents

FS- Family size of household level

EDU- Educational of household individual

EMP- Employment

INC- Income level

FAR SIZE- Farm size (cultivated land size)

No Oxen- Number of oxen

NFI- Non farming income (Off Farming income)

Ui- random error term

3.4 Definition of variables and hypothesis

Are hypothesized to influence the vulnerability of household to poverty as follows. Monthly real income consumption expenditure per adult equivalent is the dependent variables in specified FGLS procedure of estimation vulnerability to poverty index.

Estimation of Vulnerability to Poverty

To estimate the vulnerability of rural households to poverty in Ankober Woreda, **Binary logistic regression model** was employed, given the nature of the dependent variable. The dependent variable in this study is the **vulnerability to poverty**, which is treated as Dummy variable.The poverty line in this study is determined using the **Cost of Basic Needs (CBN)** approach. This involves the following steps:

- **Selection of Food Items**: A list of commonly consumed food items is identified, typically reflecting the dietary habits of the majority of the poor in the region.
- **Caloric Requirements**: The minimum calorie requirement is set at 2,200 kcal per adult per day, which is a standard benchmark.
- **Cost Estimation**: The cost of the identified food items is calculated to determine the monthly expenditure required to meet the caloric needs. This results in a poverty line of 186 Birr per month per adult equivalent.

In essence, **1860Birr** is the monetary value that defines the threshold for poverty in the study area, indicating that households spending less than this amount per adult equivalent are at risk of not meeting their basic nutritional needs.

Age: Age refers to the age of the household head in years. Hypothesis: Age is expected to be negatively associated with poverty status, meaning older household heads are less likely to be poor due to accumulated experience, skills, and assets.

Sex: Sex is a dummy variable which takes the value 1 if the household head is male and 0 if female. Hypothesis: Being a male-headed household is expected to be negatively associated with poverty status, meaning male-headed households are less likely to be poor.

Family size: Family size refers to the total number of household members who are living and eating together for at least a year. Hypothesis: Family size is expected to be positively associated with poverty status, meaning larger households are more likely to be poor due to increased consumption needs and dependency ratios.

Education (EDU): This variable refers to the number of years spent in school or its equivalent, measuring the educational attainment of the household head. Hypothesis: Education is expected to be negatively associated with poverty status, meaning more educated household heads are less likely to be poor.

Employment (EMP): This is a dummy variable, taking the value 1 if the household head is employed and 0 otherwise. Hypothesis: Employment is expected to be negatively associated with poverty status, meaning employed household heads are less likely to be poor.

Income (INC): This refers to the level of income that the household earns monthly or daily in dollars. Hypothesis: Income is expected to be negatively associated with poverty status, meaning households with higher incomes are less likely to be poor.

Farm size (FA Size): This refers to the total hectares owned by the household head used for cultivating crops and fodder for livestock. Hypothesis: Farm size is expected to be negatively associated with poverty status, meaning households with larger farm sizes are less likely to be poor.

Off-farming income (OFFY): This is a dummy variable which takes the value 1 if the household participates in off-farming activities that generate significant income, and 0 otherwise. Hypothesis: Off-farming income is expected to be negatively associated with poverty status, meaning households with off-farm income are less likely to be poor.

Number of oxen (No Oxen): This refers to the number of oxen owned by the household. Hypothesis: Number of oxen is expected to be negatively associated with poverty status, meaning households with more oxen are less likely to be poor.

3.5 Test

The overall significance of the variable is tested by Prob>F. If prob>F less than 0.10(10%) then the explanatory variables included in the model are jointly statistically significant and the explained variable. (Gujarati, 2004)

3.5 .1 Multicollinearity

The variance inflation factor (VIF) is the test of Multi collinearity. Some authors therefore use the VIF as an indicator of Multicollinearity. As a rule of thumb the Largest The value of VIF or if the value of the variable exceed 10 the more would be the degree of collinearity of the variable with the other regressor.

3.5 .2 heteroscedasticity

The researcher would employed the Breusch-pagan test to detect the problem. Accordingly, in the Pagan test the prob (chi2) must be greater than level of significance (5%) to say the model is free from the problem of Heteroscedasticity.

Decision rule; since p-value is greater than 5 % the null hypothesis is accepted i.e. there is no heteroskedasticity problem.

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSION

4.1 Setting Poverty line

The cost of basic need approach is employed to determine poverty line study area. This approach is preferred due the fact that current price of goods and service have remained almost constant compared with previous year and have the ability to show the real expenditure behaviour of the society in Ankober woreda

Having such rational for CBN, the following steps would be employed to obtain the poverty line.

1. Selected the food items commonly consumed by the majority of the poor and 21 food items have been identified.

2. Each bundle of food is weighted with appropriated unit of measurement.

3. Each unit of food items consumed by a household in a month is divided to the corresponding adult equivalent unit in the household.

4. Sum all food per adult unit consumed in a month to get month requirement of food for each adult equivalent unit in the household.

5. Assuming 2200kcal as minimum calorie required per adult equivalent per day in Ethiopia, the researcher Would tried to estimate the cost of meeting this food energy requirement. Therefore, the food poverty line is Birr 155 per month per adult equivalent or 1860 per year which is set in by PASDEP

Hence poverty line Daily calorie requirement: 2,200 kcal/day.

Monthly requirement: 2,200 kcal × 30 days = 66,000 kcal/month.

Cost to meet 66,000 kcal/month: 155 Birr/month (as stated).

Annual poverty line: 155 Birr/month × 12 = 1,860 Birr/year .

Table 2 Quantity of food used for poverty line estimation per month per adult

Food item	Kcal/month/adult	Kcal/adult (Araya 2010)
Teff	5.9	341
Barely	1.46	354
Wheat	4.39	351
Maize	1.19	362
Sorghum	0.04	347
Bean	0.489	244
Peas	0.47	341
Meat	0.46	626
Egg	0.04	68
Milk	0.54	79
Oil	0.69	884
Potato	0.27	87
Tomato	0.21	75
Vegetable	0.5	75
Sugar	0.48	400
Honey	0.33	500
Coffee	0.39	2
Fruits	0.08	110
Red paper	0.65	318
Salt	0.2	0
Onion	0.25	42

Source: adopted from Araya (2010) Age of the Household head

4.1 A Demographic Characteristics

4.1. 1 Comparing two groups (in this case poor and non-poor)

Decomposition of poverty by some socio-economic characteristics

Poverty decomposition by different demographic characteristics and economic variables to answer the question of who are poor in the study area, according to an effort or potential to made here to decompose poverty over selected segments of sample like sex, educational attainment, occupation in the study area. The result of this survey shows that among the total poor, All the total female headed HHs includes in the survey 25% of them found to be poor while 31% of the male headed HHs are deemed poor Below the table 4.2

Decomposition of poverty by education level shows that HHs with higher educational attainments HHs heads has low level of poverty relatively. HHs with illiterate heads are consider found to be poor the level of poverty increase as one moves from HHs head by primary, secondary and above that level. From the total population sample 56% are the poor and the remain 44% of the households are other which describe in the following manner.

Table 3decomposition of poverty by sex and educational level

Demographic characteristics HHs	Poor No	%	Non-Poor No	%	Total No	%
Male	31	31%	18	18%	49	49%
Female	25	25%	26	26%	51	51%
Total	56	56%	44	44%	100	100%
Education level						
Illiterate	33	33%	17	17%	50	50%
Literate	23	23%	27	27%	50	50%
Total	56	56%	44	44%	100	100%

Source; computed from own survey, 2024

4.1.2 Age household distribution with poverty status

Two conflicting ideas have been dominating the correlation between the poverty and age of the HH. Some scholars contend the failing to vulnerability to poverty with old age is sever at old age because of the individual household has few saving to compensated for the decreasing of productivity and income from different activities.

From the table 4.3 below we explain the content of poverty in study area on the basis of the age HH head is categorized in to four groups. From the table we observe that shows among the HHs who age between less than or equal 30 years 3 and 19 households are non-poor and poor respectively, who aged 30-40 years 15 and 21 households are poor and non-poor and those aged 40-50 years old 15 and 16 HHs are poor and non-poor respectively and greater than 50 years 4 and 6 households are non-poor and poor households respectively.

The largest percentage implies the respondents belong to below the age of that failing to vulnerability to poverty to the near future period. So, the major group of respondents 37% poor or lives below the poverty line followed by 31%, 22% and 10% respectively.

Table 4 Age household distribution with poverty status

Age category HHs	Poor no	%	Non-poor no	%	Total no	%
Less than 30	19	19%	3	3%	22	22%
30-40	16	16%	21	21%	37	37%
40-50	15	15%	16	16%	31	37%
Above 50	6	6%	4	4%	10	10%
Total population	56	56%	44	44%	100	100%

Source; own Questionnaire survey 2024

4.1.3 Sex distribution of household with poverty status

Scholars who deals with poverty analysis come with different conclusion with respect to correlation between poverty and sex HH head significant affect poverty and that female HHs are much vulnerable to poverty in the next near future time.

When we look at the sex composition of the household head from the table 4.4 below 49% of the household respondents are male head households and the rest 51% respondent's female headed HHs were males so they are below the poverty line followed by 51% of the female headed HHs. Among those male head households 31 and 18 household respondents' poor and non-poor respectively and from the female headed HHs 25 and 26 household respondents' poor and non-poor respectively. This may be due to the customary prohibition of women participation in political and economic activities which limits their information and access to improve farm inputs. Generally, from both male and female 56 and 44 HHs are poor and non-poor respectively in study area.

Table 5sex distribution of households

Sex household	**Poor No**	**%**	**Non-poor No**	**%**	**Total**	**%**
Male	31	31%	18	18%	49	49%
Female	25	25%	26	26%	51	51%
Total	56	56%	44	44%	100	100%

Source; own computed survey 2024

4.1.4 Household size distribution

Family size refers to the number of household members who lived and eat with household at least for one year. HH size is another factor that influence to failing to vulnerability to poverty of the household the majority of farm household in Ethiopia are small scale semi-agricultural subsistence procedure with limited to participation in non-agricultural activities increasing family size tends to exert more pressure on consumption than the small size it contributes to production. The following table shows that 40% of the respondents answered that the family size

ranged between 1-3 people per household and 28% and 32% of the respondent family size range 3-5 and 5-9 person per households respectively. In addition, some respondents said that one person marries two or more than two women's in Woreda and each household ruled by one husband.

Table 6 Household size Distribution with poverty status

Family size rang	**Poor no**	**%**	**Non-poor no**	**%**	**Total**	**%**
1-3	18	18%	22	22%	40	40%
3-5	13	13%	15	15%	28	28%
5-9	25	25%	7	7%	32	32%
Total	56	56%	44	44%	100	100%

Source; from own computed survey 2024

4.1 B Socio economic characteristics and Employment opportunities and source of Income

4.1.5 Income of the household

There are so many reasons in which members of family may not join the labour force and become unproductive. Most studies indicate that individual become dependent because of they are too young to be employed retired, sick or disability shocks. Moreover, empirical works revealed that household with more economically active members have less to failing to vulnerability to poverty.

From table below we observe that 36% of the household respondents have 600-4000 income followed by 29% for the income group 4000-6000 and 20% of household who have an income of 6000-10000 and also some of the household group that earn more than 10000 are about 15% as the table below show that 56% of the household are poor and 44% of the household are non poor.

Table 7 Income of household

Income generates	**Poor no**	**%**	**Non-poor no**	**%**	**Total**	**%**
600-4000	28	28%	8	8%	36	36%
4000-6000	19	16%	10	10%	29	29%
6000-10000	6	6%	14	14%	20	20%
> 10000	3	3%	12	13%	15	15%
Total	56	56%	44	44%	100	100%

Source; own survey of questionnaire 2024

4.1.6 Employment occupation of the household

Empirical studies indicate that employment has high and negative correlation with poverty (Araya 2010), however few research works infer is so significance difference between the unemployed head and those are employed in the informal sectors, (NS 2007). In this study the employment categories of the respondents below the table are classified in to three major classes. These are 59% among those 41 and 30 poor and non-poor followed by government 41% among those 15 and 26 are poor and non-poor respectively.

Table 8 Employment status of household head occupation

Employment category	Poor no	%	Non poor no	%	Total	%
Self-employed	41	41%	18	18%	59	59%
Government	15	15%	26	26%	41	41%
NGO	0	0%	0	0%	0	0%
Total	56	56%	44	44%	100	100%

Source; own computed survey questionnaire 2024

4.1.7 Farm land size

As this study shows, farmland size affects consumption status of households positively. Food production can be increased extensively through expansion of areas under cultivation. Therefore, under subsistence agriculture, holding size is expected to play significant role in influencing farm households' food consumption.

The sample households plough fragmented plots with different sizes and fertility levels. Farmland size is considered as a critical production factor that determines the type of crop grown size of crop harvest. In this Woreda mainly farmers developed farm land through clearing forests and adding for farm land. Moreover, due to population pressure the size of land owned by each household is declined over time.

The farm size or land holding as indicated on the above table 32% of sample units have land size of 1-2 hectares per household, 37% sample unit have land size 2-4 hectares per household, 18% sample units have between the class interval of 4-6 hectares and 13% sample unit have land size of 6-8 and these class interval per household.

The implication that households who have hold large land size are non-poor, this is possible because the size of land holding is a proxy for a host of factor including wealth capacity to bear risk and income large farmer are associated with greater wealth and income increase availability of capital, which increase the probability of investment in purchasing of farm inputs that increase the food production for consumption and insuring non-poor. Since farmers have no equal distribution of land which creates divergence in poverty among farmers, it is impossible for farmers who have small farm land to attain the minimum poverty line study area. Therefore, under subsistence agriculture, land holding size is important determinant influence the household lies above poverty line.

Table 9 Farm land size distribution of households

Land size	**Poor no**	**%**	**Non-poor no**	**%**	**Total**	**%**
1-2	23	23%	9	9%	32	32%
2-4	20	20%	17	17%	37	37%
4-6	7	7%	11	11%	18	18%
6-8	6	6%	7	7%	13	13%
Total	56	56%	44	44%	100	100%

Source, own survey own questionnaire 2024

4.1.8 Participation in off- farming activities

Household by participation non- farming income is received by participation in non-agricultural activities. Therefore, concerned stakeholder showed identify the different possible types of off-farm activities and support with the necessary knowledge and skill of the various types of off-farming activities that could improve the lies above the poverty line status.

From the following table we can understand that out of sample size 52% did not participation in the non- farming activities and only 48% can did it. Its overall implication is that those households who participate in off-farming activities can considered as less failing to below the

poverty line and vice versa. Because those who participate in off-farming activities can sustain when agricultural production is fails.

This source income is collected from sale crop produce, sale of livestock and livestock production and hiring of agricultural land. The table below implies that farm those who participate in non- farming activities 20 and 28 HHs are poor and non-poor and from those who did not participate in off- farming activities 36 sand 16 HHs are poor and non-poor respectively. The more household head engage in gainful employment, the higher he or she earns and greater chance of being non-poor.

Table 10 Participation of off-farming activities

Response yes\no	**Poor no %**	**Non-poor no %**	**Total %**
Yes	20 20%	28 28%	48 48%
No	36 36%	16 16%	52 52%
Total population	56 56%	44 44%	100 100%

Source; own survey questionnaire 2024

4.1.9 Oxen ownership

Oxen plays an important role for farming in study area as farmers in the mostly depends on traditional farming method. Hence, oxen are an important factor of the production as it the primary source of power for land cultivation. The number of households in Ankober Woreda is 43902. According to this study we taken sample from 39% from this 29 and 10 are poor and non poor respectively, the household who have oxen number 49% among this 19 are poor and 30 are non poor. lastly the households oxen number that have 12% are 7-11. In general the total household who are poor is 56 and the remain 44 is non poor households.

Table 11 Number of oxs

Number of oxen	Poor no	%	Non-poor no	%	Total	%
1-3	29	36%	10	10%	39	39%
3-7	19	19%	30	30%	49	49%
7-11	8	8%	4	4%	12	12%
Total	56	56%	44	44%	100	100%

Source; own computed survey, 2024

4.2 Selecting Vulnerability Group

The table summarizes it given their current socio-economic characteristics levels among poor and non-poor households in Ankober Woreda, using a threshold of 50% probability (≥0.5) to classify vulnerability. Key findings include:

- **56% of the total population** is currently poor, with **48% of these poor households** also classified as vulnerable, indicating a high likelihood of remaining impoverished.
- **20% of non-poor households** are vulnerable, meaning they face a significant risk of falling into poverty despite their current status.
- Combined, **68% of the population** (48% poor + 20% non-poor) are vulnerable, underscoring widespread economic instability. Only **32%** (8% poor + 24% non-poor) are deemed non-vulnerable. Most poor households (48%) lack resilience to escape poverty, suggesting entrenched deprivation. Meanwhile, the 20% vulnerable non-poor households signal systemic risks (e.g., lack of safety nets, economic shocks) that threaten even those above the poverty line

Table 12Selecting Vulnerability Group

Classification of vulnerability	Poor no %	Non-poor no %	Total 100%
Vulnerability	48 48%	20 20%	68 68%
Non-vulnerability	8 8%	24 24%	32 32%
Total population	56 56%	44 44%	100 100%

Source, computed own questionnaire, 2024

4.3 Econometrics analysis

4.3.1 Tests

The overall significance of the variable is tested by Prob>F. If prob>F less than 0.10(10%) then the explanatory variables included in the model are jointly statistically significant and the explained variable. (Gujarati, 2004)

4.3.2 Multicollinearity

One of the assumptions of the classical linear regression model (CLRM)is that there is no Multicollinearity among the repressors included in the regression model. The term Multicollinearity refers to the situation where there is either an exact or an approximately exact linear relationship among the x variables. The variance inflation factor (VIF) is the test of Multi collinearity. Some authors therefore use the VIF as an indicator of Multicollinearity. As a rule of thumb the Largest The value of VIF or if the value of the variable exceed 10 the more would be the degree of collinearity of the variable with the other regressor. On the other hand if the VIF is less than 10 the greater the evidence that variable is not collinear with other regressor The result shows VIF 1.10 which is less than 10. This is implies there is no multicollinearity problem in this model. (Gujarati, 2004).

4.3.3 Hetroscedasticity test

When the problem of hetroscedasticity exist in the model, the variance the dependent variable (Y) and the variance of the residual term (Ui) of the model is not uniform (not constant). The major sources of hetroscedasticity are model misspecification bias, omission of the relevant variables from the model and the wrong mathematical form of the model. If this problem exists in the model our conclusion would be misleading. Therefore, the researcher was employed the breusch-pagan test to detect the problem. In this case, the test statistic is $chi^2(1) = 3.52$, and. Since the p-value is significantly higher than the conventional significance level of 0.06070, we fail to reject the null hypothesis. This outcome suggests that there is no evidence of heteroskedasticity in the model, indicating that the variance of the error terms is constant across the fitted values of poverty. By simply refer the information from the Appendex part we observe the result of hettest and its behavior.

Decision rule; since p-value is greater than 5 % the null hypothesis is accepted i.e. there is no hetrosdacity problem.

4.4 Interpretation of the Logit model

The regression result of the model shows that study of overall statically significant at 95% of confidence interval and 5% margin error indicated by p-value (prob>chi2=0.0000<0.05).even though the model as whole is statically significant not all variables independent is statically significant .according to the result family size, education, age, sex, income and farm size are significant at 95% level of significance because their respective p>z<0.05 less than five percent. the logistic result nomber of ox ,employment and off-farm activity are statically insignificant their value is greater than 0.05 or five percent.(5%).

According to the Logit Regration Appendex

Interpretation of Significant Variables

family size: p=0.000, significant. coefficient is -0.073. so larger family size is associated with lower vulnerability. each additional family member decreases vulnerability by 0.073 units. that makes sense if larger families have more support.

education of household status: p=0.000, significant. coefficient 0.23.educational status of household head is positive related with probability of being non-poor and statistically significant at 5% level of significant. the number of literate person in the study area is less that means most of them are illiterate so it also determine the vulnerability.

income : : p=0.000, definitely significant. coefficient is 0.0000512. if increasing income has a negative side effect on vulnerability to poverty, it suggests relationship where higher income could inadvertently lead to increased vulnerability in such way dependency on income,cost of living ,behavioral changes, social isolation and so ,since income is probably in local currency units, a one-unit increase in income leads to a 0.0000512 decrease in vulnerability.

farm size p=0.021, significant. coefficient is -0.047. larger farm size reduces vulnerability. each unit increase in farm size decreases vulnerability by 0.047.

sex: sex3: p=0.011, significant. coefficient -0.063, it is also one factor that affect the vulnerability of household group.the coefficient indicated by -0.063 is stastically significant at 5% level. in the study area the number of female is greater than that of male by this case their productivity is less compared to male so,they are more vulnerable to poverty.

age : coef 0.0064611, p=0.024. that's less than 0.05, so significant. the coefficient is positive, so older age is associated with higher vulnerability .For every 1-year increase in age, vulnerability increases by **0.0065 units**, holding other variables.

Goodness of fit of the model

The goodness of fit of the model is measured by coefficient of determination, which measures the percentage of the total variation in the dependent variable that is explained by the variation of all the explanatory variables included in the model, Therefore, R_squared is used to measure the goodness of fit of the estimated model.

As the above regression result shows that R_square=0.5383, which implies 53.83% of the variance in vulnerabilit) is explained by the joint variation of all explanatory variables included in the model or 53.83 % of variation of dependent variable is due to the variation of independent variable included in the model and the remaining 46.17% is explained by the variable excluded from the model.

CHAPTER FIVE

5 CONCLUSION AND RECOMMENDATION

5.1 conclusion

The objective of the study was to determine rural household vulnerability to poverty in case of Ankober woreda. Both primary and secondary sources were used to carry out the study.

The study provided an assessment of rural household's vulnerability to poverty in Ethiopia using single visit cross sectional data from Ankober woreda for year of 2024. The cost of basic needs (CBN) approach was employed to set poverty line in study area as proposed by Araya (2010) vulnerability was defined at household level, within framework of poverty eradication, as the probability of household would be consumption poor in the near future time. According to the methodology proposed by Chaudhuri et al (2002) was used for estimating household level vulnerability using cross sectional data.

This study assessed rural household poverty in Ankober Woreda, Ethiopia, revealing critical insights into vulnerability determinants. Using the Cost of Basic Needs approach, a poverty line of 1860 Birr per adult monthly was established. Findings showed **68% of households were vulnerable to poverty**, with key factors influencing vulnerability identified. Larger family sizes and lower education levels increased poverty risk, while higher income, larger farm sizes, and oxen ownership reduced vulnerability. Male-headed households and older individuals faced lower risks compared to female-headed households and younger populations. Despite current poverty affecting 56% of households, 20% of non-poor households remained at risk of falling into poverty, highlighting systemic instability.

The study underscores the need for targeted interventions, such as family planning programs to reduce dependency ratios, educational access to enhance livelihood opportunities, and support for off-farm income activities to diversify economic resilience. Improving agricultural productivity through oxen health services and land management could further mitigate vulnerability. Addressing these factors holistically is essential for sustainable poverty reduction in Ankober Woreda, aligning with Ethiopia's broader goals under the Sustainable Development Agenda.

5.2 Recommendation

To address the multifaceted and complex nature of poverty in Ankober Woreda, targeted interventions must prioritize both immediate and long-term strategies. Local governments and NGOs should intensify the implementation of existing population policies through accessible family planning programs, integrated health services, and educational campaigns. These efforts would reduce dependency ratios and empower households to allocate limited resources more effectively. Furthermore, diversifying income sources is essential, as the majority of poor households lack participation in off-farm activities. Creating non-farm employment opportunities, such as small-scale enterprises, vocational training, and market linkages, could enhance economic resilience and reduce reliance on volatile agricultural incomes.

Additionally, improving agricultural productivity remains vital, given the dependence on traditional farming methods. Establishing oxen health centers in each kebele would ensure access to veterinary care, enhance draft power for cultivation, and mitigate risks associated with livestock morbidity. These measures, combined with targeted social safety nets and investments in rural infrastructure, would align with Ethiopia's commitment to the Sustainable Development Goals (SDGs), fostering sustainable poverty reduction and inclusive growth in both rural and urban settings.

It recommended that households with off-farming income are better and endowed with better and additional income, thus government might create non- farm jobs for rural households.Number of oxen is the most important determinant of poverty for farmers in the study area which farmers dominantly depends on traditional farming method. Hence, oxen are important factor of production as its primary source of power for land cultivation .It recommended that the government built oxen health centre each kebele.

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COLLEGE OF AGRICULTURE AND NATURAL RESOURCE

DEPARTMENT OF AGRICULTURAL ECONOMICS

RESEARCH QUESTIONNAIRES

By: DANIEL NGATU NSR/0688/14

Adviser: Mesfin Agza (PhD)

Specific objectives

- ✓ To assess the poverty status of households in the study area.
- ✓ To identify the determinants of of poverty in the study area.

Dear respondents

I am graduating student in WOLKIT UNIVERSITY COLLEGE OF AGRICULTURAL AND NATURAL RESOURCES DEPATMENT OFAGRICULTURAL ECONOMICS.As partial requirement of the program. I understand a research study with the title THE ASSESSMENT OF RURAL HOUSEHOLD POVERTY STATUS IN ANKOBER WOREDA**.** So you are kindly requested to extend your cooperation for success of this study by genuinely answered all questions in the questionnaires I assure you that your individual answers will be kept strictly confidential. I would like to thank you in advance for your kindly corporation. Thank you !!

Introduction

- ❖ No need of write your name
- ❖ Put remark for closed ended questions and write idea for open closed questions.

Part I: Demographic information

1. Sex male ☐ female ☐

2. Age of household head _____years

3. Level of education of household heads _____ years

4. Family size _____ members

A .Below 15 ☐ B. above 65 ☐ C.between15-65 ☐

D. Total family size _____

Part II: socio economic factor

5. Status of employment A. employed ☐ B. Pension ☐ C. Unemployed ☐

5.1 What is our main occupation A. self employed ☐ B govt ☐ C. NGOs ☐

5.2 What is your current average monthly income _____ birr

6. What is your average monthly expenditure on food? _____birr.

7. What is your average monthly expenditure on cloth and housings? _____birr

8. Did you use oxen for a ploughing Yes ☐ No ☐

8.1 If yes how many in number _____

9. What average distance from all seasonal road from your farm _____Hours.

10. Do you participation in off farming income generation Yes ☐ No ☐

11 If yes how much income you make from off farming activities _____birr

11.1 How much income you make from farming activities_____birr

12. Do you have your own land? YES ☐ No ☐

12.1 If yes answer for question #13 how many heactars of land do you have? _____heactars

13. How many hectars of cultivating land do you have _____hectars

14. What is average market distance from your travelled to nearest market form your home of walk_____km.

15. What is your current average yearly farm income

No	Types of production	Quantities in KG	In terms of monetary value	
			Unit price per KG	Total value
1	Teff			
2	Maize			
3	Enset			
4	Barely			
5	Coffee			
6	Wheat			
7	Bean			
8	Potatoes			
9	Onion			
10	Others			

16. How many livestock dou you own

No	Types of animals	Numbers	Unit price	Total value
1	Ox			
2	Cave			
3	Calf			
4	Heifers			
5	Sheeps			

6	Goats			
7	Donkey			
8	Hourse			
9	Mule			
10	Camel			
11	Chicken			
12	Plutary			
13	Other specify			

17. Write the average weekly consumption of each of the following food items in local units and Kilograms.

S/N	Food item	Local Units/Kilograms	Weekly consumption in Kilo Grams/Liters
1	Maize		
2	Teff		
3	Wheat		
4	Ater		
5	Better		
6	Honey		
7	Cassava		
8	Oil		
9	Dabo		
10	Coffee		
11	Salt		

12	Cabbage		
13	Tomato		
14	Onion		
15	Halako		
16	Banana		
17	Berbere		
18	Orange		
19	Sorghum		
20	Mango		
21	Meat		

APPENDIX

2. More than 2 billion observations are allowed; see help obs_advice.
3. Maximum number of variables is set to 5000; see help set_maxvar.
4. New update available; type -update all-

```
. use "C:\Users\pc\Desktop\proposal\daniel   data.dta"

. reg vulnerability Age income familysize oxenno farmsize educationlevel2 sex3 offfarm1 employment2
```

Source	SS	df	MS	Number of obs	=	100
				F(9, 90)	=	11.66
Model	11.714485	9	1.30160944	Prob > F	=	0.0000
Residual	10.045515	90	.111616833	R-squared	=	0.5383
				Adj R-squared	=	0.4922
Total	21.76	99	.21979798	Root MSE	=	.33409

vulnerability	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Age	.0064611	.0028223	2.29	0.024	.0008541	.0120681
income	.0000512	8.37e-06	6.11	0.000	.0000345	.0000678
familysize	-.0732323	.0176348	-4.15	0.000	-.1082669	-.0381978
oxenno	-.0322846	.016834	-1.92	0.058	-.0657284	.0011591
farmsize	-.0474109	.0202576	-2.34	0.021	-.0876562	-.0071657
educationlevel2	.2303694	.0450578	5.11	0.000	.1408542	.3198846
sex3	-.0636057	.0245258	-2.59	0.011	-.1123304	-.0148809
offfarm1	-.0485221	.0680529	-0.71	0.478	-.183721	.0866768
employment2	-.0126661	.0301525	-0.42	0.675	-.0725693	.0472371
_cons	.3600876	.228791	1.57	0.119	-.0944456	.8146209

```
.
```

```
. vif
```

Variable	VIF	1/VIF
oxenno	1.24	0.805460
familysize	1.20	0.830128
educationl~2	1.16	0.862266
Age	1.12	0.894327
income	1.06	0.940479
farmsize	1.04	0.966012
offfarm1	1.03	0.973781
employment2	1.02	0.979083
sex3	1.02	0.981849
Mean VIF	1.10	

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of vulnerability

         chi2(1)      =     3.52
         Prob > chi2  =   0.0607
```

```
. estat gof
```

Logistic model for vulnerability, goodness-of-fit test

```
      number of observations =       100
 number of covariate patterns =       100
           Pearson chi2(90) =        53.83
               Prob > chi2 =         0.9991
```

```
. sum
```

Variable	Obs	Mean	Std. Dev.	Min	Max
observetion	100	50.4	28.88046	1	100
vulnerabil~y	100	.68	.4688262	0	1
Age	100	31.29	12.58048	15	65
income	100	6153.31	4138.05	600	20000
familysize	100	3.58	2.089802	1	9
oxenno	100	3.5	2.222475	1	11
farmsize	100	3.62	1.686428	1	8
educationl~2	100	2.68	.8025213	1	4
sex3	100	2.49	1.381662	1	5
offfarm1	100	1.55	.5	1	2
employment2	100	2.69	1.125418	1	4