

B 8180

Determinants of Income Diversification into Off-farm
Activities among Farm Households:
The case of Misrak Badawacho Woreda; Hadiya Zone, SNNPR

Gemeda Bilate Abire

A Thesis Submitted to

College of Development Studies
Department of Rural Livelihood and Development

Presented in Partial Fulfillment of the Requirements for the Degree of
Master of Arts in Development Studies

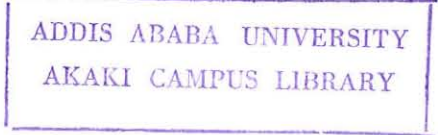
ADDIS ABABA UNIVERSITY
AKAKI CAMPUS LIBRARY

Addis Ababa University
Addis Ababa, Ethiopia
June 2012

The
6303
2012

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared by Gemeda Bilate, entitled: *Determinants of Income Diversification into Off-farm Activities among Farm Households: The Case of Misrak Badawacho Woreda, Hadiya Zone, SNNPR* and submitted in partial fulfillment of the requirements for the Degree of Master of Arts in Development Studies complies with the regulations of the University and meets the accepted standards with respect to originality and quality.



Signed by the Examining Committee:

External Examiner Dugassa M (Ph.D) Signature [Signature] Date 28/06/2012

Internal Examiner Getnet Alemu (Ph.D) Signature [Signature] Date 28/06/2012

Advisor Mengistu Dessalegn (Ph.D) Signature [Signature] Date June 27/2012

Chair of Department or Graduate Program Coordinator

62072

The
6303
2012

ABSTRACT

Determinants of Income Diversification into Off-farm Activities among Farm

Households: *The Case of Misrak Badawacho Woreda, Hadiya Zone, SNNPR*

Gemeda Bilate

Addis Ababa University, 2012

ADDIS ABABA UNIVERSITY
AKAKI CAMPUS LIBRARY

This study was intended mainly in examining the determinants of income diversification into off-farm activities among farm households and thereby to have an insight on contributions of diversification in Misrak Badawacho Woreda. The study drew a sample of 235 households through a multi-stage stratified sampling technique from four Kebeles in the Woreda. Data analysis was done using descriptive statistics, binary logistic regression model and multinomial logit model. Opinions of interviewees have also triangulated with data obtained from survey in issues related to roles of diversification. Results indicate that about 59.1 percent of respondent farm households have participated in off-farm activities. Among these about 76.9 percent of off-farm participants drive their income from at least self employing nonfarm sources while 23.1 percent of off-farm participants are allocated their labor to wage work. The binary logit and multinomial logit estimations show that the major significant determinants of participation into off-farm activities as well as choice of an activity among alternatives are farm size, oxen holding, proximity of market locations and roads, and number of adults. Other characteristics such as age, sex, education level of household head, dependency ratio, and soil quality of farm land are not significantly influenced the probability of involving decision in and choices of off-farm activities. Farm households who involved in off-farm activities have benefited in gaining a higher average income than not involved households thereby maintained their daily requirements including food. Moreover, poverty headcount index shows that households who participated in off-farm activities are less incident to poverty than those did not involve. However, the implied constraints to nonfarm diversification include high financial shortage, lack of skills and knowledge inadequacy of institutional support. Based on the findings, the following points of recommendations are stated: Promoting rural credit schemes, integrating Government and nongovernmental organizations in providing technical support, organizing peoples in off-farm activities, designing labor intensive employment program and constructing rural infrastructure.

72042

Acknowledgements

I owe my sincere gratitude to my advisor Dr Mengistu Dessalegn for his patience, critical reading of the thesis and for his valuable comments, hence without whom successful accomplishment would have been difficult.

I am also thankful to Dr Getnet Alemu, the promoter of my research proposal, for the valuable comments he offered for the improvement of the research proposal.

It is also my pleasure to thank the people without whom the field work would not have been possible, namely Girma Degelo, Yohanis Atushe, Atiso Derilo and Merkin Mathewos who devoted their time in data collection.

I fail short of words to express the gratitude I have to Sr. Rahel Alemu (my wife), for her consistent encouragement and all personal sacrifices for the success of the study.

I wish to extend my gratitude to Hadiya Zone Administration office for covering my living expenses during the study; and to Misrak Badawacho Woreda Administration office and Misrak Badawacho Woreda Agricultural Development Office for their provision of important information and their support in transport facilities for data collection.

Table of Contents

Title	Page
List of Figures -----	viii
List of Tables -----	ix
Acronyms -----	x
CHAPTER ONE: INTRODUCTION-----	1
1.1 Background of the Study	1
1.2 Statement of the Problem	4
1.3 The Research Questions	7
1.4 Objective of the Study	8
1.5 Significance of the Study.....	8
1.6 Limitations of the Study.....	9
1.6 Organization of the Thesis	9
CHAPTER TWO:REVIEW OF RELATED LITERATURES -----	10
2.1. Concepts and Definitions.....	10
2.2 Determinants of Income Diversification into Off-farm Activities: Theoretical Aspects.....	11
2.3 Empirical Literatures on Determinants of Income Diversification into Off-farm Activities	15
2.4 Empirical Literatures on Rural Income Diversification into off-farm Activities in Ethiopia	21
2.5 Role of Off-farm Activities in Rural Households Poverty Reduction.....	27
2.5.1 Evidences from Some Developing Countries-----	28
2.5.2 Evidences on Roles of Off-farm Activities in Ethiopia-----	30
2.6 Study Framework.....	32
CHAPTER THREE:STUDY AREA AND RESEARCH METHODOLOGY -----	34
3.1. Description of the Study Area	34
3.1.1 Physical setting of the Study area-----	34
3.1.2 Population-----	37
3.1.3. Economic Activities-----	37
3.2. Research Methodology.....	38
3.2.1 Sampling Procedure and Data Collection-----	38
3.2.1. 1 Sample Size and Sampling of Respondent Households.....	38

3.2.1.2 Data Set-----	40
3.2.2 Approaches to Data Analysis-----	41
3.2.2.1 Theoretical Framework-----	41
3.2.2.2 Econometric Models.....	42
3.2.2.3 The Empirical (Binary Logit) Model Specification	43
3.2.2.4 Model Variables Specification and Working Hypothesis	45
3.2.2.5 Multinomial Logistic Regression Model.....	50
CHAPTER FOUR: RESULTS AND DISCUSSIONS -----	53
4.1 An Overview Off-farm Activities in the Study Area.....	53
4.1.1 Participation Pattern-----	53
4.1.2 Types of Off-farm Activities in the Study area-----	55
4.2. Reasons for Participating in Off-farm Activities	56
4.3 Descriptive Analysis on Factors Affecting Participation in Off-farm Activities.....	60
4.3.1. Gender and Demographic Characteristics-----	60
4.3.2 Education Level of the Household Heads-----	63
4.3.3 Land Holdings-----	64
4.3.4 Financial Capital-----	67
4.3.4.1 Livestock Ownership.....	67
4.3.4.2 Credit Access.....	69
4.3.4.3 Agricultural Income.....	70
4.3.5 Access to Physical Capital-----	71
4.4 Determinants of Income Diversification into Off-farm Activities.....	72
4.4.1 Econometric Models Estimation Procedures-----	72
4.4.2 Binary Logit Estimation on Determinants of Income Diversification into Off-farm Activities-----	75
4.4.3 Multinomial Logit Model Estimates on Determinants of Off-farm Activity Choices-----	81
4.5 Role of Income Diversification into Off-farm Activities in Household Poverty Reduction ---	83
4.5.1 Income from Diversified Activities-----	83
4.5.2 Utilization of Earnings from Diversified Activities-----	86
4.5.3 Poverty Status versus Off-farm participation-----	90
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMENDATIONS.....	92

5.1 Summary of Major Findings.....	92
5.2 Conclusion	97
5.3 Recommendations.....	99
REFERENCES.....	101
APPENDICES.....	109

LIST OF FIGURES

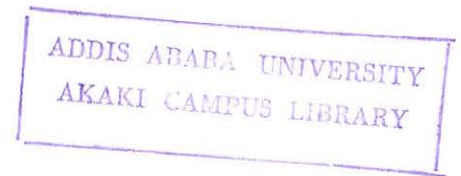
Figure 2.1: Study Framework -----	33
Figure 3.1 Map of the Study Area -----	36
Figure 4.1: Contributions of Off-farm Income in the Livelihood of Farm Household --	87

LIST OF TABLES

Table 3.1: Distribution of the Sample Households -----	39
Table 3.2: Summary of definitions of the variables in the logistic Regression models (Binary and Multinomial) and Working Hypothesis -----	52
Table 4.1: Participation in off-farm activities and Choices by Respondent HHs -----	54
Table 4.2: Summary of types of Activities Involved by off-farm participant Households -----	56
Table 4.3: Reasons for Participating in Off-farm Activities -----	58
Table 4.4: Sex Distribution of Sample Household Heads -----	61
Table 4.5 Descriptive Statistics of Demographic Characteristics of Sample HHs -----	63
Table 4.6: Education Levels of Respondents -----	64
Table 4.7: Distribution of Total and Crop Land Owning for Sample Respondents -----	66
Table 4.8: Soil Quality of the Crop Land Holdings for respondent HHs -----	67
Table 4.9: Descriptive Statistics of Livestock ownership and Oxen ownership -----	69
Table 4.10: Descriptive of Market and Road distances from Respondents' Residence -----	72
Table 4.11: VIF and Tolerance Test for Multi co-linearity -----	74
Table 4.12: Contingency coefficients for Categorical Variables in the Models -----	75
Table 4.13: Parameters Estimation of Binary Logistic Regression Model -----	76
Table 4.14: Results of Significant Variables in Multinomial Logit Model Estimates ---	81
Table 4.15: Income Driven From Diversified Activities -----	84
Table 4.16: Food poverty status of Respondents in relation to off-farm Activities -----	91

Acronyms

ADO	Agriculture Development Office
ADP	Area Development Program
CSA	Central Statistics Authority
BoDPP	Bureau of Disaster Prevention and Preparedness
BoFED	Bureau of Finance and Economic Development
GTP	Growth and Transformation Plan
HAB	Household Asset Building
HH	Household
IDS	Institute of Development Studies
LPM	Linear Probability Model
MoFED	Ministry of Finance and Economic Development
MOLSA	Ministry of Labour and Social Affairs
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary least Square
PASDEP	Plan for Accelerated Sustainable Development to End Poverty
PSNP	Productive Safety Net Program
RNFE	Rural Nonfarm Economy
SDPRP	Sustainable Development and Poverty Reduction Program
SNNPR	Southern Nations, Nationalities, and Peoples Region
SPSS, V.20	Statistical Package for Social Science, Version 20
TLU	Tropical Livestock Unit



CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

About 84 percent of the Ethiopian population lives in rural areas, and derive their livelihood from agriculture directly or indirectly. Agriculture contributes 41.6 percent of the country's gross domestic product; more than 90 percent of its exports, and 83 percent of its employment (MoFED, 2010). However, agriculture in Ethiopia is virtually small-scale, subsistence-oriented and it is crucially dependent on rainfall. It is dominated by smallholder households who produce more than 90 per cent of the agricultural output and cultivate more than 90 percent of the total cropped land using traditional tools and farming practices. The other factors related to poor agricultural performances are reduced soil fertility; unreliable climatic conditions, environmental degradations, and land scarcity have resulted in low crop yields and income variability (Mintiwab et al, 2010; Mulat et al, 2006).

On the other hand, the carrying capacity within the agriculture sector is decreasing over time due to an increase in population growth and the corresponding reduction in farm size in Ethiopia. Available Data show that Ethiopia is the second most populous country in Sub-Saharan Africa. The country has a population of 82,101,998 (CSA, 2010) among which 68,822,164 resides in rural areas. From the labor force (which constitutes 51.84 percent of the total population), 54.53 percent are youth implying a high rate of an increase in the labor force. The population pressure, which led to shrinking plot size of per capita arable land, created a mismatch between the growing labor force and agricultural employment (Mintiwab, B. et al, 2010). Consequently, a number of

increasingly growing rural young and economically active people are forced to work on the fragmented family plots or become landless, resulting in rural underemployment and insignificant or nil marginal contribution of the new entrant to the farm output growth in Ethiopia (Delil, 2001). Population pressure in rural areas is also contributing to the cultivation of impoverished soils on sloppy and marginal lands that are generally highly susceptible to soil erosion and other degrading forces (Asmamaw, 2003).

Thus, as World Bank (2008:202) reports, in Sub-Saharan Africa, including Ethiopia, agriculture is not enough to absorb new rural workers even with migration to cities, because rural populations continue to grow very rapidly, which creates a terrifying employment challenges. Similarly, Demissie (2003) argues that agricultural production fails to keep pace with a population growth rate in the last three decades in Ethiopia. As a result, quite a significant proportion of population lives in poverty in Ethiopia. In this regard, for example, a study conducted by the Ministry of Finance and Economic Development shows that the proportion of food poor people are 34.7 percent in rural areas in the year 2011 (MOFED, 2012). Hence, this needs other possible livelihood pathways; one is livelihood diversification (Scoones, 1998; Ellis, 2000).

Diversification through off-farm activities is believed to smooth labor allocation, the flow of income and consumption of households by combining return giving activities at different time and by diversifying the portfolio of economic activities (Reardon, 1997). As Delil (2001) and Asmamaw (2003) pointed, particularly involving in off-farm activities is crucial for poor and vulnerable segments within a society- the rural landless, small holders with a limited size of land, drought victims as a result of shortage of rainfall or other factors.

Mulat et al. (2006) also noted that off-farm activities among rural households have significant roles in employment, income generation, and in the development of agriculture. Such roles promote growth and welfare offering a pathway out of poverty both in rural and urban areas. Its role of rural poverty reduction will result in a slowdown of migration into the towns and thus could have a favorable impact on poverty in urban areas too. In this respect, Reardon (1998) reported that an average share of non-farm income in total rural household income was 42 percent in Africa, 32 percent in Asia and 40 percent in Latin America. Similarly, Barrett et al (2001) described that in Africa nonfarm sources may already account for as much as 40-45 percent of average household income and seem to be growing in importance. Haggblade et al (2005) also added that even though the scarcity of their various capitals often confines the rural landless and near-landless to low-productivity and low-growth market segments, households with less than 0.5 hectare earn between 50 and 90 percent on their income from nonfarm activities. In Ethiopia, according to Tassew (2000), off-farm labor income accounts for up to 35 percent of total farm household income and 81 percent households participated in off-farm activities. Rijkers et al (2008) also reported that nonfarm enterprise profits on average account for approximately 38 percent of total household income for those households which run a nonfarm firm in rural Ethiopia. It is also pointed out (Mulat et al, 2006) that rural non-farm employment is an important stepping-stone to urban skills and successful structural transformation and consolidation of the agricultural sector through a provision of gainful full time and part-time employment opportunities for the growing rural population in Ethiopia.

Nevertheless, although income diversification into off-farm activities is of paramount importance to compensate for the livelihood stress prevalent in the rural areas, participation appears to be influenced by various enabling conditions such as livelihood resource endowments, incentives and institutional factors (Reardon, 2006). For example, households that live in communities with limited access to credit, inefficient markets, and fewer accesses to public transports are less likely to engage in off-farm activities (Ellis, 2000; Mintiwab, B. et al, 2010; Asmah, 2011).

1.2 Statement of the Problem

Nonfarm sector development is frequently a missing part in the policy debate in developing countries in general and in Ethiopia, in particular (Tassew, 2000; Demissie, 2003; Babatunde and Qaim, 2009). Policy makers by tradition were favoring agriculture as means of rural economic development for a long time. This excluded rural off-farm activities from much attention, thereby ignoring an important source of livelihood (Fikru, 2008). The Past governments failed to create favorable conditions that promote the development of nonfarm rural sector and alternative income and employment opportunities for rural households (Demissie, 2003). Even rural setting in general and small holders' agriculture, in particular, were given a negligible policy concerns in imperial regime considering industry as an engine of growth. During the military government regime, as Beyene (2008) describes, though it has been tried to promote the rural nonfarm sector through different public institutions such as Rural Technology Promotion Department (RTPD) of the Ministry of Agriculture, the Handicraft and Small Industries Development Agency (HASIDA) of the Ministry of Industry and the Adult

Training Centers of the Ministry of Education, they were not successful because of policy and institutional problems from the beginning. Tassew (2000:20) also notes that the property ownership policy followed by the regime discouraged the development of non-farming activities in rural areas by prohibiting people from having more than one occupation.

In recent years, there is an increasing recognition to the importance of income diversification for rural household in Ethiopia in addition to improving agricultural productivity. Particularly, the food security strategy documents explicitly state its importance in supplementing food insecurity problem. For instance, in PASDEP (MOFED 2006:96) stated that as:

The food insecure households are a resource poor, living in drought-prone and degraded areas, focusing on crop and livestock production alone may not entirely solve the problem of food insecurity in some areas. For such areas, income diversification through promoting nonagricultural activities is of paramount importance.

Moreover, the current Growth and Transformation Plan (GTP) in MOFED (2010) underscores that the importance of encouragement of households that have very small plots or landless to engage in non-farm income generating activities through provision of packages of skill and business management training ,credit and access to markets so as to ensure food security. Given the aforementioned policy concern, it is important to assess existing situations in determining and constraining diversification into off-farm activities in areas where the agricultural sector could not accommodate the ever growing rural population and hence food insecure such as the following Woreda that to be studied.

Misrak Badawacho Woreda, the study area, is characterized by one of the densely populated areas in Southern Nations, Nationalities and Peoples' regional state as well as in the whole Ethiopia (CSA, 2010). It carries 203,761 people in the area of 439.66 square kilometers showing a density of 463.1 people per square kilometer while national average density and regional average density in one square kilometer is 110.7 and 159.1 people respectively (CSA, 2010). As a result, land holding of farm households which is a very dominant asset in the livelihood of the rural people has become more fragmented and very small through time. For instance, the data available from the then SNNPR Bureau of disaster prevention and preparedness (BoDPP, 2002) show that, mean land holding was 0.62 hectare and more than 80 percent of households had less than one hectare of land in the area under discussion. The same source also identifies that drought and erratic rain are some of the other vulnerability conditions that make the area prone to a food insecurity problem. Due to these reasons, a significant amount of the people faces food shortage even in a favorable weather condition. As an illustration, a crude assessment report of the Woreda Agricultural Development Office in this year shows that about 43,000, people need additional food for months March to August in 2012 due to crop failure in the previous crop seasons and delay of this Belg season rain.

In this area there is no evidence that asserts promotion of off-farm activities is given adequate attention in practice as a food security intervention. Nevertheless, as other parts of Ethiopia, rural households in the study area are as a norm (Barrett and Reardon, 2000) engaged in various diversifying activities due to different reasons. However, as our knowledge, studies on the issue of determining or constraining factors in involving into such income-generating activities have not been undertaken in the study area.

Thus, a provision of solid and up-to-date information about the driving forces of household income diversification in the specific context could address the problem of a relatively little efforts to promote the sector in a pro-poor way and overcome potential constraints (Babatunde and Qaim, 2009). And an improved understanding of diversification behavior may also help the identification of effective means of targeting the poor or the food insecure (Barrett and Reardon, 2000). These suggest a need of having an in-depth understanding of the enabling and constraining factors for participation in off-farm sources in the specific context to exploit its contribution for the livelihood of the farm households as well as for successful realization of enhancement of the sub-sector.

Therefore, this study focuses on empirical investigation of factors that determine rural farm households to participate in and choices of income diversification activities, and thereby it assesses the contributions in the livelihoods' farm households in Misrak Badawacho Woreda.

1.3 The Research Questions

Attempts have been made to address the following research questions.

1. What are the main types and the patterns of off-farm activities in the study area?
2. What are the determinants that enable or constrain participation in and choices of off-farm activities
3. Which factors are strongly influencing such activities in the area?
4. What are contributions off-farm income diversification activities in the livelihood of farm households particularly in poverty reduction?

1.4 Objective of the Study

The main objective of this study is to identify empirically the socio-economic and demographic factors that determine rural farm households to participate in off farm diversification activities and thereby to identify its contribution in the livelihoods of farm households. Specifically, the study is aimed at the following objectives:

- ✓ To identify the types and pattern of off-farm activities that household involved in the study area;
- ✓ To examine the principal reasons and determinants of participation into off-farm activities and how do they correlate with such activities in the study area;
- ✓ To examine the relative strength of factors those push or pull to diversification activities;
- ✓ To identify the contribution of income diversification from off-farm sources in the livelihoods of rural households in the study population.

1.5 Significance of the Study

As stated earlier, the role of off-farm diversification activities is vital in absorbing significant amounts of rural households by creating employment opportunity and a corresponding diversification in income. Firstly, it is believed that the findings can provide better understanding on determinants that negatively or positively affect rural people's involvement in off-farm work and effects on the participation. Hence it is expected to contribute as an empirical literature for related research on issues of rural development. Secondly, the study's findings will have policy significance for government

and non government bodies. It helps to initiate policies and institutional support, which are necessary to alleviate constraints on participation in off-farm diversification activities and thereby to promote the role of the sub sector in poverty reduction particularly addressing food insecurity as well as rural development.

1.6 Limitations of the Study

The unit of analysis for this study is farm household. It is assumed that members of a farm house hold decide in engaging various activities unitary so that maximize their benefit or utility. However, the household is not a homogeneous block; rather, it is internally complex with different members (men, women, and children) having various roles and autonomy of control over resources, including those crucial for diversification (Barrett and Reardon, 2000). Due to cost and time constraints, a disaggregated approach with the family was not adopted is therefore an important limitation. Again due to budget and time constraints, the study has remained in a small size sample which could be seen as another limitation.

1.6 Organization of the Thesis

The rest parts of the thesis are organized as follows. The review of relevant literature on diversification into off-farm activities and its contribution on income generation and hence poverty reduction has been discussed in chapter two. Data sources, methodology, including the econometric models specifications used for data analysis have been dealt in Chapter three. Chapter four provides results from descriptive analysis and estimations of the econometric models as well as discussions contributions of involving in off-farm activities. The last chapter has been devoted to the summary and conclusion and recommendations/policy implications.

CHAPTER TWO

REVIEW OF RELATED LITERATURES

2.1. Concepts and Definitions

Although it has been well acknowledged on the significance and importance of these livelihood diversification activities in developing countries, there seems to be no unanimous consensus regarding the definition of terminologies and most important factors that determine participation of such activities among scholars. This needs to have insight into the concepts and definitions related to rural livelihood and livelihood diversification, which have been used for this study. As Ellis (2000:10) defines *“livelihood comprises the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household.”* And livelihood diversification can be defined as the process by which rural households construct an increasingly diverse portfolio of activities, and assets in order to survive and to improve their standard of living. Income diversification is the composition of household incomes at a given instant in time (Ellis 1998; 2000:14). It is the allocation of productive resources among different income generating activities, including on farm and off-farm (Babatunde and Qaim, 2009, p.9).

Terms which are off-farm and nonfarm often used interchangeably are also needed to be defined. Man and Sadiya (2009) define off-farm income refers to the earning that obtained from the participation of individuals in remunerative work away from a home plot of land. According to Haggblade et al. (2007) ‘off-farm’ income or employment

mean “off the owner’s own farm” that includes wage employment in agriculture earned on other people’s farms along with nonfarm earnings from the owner’s nonfarm enterprises or from nonfarm wage earnings. Similarly, Adugna (2009); Mulat et al (2006) Mintwab, B, et al (2010); Babatunde and Qaim (2009) used the term off-farm to refer income diversification sources such as agricultural wage employment, non-agricultural wage employment, and self employed on the non-agricultural activities. In this study, ‘Off-farm’ income refers to any income generated from wage works and/or non-farm self employing activities. While income generated from own agricultural production (i.e. crop production and/or livestock rearing) refers to on-farm income.

2.2 Determinants of Income Diversification into Off-farm Activities: Theoretical Aspects

According to Reardon et al (2006) and Reardon (1997) livelihood diversification activity choices and then corresponding income to be obtained are determined by the basic motivations to diversify and by the access of different assets. With respect to the motivations that individuals and households participate in off-farm diversification activities are presented in many typologies in literatures: necessity vs. choice; ‘distress push’ versus ‘demand pull’, income-driven versus activity-driven; occasional versus strategic diversification, to mention a few.

One of the hypotheses is that households engage in off-farm activities either for necessity or for choice (Ellis, 2000; Adugna, 2006). Choice arguments focus that diversification as a matter of choice and opportunity, involving proactive household strategies for improving living standards, and it is voluntary in nature. As most neoclassical farm household models predict that a farm household chooses to work either on the farm or

off-farm depending on the marginal return from farm and off-farm labor on the labor market (Ellis, 1998). For this argument, households are assumed to want to maximize earnings subject to constraints imposed by its limited resources and in trade-off with its desire to minimize risk (Singh et al, 1986, cited in Abebe, 2002, p.9; Reardon et al 2006). The view of the necessity hypothesis is that households engage in diversified activities as a matter of survival, to secure needs during times of distress such as poverty, lack of assets, vulnerability, and disaster (Hart, 1994 cited in Ellis, 1998). Necessity refers to involuntary reasons for diversifying; such examples include fragmentation of farm land holdings, environmental deterioration leading to declining crop yields and abandonment of previous assets (Ellis, 2000).

The motives for undertaking diversification activities are also termed as “Distress-push” or “Demand pull” factors (Barrett et al. 2001; Davis, 2004; Reardon, 1997; Reardon et al, 2006). Demand-pull diversification is a response to new market or technological opportunities and derived from better returns in the non-farm sector relative to the farm sector, while distress-push diversification is driven because there are no opportunities on farm activities. Demand-pull diversification includes the increased income of lesser and middle-income households and increased demand from urban areas for rural products (Davis, 2004 and 2006). As Davis (2004) points pull factors include higher returns or lower risk to rural nonfarm activity than those from farm activities. Higher returns allow farm households to accumulate capital which in turn, can be reinvested in farm technology upgrading and ratcheting up of farm incomes as well. Reardon et al (2006:3-4) identify that “Push” factors include an inadequate farm output, resulting either from temporary events (e.g. drought) or longer-term problems (e.g. land constraints), which

drops to levels not sufficient for survival; credit or insurance market failure which drives households to self-insure and self-fund input purchases; the risks of farming (e.g. rain fall instability, soil quality degradation) which induce households to manage income and consumption uncertainties by diversifying and undertaking activities with returns that have a low or negative correlation with those of farming. They can be “idiosyncratic” (related to a single household or group of households) or “common” to all households in a zone or region (Dercon, 2002; Reardon et al, 2006).

However, Ellis (2000) warns that although division of the motives seems attractive, it is misleading since it attempts to assign the range of experiences to one process or another. He notes that diversifications for survival and diversifications for accumulation are different in the practical situations. Accumulation or choice may become the motive of diversification once survival and risk appear less large on the perspective of the rural household. Some may diversify to accumulate while others (the landless and near-landless) diversify to survive. Farmers may engage in off-farm activities due to necessity when they are in distress; on the other hand, they may participate by choice when there are encouraging environments given that they have necessary resources. Davis (2004: 5) also points that:

Some households will make a positive choice to take advantage of opportunities in the nonfarm sector, considering the wage differential between the activities and the riskiness of each type of employment. Other households are pushed into the non-farm sector due to a lack of opportunities on-farm, for example, as a result of drought or the small size of land holdings.

Bryceson (1999) also added that when wealthy rural households asked why they diversify, they mention profit maximization.

As Reardon et al (2006:11) identifies, the second component of determinants of income diversification into off-farm activities includes capital assets such as human, social, financial, organizational, and physical capital (which they also called capacity variables). The capital can be public or private goods, and can be at the meso or regional level and thus generalized over an area of households, or “idiosyncratic” thus related to a household or a group of households.

The human assets are those factors related with household characteristics. Scoones (1998) and Reardon et al (2006) identify that education level and skill of household members are key sources of human capital, which offer a potentially important route into higher-return nonfarm opportunities. Family composition in general and availability of capable, healthy labour, in particular, are important to pursuit different diversification strategies. Asset endowment related to financial capital also economic capital (Scoones, 1998) includes, access to credit, livestock owning, savings, production equipment and technologies.

Physical asset also called meso levels assets (Reardon et al, 2006) are typically public goods include proximity to towns (market places) and access to infrastructure such as roads, electricity and water. These are crucial capacity determinants of rural nonfarm employment and income levels.

Another capacity variable categorized as natural capital. A vital determinant factor here is land. As Reardon et al (2006:16) observe land is a variable that potentially affects both incentives and capacity to undertake off-farm activity; and it can affect involving negatively or positively. In its positive effect, land can be collateral where credit markets function and thus increase access to credit, in turn used to invest in physical capital

needed for more remunerative nonfarm work; land holding (compared with landlessness) can be the key to enter organizations and groups and thus have social capital, which aids in rural off-farm activity; land can simply be the determinant of farm investment, access to working capital and income, and most nonfarm activity investments are based on own-liquidity. In its negative incidence, land holding has fewer incentives to farm household as they have more farm income. The final constituent of asset or capacity variables is the social capital. According to Scoones (1998) social capital consists of social resources (social networks, social relations, associations, etc.) up on which people draw when pursuing different livelihood strategies.

Thus, as Reardon (1997) and Reardon et al (2006) conceptualized, the rural household or individual's decision in labor supply as well as capital investment (of say household i) to activity j is a function of incentives and capacity variables by the fact that the household is assumed to want to maximize earnings subject to constraints imposed by its limited resources and in trade-off with its desire to minimize risk (Reardon et al, 2006:2).

Therefore, rural households' decision in diversification into off-farm activities and the choice and extent of their involvement within the sub sector are generally determined by the set of incentives and the endowments. Some research findings are reviewed in the following sections.

2.3 Empirical Literatures on Determinants of Income Diversification into Off-farm Activities

One aspect of livelihood analysis is examining the influence of motives and range of resources, which are conventionally called as capital or assets that people utilize to achieve certain livelihood outcomes (Babington, 1999). Motives and resources that

influence the decision to participate in off-farm activities, and the choice of activities had investigated in different studies of developing countries discussed as follows.

Access to natural asset is a major determinant of the livelihood strategies of rural households. Access to land affects participation decision in off-farm activities and on-farm activities among farm households. Ali (1993) in his study on a normative sample of 200 households living in a village southwestern Bangladesh, using descriptive estimates reported that the prevalence of higher rates of unemployment and underemployment in agriculture (income variability) particularly among the households of landless and small farmers, significantly influenced to offer labor in to off-farm work. As a result off-farm work contributed for 66% of the family income. Education and urbanization have shown positive effects on the availability of off-farm work as well as off-farm income. In India, in which 70 percent of rural households own less than one hectare and 11 percent are landless, Lanjouw and Shariff (2004) based on rural data from households and using multinomial logit estimates of analysis, show that the less household's per-capita landholding is a positively correlated factor that contributing to nonfarm employment in rural India. In their study, they also reported that education, wealth, caste, village level agricultural conditions, population densities and other regional effects influenced access to non-farm occupations.

In Malaysia, a study has been conducted by Man and Sadiya (2009) among 500 paddy farmers to examine the relationship between the determinants of employment and the off-farm participation decision using descriptive analysis and logit regression methods. With regard to land they reported that though farm land size negatively correlated implied that

as the size of the farm increased, there was less likelihood of the respondents participating in off-farm employment. Land quality, which is a risk push factor, was significant to off-farm employment. The results also reveal that the farmers' age, gender and number of dependants, as well as other income and the type of farm were the variables that influenced their likelihood to engage in off-farm employment. They as well found that 50.4% rice producers participate in nonfarm employment as an alternative strategy so as to improve their well-being.

Similarly, Escobal (2001) in Peru points that farm households engage in off-farm activities to compensate for insufficient income from land, cattle or farm capital. Moreover, Deininger and Olinto (2001) in Colombia and Ruben and Berg (2001) in Honduras revealed that high level of land concentration and lack of land access for a large number of rural families has contributed to participate in off-farm employment. In Sub-Saharan Africa, one-third of small holders subsist on plots too small to support their families (Oxfam International, 1997, cited in Berdegué and Escobar, 2001). Thus, in Egypt, for example, study by Adams (1999) figure outs that lack of land "pushes" the rural poor into the nonfarm sector in the country representing almost 60% of the poor's total per capita income. Farm sector characteristics such as seasonality and risk factors which are mainly related to land holding are noted as determining variables as the size and nature of the nonfarm sector in Africa (Barrett et al 2001; Reardon et al, 2006; Ellis, 2000).

Human capital assets (such as family size and composition, age, health status education and training) are also major determinants of the diversification into off-farm activities. Education is a key source of human capital, which offers a potentially important route

into higher-return nonfarm opportunities (Reardon et al., 2006). Studies in Latin America confirm that, the number of years of education of the adult members of the households has a strong positive effect on total income and participation in nonfarm activities. Escobal (2001) in Peru identifies determinants using Tobit model and comparisons, and found that private assets such as education and access to public assets such as roads are important factors for nonfarm diversification involvement. Ruben and Berg (2001) in Honduras, for example, show that educated individuals have highly accessed to nonfarm employment and corresponding income. Similar findings have been reported in Africa and Asia too. Barrett et al (2001) in their study of Côte d'Ivoire and Kenya, Smith (2001) in Uganda, Babatunde and Qaim (2009) in Nigeria, Asmah (2011) in Ghana using the probit model for estimation, Reardon (1997) and Reardon et al (2006) in their household diversification studies reported that education has differentially constrained household participation choice.

Further, studies by Ali (1993) in Southwestern Bangladeshi, by Lanjouw and Shariff (2004) in rural India, by Démurger et al (2010) in China through probit analysis, indicate that households' private assets position, including education are found to be strongly show positive effects on the availability of off-farm work as well as income. Family composition is also reported as an important determinant of off-farm participation decisions in farm households. Kimhi (2004) in Israel showed that the demographic composition in the family members affects participation decision. He finds that both father and the mother tend to reduce their participation in off-farm work as the number of elderly and children rises. This shows that the larger dependency ratio affects negatively nonfarm participation due to less labor availability. On the other hand, findings reported

by Ibrahim and Onuk (2009) in Nigeria noted that a household with a very high ratio of dependants has a higher tendency to diversify into other non-agricultural activities in order to cope with the needs within the household.

Number of draft animals (oxen, horse, donkey) and livestock in general owned by households and access to credit determine the options of rural households in terms of diversifying livelihood activities (Berdegue and Escobar, 2001; Davis, 2004). In this regard, studies in Uganda, Tanzania, Malawi and Kenya, Ellis and Freeman (2005:39) note that households with assets such as cattle with their nature of liquidity can find ways to convert one or other asset to investment capital. Barrett et al (2001) finds that within the non-farm sector, such as capital endowments provide access enter most higher-return activities (e.g., long-haul motorized transport, salaried employment creating entry barriers to the poor.

Access to credit is most commonly reported determinants of diversification. However, it is argued as a hindering factor as well as a pushing factor. As Ellis (1998) and Reardon (1997) observed, some researchers have linked income diversification with credit market failures in the rural economy of developing countries, that is, credit market failure drives farm households to undertake local nonfarm activities. By engaging in nonfarm activities, farm households can generate cash income to substitute for the absence or high cost of credit, thus permitting them to purchase cash inputs into production, or to make farm investments and to mitigate the seasonality problem of managing unstable income. Barrett et al (2001) also described that missing credit markets can impede diversification into activities or assets. Davis (2004) points that; lack of access to credit is a single most common obstacle to investment and entrepreneurship in off-farm activities. To

supplement this, study in Nigeria by Ibrahim and Onuk (2009), using simple descriptive statistics and ordinary least squares regression model, find that increase in access to credit by a given household has increased the level of non-farm diversification while the major constraint to non-farm diversification was high financial risk. This is due to the increase in the capital base will enable them to have enough resources to support members of the household. This study also finds that other influencing factors are level of household income, total household farm size and household dependency ratio. Similarly, Smith et al (2001) in Uganda and Escobal (2001) in Peru reported that lack of access to financial services remains a key problem in diversification into non-farm economic activities. The studies recommended that provision of financial resources with loan guarantees and interest rate subsidies to enterprise start up.

Rural Physical infrastructure affects the livelihood strategies of rural households in direct and indirect ways. Roads allow reliable and regular motor vehicle access to serve both the farm and rural nonfarm economy (Davis, 2004). In remote areas (Barrett et al, 2001) where physical access to markets is costly and causes (household-specific) factor and product market failures, households diversify production patterns partly to satisfy own demand for diversity in consumption or no market development encourages households to reallocate their productive resources to higher-return activities (Démurger et al, 2010). Thus, proximity to town affects diversification into off-farm income sources even sometimes such access compensates for lack of private assets such as education (Reardon, 2006). Asmah (2011) in his study in Ghana showed that households which live in areas with access to public transports, and local produce markets are more likely to engage in non-farm diversification and enjoy improving welfare.

influence of non-farm activity on the production decision of farmers, identified the factors influencing involvement in non-farm activities. The study finds that 70.1 percent of sample respondents reported that they earned income from non-farm activities. In the study area as he reports, the farm sector is characterized by shortage of land, low yield of crops, shortage of draught animals, and lack of grazing land. The inference made is that the farm sector is not adequate to support the high density of population in the study sites. Farmers in the study sites, therefore, have shown higher involvement in non-farm activities and income from non-farm sources play a major role in their livelihood. The major nonfarm activities are trade and handicraft. Those participating in non-farm activities are found to be relatively younger and more educated. Family size was not found to be a significant variable, while villages near urban centers tend to have more households earning non-farm income and engaging in trade activities.

Tassew (2000) conducted a survey of random sample of rural household to analyze on farm and off-farm employment, the impact of income diversification on farm production and rural income distribution in Enderta and Adigudom Woredas (Tigray region of northern Ethiopia). The study identified that wage rate, age of the household head, farm output, livestock wealth, non labour income, family size, and numbers of dependants are the main factors which determine off-farm wage employment (Ibid, p.146). Off-farm self-employment is significantly influenced by the level of farm output, wage rate, area of land cultivated, livestock wealth and the value of owned off-farm equipment. The multinomial logit regression result showed that the most important factors that determine the choices of farmers between off-farm wage and self-employment are farm income, ownership of transport animals, area of land cultivated, family size and location. Farm

households that have higher farm income and greater number of transport animals prefer working in off-farm self-employment, while households that have a large family size and more livestock wealth prefer off-farm wage employment. One of the key findings from the study is that expenditure on farm input is dependent not only on agricultural production, but also on off-farm income because of capital market imperfections (borrowing constraints). Farmers involved in better paying off-farm activities such as masonry, carpentry and trading are in a better position to be hired. The study showed that a substantial proportion of farm household (81%) diversify their income into off-farm activities.

Carswell (2000) on the basis of a study carried out in three sites in southern Ethiopia presents that off -arm activities are carried out by significant proportion of adults and makes an important contribution to livelihoods, showing high involvement of women, high cash income contribution to poorer household and high importance of laboring for others next to trading in highland of Wolitya area. He concludes that lack of credit and lack of labour are the two key barriers to entry for diversification activities. The key policy challenge identified from the study is how to find effective ways of articulating formal credit delivery and informal systems. Other key institutions identified to include markets and institutions around labour and natural resource tenures.

Demissie (2003) in five study sites in SNNP region identified influential factors that affect rural household choice of income diversification strategy. His findings indicate that asset endowment of households has a significant effect on household's choice of livelihood diversification strategy. The pattern of livelihood diversification that emerged from study shows that livestock has an important role in diversification of livelihood into

non-crop activities. He also finds that labour is also an important resource that has a positive impact on diversification. Size of cultivated land, cash crop production and access to extension service are found not to encourage diversification. They are rather important factors in enhancing crop farming. An important conclusion of this study is that households use small part of their off-farm income and remittance for investment in farm and off-farm activities, and that they use the largest portion of the income for maintaining consumption.

Mulat et al (2006) under their study of “Towards a more Employment-intensive and Pro-poor Economic growth in Ethiopia” investigated the role, the determinants and constraints of off-farm employment opportunities using the 1999 Ethiopian Rural Household survey. Their study applied a probit model to identify the main determinants of off-farm involvement in rural areas. The result shows that all indicators related to land holding are statistically significant in influencing the probability of off-farm employment. As the study finds, for instance, the probability of off-farm participation declines as holding size increases by about seven percentage, because households may concentrate in the cultivation of their own farms. Moreover, the quality of land matters for off-farm employment, with lesser probability of participation for those with good quality of land. In addition, the investigation shows that the probability of participating in off-farm employment is lesser for participants to the extension program, compared to non-participants. As they point, this may be because, households involved in the extension program have relatively higher incomes from their own farm and are constrained by time compared to poorer households. However, this study reports that the sex of the head of

participation decisions of male members of farm households. The availability of credit and transfer income is the other factors that have a positive impact on the male members' participation in off-farm activities.

Mintiwab et al (2010) undertook an empirical analysis to assess the impacts of rainfall patterns and financial constraints on participation in off-farm employment and activity choice in two Woredas of Amhara Region. They reported that average participation rates for the years 2005 and 2007 were 63.3 percent 56.5 percent respectively. They employed a binomial logit model to assess the determinants of participation in off-farm employment, and a multinomial logit model was estimated for the activity choice between alternative employments in agriculture and the other off-farm activities. The finding from the study shows that annual total rainfall had an inverse impact on off-farm participation implying that abundant rainfall increases the demand for farm activities. Similarly, the result shows that variation of rainfall had a significant positive impact on nonfarm participation implying that rainfall variability increases participation of household members in off-farm activities as a way of mitigating possible agricultural income risk. However, land holding is positively correlated with a decision to engage in off-farm activities.

It has been found that older household heads are less likely to participate in out of own agriculture, while gender and education do not have a significant impact on participation in off-farm activities. It has suggested that households with greater numbers of male and female household members participate more in off-farm activities than other households. This could be because participation in off-farm activities is critically dependent on labor availability. Among other household characteristics, ownership of livestock also has a

significant and positive impact on participation in off-farm activities, indicating that wealth enhances the tendency to engage in off-farm activities. Plot characteristics with favorable attributes, such as fertility and flat plots, tend to increase off-farm participation. In addition, as the study finds that households with relatively large land assets or those with no land tend to participate in off-farm activities. This indicates the presence of non-linearity corresponding to the household characteristics in their effect on off-farm participation.

In sum, regardless of the methodologies used for analyzing the labor allocation of rural households, the studies reviewed above show that determinants to participate in diversification into different activities are facilitated and/or constrained by private asset endowments of households and access to public resources/facilities; and the existing motives. Nevertheless, they are not separate; they may be conceptually distinct but are rarely separable in practice, and they are not similarly and equally influential across the areas in which the studies undertaken in time as Reardon et al (2006) notes.

2.5 Role of Off-farm Activities in Rural Households Poverty Reduction

Poverty is a multi dimensional in its nature. It encompasses lack of economic capabilities; human capabilities, political capabilities, social capabilities, etc. (OECD 2001). Among these the core elements of well being and means to improve livelihoods are (OECD, 2001, p.38): *“Economic capabilities (the ability to earn an income, to consume and to have assets, which all are keys to food security, material well-being and social status) and human capabilities; based on health, education, nutrition, clean water and shelter.* Dawit et al (2011, p. 24) also stated that *“poverty is a situation of whether or not individuals or households possess enough resources or capabilities to meet their current*

needs for a living". Thus, as they pointed, the poor are disadvantaged segments of society who do not have enough food, shelter, access to education, health and other services. The following are some reviews related poverty alleviation potential of off-farm activities.

2.5.1 Evidences from Some Developing Countries

Off-farm activities among rural households play vital roles in employment creation, income generation and thereby poverty alleviation. Available evidences suggest that the nonfarm share in rural income is increasing over time and seem to be growing in importance. In this regard, there are more research findings that reported the growing shares and role of nonfarm economy in different regions. As World Bank (2008:202) describes, across the developing countries, nonagricultural activities account for 30 percent to 50 percent of incomes in rural areas, and it employs 47 percent to 49 percent of adult males in Latin America and the Caribbean, South Asia, and in the Middle East and North Africa. Barrett et al (2001) note that in Africa nonfarm employment sources may already account for as much as 40-45 percent of average household income.

In India, a study by Lanjouw et al (2011) reveals that the share of nonfarm income has increased from 34 percent in 1983 to 67 percent in 2008; and annual growth rate of employment share has also increased from about 2 percent in 1983-93 to about six percent in 2004-05. This created absolutely 40 million new entrants into nonfarm sectors. As a result, poverty has declined directly, through employment generation and also indirectly through an impact on agricultural wages. However, as they noted, particularly casual wage employment and self-employment activities are the major ones in which the poorest have involved. In Vietnam, those households which left agriculture for other occupations experienced a growth in consumption that was 10 percent higher than those

who remained in agriculture (Glewwe et al., 2000, cited in Berdegúe and Escobar, 2001). In Malaysia, a study conducted between Paddy/rice farmers (Man & Sadiya, 2009) shows that more than fifty percent of farmers derive their income through off-farm employments. CheMat et al (2011) in Kedah area of the same country analyzed the impact of the inclusion of non-farm income on poverty reduction level, depth and severity of poverty among farmers. They reported that severity of poverty falls by 55.72 percent when non farm income is included in household income. Similarly, Janvry et al (2005) in China using household survey data from *Hubei* province reported that 72 percent of rural households obtain non-farm incomes, accounting on average for some 36 percent of total household income. The average income of households that participate in Off-farm activities is higher than that of households that only participate in farm activities. They also found that without nonfarm employment, rural poverty would be much higher and deeper, and that income inequality would be higher as well. Their finding in this respect shows that nonfarm incomes lead to a decline in the incidence of household poverty from 68.9 percent to 10.9 percent, the depth of poverty from 39.2 percent to 2.9 percent, and in the severity of poverty from 26.3 percent to 1.2 percent.

In Egypt, Adams (1999, p. 21) has shown that nonfarm income is of great importance to the poor, representing almost 60 percent of their total per capita income has shown impact on overall income distribution. Thus he recommends that if policymakers are interested in reducing poverty and improving income distribution in rural Egypt, then they should focus on nonfarm income. A study in western Kenya has shown even higher participation in nonfarm activities, from which income share is 90 percent (Barrett et al.,

2004). In Ghana, a study by Owusu and Abdulai (2009:10) also indicates that participants in non-farm employment are less likely to be poor by about 46 percent (on average). A recent study by Adewunmi et al (2011) among rural farm households in southwest Nigeria shows that the households derived their income with non-farm activities accounting for 67.1 percent of the income. As this study reports, a marginal increase in off-farm diversification level with the household head reduced the poverty situation of the households by 0.83 percent. It is also revealed that increase in the participation of skilled and unskilled wage employment by the rural farm household members is more likely to reduce their poverty level by 11.02 percent and 10.68 percent respectively (Idow et al, 2011:12).

From Latin America in Honduras, the analysis by Ruben and Berg (2001) through calories intake measure of food security showed that an improvement of 0.3 percent in food adequacy is resulted from an increase of 10 percent in nonfarm income.

Anriquez et al (2010) using surveys from Bangladesh (2000), Malawi (2004), Nicaragua (2001) and Tajikistan (2003), also found that the contribution of nonfarm income (whether via wage of self employment) ranges between 32 percent (in Tajikistan) and 63 percent (in Bangladesh) of total earned income and they concluded that nonfarm enterprises have significant potential to reduce poverty.

2.5.2 Evidences on Roles of Off-farm Activities in Ethiopia

In Ethiopia, as Mulat et al (2006) find, the poor seek out opportunities in the rural nonfarm economy, not only to raise income levels but also to stabilize household income over time. Thus, such earnings serve an important safety net function. Through reduction

of rural poverty, off-farm activities could slow down migration into the towns and then it could have a favorable impact on poverty reduction in urban areas (Ibid, p.35).

Adugna (2006) also investigated that the trend of poverty among farm households comparing the 1994 and 1997 data. He discloses that the rate of poverty drop was high among off-farm participants compared to non participants (48 percent in 1994 to 30 percent in 1997 for off-farm participants 50 percent to 36 percent for non participants). Moreover, poverty gap, and squared poverty gap were also declined across the board, but more so for off-farm income earners. As he argues this confirms that participation in off-farm activities has poverty reduction effects; however, off-farm also is not responsible for the changes.

A study undertaken by (Woynishet, 2010) shows that share of off-farm income is higher for poor households, that is, off-farm income constitutes nearly 35 percent and 18 percent of household income for poor and non-poor households respectively. She also points that the poorer segment of the society relies relatively more on off-farm income and there is an entry barrier for poor households to participate on high-earning activities and off-farm activities have a potential to reduce poverty and income inequality as it is relatively beneficial to poorer households. It has also been found that off-farm activities are acting as a safety net for rural society in Ethiopia by preventing them from worst livelihood situations.

Bereket and Zenebe (2011) also looked into the link between food security and nonfarm employment using the survey data collected from 151 randomly selected households from Eastern area of Tigray in Ethiopia. They found that nonfarm employment provides additional income that enables farmers to spend more on their basic needs include: food,

education, clothing and health care, thus nonfarm employment has a role which is significant in maintaining household food security. Merima and Peerlings (2011) assessed the impact of entry and exit into and from nonfarm enterprises on farm household's well-being. They reported that entry into nonfarm enterprises significantly increases household's income and food security status.

2.6 Study Framework

Study framework helps to conceptualize the, determinants and outcomes of rural off farm diversification activities in the study area. The basic framework is based on the assumption that a household's portfolio of activities and how they influence on livelihood outcomes is decided based on selected micro-economic constraints and incentives created through access to public and private resources. Changes in the portfolio of assets and the extent to which households have access to them are the attributes that are critical in determining in involving in off-farm activities and ultimately household poverty reduction (Asmah, 2011).

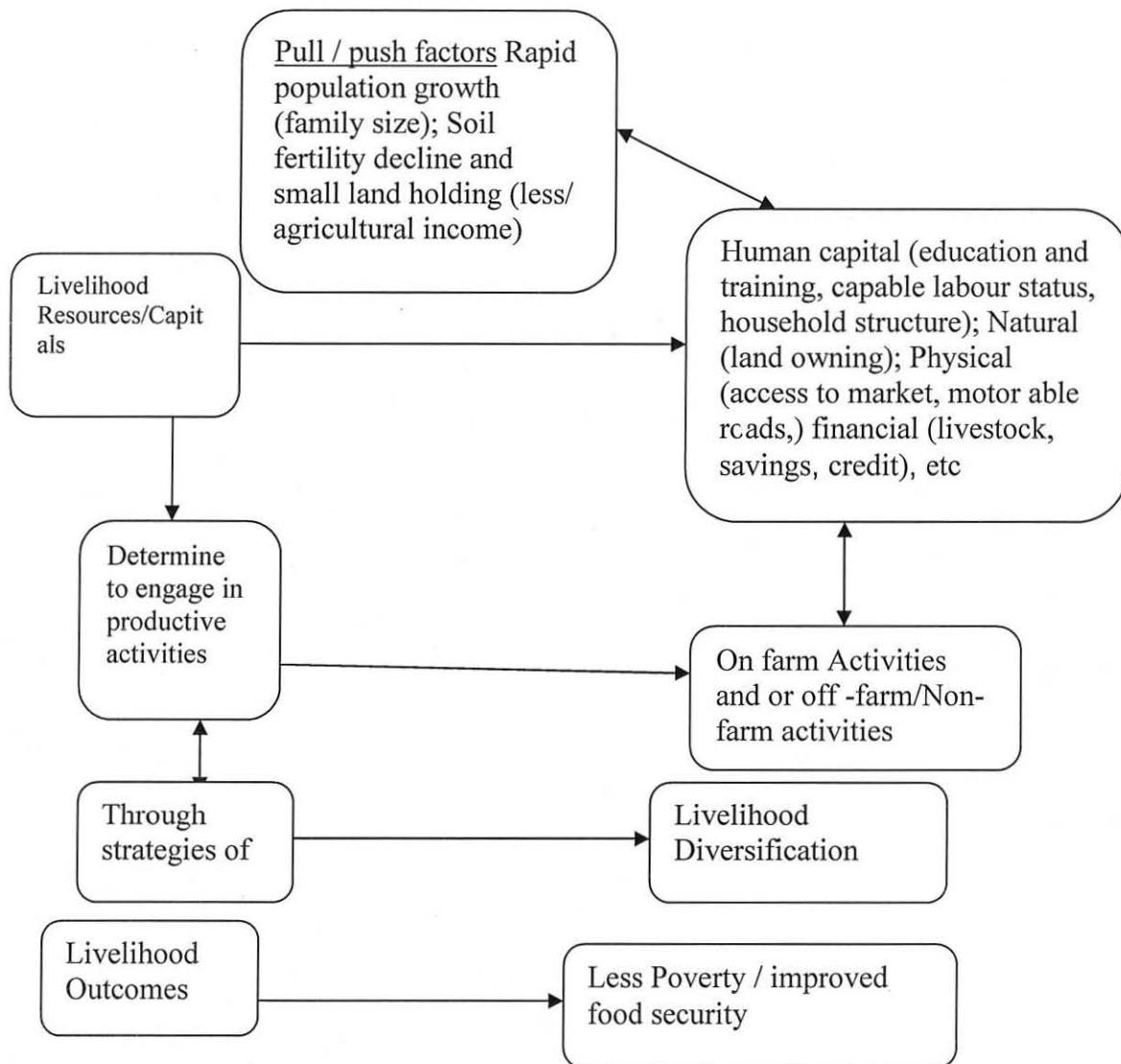


Figure 2.1 Study framework: Determinants and Outcome of income diversification into off-farm activities; adapted from Ellis (2000:30)

CHAPTER THREE

STUDY AREA AND RESEARCH METHODOLOGY

3.1. Description of the Study Area

This study was conducted in Misirak Badawacho Woreda of Hadiya zone. Hadiya zone is one of the fourteen zones and four special Woredas in Southern Nations Nationalities and Peoples Regional State and its capital is Hosanna. The zone is divided into ten Woredas and one city administration. Based on the Central Statistical Agency of Ethiopia (CSA, 2010), Hadiya zone has a total population of 1,391,147 people of which 691,954 males and 699,193 are females; rural inhabitants comprise (89.24 percent) and the urban inhabitants number is 10.7 percent of the population with an estimated area of 3,593.31 square kilometers. An estimated density of 387.1 people resides in one square kilometer.

3.1.1 Physical setting of the Study area

Misirak Badawacho Woreda is one of ten administrative Woredas found in Hadiya zone of the Southern Nations Nationalities and Peoples region (SNNPR). It is located approximately at 7° North latitude and 37 to 38° East longitudes. It is bounded by Alaba special Woreda in the north, Siraro Woreda of Oromia region in the east, Kedida Gamela and Mirab Badawacho Woreda in the west, Damot Woyide, Damot Gale, and Damot Fulasa Woredas of Wolayita Zone in the South. The capital of the Woreda, Shone, is located at a distance of 345 km in the south-west from Addis Ababa and 123 km from Hawassa, the capital of the region, and 97 km from Hosanna.

Annual rainfall amount ranges from 800 mm to 1300 mm, evaporation rate ranges from 1400 mm-1500 mm. The elevation of the Woreda, based on topographic map, ranges from

1550 meters above sea level around Bilate River that found in the eastern part of the Woreda to 2200 meters above sea level in north western part Kebeles (Woreda ADO, 2011). Having this altitude range, the whole Woreda is divided in to two major traditional agro-ecological zones: namely, dry midland (Kolla) and Wet midland or Woinadega (SNNPR BoFED, 2001). The dry midland (Kolla) kebeles comprise about 60 percent of area coverage of the Woreda while wet midland kebeles comprise about 40 percent coverage of the total area of the Woreda. The following figure (Figure 3.1) shows map of study area.

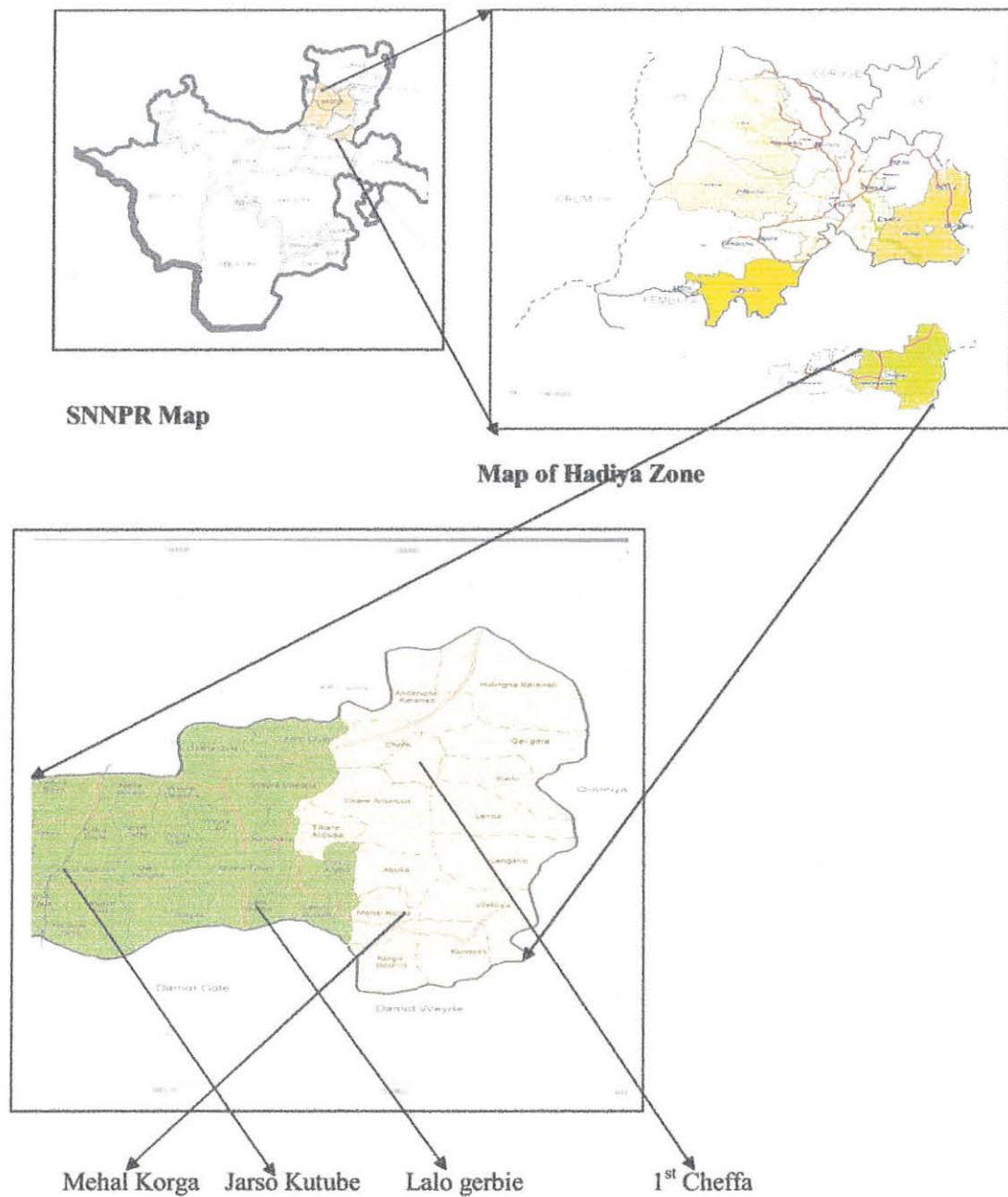


Fig.3.1 Map of Study area. Source: Adopted from SNNPR BoFED(2002) and Hadiya Zone Statistical Abstract of 2010

3.1.2 Population

According to the Woreda Finance and Economic Development Office the current (2011/12) projection estimation, the population of Misrak Badawacho Woreda is estimated to 203,761, from which male accounts 101,206 while female are 102,555 showing that the proportion of female population is 50.3 percent. The Data also reveals that area of the Woreda is 439.96 square kilometers with a density of 463.1 people per square kilometers. The Woreda has one urban municipality and thirty eight rural kebeles. About 50.26 percent of total inhabitants in the Woreda reside in wet Midland while 49.74 percent total Woreda population resides in the dry mid land agro-ecology.

3.1.3. Economic Activities

According to the information obtained from Misrak Badawacho Woreda agricultural development office, the main sources of rural livelihood, which gained from agriculture are perennials such as coffee, sugarcane, Enset, and fruits such as Avocado, and vegetables in wet Midland area, annual crops (maize, teff, adengware, wheat, and barley), and livestock raising. As far as land use is concerned, cultivated land and grazing land in the Woreda are 36,857 hectares, and 834 hectares respectively. Natural forest land is 784 while 2205 hectares of land are hold by private forests (e.g. Bahirzaf / Eucalyptus tree). Overall all sloppy land is 2103 hectares from which 1639 hectare of land could be cultivable, others include 1208. Thus the total land area of the Woreda is 43996 hectares. Inhabitants of the Woreda are also engaged in various non-farm activities besides their farming occupation. These include waged labor, livestock trade, petty trade, grain trade, pottery, making and sale of local liquors, etc.

because of information inadequacy and finally two hundred thirty five surveyed households in the four study kebeles were used for the analysis.

A multi-stage sampling technique, which is generally used in more complex survey designs of real life social research (Sing, 2007), was employed in sampling procedure. In the first stage, four kebeles were selected, that is two kebeles from Wet Midland and two kebeles from dry Midland were selected to include representatives from each area. Differences in some variables such as relative distance of a Kebele/village to nearest market location and proximity difference in motor-able roads which presumed as important determinants were also considered. Spatial accessibility of field work as well influenced the selection of Kebeles. Then, the total of households in each of four kebeles was identified and based on that proportional number of sample unit (households) was allocated for each kebele. Finally, systematic random sampling was employed to select representative households (See table 3.1 below)

Table 3.1 Distribution of the Sample Households

Ago-ecological zone	Name of Kebeles	Total number of households *			Households selected				
		Male headed	Female headed	Total	Male headed	%	Female headed	%	Total
Wet midland	Lalo gerbie	672	20	692	59	8.8	6	30	65
	Jarso kutube	606	95	701	57	9.4	9	9.5	66
Dry midland	1 st Ceffa	529	25	554	50	9.5	2	8	52
	Mehal Korga	514	31	545	48	9.3	4	13	52
Total		2321	171	2492	214	9.2	21	12.3	235

Source: *Obtained from CSA (2007) and matched with recent kebele administration data

To complement the survey, in-depth interview was dealt with twelve households in four kebeles. Three household heads have been chosen for interview purposively based on

their activity types from each Kebele to obtain insights on motivation and contribution. In addition, concerned government body officers and core-process owners in the Woreda agricultural development office, World vision Ethiopia Shone ADP (The NGO, intervening since 1992 in the Area) manager were interviewed to obtain information related intervention mechanisms if there exist.

3.2.1.2 Data Set

The data used for this study were gathered from 235 households via a structured questionnaire through a multi-structured survey, which included questions related to various forms of asset endowments (demographic/human assets, physical and financial and other assets. It also encompassed basic reasons to participation decisions, the type of participations, the number of involvers within a household; and the purposes that the household expends its generated income were collected. To collect the data one teacher a bachelor holder in biology, three Agricultural Extension workers of respective kebeles (one bachelor holder and two diploma holders) were assigned and oriented for one day on the contents of the questionnaire and approaches to data collection, which includes an ethical dimensions too. The enumerators were chosen based on level of education, their prior experience on data collection issues, their closeness to selected kebeles in which they are working and language ability, and also their intimacy to the researcher. Moreover, the researcher has also taken part in supervision as well as enumeration because no problem in communication with the local language. In-depth interview also has held with some twelve household heads. These households have chosen purposively on the basis of the type off-farm activities they involved. Some of them are secondary sources such as the three planning periods of the country, food security implementation

documents such as manual of PSNP and household asset building (HAB) program guidelines have also consulted.

3.2.2 Approaches to Data Analysis

A single method of analysis may not capture issues with regard livelihood of rural households in general. For this reason, different techniques of analysis including descriptive statistics as well as econometric models were employed using Statistical Package for Social Science (SPSS, V.20) software for the descriptive analysis and logistic regression (Binary and Multinomial). Moreover, data obtained through interviews were triangulated with description obtained from the survey.

3.2.2.1 Descriptive Analysis

Descriptive statistics include frequencies, descriptive, cross tabulations and the percentage of distribution. The mean comparison between various asset endowments of income diversifying household visa-vise non-diversifying household was tested with t-test. For categorical variables, Chi-square test was used to analyze their association.

3.2.2.2 Econometric Models

The household economic portfolio consists of a set of household resource, households' activity, and the circular flow of interaction between its recourses and activities (Dunn, 1997). Household resources are the basis for a livelihood strategy which include human, physical, natural, financial and social. As Reardon et al (2006), Davis (2004) and Escobal (2001) pointed; these households' resources may be augmented by the access to public assets. A household must decide on type, quantity, and intensity of activities in which it participates, given its asset endowment and other external conditions. Thus, labour supply

3.2.2.3 The Empirical (Binary Logit) Model Specification

The Decision of a household to diversify its income into off-farm activities or not involving in off-farm activities could be characterized as a dichotomous choice between two alternatives. Thus, to capture household's decision to participate in the off-farm activities, a discrete econometric model was used. This approach works that the utility derived from the activities may be expressed as a function of several demographic and socio-economic factors. Hence, there is a need to a model that describes the probability of a particular rural household to decide to participate.

According to Gujarati (2004), Madala (1992), and Singh (2007) when the dependent variable is a qualitative response in general and dummy or binary in particular, the model we want would look like something like S-shaped (see Gujarati 2004:594 fig 15.2) very much resembles the cumulative distribution function (CDF) of a random variable in which the probability lie between 0 and 1, and that it varies nonlinearly. Therefore, one can easily use the CDF to model regressions where the response variable is dichotomous, taking 0–1 values. The non-linear models that attain the objectives of relating the choice of probability (P_i) to explanatory factors in such a way that the probability remains in the [0-1] interval, are the logistic (logit) model and the normal or probit model (Gujarati, 2004:595).

The cumulative normal distribution (probit) and the cumulative logistic functions (logit) are quite comparable and can alternatively be used. Both models qualitatively give similar results and have only two categories in the response variable. The chief difference between the two is that the logistic curve has slightly flatter tails while a normal or probit

curve approaches the axes more quickly than the logistic curve. In practice, the logit model is chosen by many researchers because of its comparative mathematical simplicity. Thus, in this study, the logit model was used to estimate a household's decision probability to involve into out of own agriculture sources. The explained variable is set up as a 1 and 0 dummy, taking the value 1 for the farm household at least one of whose members participate in off-farm work and 0 for the members who do not. The predicted value of the determined by variable can be interpreted as the probability of participating in off-farm work, given the values of the independent variables.

Following Gujarati (2004), the logistic distribution function is specified as:

$$P_i = E(y=1/X_i) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_m X_m)}} \dots\dots (1)$$

For ease exposition, equation (1) can be written as

$$P_i = \frac{1}{1 + e^{-Z_i}} \dots\dots\dots(2) \text{ Or } P_i = \frac{e^{Z_i}}{1 + e^{Z_i}}; \text{ where } Z_i = \beta_0 + \sum \beta_i X_i, \text{ and } Z_i \text{ ranges}$$

from $-\infty$ to $+\infty$ while P ranges between 0 and 1 and that P_i is nonlinearly related to Z_i (i.e., X_i), thus satisfying the two requirements.

Since P_i is the probability of expected outcome i.e. off-farm works participation in our case, the probability of not to participate in off farm activities or may be remaining in on own-farm activities could be written as:-

$$1 - P_i = 1 - \frac{1}{1 + e^{-Z_i}} = \frac{1}{1 + e^{Z_i}} \dots\dots\dots(3)$$

Then $\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} = e^{Z_i} \dots\dots\dots(4)$ while $\frac{P_i}{1 - P_i}$ is the odds ratio in favor of participation

in off-farm activities-the ratio of the probability of that a household would participate to

the probability of not to participate in off-farm diversification activities. Introducing the natural logarithm in both sides of equation (4), we obtain a very interesting result. That is

$$\ln\left(\frac{P_i}{1-P_i}\right) = \ln e^{Z_i}$$

$$\Rightarrow Li = \ln\left(\frac{P_i}{1-P_i}\right) = Zi = \beta_0 + \sum \beta_i X_i + U_i \dots \dots \dots (5), \text{ Here } Li \text{ is log of the}$$

odds ratio, which is not only linear X_j but also linear in parameters. Thus, $L_i=Z_i$ is called the logit while X_i is i^{th} explanatory variable β_0 is a constant term and β_i s are slope parameters (coefficients). U_i = Stochastic disturbance term (error term). Hence, equation (5) shows the logit model.

3.2.2.4 Model Variables Specification and Working Hypothesis

i) The Dependent Variable

The dependent variable of this study is participation in off-farm activities. This study uses a dummy variable Dummy (0 = non-participating, 1= participating), which indicates two possibilities of individual participation: off-farm or reserve on farm work only. Off-farm work participation is defined in this study as the participation of household members in order to work for a wage (agricultural and non agricultural), and in self employment job away from his or her own plot of land. On-farm work participation is defined in this study as the participation of individuals in the agricultural sector as their only job, with no secondary or additional job.

ii) Independent/ Explanatory Variables

There are a number of explanatory variables, which can influence the decision of household to participate into off-farm activities. As different empirical studies pointed

out, diversification choices are firmly rooted in the microeconomic (household and community-level factors) logic of farming households (Warren, 2002; Reardon, 1997; Reardon et al, 2006). Thus, the independent variables in this study are the household asset basis- natural, human/demographic, financial, etc.-including land, livestock, education, age, gender, the dependency ratio; the access determining factors also called meso-level determinants Reardon et al, (2006) such as proximity of road and market; the incentive variables, e.g. quality of land. These variables are defined and rationalized as follows.

(a) **Total Labor size of the Family (LABORSIZE):** Labour size refers to the number of all working age (15 - 64 years) people living together in a sample household permanently. The size of working age group is an important factor of household endowment of labour that determines the characteristic of a household. The larger family labor, the higher human capital to offer labor into different income-generating activities. A number of literatures suggest that households with greater numbers of male and female household members participate more in off-farm activities than other households (Mintiwab et al, 2010). Labour-rich households make a decision of sending more members to non-farm activity. Thus, labor size is expected to influence the probability of off-farm participation in farm households positively.

(b) **Age of the household head (AGE):** age of the household head is expected to increase participation in non-farm activities positively up to some threshold year. However, as household heads get older, they are expected to be less active and hence rely more on the farm than on non-farm income (Tassew, 2000). The age of the household is

therefore expected to influence negatively or positively income diversification through off-farm activities.

(c) **Sex of the household head (GENDER):** assumption here is that it is male labour that is predominantly able to take advantage of diversification opportunities. Then women may be confining to domestic sphere and to subsistence food production (Ellis, 1999). Thus, participation decisions in off-farm activities are to be in favor of male households.

(d) **Dependency Ratio (DEPER):** It is the ratio of non working age group to the working age (adult) group. The higher the dependency ratio¹ implies a lesser degree labour to involve in various diversification activities. Thus, households with a higher dependency ratio are to smaller extent likely to participate in off-farm activities.

(e) **Education status of a household head (EDUC):** It refers to the years of schooling of the household head. Education level plays a vital role in the decision of household day-to-day activities and long run decisions. It relatively enables farm households to use available resources more efficiently. Skilled and educated people are more prone to engage in non-farm activity (e.g. Lanjouw and Shariff, 2004). Education thus has a positive impact on non-farm earnings. Therefore, it is expected that the more years of level schooling, the higher probability of participating in off own land activates.

(f) **Farm land owned by the household in hectare (FARMLAND):** It is the sum of total cultivatable land owned by the household. Land is a basic natural asset that the livelihood of rural household depends, and, which reflects asset holding related to poverty. It is assumed that a small farm size is related to a poor farm household and vice

¹ Dependency ratio is defined as the ratio of the sum of the number of a household members aged 0 to 14 years and those aged above 64 years to the total number of a household members aged 15 to 64 years. Or it is simply, children plus elderly dependents divided by adults.

versa (Tegegn, 2000). It is a capability variable at household level and an incentive variable at the community level (Reardon, 1997; 2006; Mulat et al, 2006). Thus, it is expected that off-farm participation is less likely to be favored by individuals owning larger farm land.

(g) Soil quality of farm land (SOILQUALITY): It refers to the categorical fertility level (fertile, semi-fertile or infertile) of farm land that the household owns. Literatures provide signs for farmers to perceive risk is the quality of their land. The lower the quality of land under cultivation, the higher the possibility that farmers may experience crop failures and hence higher labor allocation in farm activities to intensify agriculture (Adugna, 2006). Therefore, it was hypothesized as long as the households own infertile or semi-fertile plot, there is a fewer probability to participate in off-farm sources of income.

(h) Number of livestock owned by the households (LVS): It is the value of all livestock owned by the households in Tropical livestock unit². Livestock for rural households is the major asset for their livelihood and an important proxy for indicating wealth status of the respondent in the study area. Moreover, it is an easily convertible/ liquid financial capital. As Tassew (2000, p.137) points, "*farm income, livestock wealth and other income may also improve farm households' access to off-farm work if there is a credit constraint.*" Therefore, it was hypothesized as households with relatively larger livestock are more likely to engage in off-farm activities.

² Conversion factor for livestock ownership by number of tropical livestock unit used in this study was adopted from Strock et al (1991).

categories of income-generating activities that to be chosen, thus, the multinomial logit model captures the relation between four discrete outcomes (wage employment; self employment; both wage and self employment; and no participating in any off-farm activities) and possible explanatory variables (characteristics). The variables include are those variable fitted for binary regression model. Such variables are gender, age of household head, farm land; distance from nearest market places and roads, oxen holdings, and others.

Thus, the activity alternatives are coded as: 0 = if the farm household not participates in off-farm work at all); 1= if the farm household participates in wage work; 2 = if the farm household participates in off-farm self-employment only; 3= if the farm household participates in both off-farm wage employment and self-employment. Therefore, following Greene (2007), the model for occupational choice is specified as:

$$Prob(Y_i = j/X_i) = \frac{e^{(X_i \alpha_j)}}{\sum_0^3 e^{(X_i \alpha_j)}}$$

Where, $j = 0, 1, 2, 3$ are alternative choices of activities;

Prob ($Y_i = j / X_i$) is the probability of choosing an activity j with given explanatory variables (X_i) such as holding size, proximity of market places and roads, market places,

etc. $p_{ij} = \frac{\exp(X_i \alpha_j)}{1 + \sum_{j=1}^3 \exp(X_i \alpha_j)}$ ($j = 1, 2, 3$) Probability of expected outcomes

And, $p_{i0} = \frac{1}{1 + \sum_{j=1}^3 \exp(X_i \alpha_j)}$, Probability of not participates in off-farm work at all

α_j = are parameters

Here, the very assumption which considered in this estimation is that farm households' decision to involve in off-farm activities and choice of activities within off-farm sectors

or being in agricultural activities could be taken simultaneously (Mintiwab, et al, 2010). Hence, specification of variables stated and expected signs for binary logistic regression also holds true here. The following table (table 3.2) summarizes the defined variables and expected signs which are discussed in analysis of chapter four.

Table 3.2 Summary of Descriptions of the variables in the logistic Regression models (Binary and Multinomial) and Working Hypothesis

Variable code	Descriptions	Expected signs
LABORSIZE	Number of working age group in the HH	(+)
AGE	Age of household head in years	(+, -)
GENDER	Sex of the household head; Dummy, 1 for male 0 for female	(+) for male
DEPER	The ratio of number of dependents to labor force in the households	(-)
EDUC	Level of schooling of the household head	(+)
FARMLAND	Farm land size owned by HH in hectare	(-)
SOILQUALITY	Fertility level of cultivatable land; 1 for fertile	(+)
LVS	Number of livestock holdings in tropical livestock unit	(+, -)
OXEN	Dummy, 1 if the household owns at least on ox	(+,-)
ROADACCESS	The relative distance of the village to nearest motor-able road in km	-
MARKETACC	relative distance of the village to nearest market in km.	-
CREDITACCESS	Access of formal credit for non-farm activities	+
AGRIINCOME	Income generated from agricultural production	(+,-)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 An Overview Off-farm Activities in the Study Area

4.1.1 Participation Pattern

In the study area under discussion, respondent households were asked whether their family members are involved in out of own agriculture or not. The data obtained from the household survey shows that from a total of 235 respondent households, 59.1 percent (n=139) reported that they involved into off-farm activities while the remaining 40.9 percent (n= 96) is not involved in such activities. This figure shows us considerable proportions of farm household are involved in off-farm activities in study area, which could be comparable with some of the aforementioned reports in Ethiopia. Moreover, identification participation rate per kebeles shows us that significant difference in proportion of off-farm participants that highlights location also matters as presented in table 4.1.

Table 4.1 shows that from a total of 65 respondents in Lalo gerbie kebele 56 (86.15 percent) informed that they participated in off-farm activities, while 13.85 percent (n=9) of households involved in merely on agricultural activities. The lowest engagement proportion is reported from respondent households of First Cheffa kebele, in which just 36.54 percent of sample respondents told that at least one of their family members involved in off-farm income-generating activities. Involvement rate for the remaining Mehal Korga kebele and Jarso Kutube kebele is 51.92 percent and 56.06 percent respectively.

Table 4.1 Participation in Off-farm Activities and Choices by Respondent HHs

Activity Choices that the HH involved.		Participation in off-farm activity by the HHs					
		Not participated		participated		Total	
		No.	%	No.	%	No.	%
Wage employment	Lalo Gerbie			10		10	
	Jarso Kutube			11		11	
	1 st Chefa			5		5	
	Mehal Korga			6		6	
	Total			32		32	23.1
Self employment	Lalo Gerbie			29		29	
	Jarso Kutube			14		14	
	1 st Chefa			7		7	
	Mehal Korga			10		10	
	Total			60		60	43.1
Both wage and self work	Lalo Gerbie			17		17	
	Jarso Kutube			12		12	
	1 st Chefa			7		7	
	MehalKorga			11		11	
	Total			47		47	33.8
Total	Lalo Gerbie	9	13.8	56	86.15	65	
	Jarso Kutube	29	43.9	37	56.1	66	
	1st Chefa	33	63.46	19	36.54	52	
	Mehal Korga	25	48.1	27	51.9	52	
	Total	96	40.9	139	59.1	235	

Source: Own survey

Farm households were also asked about the type of work chosen they engaged. As table 4.1 shows, among a total of 139 off-farm participant households, 23 percent (n=32) households responded that they only engaged in wage employment. Others, 43.9 percent (n= 60) engaged in self-employment and 33.1 percent (n= 47) from participant groups reported that they were participated in both nonfarm self-employment and wage works.

4.1.2 Types of Off-farm Activities in the Study area

Mulat and Teferi (1996) generally classified non-agricultural activities in the rural areas of Ethiopia in to the following categories:

- a) Small-scale industrial activities such as food processing: flour milling, oil processing, and making cottage industries: handicrafts, spinning of cotton (yarn and wool), cloth weaving and dyeing, pottery leather tanning and distilling local brews;
- b) Informal sector artisan activities; blacksmithing, masonry, wood work/ carpentry, house construction, repair services and fabrication of farm tools;
- c) Commercial activities; trading and transportation;
- d) Infrastructural development activities; special public works feeder roads and irrigation works;
- e) Formal employment in rural areas including professional administrative workers.

In this analysis the specific work type that practiced by respondent households has also identified as some are summarized in table 4.2. Major nonfarm self-employing activities reported by respondents are general trades (68.3 percent) which include trade in different types of grains, coffee, spices, and others, followed by trade in livestock and livestock products (16.8 percent), transport services by donkey cart and horse cart (5.6 percent). Activities such as sewing clothe, making and selling 'katikalla', trade in food items, trade in 'sheketasheket, barberry, etc. together comprises 9.3 percent.

Wage work involvement alternatives that the respondents participated have also grouped. Accordingly, from the households which participated in off-farm wage work, 48 percent participate in temporary labor work (development work), including PSNP. The other types of wage employment in terms of their significance were farm workers for pay (21.5

percent); unskilled nonfarm workers (13.5 percent), and skilled laborer (i.e. Builder, Spray-men, Mason, carpenter, painters, and, etc.) are 10.1 percent. Another 6.9 percent is professionals (Teacher, Health Worker, soldiers, etc.). Off-farm worker households were also asked the location where they involved. Around 75 percent (N=104 out of 139) is working close to their village as wage workers and/or self-employed ones. Remained, particularly, wage workers were participated off from their surroundings. In this respect, a unique report coming from Jarso kutube kebele shows that there is a significant number of households (23.1% or from wage participants in the kebele) worked away from their local areas in the last twelve months in areas of Koka and Meki.

Table 4.2 Summary of types of Activities Involved by off-farm participant Households

Wage employment activities			Self employing nonfarm activities		
Type	No.	%	Type	No.	%
Development work	38	48	General trades	73	68.3
Farm workers	17	21.5	Livestock/its product trade	18	16.8
Unskilled nonfarm workers	10	13.5	Beverages & food selling, petty trade, etc	10	9.3
skilled laborer	9	10.1	Transport services	6	5.6
Professionals	5	6.9			

Source: Own survey

4.2. Reasons for Participating in Off-farm Activities

Farm households diversify their income sources for at least two motives. The first motive termed as the pull factor for which diversification undertaken for accumulation objectives; and the second factors termed as push factors is diversification undertaken to

reduce risks, cope with shocks or respond to diminishing returns in factor use (e.g. Reardon et al., 2006).

The surveyed households were asked to rank their reasons for offer labour and their capital to off-farm sources of income. About 80 percent (111 out of 139) has responded to that insufficiency of income from agriculture is the main and the first reason that prompted them for participating in off-farm activities. Growing family size ranked first by 6.5 percent of (9 households) respondents. Another 4.3 percent (6 respondents) have reported that the presence of road and market opportunity in nearer area and demand related factors are the first reasons for participation. Presence of professional knowledge and skill were ranked first by 2.8 percent (4) of participant respondents. 4.3 percent (6 respondents) of participants in nonfarm activities reported seasonality and crop failure were the main reasons. Only two respondents (1.4 percent) ranked that their first reason as availability of credit and one individual (0.7 percent) ranked as another reason, i.e. unavailability of the male labour members in the family.

With regard to second reason, growing family-size shares about 22.3 percent while agricultural income shortages comprize 19.4 Percent of respondents in the participants group. Market opportunities and other demand-pull related reasons for both self and wage employment ranked as the second reason by 16.5 percent of participant respondents. Those who reported seasonality of agricultural labour and Shocks (rain failure, short rainy season, 'wag' flood, etc.) as a second motive is 20.4 percent in total. For about 10.8 percent of respondents, the availability skill was the second overriding motive for diversification. Access to credit ranked as the second motive by 5.8 percent of participant respondents. Other factors include for about 4.8 percent of participant households (see

table 4.3). From the above description, among others, one can see that the main reasons that explain the extent and involvement in off-farm employments were insufficiency of income from agriculture and family-size pressure.

Table 4.3 Reasons for Participating in Off-farm Activities

First Reason	%	Second Reason	%
Insufficiency of income from agriculture (due to decline land size, soil fertility or productivity)	80	Growing family size	22.3
Growing/ large family size	6.5	Insufficiency of income from agriculture (due to decline land size, soil fertility or productivity)	19.4
Availability of credit	1.4	Availability of credit	5.8
The presence of road, electricity and market access village, favorable demand for goods/ services/ profitability	4.3	The presence of road, electricity and market access, favorable demand for goods/services/Profitability	16.5
Seasonal nature of agricultural labour demand; and Shocks (rain failure, short rainy season, pests swarm, flood, etc)	4.3	Seasonal nature of agricultural labor demand; and shocks (rain failure, short rainy season, pests swarm, flood, etc)	20.4
Possession of special skill such as masonry, handcrafts, etc	2.8	Possession of special qualification ;and skills such as masonry, handcrafts, etc	10.8
Other	0.7	Other	4.8

Source: Own survey

In connection with insufficiency of agricultural income, it is also important to forward views obtained from our interviewees in a situation which led as a major contributor of diversifying into nonfarm activities. Getachew Gebo is a middle-aged person from Mehal Korga kebele who has a total of 16 family members (five males and 11 females) and married two wives. For one of our interview question related to the very reasons working in off-farm activities he tells us that:

We had a total of two hectares of farm land in which our livelihood depended. Unfortunately, ours and our neighbors' larger part of farm land has been occupied with flood in 1999 E.C., up to now the area is occupied with water. Until the occurrence of such a disaster, our family was earning at least eleven thousand birr including from sale of green corn or 'eshet' per year. Then, loss of farm land accompanied by large family size forced us to engage in grain trade. At the beginning, I was running highly for daily food requirement purpose, however, through time our business became a bit profitable. After that, I have changed our trade activity to livestock trade with other partners particularly trade in oxen moving to different market places. Now we are in a better position and supplying oxen to butchers.

Thirty two years-old person, Hessebo Arficho, who interviewed from Lalogerbie Kebele, shares the influence of land shortage as the very reason to get into non-farm activities; however, he perceives in a bit different way. Hessebo is a landless household head who is managing six family members, including his mother. He has been involved for last ten years in trade of clothe working three market days per week and at the same time he is working in crop production in rented-in land from his relatives in a kebele called Woldaya, which is located at a distance of about 18 kms. As he perceives:

Of course, land owning is very important for life in rural area, but what matter is the way of thinking and managing or means mind. If we take an example, someone who is in our neighbor adequate land, but even he couldn't feed his family adequately due to inappropriate management of his land. If you see me, I don't have of any land; we are returnees from Dergue resettlement. The place on which even our house built is my uncle's land. When my mother and I come to this area, we don't have any. I have started to run my business with selling T-shirts in

The age structure of the sample households shows that the average age of total respondents was 40.09 years with standard deviation of 9.3. The minimum age found in the sample was 18 years with the maximum of 70 years. The mean age of household heads of participating in off-farm activities is 39.19; while the mean age of non participating group is 41.38. This shows that the off-farm participant mean age is smaller than non participant household heads revealing that the younger the age the higher chance to participate in off-farm activities. The mean difference between the groups is 2.19, but it is not statistically significant.

With regard to family structure, as presented in table 4.5, the survey data revealed that the average family size of the sample households is 7.1 persons. This size is above the national average and regional average, i.e. 4.7 persons and 4.9 respectively (CSA, 2007) which could contribute to higher pressures on limited per-capita land holdings. From family members of a household, the number and quality of working age is a very crucial human asset to offer capable labor in various livelihood diversification activities (e.g. Reardon, et al 2006). Data available from sample households show that the average number of adult labour (working force) per household for non off-farm participant households is 4.34, while that of the participant group is 4.56. That is on average households who engaged to diversify their livelihood to off-farm sources have more labour than those do not engage.

Moreover, the dependency ratio was one of the expected demographic variables for influencing involvement in non-farm activities. Earlier work in respect to the influence of the number of dependents on diversifying out of agriculture activities is not unanimous.

not attend any education /illiterate/ while 22.9 percent of them are under the category of lower primary level. The remaining 19.8 percent and 14.6 percent of the non-participant had an educational level of 5-8 and high school and above years of schooling, in the same order. Among participants, 25.9 percent did not attend any formal education, and 25.2 percent attended formal education up to the level of lower primary (1-4). About 35.3 percent and 13.7 percent of them had attended upper primary level schooling, and high school and above respectively. The mean of schooling is 3.67 years for non participants while it is 4.42 (a bit higher) for participants showing the difference of years of schooling between the groups is 0.75. However, it is not statistically significant in affecting involvement such activities in the study area at $p < 0.05$.

Table 4.6 Education Levels of Respondents

Education level of the household head	Participation in off-farm activity by the HH				Total	
	Not-Participants		Participants			
	No.	%	No.	%	No.	%
Not attended	41	42.7	36	25.9	77	32.8
Primary (1-4)	22	22.9	35	25.2	57	24.3
Primary(5-8)	19	19.8	49	35.3	68	28.9
High school & above	14	14.6	19	13.7	33	14
Total	96	100	139	100	235	100

Source: Own Survey

4.3.3 Land Holdings

As far as ownership of rural households is concerned, land is the most important economic resource on which the livelihood of the rural community is highly dependent. For this research, the surveyed households were asked about the total land owned by each household; the size of grazing or not cultivable land; the size and quality of cropping land; slope of land owned; and whether the household has access of land in the form of

renting or share cropping. It is found that the average entire land owning of the sample households is 0.69 hectares (see table 4.7) which are lower than the national average holding sizes per household (1.18 hectares) as well as the zonal holding size of Hadiya zone that is 0.8 hectare (CSA, 2011). The size of total land owning between households who diversified their income from off-farm activities and non diversifying ones is on average 0.58 hectare and 0.88 hectare respectively.

Total land owning of the farm households has also been disaggregated as land being used for crop production and land used for grazing or related purpose. As demonstrated in the table 4.7, the result shows that the average crop land size used for cultivation in the study is 0.57 hectares with a minimum of 0.00 and a maximum of 1.60 hectare, however, the national average cropland area is 1 hectare per household (CSA, 2011). The mean cultivatable farm size for off-farm participants is 0.46 hectare while for non participant group is 0.73 hectare. The mean difference of average farm land holdings between those households who did not participate and households that participated in off-farm activities is 0.27 hectares, and it is statistically significant at $p < 0.01$. This makes known that on average farm land holding is an influencing variable participating outside agricultural works in study (see table 4.7).

Table 4.7 Distribution of Total and Crop Land Owning for Sample Respondents

Variable	Participants (n=139)	Non-participants (n= 96)	t-value	Sign.
Total land	Mean= 0.58	Mean= 0.88	-6.238	0.000
	SD=0.306	SD=0.42		
	Min =0.0	Min =0.1		
	Max =1.625	Max =2.0		
Crop land	Mean= 0.46	Mean= 0.73	-0.626	0.000
	SD=0.246	SD=0.377		
	Min=0.0	Min =0.1		
	Max=1.25	Max =1.6		

Source: Own Survey, January, 2011

Sample households were also asked to label their crop land quality as fertile, semi-fertile and infertile; presuming that not only size but also quality of land affects involving decision in different sources of diversification. Accordingly, 13.2 percent of respondents reported their land is fertile, while 71.1 percent of respondents categorized their plot as semi-fertile. Remained 15.7 percent of total respondents classified their land as infertile. With the very essence of examining how soil type is pressuring farm household members to join nonfarm sources, as we weigh against households who have a fertile plot, the proportion of participant households (17 Percent) is greater than those households who did not participate (7.3 percent). And again, the proportion semi-fertile crop land holders (66.9 percent are for off-farm participant households while it is 77.1 percent for non participant households. However, the Ch-square test value is 5.11 and p-value is 0.078 while expected value of chi-square is 12.66. Thus, it is not statistically adequate to

conclude that soil fertility level land owned by respondents is influencing to participate in off-farm activities. But in Ethiopia, Adugna (2006) finds that households which own less-fertile land were less tended to participate in off-farm activities because farm households have to spend more labour time in poor fertile land in order to secure food subsistence as he argues. For the question whether the households have access of plots in the form of rent or share cropping 16.8 percent off-farm participants and 12.5 percent of non participant households have gained access to cultivate on others farm land. Generally, 86.4 percent of respondents answered that they do not have access while 13.6 percent were replied as they have access to other households' land in the form of rent or share cropping (see table 4.8).

Table 4.8 Soil Quality of the Crop Land Holdings for respondent HHs

	Participant HHS		Non-participant HHs		Total	
	Frequency	%	Frequency	%	Frequency	%
Fertile	24	17.3	7	7.3	31	13.2
Semi-fertile	93	66.9	74	77.1	167	71.1
Infertile	22	15.8	15	15.6	37	15.7
Total	139	100	96	100	235	100.0
Land Access in rent or share cropping						
Yes	20	16.8	12	12.5	32	13.6
no	119	83.2	84	87.5	203	86.4

Source: Own Survey *Pearson Chi-Square found by cross tabulation for soil quality is

=5.112 at p=0.078

4.3.4 Financial Capital

4.3.4.1 Livestock Ownership

Livestock and their products is a very crucial source of financial asset endowments for agrarian households. Livestock is an asset which could be converted for liquidity

requirements of social and economic activities. It is also a good proxy indicator for wealth in different parts of Ethiopia so does for the community in the study area.

Farm households in the study area own livestock that are used for different purposes. Livestock products such as milk and its components (butter and cheese,) egg, hide, etc. are important sources of income which smooth daily financial requirements. Livestock is also a means of savings, which fulfill anticipated and unanticipated liquidity requirements such as marriage, funeral, etc. Livestock Cattle (oxen, cows, heifer, bulls, and calves), followed by sheep, goats and poultry; others like donkey are owned. Respondents were asked to tell the number of their endowments in number and possibly monetary estimation of their ownership at the estimated current market price. Then, for estimation purpose, it has been converted in to the number of livestock in a tropical livestock unit (TLU). As the data presented in table 4.9 shows that overall average number of livestock is 2.721 TLU with standard deviation of 1.76. The minimum number of livestock is 0.00 while the maximum value is 7.2 TLU. With regard to the participation decision, the result also shows that the mean value of the participant group was 2.29 TLUs while that of the non-participant is 3.34 TLUs. The mean difference (1.05) for the two groups is statistically significant at 1 percent level of significance showing livestock holding important variable to influence participation decision.

The owning of draught animals particularly oxen ownership is also thought as an important variable to affect diversification into nonfarm activities. Households in the study area, use pairs of oxen for farming. The data presented in table 4.9 however, shows that 48.5 percent of the respondents do not possess an ox, while those who own only one ox are 37.4 percent of the respondents. The remaining 14.1 percent of the farm

households have adequate pairs of oxen for farming purposes. The most widely used methods of overcoming shortages of oxen in the area are pairing of oxen with others and using relatives' oxen. Based on participation in off-farm activities, 35.2 percent (n=49) of participant households and 75 percent (n= 72) of a non-participant households own at least one ox (See table, 4.9). The very purpose of obtaining such information is to examine whether oxen ownership is influencing diversification out of agriculture or not. The Chi-square test value is 37.2, and it is asymptotically significant at 0.001 levels. This asserts that oxen ownership is an important explanatory variable for participation into off-farm activities, either positively or negatively.

Table 4.9 Descriptive Statistics of Livestock ownership and Oxen ownership

Number of livestock owned by the HH in TLU.					Oxen held by the respondent Households			
N	Min	Max	Mean	S.D	No. of Oxen	HH frequency	%	Cumulative %
Total	0.00	7.20	2.72	1.77	0	114	48.5	48.5
Yes*	0	6.64	2.29	1.61	1	88	37.4	86.0
No *	0	7.20	3.34	1.81	2	32	13.6	99.6
Mean Difference			1.05		3	1	0.4	100.0
significance			0.00		Total	235	100	

Source: Own Survey

* 'Yes'= participant household (n= 139); 'No' = non participant household (n=96)

4.3.4.2 Credit Access

Availability of financial resources in general and access for credit is believed to be an important decisive factor for joining nonfarm business activities. For instance, Mintiwab et al (2010), noted that that program credit has positive and statistically significant effect

on participation in off-farm employment and change in the level of income derived from off-farm employment.

For this study, farm households were asked to indicate their source of capital (credit) particularly for the purpose of running their self employing nonfarm activities. All most all respondents have no access to formal credit sources that could be provided by government organization or any credit providing formal institutions. As respondents who received loan reported, loans from friends and relatives (46.3 percent), loans from moneylenders (34.8 percent); and loan from Iddir (17.8 percent) are the top three sources of credit. Credits being provided by formal institutions were in kind of farm inputs such as fertilizer and high-yield variety seeds. Therefore, no comparison has been made between groups of participant households.

4.3.4.3 Agricultural Income

Farm households generate income from agricultural activities through the own plot of land and/or own livestock production. They can also gain income from share cropping and renting- in farm plots that owned by some others or renting-out of land to others. Such income could have an influence on income diversification into off-farm sources positively. It is a potential source of paid-in-capital for business activities.

Thus, farm households were asked to describe their product types and estimate net annual income from both crop and livestock production. Then descriptive analysis has been made. It shows that households which engaged in off-farm activities gained 5143.69 birr on average while non participant households gained 8410.94 birr in the last twelve months from agricultural production. To assess whether the net agricultural income is

influencing or not we compared the mean of participants and nonparticipant households. The mean income difference between participant groups and nonparticipating groups is 3267.25 birr and significant ($t = -5.026$ and $p < 0.001$). This shows that agricultural income is a factor that influence household involvement out of own agriculture.

4.3.5 Access to Physical Capital

In this study physical distance to nearest market place and distance to motor-able roads from the village where the respondent household lives were thought to be good proxy indicators for diversification into off-farm activities. Descriptive analysis shows that households that live in a relatively nearer area to market locations and roads are more participants in income diversification out of own agricultural activities. With regard to access to market location, the result showed that the average distance from the village where the respondent lives to the nearest market location in kilometers for nonfarm diversifying households is 4.26 kilometers while for non-participant group of household is 5.66 km. The mean difference between the groups is 1.4, and it is statistically significant ($t = 4.37$ and $p < 0.001$). This means that there is significant difference in the market access in kilometers in off-farm participant households and non participant households and hence market proximity is an important variable to determine employing in off-farm activities. Therefore, households in longer distance are less favor of engaging in diversification activities or vice versa.

Similarly, as one can see from the table (4.10) bellow, the result shows that average distance from the village a household lives to nearer motor-able road is 3 kilometers for participating households while it is 3.7 kilometers for non-participant households which

shows households which did not involve into off-farm activities in general are far to motor-able roads.

Table 4.10 Descriptive of Market and Road distances from Respondents' Residence (N=235)

Variable	Participants (n=139)	Non-participants (n= 96)	t-value	significance
Market proximity	Mean= 4.26	Mean= 5.66	-4.37	0.000
	SD=2.42	SD=2.39		
Road proximity	Mean= 3	Mean= 3.7	-1.46	0.136
	SD=3.2	SD=3.6		

Source: Own Survey, January, 2012

4.4 Determinants of Income Diversification into Off-farm Activities

In preceding part of our discussion, we have tried to describe how endowments of capitals such as human assets; natural asset, access to physical, etc. inseparably with pull and push factors were influencing diversification decision. In the following part, we will look at results and discussion from econometric models' estimations. The working hypotheses and expected signs are given in chapter 3 part 3.2.2.4.

4.4.1 Econometric Models Estimation Procedures

As already stated, to examine factors that determine the involvement decision into off-farm activities by farm HHs, a binary logistic regression model was employed to estimate using the SPSS-V₂₀ program. Moreover, an attempt has also made to investigate factors

that influence employment preferences within out of own agricultural activities. Nine continuous and four categorical explanatory variables were fitted to the models. The estimation procedure is given as follows.

In a survey, data set it is commonly expected to encounter the problems of multi-collinearity and the existence outliers. The existence of outlier creates higher discrepancies, which affect the estimation results of regression analysis. So, before it is used for purposes of analysis, the data should be cleared through possible exploratory data analysis techniques (mostly graphical techniques). Hence, to detect outliers the box plot graph was used, and the most frequent observation is assigned so that details do not get lost.

The existence of multi-collinearity will also affect seriously the estimate of parameters. If it exists significantly, the simultaneous presence of the two collinear variables will reinforce the individual effects of these variables (Gujarati, 2004). To look into the problem of multi-collinearity among continuous variables, the variance-inflation-factor (VIF) and condition index (CI) were used.

Following Gujarati (2004), popular measure of multi co linearity associated with VIF (X_j)

is computed as: $VIF(X_j) = (1 - R_j^2)^{-1}$

Where, R_j^2 is coefficient of multiple determinations when the variable X_j is regressed on other explanatory variables. A VIF value greater than 10 is a signal for the strong multi co linearity.

As a rule of thumb, if the VIF of a variable exceeds 10 (this will happen if R_i^2 exceeds 0.90), that variable is said to be highly collinear. However, with this particular study, there is no serious multi-co linearity problem, because VIF for continuous variables is not approached to ten. Put differently, tolerance value, which is the inverse of VIF was not approached to 0 (table 4.11). In our case showing that there is no serious co-linearity as Gujarati (2004:361-362) remarks.

Table 4.11 VIF and Tolerance Test for Multi co-linearity

		Variables								
		age of head	Labor total	Depen dency	Educ ate	Farm size	Agri. income	livest ock	market access	Road access
Coli- statis tics	Tole ranc e	.531	.543	.738	.696	.4700	.429	.502	.802	.778
	VIF	1.885	1.843	1.356	1.44	2.126	2.331	1.99	1.246	1.285

Source: Own analysis using SPSS

Similarly, the presence of strong interaction among categorical explanatory factors may lead to multi-co-linearity or association problem. To detect this problem contingency coefficient of these explanatory factors were computed. The coefficient is given as:

$$C = \sqrt{\frac{\chi^2}{n+\chi^2}}$$

Where C is a contingency coefficient; χ^2 is a chi-square test; and n is total sample size. The value of C ranges from 0 to 1. Smaller values of C indicate weak association between the variables and vice versa. In this analysis, the result for multi- collinearity diagnosis reveals that there was no or weak association between the categorical predictor variables with a maximum of 0.261 as table 4.12 shows.

Table 4.12 Contingency coefficients for Categorical Variables in the Models

Attribute	GENDER	OXEN	SOILTYPE	RELIGION
GENDER	1.00	0.051	0.107	0.132
OXEN	0.051	1.00	0.149	0.009
SOILTYPE	0.107	0.149	1.00	0.261
RELIGION	0.132	0.009	0.261	1.00

Source: Computed from own survey using SPSS Application

4.4.2 Binary Logit Estimation on Determinants of Income Diversification into Off-farm Activities

A binary logistic regression analysis was conducted to predict decision factors in income diversification in to off-farm activities for 235 households using thirteen predictors. The findings of the fitted binary logistic regression are analyzed as follows (Table 4.13).

Table 4.13 Parameters Estimation of Binary Logistic Regression Model

Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)
GENDER(1)	-.386	.629	.377	1	.539	.680
LABORSIZE	.268	.131	4.195	1	.041**	1.308
DEPR	-.001	.003	.145	1	.703	.999
AGE	.000	.000	.663	1	.415	1.000
EDUCATE	.038	.055	.478	1	.489	1.039
FARMLAND	-1.737	.776	5.011	1	.025**	.176
RELIGION(1)	1.614	.840	3.695	1	.055	5.022
SOILQUALITY			.227	2	.893	
SOILQUALITY(1)	-.276	.753	.134	1	.714	.759
SOILQUALITY(2)	.008	.516	.000	1	.987	1.008
AGRIINCOME	.000	.000	5.067	1	.024**	1.000
LIVESTOCK	.109	.154	.500	1	.479	1.115
OXENDUMMY(1)	1.293	.431	9.009	1	.003***	3.642
MARKETACC	-.362	.089	16.627	1	.000***	.697
ROADACCESS	-.213	.066	10.545	1	.001***	.808
Constant	2.368	1.319	3.223	1	.073	10.673
Percent correctly predicted: Not participant HHs72.9						
Participant HHs.....88.5						
Over all82.1						
Chi-square = 98.52						
Cox & Snell R ² = 0.342						
Nagelkerke R ² = 0.462						
-2 Log likelihood = 219.354						

** , *** Significant at 5%, and 1% levels respectively a based on 50-50 probability.

Source: Computed form the survey data.

From Table 4.13 it is possible to draw about the magnitude and direction of variables on the probability of involving in off-farm activities. The general test for the goodness of the fitted multivariate model assures the statistical importance of adequacy of the model, at $P < 0.0001$. The log likelihood ratio statistic was significant at one percent level, suggesting that the independent variables taken together influence participation decisions. The Chi-square value also showed the relevance of the parameters included in the model.

That is, it reveals that at least one of the coefficients of the parameters is non-zero at one percent level of significance or at least one of the covariates significantly predicts the probability of diversification into off-farm activities. Besides, the model prediction success overall was 82.1 percent (in predicting the observed values of 88.5 percent for participant households and 72.9 percent of non participant households at the cut value 0.5).

Table 4.13 shows the maximum likelihood estimate. The number of labour or working-age members of respondent households (LABORSIZE); the land size owned by the household (FARMLAND); owning of at least one oxen (OXENDUMY); distance of the nearest market place in kilometers from the village where the respondent farm household lives (MARKETACC); and distance of the nearest motor able road in kilometers from the village where respondent farm household lives (ROADACC) are very important variables in influencing participation of farm households into income sources out of agriculture, details are discussed as follows.

Labor Size: labour size the number of adult members per household. The logit estimates presented in the table 4.13 shows that the coefficient of labour size (B) is positive implying that as the number of labour power increases, the probability of employing family labour into off-farm activities also increases. Again, the odds ratio or $\text{Exp}(B)$ in favor of diversifying income from off-farm participation is 1.308, revealing that when labor size is raised by one unit (one person) households in the study area are 1.308 more times likely to belong to the off-farm participant group than non participant group holding other things constant. The coefficient of labor size of household was significantly different from zero at 5 percent level. The possible justification is that as the number of

labor power per household increases the capability of household, that is a human capital will increase, and hence the household will have chance to offer its labour in possible sources of income-generating activities. Woynishet (2010) reports a similar result in that the probability of having a greater number of adults in a household increases the decision of an individual to allocate labour into off-farm activities in Ethiopia. This result is also in agreement with study of Mintiwab et al (2010). However, they have examined the influence of male labor power and female labour separately.

The influence of other family characteristics is also analyzed for participation decisions. The coefficient of sex (GENDER) is negative for male-headed households showing that male-headed households have a lesser favored working off-farm than female-headed households. It means that female members are more likely to participate in off-farm activities. Sign of the relation is in agreement with Rijkers et al (2008) who find that participation is positively correlated with the number of adult women in the household however it is not statistically significant.

As far as human capital is concerned, education and skill of farm household play an important role for income diversification as various research findings reported (e.g. Lanjouw; 2001). As Reardon et al (2007) pointed it is a key source which offers a potentially important route into higher-returning non-farm opportunities. However, as one can see from the table 4.13, years of schooling for respondent farm households was not significant except the positive impact sign agreement with off-farm involvement. The reason for the less impact of education on the off-farm employment could be related the

nature of most of the off-farm work being undertaken in the study area, are such as manual work which does not require education at all.

Similarly, the dependency ratio of households was not accepted; nevertheless, the sign of correlation of the dependency ratio with off-farm participation decision is negative as hypothesized. Age of the household head was also statistically significant.

Farm land size owned by household (**FARMLAND**) was an important natural asset, which has significantly influenced the household decision. The impact of farm size on off-farm employment was negative as expected in the hypothesis. The negative relationship with the dependent variable is revealing that as households have relatively larger land size participation in off-farm activities decreases. The odds ratio in favor of engaging in such activities is 0.176, which is nearly zero. It shows that as land size increases, by one unit (hectare), the probability of decision to involve in off-farm activities is 0.176 times likely than not participating. The coefficient of farm size is significant at $P=0.025$. Thus, it can be deduced that rural household that has less or no plots of land are more likely exposed to agricultural income shortage and vulnerable to food shortage, hence will probably be pushed to off-farm activities. This finding is in line with the previous research that disclosed in different studies in Ethiopia (E.g. Delil, 2001; Mulat et al, 2006; Adugna, 2006; 2009; Beyene, 2008). Quality of farm land owned by the respondent farm household on average, which was considered as a risk factor is not statistically significant. The sign of relation with off-farm activities was not as expected for fertile land holding dummy variable as anticipated.

Income from agricultural production (AGRIINCOME) was one of the variables that expected to influence diversification in off-farm activities and the mean income difference between participant group and off-farm non participant groups was significant. However, the extension of our estimation to logit model shows that the value of odds ratio is one. This shows that households are equally likely to belong to the participating in off-farm activities group or belonging to non participant groups.

Holding draft animals, particularly oxen ownership dummy (OXENDUMMY) was another most significantly related variable to diversifying income out of agricultural activities. The coefficient for oxen dummy indicates that the probability of involving in off-farm activities is 3.642 (odds ratio) times likely than non participants as long as a household owns at least an ox at one percent level of significance. This could be because of that farmers could cultivate their limited plot of land with lesser labor power as they used oxen for cultivation, and hence they can save labour, that possibly will be offered to non-farm activities. The finding is in agreement with the previous study undertaken by Mintiwab et al (2010) and Mulat et al (2006). The statistics corresponding to the variable whole number of livestock ownership which was expected as a good proxy of financial asset put on view that the entire number of livestock holding in topical livestock unit was not significant in binary logit estimation, but as one can see from table 4.13, the impact of livestock holding on participation in to off-farm activities is positive.

Physical capital accesses were important determining variables in involvement of rural households in income diversification into off-farm sources. Market proximity was a very significant variable in influencing the probability of working off-farm by the farm household members. Table 4.13 also shows that as distance from the village of

respondent households to closest market location is increasing away by one kilometer, the likelihood of participating in off-farm activities is decreasing by 0.697 times at 1 % level of significance ($p = 0.000$). The finding is in agreement with Tegegn (2000) report and Asmah (2011), while it is in opposite with Beyene (2008) reported. Similarly, participation is negatively and significantly affected by distance of the village that the respondent household lives to the nearest motor able road, implying that households with fewer distances to roads are tended to participate in off-farm activities ($p = 0.001$).

4.4.3 Multinomial Logit Model Estimates on Determinants of Off-farm Activity Choices

Multinomial logistic regression is a simple modification of binomial logistic regression for more than two outcomes of dependent variable. The model was estimated for the activity choice among alternative employments in own agriculture and the three variants of off-farm activities (wage employment; self-employment; or, both self and wage employment).

Table 4.14 Results of Significant Variables in Multinomial Logit Model Estimates

Variables	Wage employed			Self employed			Both self and wage group		
	B	Sign.	Exp (B)	B	Sign.	Exp (B)	B	Sign.	Exp (B)
MARKETACC	-.253	0.032**	.776	-.434	.000***	.648	-.419	.000	.658
ROADACCESS	-.226	0.015**	.798	-.220	.004***	.803	-.178	.038	.837
LABORSIZE				.371	0.021**	1.45	.352	.041	1.422
CROPLAND		-	-	-3.114	0.002***	0.044	-2.422	0.045	0.089
OXEN	1.759	.010**	5.807	1.725	0.002***	5.613	-	-	-
LVS				0.55	0.05**	1.68		0.097	.66

Source: Own survey ** , Significant at 5%;***and 1% levels respectively

Table 4.14 presents a regression analysis for activity choices of households who involved in off-farm activities holding own agriculture as the reference category. It shows that proximity to markets and roads, and oxen ownerships are strong predictors for all types of activity choices within off-farm activities. The impact of market proximity for self-employed households is perfect and significant ($p=0.000$), this could be because self-employed off-farm activities are mainly undertaken at market places. The influence of road access is significant at 5 percent level of significance for both wage employed households and self-employed households. The odds ratio is nearly 0.8 for both activity choices. It shows that as distance from the area in which the respondent household resides to motor-able road increases by one km., the probability for the households to involve in wage employed or self-employed off-farm activities is 0.8 times likely than those only engaged in agricultural activities .

A different finding obtained in multinomial regression analysis is that the impact of the number of livestock in self-employing activities was positive and significant at 1 percent level of significance, which was not significant in binary logit model analysis. The odds ratio, i.e. [Exp (B)] in favor of choosing nonfarm self-employing activities is 1.68 for the coefficient of livestock holdings. This value shows that as the number of livestock in tropical unit increases by one, the likelihood of choosing nonfarm self-employed activities will be 1.68 times more than own agricultural activities, holding other factors constant. A possible validation for this is that nonfarm self-employing activities need financial assets in the form of paid-in capital or in the form of collaterals and accordingly, livestock ownership have potential to addresses these requirements. The result is in agreement with the findings of Mintiwab et al (2010). Oxen ownership was significant

for wage employment participant group and self-employment participant groups at 5% and 1% level of significance respectively but the signs are not in similar. It could be due to the disaggregation effect of off-farm alternatives.

4.5 Role of Income Diversification into Off-farm Activities in Household Poverty Reduction

Literatures provide adequate evidences that rural nonfarm activities contribute to overall income that combat the challenge of farm household poverty as some are reviewed earlier. For example, Owusu and Abdulai (2009, p.2) notes that “ *Despite agriculture being the main stay of most rural economies in sub-Saharan Africa, nonfarm sources of income contribute significantly to overall income of rural households and are very relevant in the poverty reduction strategies of these economies.* ”

In the case of study area, with respect to assessing contribution of income diversification into off-farm activities particularly poverty related issue, the discussion focuses on descriptive analysis and comparison of the income generated from on farm and off-farm activities; its purpose the respondents utilizing and as well as the respondents with measuring the per capita level food poverty using the income approach.

4.5.1 Income from Diversified Activities

This study depicts that 59.1% of sampled households are involved in different types of wage works and self employing non-farm activities and hence generated income. As stated above, income enables people to have at least economic capability which is a key for food security and material well-being (OECD, 2001). Thus in the survey of the study, respondent households were asked to tell their agricultural income and their non-

agricultural income from different sources. As presented in table 4.15, the descriptive analysis from respondents' information for participant groups shows that average income from agriculture is 5143.69 birr while off-farm income on average is 4750.33 birr which reveals that on average, farm income accounts for 51.58 percent of total income while off-farm income accounts for 48.42 percent of total household income. Again, the investigation from the data obtained shows that annual average income that gained from both agriculture and off-farm activities is 9894.02 birr for the households who involved in off-farm income generating activities and 8410.94 birr for non participating households. This reveals that households which diversified through off-farm participation gained higher income than those did not involve in non agricultural activities on average, indicating that diversification increases overall income of households on average.

Table 4.15 Income Driven From Diversified Activities

Income component	Amount Off-farm participant households	Amount in birr non participant households
Average agri. income	5143.69	8410.94
Average off-farm income	4750.33	0
Total income on average	9894.02	8410.94
Share of off income	48.42	
Highest Income from agri for 1 st Quartile	2150	
Highest Income from non-agri for 1 st Quartile	2100	
Highest income from agri for 2 nd Quartile	4700	
Highest income from non-agri. for 2 nd quartile	3760	
Highest income from agri. for 3 rd quartile	6520	
Highest income from non-agri. For 3 rd quartile	7250	

Source: own survey

As shown in table 4.15 above a bit disaggregation was made to investigate the corresponding return of income for those households who involved in diversification activities. The analysis based on income quartiles shows that income from agriculture is higher than non agriculture income for first quartile and second quartile while off-farm income is greater than income from agricultural activities for third quartile and fourth quartile. That is the first quartile (25 percent) of households who involved in off-farm activities gained a bit higher average income from agriculture (2150 birr) than off-farm activities (2100 birr). Similarly, households in the second quartile gained income of 3760 from off-farm sources and 4700 birr from agricultural activities. However, for the third quartile, off-farm income ranges up to 7250 birr while agricultural income ranges to 6520 birr. This could explain that though diversification increases overall income, its return from off-farm activities is low for poor households while it is high for richer households. This could be because, poor households could not engage in high return activities due to entry barriers which highly dependent on capacity (asset endowments) of farm households. Results from descriptive analysis also confirm that though female are participating in diversification activities, their average return of income from off-farm activities is less for female-headed households (4698.45 birr) than male-headed households (5254.9 birr). This could also explain female-headed households are less favored from off-farm activities than those of male-headed households. Nevertheless, the very issue of the discussion is having an insight on contribution of diversifying in off-farm activities.

4.5.2 Utilization of Earnings from Diversified Activities

Diversification has significant role in smoothing consumption by smoothing the financial constraints that required for day-to-day expenditure as well as investing in human capital such as education. It has also vital for agricultural development through enabling the farmers to have technologies such as fertilizer, high yielding variety seeds, etc. For this study, off-farm participant respondents were asked the main purpose that they are utilizing income earned from off-farm activities by allowing multiple responses. As shown in figure 4.1 below from 139 off-farm participant households, 67(48.2 percent) respondents answered that they use the income for purchase of daily requirements only (including food, fuel, soup, coffee, etc.). Another 21.6 percent of respondents were replied that they use their income for purchase of daily requirements and other basic needs such as education and clothing expenses while about 11.5 percent of the participant group respondents added purchase of agricultural inputs such as fertilizer in addition to daily requirements. About 10.8 percent of respondents reported that they allocated their income on purchase of daily food requirements, agricultural input and other purposes while 7.9 percent of them added saving for the future use.

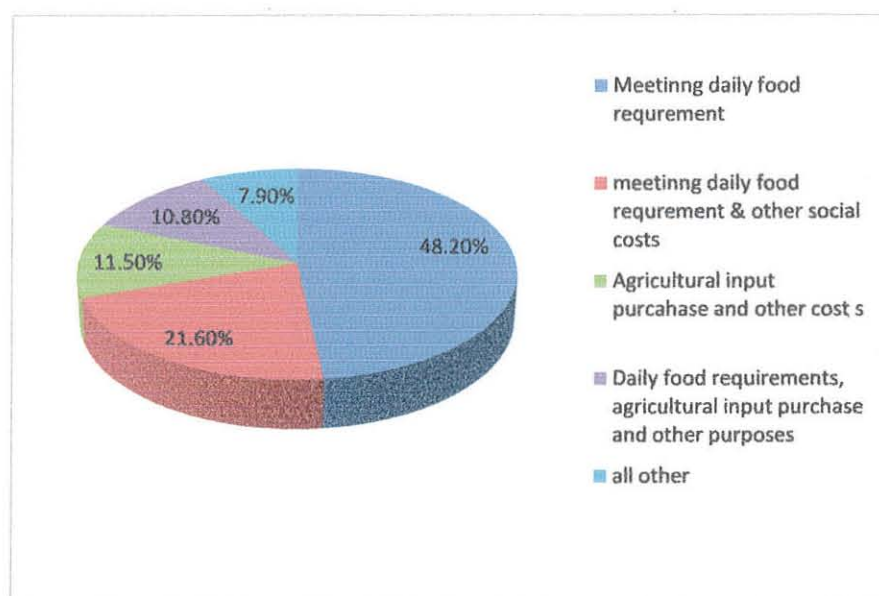


Figure 4.1: Utilization of Earnings from Diversified Activities

Respondent households which involved in diversification activities were also asked to tell whether their food accessibility status has been changed after participation in nonfarm activities than before. In view of that, about 73.4 percent (n=102) of the respondents perceived that their accessibility status improved as a result of off-farm participation while 26.6 percent (n=37) of them affirmed that their accessibility not improved even after participation. Respondents were also asked about perception of food habit change after participation in nonfarm activities. Accordingly, around 69.8 percent of the respondents answered that there has been an improvement in the food-intake per day. The other 27.3 percent confirmed that there has been no change and around 2.9 percent perceived as deteriorating.

In connection with contributions of diversifying into nonfarm income earning activities, opinions of interviewees also support the view that it is contributing to meet various

requirements, predominantly for daily requirements, including food. The following box illustrates this case.

BOX 1

Ermias Warisa is a young person who lives in Jarso Kutube kebele. He is from a large family who has no adequate asset, particularly land. His family has four members. His family is engaged in multiple types of business activities. The family members are being engaged in shopping, repairing bicycles, selling soft drinks, bread & tea. He joined formal education; however, he was not successful in continuing further education; thus, his education carrier stopped at grade ten in 2005. Due to these reasons, he obliged to look for other options. Having borrowed initial capital from his relatives, at the road side which is a boundary of his family land, he started a business with small kiosk which supplies; soap, pen, exercise book, salt, etc. to local community and neighbor elementary school students. Mean while he started selling food items such as bread. Again, his family added their effort in biscuit bakery ('Chornake') and selling soft drinks. Through time, he bought a bicycle for rent and then, he began to deliver bicycle maintenance. At the time of the interview he was expanding his shop obtaining money from 'iqub' in which he is a member. Ermias has also been requested about the perception related to changing in his family livelihood (as a result of the involvement in the nonfarm activities). He feels that they are alright relative to the previous time. He emphasizes that at least it has increased food requirements and reduced borrowing.

From the above box, one can easily observe that involving in nonfarm activity as sources of income provides a room for at least consumption smoothening. Another 38 old age interviewee called Jamal Godebo who leads six family members from 1st Cheffa Kebele confirm the benefits of involving in off-farm activities. Jamal has been engaged in spice trade since the last three years. In respect to contribution, he put that:

Moving from market to market is the major security to our family life. If I stopped it, our life will be challenged. You see our land is not only small in size, but also usually attacked by flood. I move Adilo, Alaba, Keranso (Market Places) and we guaranteed at least food and cloth.

Nevertheless, dissatisfaction was also forwarded from some individuals. Worku Uke is a landless household head in Mehal Korga kebele. His wife prepares and sales local alcohol

called 'arakié' and he involved in carpentry work. Worku underscore the contributions of involving in such an engagement for his family sustenance, but claims casualties of wage work. When he was asked whether his job is smoothly contributing or not, he replied that:

How can I say that it is smoothly going?! My work is based on the people who employ me. If they want I can get a job, otherwise I have to stay until I get. If I get let say construction of a corrugated iron sheet house for an individual, I and my colleagues work together and share the money obtained for four or five. Then we have to hang about until we get another demander. Sometimes we get continuously, another time we don't have any work even more than two months. Even sometimes, after holding an appointment to start such a job, when I go there the person says 'I am sorry Worku; I have appointed with another person so you can't have a job here'; then I have no option except turning back to my home.

Interviews held with others also derived opinions that side with off-farm employments improve households' livelihood in addressing daily food requirements as well as improving other consumption requirements. Let us see the case in the table below.

Box 2

Mitiku Ayele, aged 23, is a youth who completed 8th grade. He and his brother engaged in 'sheketasheket' and sell of food items (Chornakie) near a water point which is located near a primary school and also at the foot side of their land in 1st Cheffa kebele. They are from a house hold of ten family members. Though their land holding is not small, it faces water flood in rainy seasons per year which destroys their crops. Thus, they are forced to try their best by stopping their education. Before opening this shop (two years ago), they had been trading 'sheketasheket' moving different small market places:-Adillo; Keranso, Cheffa. Now they are making their business in their shop, and they are advantageous being near to water point and school to find their main customers as Mitiku expresses. Mitiku started his 9th grade schooling this year. For the question related to contributions of involving in their diversification activities, Mitiku said in his words as it is an 'insurance' for their sustenance and education. He believes that there are opportunities to expand their businesses provided that they obtain 'budget' the term used by him for credit so that turn this possibilities into reality.

4.5.3 Poverty Status versus Off-farm participation

It is worth noting to have an insight whether involvement in off-farm activities is contributing to combat incidence of poverty³ or not. To examine the contribution, poverty status measurement techniques are required to be employed. One of the conventional techniques is measuring incidence of poverty (headcount index) which measures the share of the population whose income or consumption is below the poverty line visa-vise stated level of standard. Thus, MoFED (2012) identified the 2010/11 national standard as 3,781birr for total poverty and 1985 birr for food poverty.

Having this bench mark, the adult equivalent per capita income is calculated from total household income. Using the above poverty line, respondent household groups are categorized as poor and non poor. A household with income less than 3,781 birr per capita adult is categorized as poor and non poor otherwise. Similarly households that gained below 1985 birr per adult equivalent are categorized as food poor. Then, the interrelation of participation in off-farm and poverty status is described in the table below. As shown from table 4.16 below, using food poverty status measurement, from the total off-farm participant households 61.9 percent is non poor while 55.2 percent of non participant is non poor. Hence, the food poverty status is less in off-farm participant households than the non participant.

³ Poverty divided in to total poverty and food poverty. Total poverty refers to an aggregate measure of poverty that takes into account both the food and non-food requirements. The food poverty line is defined by choosing a bundle of food typically consumed by the poor (MOFED, 2012, p.4)

Table 4.16 Food poverty Status of Respondents in relation to off-farm activity

Measurement		Off-farm participant HHs		Non participant Household		Total	
		frequency	percent	frequency	percent	frequency	percent
		Food poverty status	Poor	53	38.1	43	44.8
	Non poor	86	61.9	53	55.2	139	59.1
Total		139	100	96	100	235	100

Source: Computed from field survey

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMENDATIONS

5.1 Summary of Major Findings

Rural livelihood diversification strategies are important options for rural households in Ethiopia, predominantly in areas where the agriculture sector is incapable of accommodating the ever growing population and hence food poor, in particular. Yet their progress is highly dependent on the capacity of asset endowments of households support, the existing motivating situations institutional support. The preceding analysis attempted mainly to investigate the factors influencing income diversification into off-farm activities among rural households using the survey data collected from 235 randomly selected households from four Kebeles in Misrak Badawacho Woreda.

An attempt has been made to identify factors that influence the household income diversification decision into off-farm activities using descriptive analysis, mean comparisons, and by the binary logit model. An inquiry has also been made to point out factors that determining activity choices among wage employment, off-farm self-employment, and choosing both self and wage off-farm activities visa-a-vise agriculture using a multinomial logistic model. Moreover, contributions in income diversification, was analyzed. Triangulation has also been employed to address inquiry related to contributions.

The study finds that substantial numbers of farm households are involved in off-farm activities to supplement farm income though the basic livelihood of the household is dependent on farming. About 59.1 percent of the sampled households engaged in off-farm income diversification sources among whom beside agriculture, 23 percent

respondents were only participating on wage income making activities, while 43.9 percent of respondents were engaged in self employed nonfarm activities. Households those engaged in both wage and self works are 33.1 percent mean that 77 percent of participant respondents are involved at least self-employing activities. The main and the first reason that prompted for participating in off-farm activities is insufficiency of income from agriculture for about 80 percent of participant respondents. Growing family size ranked first by 6.5 percent of (9 households) respondents. Another 4.3 percent of the respondents have reported that the presence of road and market opportunity in nearer area and demand related factors are the first reasons for participation. Information obtained from interviewees also confirm that problems associated with inadequacy of agricultural income which in turn associated with land shortage, crop failure and family pressure were the basic reasons for livelihood diversification.

The results from descriptive analysis and logistic estimations show that a household's asset endowments and access to public resources have significant effects on income diversification into off-farm activities and choices within off-farm strategies of rural households' livelihoods.

From household characteristics, the number of adult members available in the family is highly influencing human asset to involve in various income diversification activities. The mean comparison analysis shows that the mean labor size for households who engaged in off-farm diversification strategies is 4.58 while for those of non participants is 4.34. The binary logistic regression analysis estimation result finds that households with a higher number of labors are more probable to offer their labor to off-farm sources of income. The odds ratio in favor of diversification into off-farm activities is 1.308 at 5

percent level of Significance, implying that a household that has an additional one working person in the family is 1.308 times more probable to participate in off-farm activities than who lacks. Moreover, the multinomial results show that labor potential in the households is in favor of off-farm self-employment at $p= 0.021$. A household variable that is education level of the household head is positively correlated with the diversification decision, while the dependency ratio is negatively related to diversification.

The analysis also reveals that land owned is the most significant factor with the higher mean difference between the off-farm participant groups and non participant groups. Mean cultivatable land owning is larger (0.73 hectare) for households who diversify their activities within the agriculture sector only than (0.46) for households who involved in off-farm sources. The mean difference of farm land holdings between the groups is 0.27, and it is statistically significant at $p < 0.05$. The binary logistic regression estimates for this covariate reveals that land holding is negatively correlated with off-farm participation. The negative effect of farm size verifies that land constraint drives diversification. The multinomial estimation Results also shows that cultivable land holding is significantly and negatively affected activity choice of self-employed nonfarm activities and activity choice of both self and wage employment at one percent of level and five percent level of significance respectively.

With respect to the effects of the number of livestock holding in tropical livestock unit, the result shows that there is positive relationship between the number of livestock owned and diversification into off-farm income sources. For binary regression analysis though the impact is positive, we couldn't see its statistical significance at the required level of

significance. Nevertheless, the result from multinomial regression investigation evidence that the number of livestock has positively influenced the choice of livelihood diversification in nonfarm self-employed activities, and its impact is highly significant relative to being only agricultural activities. With regard to the effect of oxen holding, the binary logistic regression result indicates that having at least an ox favors the likelihood of engaging in non agricultural activities than those who do not possess oxen. The odds ratio which is 3.64 shows that households which have at least an ox are 3.64 times more likely to work in off-farm income sources than households who do not have oxen.

The impacts of proximity of market locations and distance from the nearest motor-able road were also analyzed in this study. With the effect of market proximity, binary logistic regression analysis shows that households which are nearer to market places are more likely to engage in off-farm activities than households who live further away from market location. For example, from findings of analysis one can come across that a 10 kilometers increase of distance from a nearest market place reduces the probability of participation in off-farm activities by 6.97 times more than nearby households in the study population.

With respect to the effects of road access, the results indicate that the odds of having off-farm livelihoods comparative to pure-farm are higher for households nearer to motor-able roads than households far away from roads. The multinomial logistic regression outcomes also reveal that more distances to market areas and motor-able roads have negative effect on choices of activities in off-farm wage employments, off-farm self-employment, and choosing both activities relative to own agricultural employment. An important result obtained from multinomial regression analysis is that the impact of

market access is perfect for non self-employed households (at $p = 0.000$) than wage employed households (at $p = 0.032$). This could reflect the fact that self-employing off-farm activities are mainly undertaken at market places in the study area. The nature of diversification is also clearly linked to access to public facilities in rural areas. The analysis shows that the pattern of participation rate ranges from 86.15 percent households who live in the nearer kebele to 36.54 percent for farther area to market locations, though other holdings also matter, showing farm household decision engage in off-farm activity is affected by access to public facilities.

Analytic findings with regard to contribution of income from out of farm activities show that it increases aggregate income and corresponding effect on expenditure requirements of rural households. Households which engaged in off-farm activities have gained larger gross income on average than those have not involved and relatively less food poor. Nevertheless, the result of income quartile investigation shows the share of income from off-farm sources is lower than agriculture for the first and second quartiles while its share outweighs agricultural income as for the third quartile groups. This shows that households which are relatively poor gain higher income from agriculture, and they could not afford higher return providing off-farm activities.

The finding from the response of diversifying households demonstrates that participation plays a vital role in smoothing daily consumption, mainly food requirements at least for 67 percent of participant groups. It has shown that about 73.4 percent of participant households perceive that their food status has been improved due to participation. Again, 69.8 percent of off-farm participant respondents replied that their food habit is improved

due to engagement in off-farm activities. Again Households those involved in diversified activities are less incident to poverty than not diversified ones.

5.2 Conclusion

This study tried to identify major factors that affect diversification of income into off-farm activities in the study area using descriptive analysis and regression estimations. It also shed light on contributions diversification. Results of analysis disclose that income diversification into off-farm activities affected by asset endowments such as farm land, labour availability, financial assets, and difference in the access of social and physical infrastructures. It has also seen that push factors such as agricultural income variability which is resulted from farm land shortage and large family pressure outweigh as causes of off-farm participation than pull factors. Off-farm activities created by push factors target mainly on smoothing fluctuation of income and consumption than targeting on better earnings.

The finding of the study also indicates that education positively affects household's choice of livelihood strategy and income diversity. It revealed that attending education and having skill increase chance of participation in off-farm activities positively. However, still a significant number of respondent households are did not attend any formal education.

The analysis also indicates that the chief source of finance for off-farm activities comes from relatives and friends, and money lenders that characterized by inadequacy and high interest rate of money lenders which results in serious problems to cover start-up costs in off-farm activities and to expand the existing businesses to higher profitable activities as

well. The supply of formal credit to rural households is nearly absent for off-farm activities.

The regression results also indicate that land scarcity is one of the main factors that derive households to diversify into off-farm strategy on the one hand. On the other hand, the area is characterized by its higher population density, which carries about 463.1 people per square kilometer, and availability of working force is also significantly responsive to household's choice of diversified livelihood and level of income diversity, suggesting that households with abundant labour forces tend to diversify their livelihoods.

The study result showed that households which reside in areas nearer to market location were intensively participated in off-farm activities; particularly in nonfarm self-employing activities thereby they are challenging shortfall of food and other requirements. On the other hand, the distance to nearest markets and roads affected the household choice of diversified livelihoods, reflecting lack of information and high transport cost for distant households.

Sex of the household head is one the influencing factors for income diversity. The results from descriptive analysis confirm that though female are participating in diversification activities, their average return of income from off-farm activities is less for female-headed households than male-headed households. These outcomes could be related with the gender differentiation of activities, the difference in entry constraints and returns of activities

5.3 Recommendations

The growth of nonfarm activities in rural areas is highly linked with the productivity of the workforce engaged in this sector. As productivity and incomes rise, households diversify their consumption out of foods. As a result, the contribution of agriculture in total national output declines, and transfers of capital and labor out of farming help to increase a corresponding rise in manufacturing and services so that structural transformation will be observed leading to shift in sectoral composition of economic activity. Thus, the following recommendations are suggested.

Provision of education and training, particularly skills formation for labour in working age increase the capacity of rural households to diversify their income. Hence, it will allow them to higher-earning activities and improve the returns to labour and capital from off-farm activities.

Promotion of rural credit schemes could alleviate the financial constraints prevailing in the area. Measures should be taken to strengthen and expand rural financial institutions that ensure the availability of credit to rural households to encourage investment in Off-farm activities.

Measures need to be taken to create employment opportunities in rural areas in order to absorb increasing rural labour forces due to high population pressure given the difficulty to increase farm output through increasing land cultivation. Government and NGO need to involve in providing technical support, organizing peoples in off-farm activities, designing labour intensive integrated employment creating programs.

The presences of rural infrastructures such as access to road and market information are found to be important determinants of rural household choices of income diversification. Reducing disparities of transaction costs for distant rural household is essential.

Gender considerations need to be emphasized in promoting rural employment opportunities. For diversification to benefit women, activities that have equal or better access to women need to be promoted.

REFERENCES

- Abebe, Nigusse. 2002. Farm Households Labor Supply to Off-farm Activities in Ethiopia. Master's Thesis, Unpublished, AAU.
- Adams, Richard. 1999. Nonfarm Income, Inequality, and Land in Rural Egypt. *World Bank Policy Research Working Paper 2178*
- Adugan, Lemmi. 2006. The Dynamics of Income Diversification in Rural Ethiopia: Evidence from Panel Data. *Economics Faculty publication Serious. Paper, 10*. http://scholarworks.umb.edu/econ_faculty_pubs/10.
- Adugna, Lemmi. 2009. Determinants of Income Diversification in Rural Ethiopia: Evidence from Panel Data. *Ethiopian Journal of Economics, Vol. XVIII, No. 1*, pp. 35–70, Ethiopian Economics Association (EEA), Addis Ababa.
- Adewunmi, Idowu, Awoyemi T. T. Omonona B. T. and Falusi. 2011. Non-Farm Income Diversification and Poverty among Rural Farm Households in Southwest Nigeria. *European Journal of Social Sciences – Volume 21, no.1*
- Alain de Janvry, Elisabeth Sadoulet, and Nong Zhu .2005. The Role of Non-Farm Incomes in Reducing Rural Poverty and Inequality in China.
- Anriquez, Gustavo, Carlo Azzarri and Tom Hertz. 2010. The poverty-alleviation potential of farm versus nonfarm job creation: A micro simulation analysis, Unpublished.
- Asmah, Emmanuel. 2011. *Rural Livelihood Diversification and Agricultural Household Welfare in Ghana*, *Journal of Development and Agricultural Economics Vol. 3(7)*, pp. 325-334, Washington, DC, U.S.A. Available online at <http://www.academicjournals.org/JDAE>
- Asmamaw, Enquobahrie. 2004. Understanding Poverty: The Ethiopian Context. *A Paper presented at the Gambia AAPAM Roundtable Conference*
- Barrett, Christopher B., and Thomas Reardon. 2000. Asset, Activity, and Income Diversification among African Agriculturalists: Some Practical Issues
- Barrett, Christopher B., Reardon, Thomas and Webb, P. 2001. Non-farm Income Diversification and Household Livelihood Strategies in Rural Africa: Concept, Dynamics and Policy Implication. *Food Policy* 26:315-331.

- Central Statistics Agency of Ethiopia (CSA). 2010. The population projection for July 2011 Magazine (1), CSA, Addis Ababa.
- _____. 2011. Agricultural Sample Survey of 2010/2011 (2003 E.C.). CSA, Addis Ababa
- Chamber, R. and Gordon R. Conway. 1991. Sustainable Rural Livelihoods: Practical Concepts for the 21st century, *IDS Discussion Paper* 296.
- CheMat, Siti Hadijah; Aznin Abubakar and Ahmad Zafarullah Abdul Jalil. 2011. Nonfarm Income and Poverty in Kedah, Malaysia. *International Conference on Sociality and Economics Development IPEDR vol.10, IACSIT Press, Singapore*
- Dattalo, Patrick. 2008. Determining Sample Size: Balancing Power, Precision and Practicality. Oxford University Press, Inc. New York
- Davis, J. R. 2004. The Rural Non-Farm Economy, Livelihoods and Their Diversification: Issues and Options. Chatham, University of Greenwich
- Davis, J. R. 2006. Rural non-farm livelihoods in transition economies: emerging issues and policies; *electronic Journal of Agricultural and Development Economics*, Vol. 3, No. 2, pp. 180–224, FAO. www.fao.org/es/esa/eJAD
- Degefa, Tollosa. 2005. Combining household qualitative data and quantitative data in food security research: Trial lecture for the PhD-degree, Trondheim, 10.06.2005 Working papers on Population and land use in central Ethiopia, no. 5
- Deininger, Klaus and Pedro Olinto. 2001. Rural Nonfarm Employment and Income Diversification in Colombia. *World Development* 29, no. 3:455-65.
- Delil, Hassen. 2001. The Determinants of off- farm employment and its Role in Rural Poverty Alleviation: The Case of Oromiya Regional State. AAU, MA Thesis, Unpublished.
- Demissie, Damite. 2003. The Determinants and Impacts of Income Diversification in Rural Ethiopia: The Case of Communities in Southern Nations, Nationalities, and Peoples Regional State. Msc Thesis. AAU.
- Démurger, Sylvie; Martin Fournier; and Weiyong Yang. 2010. Rural households' decisions towards income diversification: Evidence from a township in northern China.

- Dercon, Stefan. 2002. Income Risks, Coping Strategies, and Safety Nets. *The World Bank Research Observer*, vol. 17 no. 2 pp 146-166.
- Dunn, Elizabeth. 1997. Diversification in the Household Economic Portfolio. *Assessing the Impact of Microenterprise Services (AIMS)*. Management Systems International 600 Water Street, S.W. Washington, D.C. 20024-2488
- Ellis, Frank. 1998. Household strategies and rural livelihood diversification, *Journal of Development Studies*, 35:1, 1-38
- Ellis, Frank. 1999. *Rural Livelihood Diversity in Developing Countries: Evidence and Policy Implications*. ODI
- Ellis, Frank. 2000. Rural Livelihoods and Diversity in Developing Countries. UK: Oxford University Press.
- Ellis, Frank and H. Ade Freeman (eds.). 2005. Rural Livelihoods and Poverty Reduction Policies. Routledge studies in development economics. Taylor and Francis Group, London and New York.
- Escobal, Javier. 2001. The Determinants of Nonfarm income Diversification in Rural Peru. *World Development Vol. 29, No.3, PP 497- 508*.
www.Elsevier.com/locate/worlddev
- Fikru, Tesfaye .2008. A Case Study of Non-Farm Rural Livelihood Diversification in Lume Woreda, Oromiya Regional State. MA Thesis. AAU, Unpublished.
- Fredu Nega,a,c Stefaan Marysse,b Eric Tollense and Erik Mathijsc. (n.d.):
Diversification, Income Inequality and Social Capital in Northern Ethiopia.
- Greene, William H. 2007. Econometric Analysis (6th .ed.) Pearson Education, Inc. Upper Saddle River, New Jersey URL: www.enbookfinder.org
- Gujarati, Damodar N. 2004. Basic Econometrics (4th .ed.) The McGraw-Hill Companies
- Haggblade,S. et al. 2005. The Rural Nonfarm Economy: Pathway Out of Poverty or Pathway In? *Future of Small Farms, Proceedings of a Research Workshop WYE, UK June 26-29, 2005*.

- Haggblade, Steven .2006. Rural Nonfarm Dynamics. *Beyond Agriculture: The Promise of the Rural Economy for Growth and Poverty Reduction,*” conference, FAO, January, 2006
- Haggblade, Steven, Peter Hazell and Paul Oros. 2007. Sectoral Growth Linkages between Agriculture and the Rural Nonfarm Economy.
- Haggblade, Steven Peter Hazell and Thomas Reardon. 2010. The Rural Nonfarm Economy: Prospects for Growth and Poverty Reduction .*World Development*
- Hosmer, D., and Stanley Lemeshow. 2000. Applied Logistic Regression (2nd Ed.). AP Wiley-Inter-science Publication, JOHN WILEY & SONS, INC. New York
- Ibrahim, H.I and Onuk, G.E. 2009. Analysis of Rural Non-Farm Diversification among Farming Households in Doma Area of Nasarawa State, Nigeria. *Publication of Faculty of Agriculture, Nasarawa State University, Keffi PAT 2009; 5(1): 49-54 ISSN: 0794-5213*
- Idowu, Adewunmi Awoyemi T. T. Omonona B. T. and Falusi A. O. 2011 .Non-Farm Income Diversification and Poverty among Rural Farm Households in Southwest Nigeria. *European Journal of Social Sciences – Volume 21, Number 1 (2011)*
- Israel, Glenn D. 2009. Determining Sample Size. *EDIS, University of Florida*.
<http://edis.ifas.ufl.edu>.
- Janvry, Alain; Elisabeth Sadoulet, and Nong Zhu. 2005. The Role of Non-Farm Incomes in Reducing Rural Poverty and Inequality in China.
- Kimhi, Ayal. 2004. Family Composition and Off-Farm Participation Decisions in Israeli Farm Households. *American Journal of Agricultural Economics, Vol. 86, No. 2, pp. 502-512: Oxford University Press .www.jstor.org/stable/30139572*.
- Kothari, C.R. 2004. Research Methodology, Methods and Techniques (2nd Ed.). New Age International p.Ltd Publishers. New Delhi
- Lanjouw, Peter, Himanshu, Abhiroop Mukhopadhyay, and Delhi Rinku Murgai . 2011. Non-Farm Diversification and Rural Poverty Decline: A Perspective from Indian Sample Survey and village Study Data. *Asia Research Centre Working Paper 44*
- Maddala, G.S .1992. Introduction to Econometrics, 2nd ed. Macmillan publishing company, New York

- Merima, Ali and Jack Peerlings. 2011. Farm household's entry and exit into and from non-farm enterprises in rural Ethiopia: Does clustering play a role? Paper on Challenges for Agriculture, Food and Natural Resources August 30 to September 2, 2011.
- Mintwab, Bezabih, Zenebe Gebreegziabher, Liyousew GebreMedhin and Gunnar Köhlin. 2010. Participation in Off-Farm Employment, Rainfall Patterns, and Rate of Time Preferences: The Case of Ethiopia. *Environment for Development, Discussion Paper Series, EFD DP 10-21*
- Mulat Demeke, Fantu Guta and Tadele Ferede. 2006. Towards a more employment-intensive and pro-poor Economic Growth in Ethiopia: Issues and policies; *Discussion Paper 22*
- Man, Norsida and Sami Ismaila Sadiya . 2009. off-Farm Employment Participation among Paddy Farmers in the Muda Agricultural Development Authority and Kemasin Semerak Granary Areas of Malaysia. *Asia-Pacific Development Journal Vol. 16, No. 2*
- Matsumotoa, Tomoya Yoko Kijima Takashi Yamano (2006). The role of local nonfarm activities and migration in reducing poverty: evidence from Ethiopia, Kenya, and Uganda. *Agricultural Economics 35 (2006) supplement 449–458*
onlinelibrary.wiley.com/doi/10.1111/j.1574-0862.2006...x/
- Ministry of Finance and Economic Development (MoFED). 2002. Sustainable Development and Poverty Reduction Program of Ethiopia (SDPRP). Addis Ababa
- _____. 2006. A Plan for Accelerated and Sustained Development to End Poverty (PASDEP). MoFED, Addis Ababa
- _____. 2010. Growth and Transformation Plan (*GTP*) 2010/11-2014/15. MoFED, Addis Ababa.
- _____. 2012. Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11), MoFED, Addis Ababa
- Ministry of Labour and Social Affairs (MOLSA). 1997. Agricultural wage employment and rural non-farm employment in Ethiopia: Survey Results. Addis Ababa.

- Organization for Economic Cooperation and Development (OECD). 2001. The DAC Guidelines Poverty Reduction. *OECD Publications Service, 2, rue André-Pascal, 75775 Paris Cedex 16, France.*
- Owusu, V. and Abdulai A. 2009. Nonfarm Employment and Poverty Reduction in Rural Ghana: A Propensity-Score Matching Analysis. *International Association of Agricultural Economists Conference, Beijing, China, August 16-22, 2009*
- Rijkers, Mans Söderbom, and Francis Teal. 2008. Rural Non-Farm Enterprises in Ethiopia: Challenges and Prospects. *Briefing note prepared for the DFID funded study.*
- Reardon, T., Eric Crawford, Valerie Kelly. 1994. Links between Nonfarm Income and Farm Investment in African Households: Adding the Capital Market Perspective. *American Journal of Agricultural Economics, Vol. 76, No. 5, Proceedings Issue, pp. 1172-1176*
- Reardon, T. 1997. Using Evidence of Household Income Diversification to inform Study of the Rural Nonfarm Labor Market in Africa. *World Development, Vol. 25, No. 5 (May).*
- Reardon, Thomas; Julio Berdegú; Christopher B. Barrett, and Kostas Stamoulis. 2006. Household Income Diversification into Rural Nonfarm Activities. Steven Haggblade et al (eds.). *Transforming the Rural Nonfarm Economy, Forthcoming. Johns Hopkins University Press.*
- Ruben, Ruerd and Marrit van den Berg. 2001. Nonfarm Employment and Poverty Alleviation of Rural Farm Households in Honduras. *World Development 29, no. 3:549-60*
- Scoones, Ian. 1998. Sustainable Rural Livelihoods: A Framework for Analysis. *IDS Working Paper 72, Institute of Development Studies*
- Shajaat, Ali. 1993. Unemployment in Agriculture and Opportunities for and Contributions of Off-Farm Employment to Rural Economy: A Case Study from Southwestern Bangladesh. *Human Ecology, Vol. 21, No. 4, pp. 431-445. Springer Stable URL: www.jstor.org/stable/4603104.*
- Singh, Kultar. 2007. QUANTITATIVE SOCIAL RESEARCH METHODS. Sage Publications, India Pvt Ltd B1/I1, New Delhi 110 044

- Siti Hadijah Che Mat, Nor' Aznin Abu Bakar and Ahmad Zafarullah Abdul Jalil (2011) Non Farm Income and Poverty in Kedah, Malaysia 2011 *International Conference on Sociality and Economics Development IPEDR vol.10 (2011) IACSIT Press, Singapore*
- Smith D. R., Ann Gordon, Kate Meadows and Karen Zwick. 2001. Livelihood Diversification in Uganda: Patterns and Determinants of change across two rural districts. *Food Policy 26, p. 421–435, Elsevier Science Ltd.*
www.elsevier.com/locate/foodpol.
- SNNPR Disaster Prevention and preparedness Bureau. 2002. Vulnerability Profile for Badawacho Woreda. Unpublished.
- Tassew, Woldehana. 2000. Economic Analysis and Policy Implication of Farm and Off-farm employment: A case study in the Tigray Region of Northern Ethiopia. PhD Dissertation, Wageningen University, the Netherlands.
- Tegegne, Gebreegziabeher. 2000. Non-Farm Activities and Production Decisions of Farmers, the Case of Damotgale and Kachabira Woredas, in Southern Regions of Ethiopia. *OSSREA Social Science Research Report Series, No. 15*, Addis Ababa.
- World Bank. 2007. World development report 2008. Washington, DC
- Woinishet Asnake. 2010. Participation into off-farm activities in rural Ethiopia: who earns more? Master Thesis. *International institute of Social Science (ISS)*. The Hague, The Netherlands
- Yoshikawa, H., Weisner, T. S., Kalil, A., & Way, N. 2008. Mixing Qualitative and Quantitative Research in Developmental Science. *Developmental Psychology Vol. 44, No. 2*, 344–354.

APPENDICES

Appendix I: Questionnaire for household Survey

This questionnaire is designed for the purpose of gathering information pertaining to a research entitled **The Determinants of Income Diversification into Off-farm Activities among Farm Households in Misrak Badawacho Woreda**. The research is being undertaken for **academic** purpose and the final report of the research paper will be written based on the information you provide. Thus, I kindly request your cooperation in providing accurate information as much as possible. All the information you offered will be highly confidential.

Part I: Household Demographics and General Questions

The respondent for this questionnaire should be the household head. If this is not possible, the most knowledgeable person about these topics would be appropriate.

- 1.1. Kebele _____
- 1.2. Distance from the village to the nearest market place in kilometers. _____
- 1.3. Distance from the village to the nearest motor able road in kilometer: _____
- 1.4. Household characteristics
 - 1.4.1 Name of the household head _____
 - 1.4.2 Sex of household head _____
 - 1.4.3 Age of the household head in year _____
 - 1.4.4 Marital status: (1) married, (2) unmarried, (3) separated/divorced, (4) Widowed; 5) Married more than one spouse 6) other; specify _____
 - 1.4.5. Family size of household: Male ____ female ____ total _____
 - 1.4.6. Family member size whose age is between: 15 years and 64 year: male ____
Female ____ total _____
 - 1.4.7. Family members size whose age is below 15 years: Male ____, Female ____
Total _____
 - 1.4.8. Family members size whose age above 64 years: male ____ Female ____
Total _____

1.4.9. Highest grade in education that the household head obtained; if he/she did not complete any schooling, write zero (0) ----- . Or state grade completed (e.g. 1st; 2nd; 3rd; etc) _____; (13)12+1(certificate) (14) Diploma (15) Degree (17) others (adult literacy program completed; _____

1.4.10 Number of Household members completed 8th grade: _____

1.4.11. Religion of household head: (1) Orthodox (2) Protestant (3) Catholic (4) Islam (5) Traditional religion (such as “Fandanano” (6) other, _____

1.4.12 House of the household built of: (1) thatch covered (2) Corrugated iron sheet

1.4.13 Primary occupation of the household 1) crop production 2) livestock production 3) Mixed farming 4) wage employment 5) self employed business 5) Other, specify _____

Part II: Agricultural Asset ownership and income generation related questions.

In the following part, we would like to ask some questions about all the land used by your family during the last full agricultural year (belg and Mehar or within twelve months) and livestock ownership and income related questions.

2.1 Fill plot sizes owned by the household in hectare, or in Timad or in square meter and mark ‘X’ for soil **quality** and **slope** of the plot in an appropriate column of option.

(Note that one hectare is equally estimated as four Timad or ten thousand square meters).

Land/Plot type	Size in hectare	Size in Timad	Size in sq.m	Soil quality			Slope of plot		
				fertil e	Semi fertile	infertil e	Flat (medama)	dget ama	ged el
Plot used for both for belg and mehar seasons (for anual crops)									
A plot used for perennial crops (such as coffee, chat, Enset, banana, sugarcane, etc)									
Land used exclusively for woodland (e.g. Bahirzaf), livestock grazing or left fallow during the last 12 months for other purposes									

2.2 Is the farm household has access to plots belonging to other households in the form of rent or share cropping? 1) Yes 2) No (Skip to question no 2.3

2.2.1 If yes the amount owned in hectare/ timad _____

2.2.2. For the plots sharecropped in by the household and owned by another household, what was the household's share? (Write 0.50, 0.33, 0.66 (half, one third; two third), etc.

If other, specify _____

2.3. State the amount of crop outputs gained (in kg. or quintal, or any standard convertible units their values in birr.

Crop type	Amount gained from own plot cultivation (a)	Amount gained from share crop (b)	Amount gained from rented plots (c)	Total amount gained (d)= a+b+c	Amount consumed out of gained	If the consumed amount would have sold, how much it worth in birr?	For sold crop or grain, state amount and money gained	
							Amount	Birr
Maize								
Teff								
Adengware								
Wheat (Sinde)								
Barley (Gebis)								
Sorghum								
Degussa								
Chick Peas (Shimbra)								
Potatoes								
Sweet Potatoes								
Godere								
Cabbage								
Berbere								
Coffee								
Chat								
Enset								
Bananas								
Sugarcane								
Gesho								
Avocado								
Mango								
vegetables								
Others								
TOTAL								
Total income								

2.4 Expenditure for Crop production/investment expenditure

Type of expenditure during Belg season	Total payment cash in BIRR (If the payment is in kind, give estimated payment if it would have in cash Total Payments in Cash)
Fertiliser	
Pesticides (incl. fungicides and herbicides)	
Seeds and young plants (chigegn)	
Labour for crop production	
Transport related to crop production and crop sale	
Rent for oxen	
Harvester, or combine services	
Land rent	
Others----	
Type of expenditure during MEHER	
Fertiliser	
Pesticides (incl. fungicides and herbicides)	
Seeds and young plants (chigegn)	
Labour for crop production	
Transport related to crop production and crop sale	
Rent for oxen	
Harvester or combine	
Land rent	
Others----	

2.5 Net total estimated income from crop production in the last twelve months/in the year

(Note that *Net income* is the difference between total revenue and total cost calculated by enumerator) _____

2.6 Livestock ownership and Income

2.6.1 Please tell us about your herd of livestock at present

Type of Livestock	Number owned and present at your farm	If you would sell one of the ... today, how much would you receive from the sale? in BIRR	Number kept for share or some benefit		Number owned but away for share or some return	
			No	Your share in birr if you would sell	No	Your share in birr if you would sell
Calves						
Bulls						
Oxen						
Heifer						
Cows						
Sheep						
Goats						
Horses						
Donkeys						
Mules						
Chicken						
Others						
Total						

** Number of Livestock in TLU value ----- (not filled by the enumerator)

2.6.2 If the household owned cross breed livestock, please state the type and amount in birr to be sold or bought 1) _____

2) _____

2.7. What was your gross income from the sale of household's animal products in the last 12 months in birr?

a) Meat (exclude live animals) _____

b) Hides/skins _____

c) Butter/cheese _____

d) Milk/cream _____

e) Chicken _____

f) Eggs _____

g) Other _____

2.8 If the household has Bee (Honey) production, number of hives

_____ and your income in birr in the last twelve months

2.9 Expenditure for livestock production

In the last 12 months, have you had any of the following expenditures related to livestock?

2.9.1 Expenditure paid for labour to herd cattle in Birr ----- If it is in kind, give estimated cash value _____

2.9.2 Expenditure paid for feed in Birr _____ if it is in kind, give estimated cash value _____

2.9.3 Expenditure paid for Veterinary services/medicine in Birr _____ if it is in kind, give estimated cash value _____

2.9.4 Other expense in Birr _____ if it is in kind, give estimated cash value _____

Net livestock income -----

Part III: Credit Access

3.1 In the last 12 months, have you taken out a loan in cash or in kind? 1) YES

2) NO (skip to question no.3.4)

3.2 If yes where did you receive from? 1) Moneylender/Arata 2) Relative3)
Friend/Neighbour 4) From Equb 5) From Iddir 6) from micro finance 7) from
government bodies 8) Other (Specify) _____

3.3 For what purpose did you want to obtain a loan? 1) To buy farm or other
Tools/Implements 2) To buy inputs e.g. seeds/fertiliser/Pesticides 3) To buy Livestock
including oxen 4) To Pay for hired labour 5) To pay rent/taxes 6) To start an Off-farm
Business (e.g. trade) (7) To buy food/goods for the household 8) To pay for building
materials 9) To pay for health expenses 10) To pay for education expenses 11) For
ceremonial(Wedding, graduation, child birth, Meskel,etc.12) Other, specify

3.4 If no, why did you not take a loan? 1) No need for a loan 2) Tried to get a loan but
was refused 3) Unavailability of credit facilities to get a loan from 4) I have no assets
for collateral 5) Afraid that I cannot pay back 6) Interest rates too high 7) Other

3.5 If the household members save income from any source, in which form do they save?

1) Save money at home 2) save in microfinance institution 3) Purchase cattle 4)
purchase grains/ coffee to sell when price rises 4) provide for borrowers in the form aratta
in kind or in cash 5) Other, specify, _____

3.6 Are you a member of Equb? 1 Yes 2) No

3.7 If yes for question 3.6, how much do you earn from it in a round?

3.8 How long does it take a round? 1) Less than three months 2) 3-5 months 3) 6-8
months 4)9-12 months 5) More than twelve months 6) Other, specify _____

PART IV: Off-farm Activities and Related Questions

4.1 Wage work participation

4.1.1 In the last twelve months, did you or any other members of the household work off the household's land either on someone else's land or in some other employment, against payment in cash or in kind (**wage employment**), including as part of food for work ?

1 YES 2 NO (if no, skip to question no 4.1.7)

4.1.2 **If yes**, in which kind of work is the household involve? (**Multiple Responses are allowed**) (1) Farm worker (for pay) (2) Professional (Teacher, Government worker, Administration, Health Worker, (3) Skilled Laborer (i.e. Builder, Thatcher, Mason, carpenter, etc) 4) Driver/Mechanic (5) Unskilled Non-farm worker 6) Food-for-work (7) other, _____

4.1.3 Who are involved, in such activities among your family members? (**Multiple Responses are allowed**) 1) I myself (head of household) 2) My wife/husband 3) my son 4) my daughter 5) other, specify _____

4.1.4 Where is the Location of work? (**Multiple Responses are allowed**) (1) This Village (2) Another Village (3) Local Market Town (4) Regional Centre (5) Addis Ababa (6) Other (Specify) _____

4.1.5 In the last 12 months, how many **months** have you been involved in these activities? _____

4.1.6 Total estimated amount earned in the last twelve months for those involved months:

a) Amount in Birr for cash obtained per months, -----

Or per week -----

b) Amount in kind ----- Unit in kg. -----, the amount in Birr if it would have purchased or sold _____

4.1.7 For the household who did not participate in off-farm wage employment activities, what are major entry constraints/barriers? (**Multiple Responses are allowed**)

1) lack of employment opportunities 2) Lack of technical skills (vocational training, education, etc 3) low respect to such activities 4) Lack of nearby towns and transportation 5) Low level of demand for labor (6) Other (being aged, health problems and time constraints); or specify _____

4.2, in the following part we would like to ask you about other **self employed off-farm** income earning activities, such as crafts, transport services, trades and other business carried out by you or any other member of the household.

4.2.1 In last 12 months, have you or other members of your household been involved in any of income earning activities, such as crafts, trades and other business?

1 YES 2 NO (if no, skip to question 4.10)

4.2.2 If yes, in which kind of work is the household involve? (**Multiple Responses are allowed**)

1) Weaving/spinning (2) Milling (3) Handicraft, including Pottery (4) Trade in grain/general trade (including. banana, pepper, honey, etc.) 5) Trade in livestock/livestock products (5) Transport (by pack animal, motor cycle, horse/donkey cart) 6) other activities? Specify _____

4.2.3 Who are involved, in such activities among your family members? (**Multiple Responses are allowed**) 1) I myself (head of household) 2) My wife/husband 3) my son 4) my daughter 5) other, specify _____

4.2.4 How much has the household earned (net of costs) from this activity in the last 12 months?

a) Amount in birr _____ b) Amount in kind ----- Unit in kg.-----, the amount in Birr if it would have purchased or sold _____ C) Total in Birr _____

4.3 Rank the reason why the household is engaged in Off-farm wage employment or self employment activities

Reason	Rank at least two				
	1	2	3	4	5
Insufficiency of income from agriculture(Decline land size, soil fertility or productivity)					
Growing family size					
Availability of credit					
The presence of road, electricity and market in your village					
Possession of special skill such as masonry, handcrafts, etc					
Favorable demand for goods/services/Profitability					
Other					

4.4 If you have skill, how did you learn the skill used for your activities? **(Multiple Responses are allowed)** 1) From parents (family tradition) 2) From friends (through contacts with others) 3) From government financed training programs 4) Own effort 5) NGOs funded training programs 5) other, specify _____.

4.5 **For only Self employed households**, would you indicate source of initial capital for your activities if you are running your business? **(Multiple Responses are allowed)** 1) Equib 2) Individual money lenders 3) gift from parents/ friends/relatives 4) Grant from NGOs 5) Microfinance institutions 6) own savings 7) other, specify _____

4.6 For which purpose you mainly use the income earned from off-farm activities? **(Multiple Responses are allowed)** 1) To purchase agricultural inputs such as fertilizer 2) to purchase daily food requirements 3) pay for Education 4)for clothing 5)for ceremonial expenses 6)save the income for the future 7) Other, specify _____

4.7 Did your household poverty status particularly food availability status has improved after participation in off farm activities **(for participant household only)**? 1) Yes (2) No

4.22 How do you see/ perceive food habit (consumption) change after participation in nonfarm activities? 1) Improved 2) Unchanged 3) Deteriorated

4.8 How do you see participation off-farm employment improvement in the livelihood of the household? **(Multiple Responses are allowed)** 1) Improved daily food self sufficiency (2) Improved housing 3) schooling of children has improved (4) Reduced borrowing increase confidence & independence (5)no change (6) other

4.9 Rank five (1st, 2nd, 3rd, 4th, 5th) major requirements to participate in nonfarm activities?

Access to finance

Availability of all weather roads

Availability of transport facilities

Access to business management skill

Access to technical skill

Availability of business information

Market Closeness/Access

4.10 If any member of the household did not participate in self employment activities such as trade, crafts, etc, what are major entry constraints/barriers? (Multiple Responses are allowed)

1) Lack of startup capital 2) Lack of business awareness 3) Lack of nearby towns and transportation 4) lack of infrastructure (road, electricity, telecom, etc) 4) lack of market demand for products/low profitability 5) low respect to nonfarm activities by the community/family 6) other, specify _____

THANK YOU VERY MUCH!

Enumerator's name: _____ Signature _____

Date _____

Supervisor's name: _____ Signature _____

Date _____

Appendix II: In-depth interview guide for Selected Respondents

The purpose of this in-depth interview is to obtain deeper insight from participant households in off farm activities. In this part of the data gathering, the researcher encourages the interviewees to provide real talk about the issue.

Name _____ Sex _____

Age _____

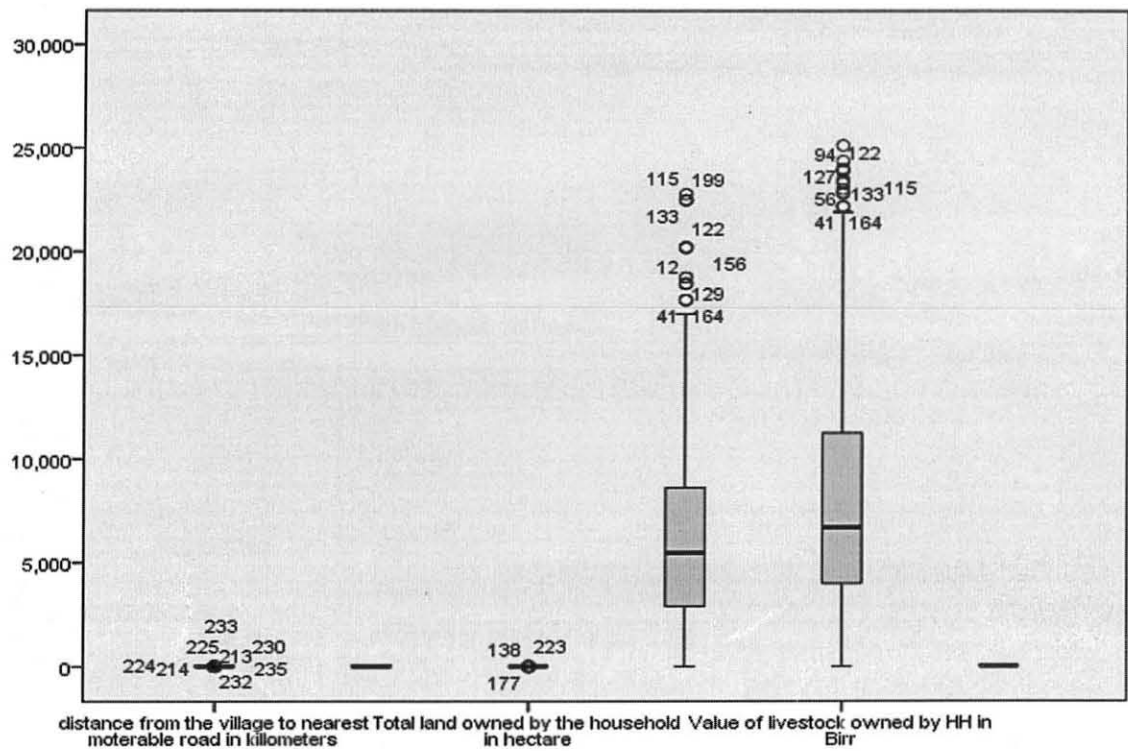
- 1) Do you or any member of your family participate in off-farm income generating activities (wage employment and self employment)?
- 2) How did you decide to start off farm business? Or what pushed or attracted to participate in off farm activities?
- 3) For how long time you engaged in this activity? Do you perform this activity throughout the year or seasonally?
- 4) Did your family or relatives or community support engaging in wage employment or self employing activities such as trade? If there was some problem, please tell us
- 5) Did you get any advice from somebody before you start your business?
- 6) Have you got any training from government or nongovernment organizations?
- 7) Have you ever obtained credit from government or nongovernment organizations?
- 8) Are you a member of a cooperative related to off-farm activities?
- 9) Is there any supporting each other system (network) in your kin family, in your friends, neighbours, etc, in the form of association, iddir, iqub, or in any form? Do these systems helped to engage in off farm or any business activities?
- 10) How do you find your nonfarm activity? Is it smoothly going or frustrating?
If it is frustrating, what is/are the reasons?
- 11) For what purpose you expend your income from off-farm activities? Or what the benefits obtained from such activities? Please describe both financial and non-financial benefits

12) Please would you describe the major constraints that negatively affecting your activities?

Some of Interview guide with concerned government officials or experts and NGOS

- ✓ Policy related issues in off farm activities particularly in food insecure households
- ✓ Programs or Interventions in the form of organizing, training, credit or provision of any extension services
- ✓ Plans prospect of nonfarm sub sector in the rural areas
- ✓ Others

Appendix III: An Exploratory Data Analysis (Box plot chart) for tests outliers in continuous variables



DECLARATION

I, the undersigned, declare that the thesis is my original work, has never been presented for a degree in any other university. All sources of material used for the thesis have been duly acknowledged.

Declared by

Sign  _____

Gemed Bilate

June 2012 AAU

This thesis is submitted for examination with my approval as an advisor of the candidate

Sign  _____

Dr. Mengistu Dessalegn

June 2012 AAU