DETERMINANTS OF RURAL HOUSEHOLDS GRADUATION FROM PRODUCTIVE SAFETY NET PROGRAM IN DOYOGENA WOREDA, SNNPR, ETHIOPIA

M.Sc. THESIS

BY

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DETERMINANTS OF RURAL HOUSEHOLDS GRADUATION FROM PRODUCTIVE SAFETY NET PROGRAM IN DOYOGENA WOREDA, SNNPR, ETHIOPIA

M.Sc. Thesis

By

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A Thesis Submitted to the Department of Rural Development and Agricultural Extension, School of Graduate Studies, Jimma University College of Agriculture and Veterinary Medicine in Partial Fulfillment of the Requirements for the Degree of Master of Science in Agriculture (Rural Development)

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DEDICATIONS

I dedicate this piece of manuscript to my families for their continuous contribution through all my life.

STATEMENTS OF AUTHOR

By my signature below, I declare and affirm that this thesis is my original work, prepared under the guidance and close supervision of major and co-advisor. I have followed all ethical and technical principles of data collection, data analysis and compilation of this Thesis. Any scholarly material used in preparation of the Thesis has been given recognition through citation. This thesis has been submitted in partial fulfillment of the requirements for M.Sc. degree at Jimma University and is deposited at the University Library to be available to borrowers under rules of the library. I also solemnly declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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BIOGRAPHICAL SKETCH

The author, Birhanu Mamo, was born in Doyogena district, Southern Ethiopia in 1982 EC. He attended his primary and junior school at Hossana 01 elementary and junior secondary school. He also attended his high school education at Yekatit 25/67 comprehensive secondary school and Wachemo senior secondary school and completed secondary education in 1999EC. He joined Wolayta Sodo University in 2000EC and graduated with B.Sc degree in Rural Development and Agricultural Extension in July, 2002EC.

After his graduation, he was employed by Bureau of Agriculture and Natural Resources Development of SNNPR and served as productive safety net program coordinator in Doyogena woreda until he joined the School of Graduate Studies at Jimma University in 2008EC academic year.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADIL	Agricultural Development Led Industrialization.
ATA	Agricultural Transformation Agency
BoARD	Bureau of Agriculture and Rural Development
CCI	Complementary Community Investment
CFSTE	Community Food Security Task Force
CSA	Central Statistic Agency
DA	Development Agent
DWFED	Doyogena Woreda Finance and Economy Development
FAO	Food and Agricultural Organization
FFT	Full Family Targeting
FHH	Female Headed Household
FGDs	Focus Group Discussions
FSP	Food Security Program
GB	Graduated Beneficiary
GDP	Gross Domestic Product
Ha	Hectare
HABP	Household Asset Building Program
HH	Household Head
HRD	Humanitarian Requirement Document
KII	Key Informant Interview
MoA	Ministry of Agriculture
MoARD	Ministry of Agriculture and Rural Development
NGOs	Non Governmental Organizations
PASDEP	Plan for Accelerated and Sustained development to End Poverty
PIM	Program Implementation Manual
PSNP	Productive Safety Net Program
SNNPR	Southern Nations, Nationalities and Peoples Region
SPSS	Statistical Package for Social Science
SSA	Sub Saharan Africa
TLU	Tropical Livestock Unit
UN	United Nations

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ABSTRACT

The productive safety net program is primarily designed to provide cash or food transfers to chronically food insecure households, in order to prevent household asset depilation as well as create community asset. In doing so, Graduation of targeted household from the program is the ultimate goal of the program. In the study area, almost half of program beneficiaries were non-graduates. Thus, this study was conducted to analyze the determinant factors of household graduation from productive safety net program in Doyogena woreda, Southern Nations. A two stage sampling procedure was used to select six kebeles and 204 sample households. The study was designed to collect both qualitative and quantitative data from productive safety net program beneficiary households. Both primary and secondary data sources were used to generate required information. The data were analyzed using descriptive and econometric statistics. The descriptive analysis showed, only 38.2% surveyed beneficiary households are graduated from the program. The result of binary logistic regression model revealed that out of fifteen variables included in the model, eight explanatory variables were found to be significant. Accordingly, age of household head, education status, household dependency ratio, livestock ownership, off farm income, total farm income, participation in credit and targeting mechanism were significantly influencing households' graduation from productive safety net program in the study area. The findings also revealed that program beneficiaries' lack interest to graduate from the program. Partially family targeting, weak institutional linkage, low access to credit and poor monitoring and follow up system of the productive safety net program affected the graduation of the households. Thus, it necessities to promote improved technologies that increases productivity of land and livestock, improve literacy, diversify and expand sources of income of rural households, improve access to financial organizations, and provide capacity building for beneficiary. The woreda also needs to exert considerable efforts to create awareness among the program beneficiary on benchmark used and the time of graduation from productive safety net program.

Keywords: PSNP Beneficiary Household, Logit, PSNP Graduation, Doyogena, Ethiopia.

1. INTRODUCTION

1.1. Background of the study

Developing countries in general and Ethiopia in particular are affected by a growing problem of food insecurity. A large portion of the country's population has been affected by chronic and transitory food insecurity (African Development Bank 2014). Ethiopia among the lowest in the least developed countries and depends heavily on smallholder agriculture. Low agricultural production leads to low income and the lowest calorie intake of 1,845 Kcal per person per day (Assefa, 2002). This has been manifested in the prevailing food insecurity, both chronic and transitory.

In Ethiopia more than 27 million people become food insecure and total population of 18.1 million people require food assistance in 2016 due to climate change and 2015 El Niño drought derived problems in the country which was the strongest droughts that have been recorded in the history of the nation' (Mohamed, 2017). The annual food deficit increased from about 0.75 million ton in 1979/80 to 1.4 million tons. As a result the most important basic deprivation that plagues Ethiopian society is a lack of access to adequate food and nutrition and has been receiving on average 700 thousand tons of food aid per annum (Endalewet 2015). Ethiopia experiences both chronic and temporal food insecurity problems.

To alleviate this problem, the government of Ethiopia together with other development partners launched the Productive safety net program in 2005 is one component of the overall food security program (FSP) which also includes resettlement, complementary community investment and Household Asset Building Program, the program commenced by covering four regions of the country (Tigray, Amhara, Oromia and SNNPR) aiming to reach more than 1.6 million households (5 million people) in 263 woredas (districts) identified as chronically food insecure areas (Siyoum, 2012). It was scaled up significantly in 2006 the pastoralist areas of the country are included in the program and the size of the beneficiaries has increased to 8.3 million people in 319 woredas (Rahmato *et al.*, 2013 and Siyoum, 2012).

In 2009 the Government of Ethiopia re-launched the Food Security Programme with enhanced efforts being made to improve a key component, the Productive Safety Nets

Programme and a replacement of the Other Food Security Programme with an enhanced set of activities to strengthen the capacity of households to generate income and increase asset holdings. The replacement to the OFSP, called the Household Asset Building Programme (HABP), includes a demand driven extension and support component and improvements in access to financial services (Guush *et al.*, 2011).

Productive Safety Net Program has two components direct support of cash or food to vulnerable households with no able-bodied members who can participate in public works projects and public work, resourcing, which support beneficiaries in exchange for public works on rural infrastructure projects (Devereux 2010). These beneficiaries are supported through food or cash transfers for six months each year, and for a period of 5 years after which they are expected to achieve food security. Graduation from PANP is a two-stage process. The first stage is graduation from the PSNP and the second is graduation from the Food Security Programme (Tafesse, 2013). This study is focused only on graduation from the PSNP. A household has graduated when, in the absence of receiving PSNP transfers, it can meet its food needs for all 12 months and is able to withstand modest shocks (Devereux, 2016).This state is described as being 'food sufficient. The program is planned to be implemented for five years, at the end of which Productive Safety Net Program beneficiaries who have received predictable transfers and complementary interventions throughout the program period will be expected to graduate out of dependence on external support, except during food crises (Ethiopia PSNP, 2006). This occurs when a household has improved its food security status to a level that shifts it from being classified as chronically food insecure to food sufficient, and thus is no longer eligible for the PSNP.

Southern Nation Nationalities and People Region is one the region out of the nine Administrative state of the country. According to SNNPR agriculture and rural development office (2010), 78 chronically food insecure woredas in the region were included in the program. Kembata Tembaro Zone is one of the 13 Zones in the Region. Doyogena woreda is one of the food insecure and PSNP target woreda since 2005. However, the number of households to be graduated from the program remained lower. Accordingly, there is a need to identify factors that determine beneficiaries' graduation from PSNP. Hence, this study is

intended to analyze major factors affecting beneficiaries' graduation from PSNP particularly in Doyogena district, Southern Ethiopia.

1.2 Statement of the Problem

Ethiopia, one of the most famine- prone countries in Africa, has a long history of famines and food shortages that can be traced back to 250 BC. More than half of the Africa's food insecure population lives in Ethiopia (Ramakrishan and Demeke 2002). Hence, the country needs immense and all round efforts to totally eliminate chronic and transient food insecurity. Accordingly, it has been undertaking different actions. However, the typical response to food insecurity in Ethiopia, prior to the start of the PSNP, was emergency food relief resourced through an unpredictable annual appeal process. While there was no doubt that this relief saved many lives, it did not halt the increasing numbers of food insecure people (Abebaw, 2010).

The graduation of productive safety net program is the ultimate goal of the program and will result in the reduction of the number of households requiring external food aid and assistance. However, a study conducted by Berhane *et al. (*2011) noted that there was distress sell of household assets from 2006-2010 to satisfy food needs at households. In addition, evaluations of the first phase (2005-2009) suggested that there was minimal graduation of beneficiary households from food insecurity (Sabates and Devereux, 2011). For instance, a total of 280,000 (3.7%) individuals out of 7.5 million households had graduated by 2009 though there was ambitious goal for graduation in the first phase (Catherine Robins and JaRco Consulting, 2011).

Doyogena woreda is chronically food insecure woreda of southern Ethiopia. The productive safety net program was launched in the woreda since 2005. Yet, graduation is the main goals of the productive safety net program whereby the beneficiaries were expected to become food self-sufficient; build enough household assets and no longer in need of external assistance. Accordingly, the governments required to those beneficiaries graduates within five years. But according to information obtained from woreda Agriculture and Natural Resources office report, in the study area ensues of graduation is not appropriately implemented according to the rules set out for its program implementation manual. Moreover, graduations are

implemented without due consideration (detail investigation) of beneficiary circumstances, asset level and without wealth ranking.

The study conducted by Desalegn (2017) indicated that in his study in Babile district of Oromia region low level of household graduation from program. Besides this Arega (2012) also pointed out different characteristics that exist across households under the program support may influence the program graduation. Household total income, livestock owned, total crop production, kilocalorie intake and geographical location are believed to have significant effect on graduation of households from the program. But the study did not consider targeting mechanism and education status of households. Moreover, a study conducted by Yibrah (2013) considered family size, farm land, livestock ownership, education status, access to extension services and credit access are supposed to have positive effect on household graduation. However, this study also did not consider targeting mechanism and off farm income. Besides this the challenges in the implementation of PSNP and beneficiary perception towards graduation are believed to have negatively influence on household graduation in the study area.

Thus, household graduation from productive safety net program which need scientific investigation to identify determinant factors for successful achievement of the program. So far in the study area, no comprehensive research was done in identifying the determinants of PSNP beneficiaries. Therefore, this study was conducted to fill the existing gaps of knowledge which were not covered by previous studies regarding to the determinants of households graduation from PSNP though in-depth interview and key informant discussion with the program beneficiaries, none beneficiaries and other stakeholders who have direct relation with the program.

1.3. Objectives of the Study

1.3.1. General objective

The general objective of the study was to identify major factors affecting graduation of rural household from PSNP in Doyogena woreda.

1.3.2. Specific objective

The specific objectives of the study are:-

- To analyze determinants of households graduation from the PSNP in the study area;
- To assess perception of beneficiaries towards PSNP graduation in the study area;
- To assess opportunities and challenges for rural household graduation from PSNP in the study area

1.4. Research Questions

The study attempted to address the following research questions.

1. What are the determinants of household graduation from PSNP beneficiary households?
2. How do beneficiaries perceive their graduation from PSNP?
3. What are the challenges and opportunities for beneficiaries' graduation from PSNP?

1.5. Significance of the Study

The findings of this study wound contribute towards breaching existing gap of farmers' perception of graduation from PSNP. Secondly it is the stepping stone to investigate farmers' graduation from PSNP in the area with modification to immediate issue. More specifically, the result of the study input for planners, and development practitioners who are primarily working food security program in general and PSNP in particular. Moreover, it's helpful to be as a reference for other studies in the area with similar or other themes of study. Finally, conclusions and recommendations to be given would help in designing food security programs at different stages.

1.6. Scope and Limitations of the Study

This study was conducted in Doyogena Woreda of Kembata Tembaro Zone. From this Woreda, six Kebeles (Dinka, Amecho, Bekafa, Murasa, Wagabata and Serara) was focused. This study was specifically focused on analyzing major determinants of rural household graduation from PSNP. But this study was limited to Doyogena woreda in terms of area coverage. The small sample used for this study cannot be generalized for all households dwelling in the six kebeles. There are many factors which affect the HHs graduation from PSNP, but this study was limited to only fifteen variables. Collecting the real information from the targeted sampling units might be another problem due to misunderstanding of the objective of the study by beneficiaries and their expectation. However, regardless of these limitations, the researcher has tried his best to overcome and meet its objectives within the limitations mentioned.

1.7. Organization of Thesis

This paper is organized into four chapters. The first chapter deals with the introduction part which comprises back ground of the study, statement of the problem, objectives of the study, research questions, significance, scope and limitation of the study. The second chapter deals with literatures reviewed from various sources and key concepts, theoretical explanations and research findings related to the study. In chapter three, brief descriptions of the study area and research methodology are presented. Chapter four presents results and discussions and finally presents the summary, conclusion and recommendations based on findings.

2. REVIEW OF RELATED LITERATURE

This chapter presents key concepts, theoretical explanations and research findings related to the study. The chapter is classified into four sections. The first section discusses basic concept of food security and productive safety net program, Second section deals with general concepts about other food security programs, the third section presents about empirical literature and the final section presents conceptual framework of the study.

2.1. Basic Concept of Food Security

Food security as a concept originated in 1970's and since then it has been a topic of considerable attention. However, the concept has become more complex due to a shift in the level of analysis from global and national to household and individual levels. According to Hoddinott (1999), there are approximately 200 definitions and 450 indicators of food security. Food security is such a complex notion that it is virtually impossible to measure it directly, and a variety of proxy measures have been suggested. Consumption and expenditure, nutritional status, coping strategies are the most frequently used measures of food security. To start with the earlier ones, food security is defined for the first time as availability at all times of adequate world supplies of basic food stuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices. While in the 1980's it is defined as access by all people to enough food for an active healthy life (Sen, 1981). FAO (1996) defines food security as when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Food availability: According to FAO (2013) food availability is a dimension of food security that plays a prominent role. Enough supply (availability) of food to a population is a necessary but not sufficient condition for food access. This is really the case when we see the national food supply or availability could not guarantees the individual household to access that supply unless and otherwise that specific household has the means, the resources and the purchasing power to access that supply.

Food access: access refers to the capacity of a household to procure sufficient food to satisfy the nutritional needs of all its members; it is 'a measure of the population's ability to acquire

available food during a given period. Factors influencing access to food include economic factors, social and political factors and related to agricultural production (access to land seed), distance to market places, access to fishing or trade (Hoddinott, 2008).

Food utilization: is the way people use the food and is dependent on the quality of the food, its preparation and storage method, nutritional knowledge, as well as on the health status of the individual consuming the food. So food security can be defined as a person, household or community, region or nation is food secure when all members at all times have physical and economic access to buy, produce, obtain or consume sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life (IFRCRCS, 2006).

Food insecurity: is a situation which occurs at individuals, households or nation level that has neither physical nor economical access to the nourishment they need. Household is said to be food insecure when its consumption falls to less than 80 percent of the daily minimum recommended allowance of caloric intake for an individual to be active and healthy. In particular, food insecurity includes low food intake, variable access to food, and vulnerability-livelihood strategy that generates adequate food in good times but is not resilient against shocks (Devereux S. 2000).

Chronic food insecurity: Households that are regularly unable to produce or purchase enough food to meet their food needs, even during times of normal rain, are considered to be chronically food insecure (Ministry of Agriculture, 2010).

Transitory food insecurity: is usually sudden in onset, short-term or temporary and refers to short periods of extreme scarcity of food availability and access. Such situations can be brought about by climatic shocks, natural disasters, economic crises or conflict. Experiences of transitory food insecurity may arise through smaller shocks at the household level (e.g. loss of income and crop failure) while not the normal state of affairs shocks can be severe and unpredictable (Hart, 2009).

Transitory food insecurity can be further divided into cyclical and temporary food insecurity (CIDA 1989 cited in Maxwell and Frankenberger 1992). Temporary food insecurity occurs for a limited time because of unforeseen and unpredictable circumstances; cyclical or seasonal

food insecurity when there is a regular pattern in the periodicity of inadequate access to food. This may be due to logistical difficulties or prohibitive costs in storing food or borrowing.

Cyclical food insecurity: is a recurring pattern of inadequate access to food such as prior to the harvest period (the hungry season) when household and national food supplies are scarce or the prices higher than during the initial post-harvest period (Hart, 2009).

Productive Safety Net Program (PSNP): The Productive Safety Net Programme (PSNP) is one of the Government of Ethiopia's flagship reform programmes and represents a significant transformation of the Government's strategy for meeting the Poverty and Hunger MDG in Ethiopia (Institute of development studies, 2008).

Household Asset Building Program (HABP): is a component of the new food security program designed to give integrated and holistic services to food insecure households to build household assets and diversify income sources thereby contributing to graduation from PSNP/FSP.

Productive Safety Net Program beneficiary: They have been intervened with Productive Safety Net Programme either graduated or non-graduated households.

2.2. Productive Safety Net Program in Ethiopia

Ethiopia’s Productive Safety Net Program is a development oriented social protection program aimed at solving the chronic food needs of rural households in the country. One of the social protection programs designed to protect the Ethiopian population is productive safety net program. In 2005, the program commenced by covering four regions of the country (Tigray, Amhara, Oromiya and SNNPR) aiming to reach more than 1.6 million households (5 million people) in 263 woredas (districts) identified as chronically food insecure areas (Gilligan *et al.*, 2009). The pastoralist areas of the country are included in the program and the size of the beneficiaries has increased to 8.3 million people in 319 woredas in 2006 (Rahmato *et al.*, 2013 and Siyoum, 2012). This program offers benefits amounting to either 15 kg of cereal per month plus pulses and oil per household or enough cash to purchase this amount of food. The PSNP is designed to take into account the national inflation rate and the benefits rise accordingly (Hobson, 2012).

2.2.1. PSNP objective

The objective of the Productive Safety Net Programme (PSNP) is: To assure food consumption and prevent asset depletion for food insecure households in chronically food insecure woredas, while stimulating markets, improving access to services and natural resources, and rehabilitating and enhancing the natural environment. (MOARD, 2010) more specifically, the PSNP delivers social transfers to some eight million Ethiopians, either through public works activities or as direct support for households that are labor-constrained, with three objectives:

1. Smoothing food consumption in food insecure households through food or cash transfers;
2. Protecting household assets by minimizing the need for damaging coping strategies‘;
3. Building community assets through implementing developmental public works activities. (Devereux *et.al.,* 2008)

According to MoARD (2010) the productive safety net program of Ethiopia mainly use the following two strategies (tools) to achieve its objective, the final goal, households' graduation from chronic food insecurity and from program support. This includes: (i) The predictable provision of adequate food and cash transfers to targeted beneficiary households, thus allowing effective consumption smoothing and avoiding asset depletion; and (ii) The creation of productive and sustainable community assets that contribute to the rehabilitation of severely degraded areas and increase household productivity.

2.2.2. Elements of the PSNP

1. **Transfers for chronically food insecure households.**

PSNP provides timely and predictable transfers to chronically food insecure households to allow them to ensure their food consumption without causing the sale of their household assets. Transfers may be in cash or food. According to the document, PSNP clients qualify for transfers in two ways: As conditional and unconditional transfers, i.e. direct support and public work.

Conditional transfers (Public work):-Those chronically food insecure households targeted by PSNP as beneficiaries in the community and having able bodies labor are participate in public work (PW) activities. Is transfers paid for households that face regular food shortages and that have members who are able-bodied (fit and healthy) and above 16 years of age. Such households receive transfers on condition that their able-bodied members (both male and female) contribute labor to public works.

Unconditional transfer (Direct support): - Individuals who live the community and do not have labour to participate in public works and do not have sufficient and reliable support from son/daughters, or remittance from relative away from the villages, and some individuals who are disabling are included in the direct support. Is a transfer paid for households that face regular food shortages but who have no other means of support, and no labor to contribute to public works. Such households receive unconditional transfers through direct support, without the need to contribute labor of any kind to any activities

2. Transfers for households affected by shocks:-When there is a shock such as a drought or flood, the PSNP is able to expand temporarily (or 'scale up') to protect households which are affected by the shock. PSNP scales up to the level, and for the duration of time, required to ensure that livelihoods are adequately protected. This allows the livelihoods of households that are not PSNP clients to be temporarily protected

3. Public works to create sustainable infrastructure: - The availability of labor from able-bodied PSNP clients is used to address underlying causes of food insecurity by rehabilitating the natural environment, and constructing social and market infrastructure. Sustainability of these community assets is ensured by establishment of appropriate management, operations and maintenance procedures. This contributes to the enabling environment for community development and addresses the underlying causes of food insecurity by transforming the natural environment. Planning of the PSNP public works sub-projects follows guidelines for community-based watershed management, and all activities are integrated within woreda development plans.

4. **The PSNP invests in the people, systems, processes and procedures that deliver the programme**. It also provides resources to ensure that the capacity of organizations is

adequate to allow the effective delivery of the programme, and that staff have the knowledge and skills they require to carry out their duties. This is essential for timely and predictable transfers and quality public works.

5. Coordination between programme implementers and other development and relief efforts. The PSNP is a multi-sect oral programme that is implemented by a number of different organizations which need to work together effectively. The PSNP makes specific efforts to ensure PSNP clients are enabled to move towards graduation, through the linkages it makes with other programmes and the wider enabling environment. The PSNP also offers an opportunity to link with initiatives that aim to achieve the development objectives outlined in PASDEP, such as improved nutritional and educational outcomes, gender equality and HIV AIDS mainstreaming (MOARD, 2010)

2.2.3. PSNP principles

The most prevalent debate centered on whether the safety net should be primarily protective or productive. Some donors opposed the idea of a productive safety net that forced poor people to labor on public works projects, while the government opposed unconditional social transfers out of concern that this would create disincentives for households to improve their livelihoods and ultimately foster dependency on external assistance. Out of this diversity of interests, it ultimately proved possible to agree on the following common set of design principles (Beshir, 2011) and (MOARD, 2010).

1. **Fair and transparent client selection.** Beneficiaries are selected by the community and district food security workers. The beneficiaries list is verified through public meetings during which it is read aloud and discussed. The final client list is also posted in public locations.

2. **Timely, predictable and appropriate transfers.** The PIM states that if transfers are timely, beneficiaries surly know when they will be receiving their entitlements and what type of transfer they will receive. A transfer is timely if it is provided to clients before or at the time during the year when they need the support. A timely transfer also takes place according to a planned transfer schedule. A transfer is appropriate if it meets the needs of households: cash is provided in settings where markets function well, while food is provided

in areas where there is no food to purchase or food prices are extremely high. An appropriate transfer also has the same value whether it is provided in cash or food.

3. Primacy of transfers. Since the PSNP is primarily a safety net, ensuring clients receive transfers takes priority over all considerations. Transfers should not be delayed for any reasons, including those related to public works implementation.

4. **Productive safety net**. The PSNP is a productive safety net which means that it not only includes a commitment to providing a safety net that protects food consumption and household assets, but it is also expected to address some of the underlying causes of food insecurity and to contribute to economic growth in its own right. The productive element comes from infrastructure and improved natural resources base created through PSNP public works and from the multiplier effects of cash transfers on the local economy.

5. **Integrated into local systems.** The PSNP is not a project but a key element of local development planning. PSNP plans are integrated into wider development plans at woreda, zone, region and federal levels.

6. **Scalable safety net.** The PSNP is scaled up when needed in the event of shocks to ensure assistance is available to those households who need it most in PSNP woredas, to prevent them from becoming more food insecure. The PSNP can scale-up to a predetermined ceiling; any transitory needs that cannot be met through the PSNP will be addressed through the emergency response system.

7. **Cash first principle.** When possible cash should been the primary form of transfer. This assists with the stimulation of markets since people spend their cash in local markets and the move away from food aid. Food transfers are provided at times and places when food is not available in the market, or where market prices for food are very high. This protects PSNP clients from food shortages and asset depletion.

8. **Gender Equity.** The program participate both men and women to help them benefit equally. It responds to women's responsibility in both productive and reproductive work and focuses to improve the living conditions of female headed households (MOARD, 2010).

2.2.4. Phases of PSNP

The 1st phase of PSNP (the transition phase) implementation runs from January 2005 until December 2006, during which period the necessary institutional structures, implementation capacity, financing modalities and financial management systems are being put in place and delivered transfers to food insecure people in Ethiopia (Stephen *et.al*, 2006). The 2nd phase (the consolidation phase) takes place from January 2006 to December 2009. During this phase the PSNP scaled up significantly size of the beneficiaries has increased and the 3rd phase (the integration phase) was implemented from January 2010 to December 2014 increase the emphasis on PSNP and new complementary scheme called HABP (household asset building program) as tools to address both relief and development objectives. The Ethiopian government spends 1.1 percent of GDP on PSNP and Household Asset Building program (HABP). Both schemes are largely donor funded. This phase of PSNP (2010 -2014) which includes HABP cost more than $ 2 billion. Currently the 4th phase of PSNP is being implemented from 2015 -2020 (Yitagesu, 2014)

2.2.5. Graduation from Productive Safety Net Program

According to Sabates-Wheeler *et al.* (2012) the term graduation describes the movement of a household out of the PSNP. This occurs when a household has improved its food security status to a level that shifts it from being classified as chronically food insecure to food self-sufficient, and thus is no longer eligible for the PSNP. From these definitions we can understand that, graduation is a two-stage process. The first stage is graduation from the PSNP and the second is graduation from the food security programme. Our study is focused only on the first step of graduation, i.e. graduation from the PSNP. Graduation of Productive Safety Net Program is the ultimate goal of the program and will result in the reduction of the number of households requiring external food aid and assistance. Additions to these (Arega, 2012) as community assets are built and are linked to other agricultural and income generating programs family assets are protected and can actually increase. After a family's assets grow to an appropriate level, graduation from the Productive Safety Net Program will occur.

According to Sandford (2010) the word graduation implies the concept of improvement: people achieving something and their success being recognized. This is also implied in the food security programme design document. The programme aims to put chronically food insecure households on a trajectory of asset stabilization first, then asset accumulation. That is, a series of inputs from the programme and from other development interventions makes households become food sufficient first, then sustainably food secure. In this way they will graduate from the PSNP first, then from the food security program.

Graduation from a productive safety net program is described as a process whereby recipients of cash or food transfers move from a position of depending on external assistance to a condition where they no longer need these transfers and can therefore exit the program (Devereux, 2010). A household graduates from first phase of food security program or graduates from safety net when he or she fulfilled 2,998 birr per each household member i.e. total asset accumulation divided by the total family members within the households. When households reach the regional benchmark they will be graduated. Along with they leave the PSNP (Government of Ethiopia Revised PIM, 2010).

2.2.5.1. Graduation benchmarks and criteria

The key source of guidance for graduation is the Graduation Guidance Note (GFDRE, 2004). It identifies seven core principles for the introduction and use of benchmarks as well as sixteen steps that regions, woredas, kebeles and communities should undertake in identifying graduates. According to guidance notes, benchmarks of level assets for graduates are follows.

Table 1: Regional PSNP Graduation Benchmarks

Region	Average Asset Value
Oromiya	Birr 19,187 per household
Tigray	Birr 5,600 per capital
Amhara	Birr 4,200 per capital
SNNPR	2,998 per capital

Sources; PSNP Guidance Note, 2007

The benchmark describes the level of assets a food sufficient household is likely to have. When the status of household's assets reaches this level, the household is no longer eligible for the program. Until this point, a household remains eligible to participate in the PSNP and cannot be taken off the program (MoARD, 2007).

Several other potential criteria could be considered for graduation, including:

- Asset based criteria, collecting information on the number or replacement value of a basket of identified productive assets owned, including animals, land, and equipment;
- time based criteria, graduating households that have not experienced food shortages for three years;
- consumption or nutrition based criteria, such as diet diversity, daily food consumption patterns, or nutritional status; and/or
- subjective or intangible criteria as defined by the perception of households within participating communities.

2.2.5.2. Perception of beneficiaries towards PSNP graduation

Graduation from productive safety net program has become central to the Government of Ethiopia's assessment of whether the food security programme is succeeding in its objective of reducing chronic food insecurity in the country. The perception of the beneficiaries affect ultimate goal of PSNP. All PSNP beneficiary is ambitious to graduate at the end of 2014, but majority of the respondents lack the confidence to leave the program at intended time which will have its own impact on the program implementation because the plan of MOARD (2010). Moreover, Teshome (2014) on his study identifies, graduation are also influenced by perception of the program beneficiary. On his study identified most of the beneficiaries respond as they want to be program beneficiaries until their life. From the total beneficiaries of the district 84.2% PSNP beneficiaries have negative perception towards graduation from the program. In addition to this, Berahne *et.al*, (2013) confirmed the process of graduation was determined based on local perceptions that somebody has graduated (food self-sufficient).

According to Sabates-Wheeler *et al.* (2012) advocate that their investigation on enablers and constrainers of graduation in Tigray and Oromia regions describes, graduated households

were asked if they had been ready to graduate during their time of graduation 56.8 in Oromiya and 42.5 in Tigray reported their unwillingness to graduate which indicate high degree of dependency syndrome. Additionally, there is low confidence among current beneficiaries (32.9 percent of the sample households in Tigray and 46.9 percent in Oromiya have no confidence to graduate from the PSNP). The reason for high dependency syndrome among the beneficiaries' households is fear of recurrent drought and limited opportunities to access easily after graduation. The same writer stated that, graduated households have mixed perception about graduation from the programme. About half of the graduated respondents indicated that they had not been ready for graduation. Moreover, a quarter and one-third of the same respondents in Tigray and Oromia suspect that they will need PSNP transfers in the future.

According to Erine and Lentz, (2005) the productive safety net program beneficiaries will lose the motivation to work to improve their own livelihoods after receiving benefits, or that they will deliberately reduce their work efforts and even hide their assets in order to stay as qualified for the program transfer. Similarly, Hoddinott (2011) also pointed that fewer than 5% reported graduation from PSNP there appears to have been little graduation to date. This showed that the local authorities faced problems in monitoring the extent of chronic food insecurity currently prevailing in the study district. This might be the reason that most of the beneficiaries are not willing to graduate and most of them lack openness to report the tangible and intangible assets owned at the present situations.

2.2.5.3. Opportunities and challenges for rural household graduation from PSNP

Graduation is a key goal of the food security programme to which the productive safety net programme, but it is a long term process that will not be possible if only PSNP resources are available. Graduation from safety net program arises from the combined effect of the food security program components and other development processes. All of these components are required for graduation. Whether this positive process of graduation actually occurs in practice is an empirical question that is being evaluated in ongoing work by Berhane *et.al,* (2011) and Sandford (2010). However, support from the OFSP still did not help achieve the desired exit rate from the PSNP. Access to the OFSP was low and the credit aspect of the program was poorly disseminated, with many households either not understanding they were

taking out a loan or being forced to accept packages that were inappropriate for their circumstances. Such households subsequently became indebted, leading to a future wariness about, or lack of access to, credit. Only 22 percent of loans were actually recovered by 2012. These results support the CGAP/Ford Foundation view that underpins the Graduation Approach's theory of change.

According to White *et al.* (2010) discusses the concept of graduation is difficult to undertake practically. The main challenges are establishment of clear indicators of food self sufficiency against future vulnerability and shocks; setting of reasonable benchmark for income or asset ownership in a situation when livelihood become unpredictable. Similarly, the study conducted by Sabates-Wheeler *et.al,* (2012). In Ethiopia, unpredictable rains are an environmental constraint, since poor rainfall can undermine PSNP livelihood packages that aim to promote crop and livestock production.

The finding of Sabates-Wheeler and Devereux (2011) indicated that programme-specific challenges emerge solely from the way the programme was designed or implemented. For instance, one of the intentions of the PSNP in Ethiopia is to implement full family targeting (FFT). Fully family targeting is a targeting rule in which all members of an eligible PSNP household should be listed as clients of the programme. This is supposed to help client households to graduate by providing a transfer for every household member to prevent dilution of transfers. Full family targeting is critical to household graduation from PSNP. However, until recently distribution at the local level has followed a partial family targeting approach so that more households in total could receive some transfers. This partial targeting lowers the likelihood of graduation, mainly because the size of the transfer per household is less than intended. Where the partial family targeting actually does constrain graduation, pathways need to be investigated empirically. Other authors also mentioned challenge for household graduation from productive safety net program in Ethiopia observes weak monitoring system of the productive safety net program and graduating beneficiaries. This low monitoring official hampers the graduation process in the study area and forced beneficiaries to leave the intervention without reaching the intended benchmark stated in the program documents (Farrington *et al.*, 2007).

According to Slater *et al.* (2006) in his study identified a number of enablers of livelihood improvement and economic growth. These are factors beyond the direct control of PSNP and OFSP that aid graduation processes. Whilst we have shown that the combination of PSNP and OFSP can push households up towards graduation, there also needs to be an enabling environment to pull them up. The same author affirmed that, PSNP households with products to sell require good markets for their products; PSNP households who are net food consumers need enhanced livelihood options, incomes and jobs. All need better public services and well targeted public spending, a more active private sector delivering what they need, and a stable macro-economic environment in which to borrow, invest and accumulate. A growing economy is likely to improve all of these things and will also itself be strengthened by widespread graduation.

2.3. Other Food Security Program

The other food security program was designed to encourage households to increase incomes generated from agricultural activities and to build up assets. The OFSP included access to credit, assistance in obtaining livestock, small stock or bees, tools, seeds, and assistance with irrigation or water-harvesting schemes, soil conservation, and improvements in pasture land. However, relatively few households have had access to the OFSP. Given these problems, the Ethiopian government, in collaboration with donors, extensively redesigned the OFSP, christening the new program as the Household Asset Building Program (HABP). The HABP placed increased emphasis on contact and coordination with agricultural extension services while expanding access to credit through microfinance institutions and Rural Savings and Credit Cooperatives (GFDRE, 2009b). This has led to an improvement in support provided by DAs. While many households reported contact with Development Agents, assistance remains concentrated on crop production. There is limited capacity to assist non agricultural enterprises. Access to new forms of credit has been limited. Relatively few households reported borrowing money to purchase inputs or to buy livestock (Berhane *et al.*, 2013).

According to FDRE (2006) revised program implementation manual, the linkage between PSNP and OFSP is clearly indicated that many PSNP participants also benefit from other OFSP. To achieve maximum impact, woredas must integrate PSNP interventions with other food security programs and broader woreda development interventions. To improve the rate

and probability of graduation for a household, participation in the PSNP will make a chronically food insecure household eligible on priority bases to participate in the OFSP. The Household Asset Building Program (HABP) formerly the Other Food Security Program (OFSP) was designed as a complementary initiative to the PSNP, rather than a component of the program. The GoE and its development partners recognized that chronically poor households would need support to build up their assets and improve their livelihoods. The HABP has demonstrated the value of combining social protection with livelihoods diversification activities to improve household resilience as the biggest gains in food security have been attained where households had access to both the PSNP and the HABP (USAID, 2012). For instance, PSNP public works combined with seeds, credit, and irrigation raised wheat and maize yields by about 200 kilograms per hectare (World Bank/United Nations, 2010).

2.4. Empirical Literature

The Ethiopian productive Safety Net Program (PSNP) is a recent phenomenon and some empirical studies were conducted by an independent researcher and/or group of member in an organization. Thus, most of the research study findings concluded that, in terms of household asset protection, improvement of agricultural production, improvement of household food consumption, creation of community asset and etc PSNP has a promised developmental intervention. Evidence from Alderman and Yemtsov (2012) shows that 62% of the households that participated in the PSNP avoided selling assets in states of food shortages, and 36% avoided using savings to buy food. In addition, they found that 23% of participants acquired new household assets, 46% used health care more, and 39% sent more children to school while 50% kept them in school longer. However, the studies are mainly focused on impact of the program and due to this reason study conducted in the study area determinants of household graduation from PSNP. Generally it has been justified that these factors which influences rural household graduation from productive safety net program in the study area are categorized in to demographic, socio-economic and institutional factors. The following section of this paper reviews evidence on the major factors influences household graduation from PSNP which is supposed to have direct relation to the topic of this study.

The study conducted by Chirwa and Matia (2010) that had supposed the greater possibility that male headed households have to become food self-sufficient earlier than female headed households. Likewise, the finding of Christina *et.al*, (2001) showed that male headed household heads have more exposure to external information and have better access to agricultural technologies than female headed farmers. Teshome (2014) found that age of household head is positively correlated with the household graduation from the productive safety net program. As a household heads age increase the possibility to have accumulated wealth also increase and aged household heads have more capital than a younger ones.

Studied by Yibrah (2013) on determinant of graduation from productive safety net program the researcher found that graduation correlates positively with education; i.e. educated beneficiaries more likely to graduate than the illiterate. In addition to his, number of dependents was also found to have a negative and statistically significant association with graduation from PSNP. Besides, Basher (2010) reported that a household with large family size could not be able to provide sufficient basic needs to family members because most of them are children and not economically active in Jigjiga District, Somali Regional State.

According to Ali (2013) the results from determinants of Safety Net Program beneficiary households' graduation and their asset accumulation in Bugna woreda of Amhara region showed that total livestock owned and size of cultivated land owned are significantly and positively affect the probability of household graduation from PSNP. Moreover, Frankenberger and Sutter (2007) confirmed that farm size one of the factors expected to determine household's path to food self-sufficiency because other things remain constant, the difference in farm size among PSNP beneficiaries will have a significant effect on their graduation. As a result, land size is one of the criteria for the graduation of households.

Rahmato and Taha (2007) were reported that off-farm activities are the other important activities through which rural households get additional income. The income obtained from such activities helps farmers to purchase farm inputs. As a results, majority of the studies reported positive contribution of off-farm income to household's improved food security status. For instance, Zelalem (2014), who advocated as households engaged in off farm activities are endowed with additional income and less likely to be food insecure. In addition

to this, Hayalu (2014) reported that total crop production was found to be positive and statistically significant relationship with household graduation from PSNP. Rural households who have had produced more where found to be graduated from the program.

According to Hailu & Seyoum (2015) the results from study conducted in Emba Alage District, Tigray region showed that irrigation use, access to credit and targeting mechanism were found to have positive and statistically significant relationship with the level and likelihood of graduation. Moreover, Slater *et al,* (2006) also contended as targeting mechanism affects household's graduation from productive safety net program. The PSNP implementation manual states each beneficiary household need to receive full family targeting. However, according to Sharp (2006) in practice, there is a dilution of transfer in all regions. This affects the graduation of households from PSNP because the transfer distributed to households with the smallest amount and affects the ambition of households to be food self-sufficient and dampen the positive effect of PSNP. The common form of dilution is cutting the family size which follows inclusion family members who have the able bodied and neglecting those members unable to participate in public works.

The study conducted Haile (2008) the result from impact of irrigation development on poverty reduction in Northern Ethiopia showed that there are four interrelated mechanisms by which irrigated agriculture can reduce poverty, through: (i) increasing production and income, and reduction of food prices, that helps very poor households meet the basic needs and associated with improvements in household overall economic welfare, (ii) protecting against risks of crop loss due to erratic, unreliable or insufficient rainwater supplies, (iii) promoting greater use of yield enhancing farm inputs and (iv) creation of additional employment, which together enables people to move out of the poverty cycle.

The study conducted by Devereux and Sabates (2004) indicates follow up by development agents enhance the likelihood of graduation from PSNP**.** Dereje (2008) also reported that farmers who have contact with development agents have better access to information on technology and the need for change, and hence have better possibility to change their intent into action. In a study at Jigjiga district of Ethiopia, study conducted by Hussien and Janekarnkij (2013) found out that fertilizer use, credit access, extension service, and household income has positive influence on food security.

2.5. Conceptual Framework of the Study

The conceptual framework is the foundation on which the entire research based. It identifies the network of relationships among the variables considered important to the study of given problem. In this study, graduation from PSNP is taken as dependent variable. The factors that are usually considered as affecting agent to dependent variable for this study are; demographic, socio-economic and institutional factors. Hence, the conceptual framework shows the most important variables expected to influence the household graduation from productive safety net program in the study area.

Based on the literature, theoretical background and field observations, independent variables such as age of household, sex of the household, education level of household, dependence ratio, frequency of extension contact, use of chemical fertilizer, use of improved seed , access to credit service, irrigation access, targeting mechanism, membership to cooperative, land holding, total farm income, off-farm income, livestock ownership influence household graduation from productive safety net program.

Therefore, in this study the researcher tries to analyze these relationships, identify the influence of independent variables on the dependent variable, beneficiary's perception towards graduation and also tries to identify the challenges and opportunities of graduation from PSNP. Based on this assumption, the conceptual framework diagram of this study is presented in Figure-1 below. The arrows indicate in conceptual frame work the expected relationship with the dependent variables.

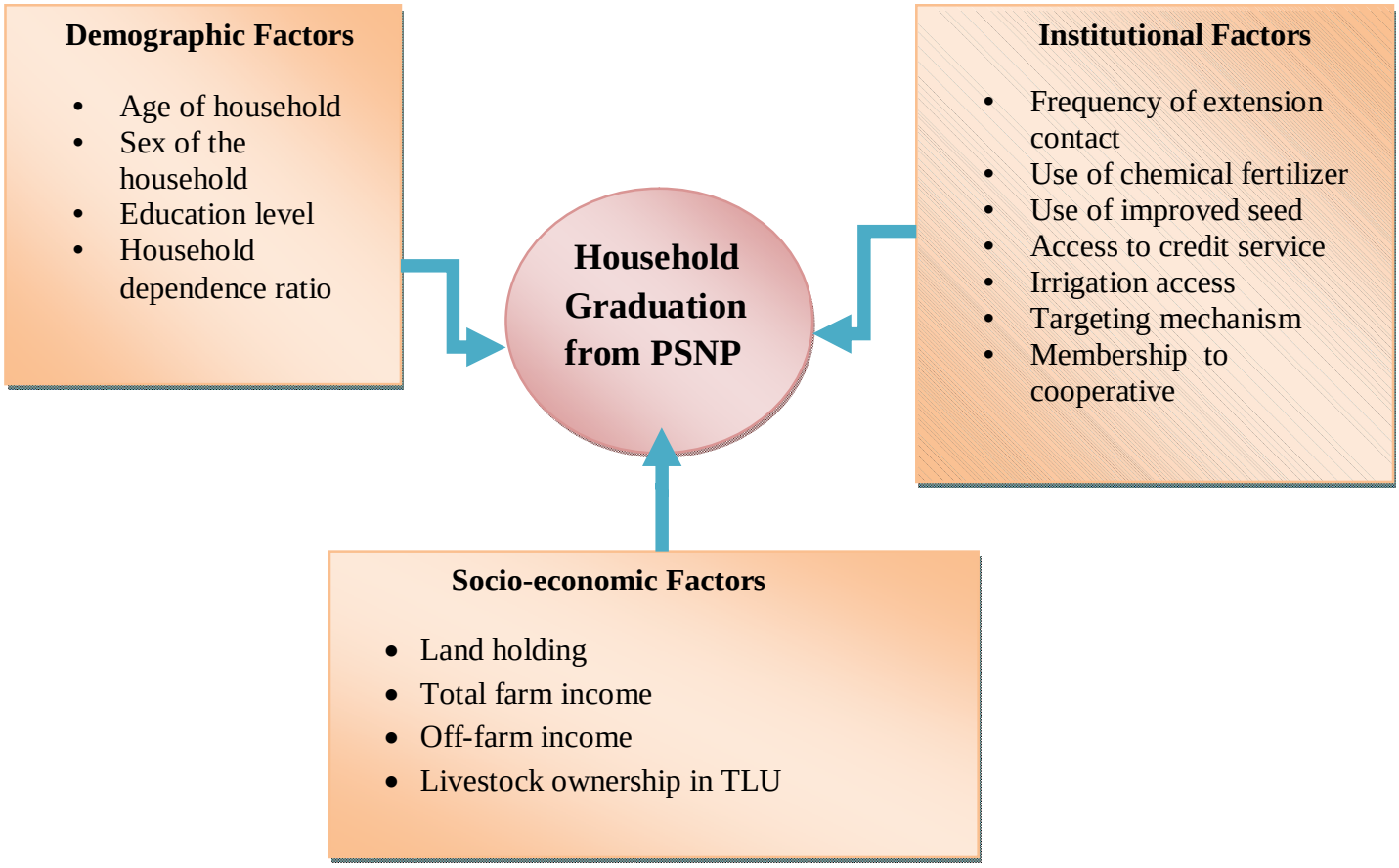

Figure 1: Conceptual Framework of the Study

Source: Developed after review of literature (2018)

3. RESEARCH METHODOLOGY

This chapter starts by presenting different aspects of the study area. It also presents research design, data type, method of data collection, sampling technique utilized are briefly described. Finally, the descriptive and regression data analysis methods and hypothesis of explanatory variables are presented in detail to achieve the results of this study.

3.1 Description of the Study Area

The study area, Doyogena woreda, is one of the seven woredas of Kembata Tembaro zone in SNNPRS. The woreda is divided into 17 kebeles for administrative purpose. Among these 17 kebeles, 13 of them are rural and 4 of them are urban kebeles. All of the 13 rural kebeles are included in productive safety net program. The woreda is bounded by Angecha woreda in Eastern direction, Hadiya Zone in North West direction, Kachabira woreda and partially Hadiya Zone in Northern direction. The woreda is located 171 km in South West of Hawassa, the capital city of the region of SNNP and 258 km South of Addis Ababa (DWANR, 2017).

According to DWFED (2017) the total population of the Woreda is 116,048. The total area of the woreda is 18,089.73 ha, which comprises cultivated land (12,248.6 ha), forest land (3573 ha), grazing land (1110 ha), degraded land (435 ha), swampy land (358.33 ha), potentially cultivable land (202.4 ha) and others (162.4 ha). Doyogena woreda is among one of the highlands of country having an altitude ranging from 1900 to 2748 meter above sea level (m.a.s.l) with significant on local climate. It has a minimum and maximum temperature of 10^{o}c and 16^{o}c respectively and receives average annual rainfall of 1400 mm the information obtained from the woreda Agriculture and Rural Development office (DWARD, 2006).

According to data obtained from the Woreda Agricultural and Natural Resource Office, the main land use of the woreda is dominated by rain fed agriculture which is owned by small holder farmers. Its predominantly rural and the livelihood activities of peoples are heavily depend on mixed agriculture which means crop production combined with animal. The major crops in the woreda according to their area coverage are teff, wheat, haricot bean, maize, inset, bean and potato. However, earning income from crop production sectors faced with many problems (such as flood, erratic rainfall, increased agricultural inputs price etc…). There are two agricultural productions seasons Mehere (long rainy season) and Belg (short

rainy season). The Mehere rains start in May and extended up to mid September, while the Belg rainy season from mid February to March lasts. Belg seasons are not significant contribution to the annual crop production. However it is important source of food for the family member. A planting crop in the Belg seasons are Haricot bean, potato and maize at homestead area, while meher season crops contributes the highest share to the annual crop production and is the most important cropping season in the livelihoods of the people. Livestock is one of the important resources of farm families. It provides traction and manure to crop production. In Doyogena Woreda, livestock are means of production and sources of income for farmers. The major types of animals kept in the Woreda are cattle, goat, sheep and poultry. However, animal breeding is also challenged by the growing scarcity of fodder.

According to Woreda Agricultural and Natural Resource Office (2018), all of the chronically food insecure kebeles have been intervened with PSNP. In the PSNP, there are people or users are participating in public works and at the same time there are people or users who are not participating in public works.

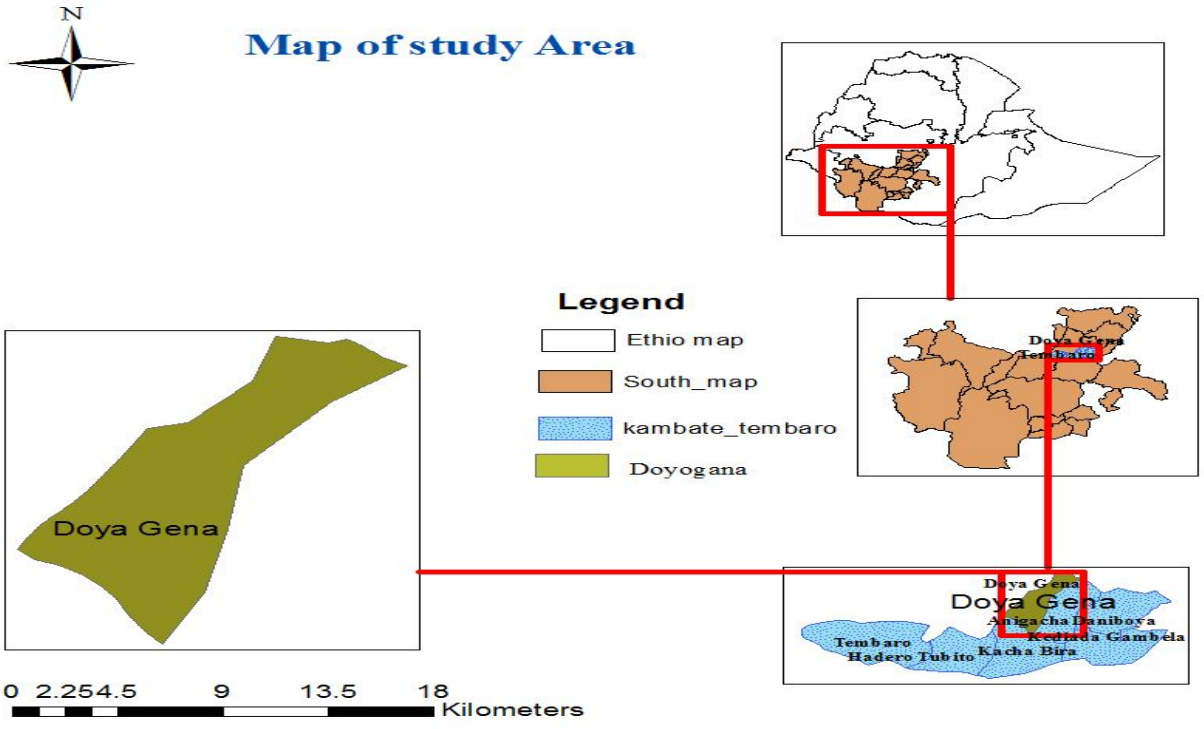

Figure 2: Map of Study Area

3.2. Research Design

The research design for this study was cross sectional survey. Both quantitative and qualitative methods were used to collect data. Among the qualitative methods, key informant interview and focus group discussions were used to collect qualitative data. Personal observation was also used to collect data. As noted Redinour and Newman (2008) the application of multiple methods, triangulating qualitative and quantitative approach methodologies is the most appropriate method of study to reach a level of truth and it enables the researcher to come up with complementary and convergence of facts. Therefore, in this study, the quantitative approach used to identify factors affecting rural household graduation from PSNP. Perception of beneficiaries towards graduation from program was analyzed using both qualitative and quantitative approach while opportunities and challenges for rural household graduation from PSNP addressed using qualitative approach.

3.3. Target population

The study area consists of 17 kebeles with a total population of 116,048. There is 2487 productive safety net public work beneficiary household head in the study district in the year of 2018. Moreover, out of 17 Kebeles in Doyogena woreda 13 rural kebeles are benefiting from the productive safety net program. Therefore, the target populations of this study were PSNP public work beneficiary households head.

3.4. Sampling Techniques and Sampling Size Determination

3.4.1. Sampling techniques

In this study two stage samplings procedure was used to obtain representative sample households from study population. In the first stage, six kebeles were selected randomly from the existing 13 kebeles using simple random sampling technique from the district because there is similarity by economic activities and food insecurity status, as reported by woreda Agricultural office (2018). Lastly, based on the list of beneficiary households obtained from respective development agents' office, 204 representative sample respondents were selected using simple random sampling technique. Accordingly, population proportion to sample was employed to redistribute sample size for each kebeles.

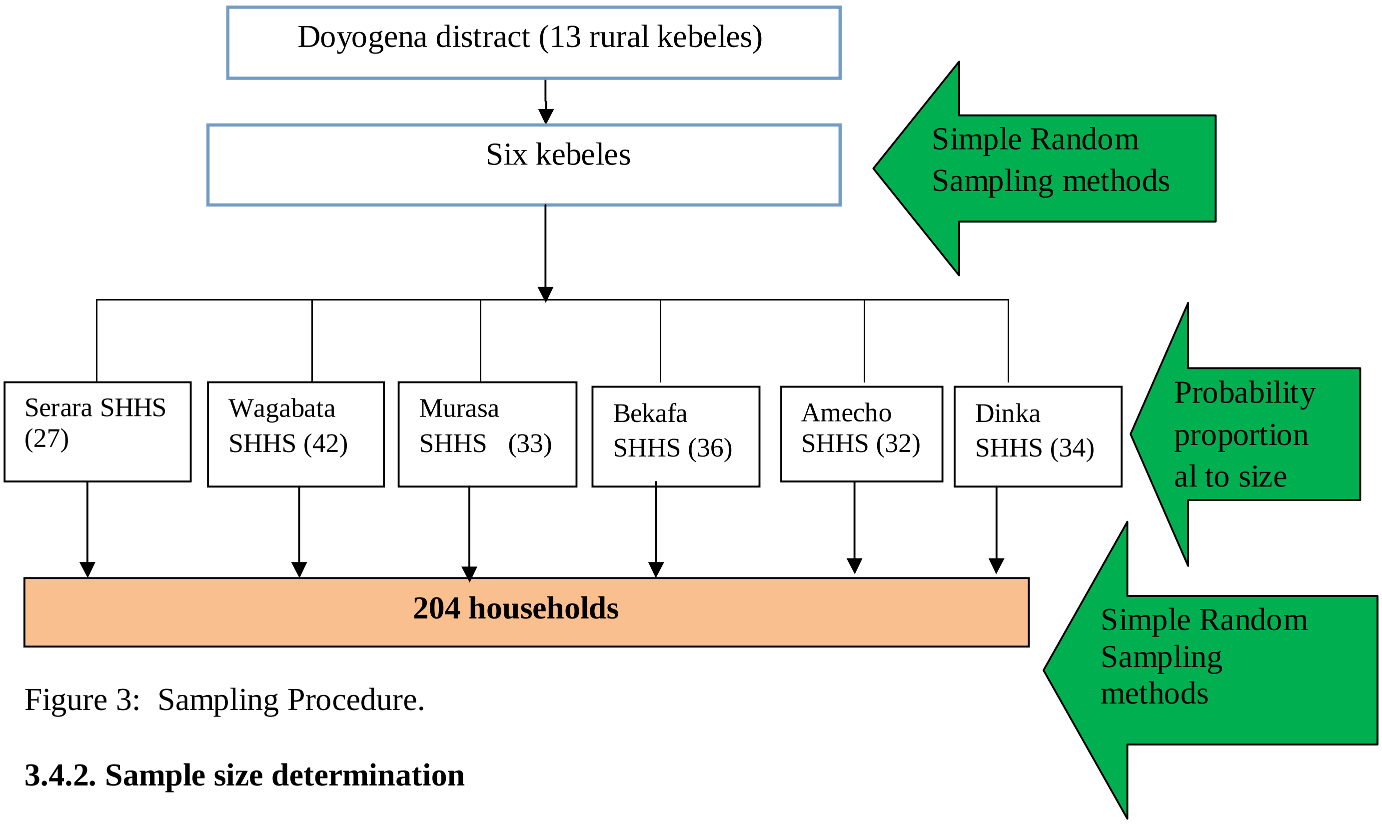

Figure 3: Sampling Procedure.

3.4.2. Sample size determination

An important decision that has to be taken while selecting a sampling technique is about the size of the sample. Appropriate sample size depends on various factors relating to the subject under investigation like the time aspect, the cost aspect, the degree of accuracy desired (Gupta, S and Gupta, M. 2013). If sample size is too small, we may fail to achieve the objectives of our analysis. But if it is too large, we waste resources. So that appropriate sample size has to be selected in order to get good representative data. To determine the sample size this study applied a simplified formula provide by Yamane's formula (1967) (cited in: Yilma, 2005). Accordingly, 95% confidence level and level of precision = 6.7% were used.

$$n = \frac{N}{1+N(e)^2} = 204 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1$$

Where 'n'= is the sample size, 'e'=is the level of precision

N =is the population size, the total current PSNP beneficiaries and graduated beneficiary; i.e. (1834 current beneficiaries +653 graduated beneficiaries) totally 2487

After that, the sample is proportionally taken from each kebeles

$n_1 = \frac{n^* N_1}{N} And n_2 = \frac{n^* N_2}{N}$ (Pandey and Verma, 2008)…… (2)

Where, n1 and n2 = is sample size of respondent in each kebele

n= total sample size of respondent in six kebele

N = is total number of PSNP beneficiaries in the study area

N1 and N2 = is total number of household in each kebele.

Table 2: Distribution of Sampled Households by Kebeles

No	Kebele	Total beneficiary of PSNP	Total
1	Dinka	215	34
2	Amecho	197	32
3	Bekafa	223	36
4	Murasa	206	33
5	Wagabata	262	42
6	Serara	168	27
	Total	1271	204

Source: DWANRM and own computation (2018).

3.4. Types and Sources of Data

This study employed a mix of qualitative and quantitative types of data. It was thus, maximized the use from the combination of the two methods in collecting both qualitative and quantitative data to tackle problems under the study. The quantitative data related to factors determining rural household graduation from PSNP were used. In addition, qualitative data were collected to get reliable information about the perception of the beneficiaries towards PSNP graduation and opportunities and challenges for households graduate from PSNP.

The required input data of this study were generated from both primary and secondary data sources. The primary information were collected from sampled household respondents, focus group discussion key informants interview and personal observation. Secondary information was collected from Doyogena Woreda Agriculture and Natural Resource office, policy documents, books, internet, thesis and both published and unpublished documents.

3.5. Methods of Data Collection

Data were collected using various instruments of data collection as the nature of the study demands the integration of varied forms. Therefore, for this study both qualitative and quantitative methods were used to collect the data. In order to collect data through qualitative methods, the study employed focus group discussion and key informant interview while household survey for quantitative method. Finally primary data were supplemented with secondary data in order to ensure adequacy and reliability of information gathered.

3.5.1. Household Survey

This method was used as primary instrument to collect primary data from the selected sample households from six kebeles. To collect data, structured interview were used. This method was believed to provide data that is reliable and most important to address objective of the study. Before conducting to on the formal survey it was pre-tested to check validity by interviewing six households and accordingly revision was made and finalized. The interview schedule was pre-tested with non-sample respondents before its use. In order to collect required data, four enumerators with the close supervision of the researcher were trained on the methods of data collection, interviewing technique and on the contents of the questionnaire. Finally, survey was conducted on 204 sample households and all information was obtained from the head of household at origin.

3.5.2. Key Informant Interview

Key informant interviews used in order to understand the perceptions of different stakeholders who were directly or indirectly affect the program and opportunities and challenges of graduation from program. Semi-structured interview was used. This is because semi-structures interview questions are flexible and can clarify the issue when ambiguity has occurred. Key informant interviews were conducted with different individuals at different levels. The investigator interviewed 12 individuals who were purposively selected because of their knowledge and experience about PSNP program. The potential respondents of key informant interviewers were woreda food security tax forces members, woreda agriculture

and natural resource office and development agents (DAs) working in six *kebele*. A kind of an in depth interviews were undertaken, with the help of checklist.

3.5.3. Focus Group Discussions

The focus group discussion was used as one of the critical sources of primary data in addition to the household survey and key informant interview. This method used to check the reliability of the data to be collected through survey and a key informant interview. As a result community elder, model farmers, representatives of youth and women and representatives of graduated and non- graduated PSNP beneficiaries were participated in discussion. Discussion was held in each kebele and the researcher has selected purposively because they have active participation in PSNP issues. Accordingly, the researcher carried out six focus group discussion (one FGD in each kebele), each group consisting of eight persons (5 male household heads and 3 female household heads). Focus group discussion helped the researcher to get data on perception of beneficiaries towards graduation and opportunity and challenges for household's graduation from PSNP. To guide the discussion, checklists were designed to guide the discussants.

3.5.4. Personal Observation

The personal observation method is the most commonly used method. Thus, personal observations method used in the study particularly to look the population density, socio-cultural features of the community, PSNP public work activities in the study area.

3.6. Methods of Data Analysis

3.6.1. Descriptive statistics

The data of the study were analyzed using qualitative and quantitative approaches. The quantitative data were analyzed using simple descriptive statistics such as mean, standard deviation and frequency to compare graduated and non-graduated households from the safety net program in terms of different explanatory variables. The results were triangulated with the qualitative data collected from focus group discussion and Key informant interviews. The analysis of qualitative data, therefore, starts during actual data collection because the process of qualitative data collection and analysis are interwoven. Based on this, the data gathered

through qualitative methods were analyzed qualitatively through narration. The t-tests and chi-square (χ^2) were also used to see the presence of statistically significant differences or systematic association respectively, between those who graduated and those who not graduated from PSNP. In doing so, the difference between the means and degree of agreements of the respondents' answers was analyzed using SPSS version 20 and STATA version 13.

3.6.2. Econometric models specification

To identify the major graduation determinants of PSNP at the household level in the study areas. In this model dependent variable is graduation that is dichotomous or dummy variables taking a value 1 households graduated and 0 otherwise. Binary logit model was employed to address the probability of households' graduation from the productive safety net program due to the binary nature of dependent variables, which can be expressed as yes or no responses.

The binary logit model is commonly used model. The binary logit model is assumes cumulative logistic probability distribution. The advantage of these models is that the probabilities are bounded between 0 and 1. Moreover, they best fit to the non-linear relationship between the probabilities and the independent variables; that is one which approaches zero at slower and slower rates as an independent variable (x_i) gets smaller and approaches one at slower and slower rates as x_i gets large (Train, 1986).

In this respect, a choice has to be made between logit and probit models. However, the statistical similarities between the two models make such a choice difficult. The choice of any model, therefore, may be evaluated based on a posteriori statistical grounds, although in practice there is no strong reason for choosing one model over the other. Pindyck and Rubinefeld (1981) illustrated that the Logistic and Probit formulation are quite comparable, the main difference being the former has slightly fatter or heavier tails; i.e. normal curve approaches the axes more quickly than the latter. In this regard, Liao (1994) also recommended using Logit model. There are two main reasons for choosing the logistic model. These are: (1) from a mathematical point of view, it is an extremely flexible and easily used function, and (2) it lends s itself to a logically meaningful interpretation. Aldrich and Nelson (1984), also state that, the logit model is simpler in estimation than the probit model.

According to Cole,(1991) pointed out, a logistic distribution (logit) has advantages over the other in the analysis of dichotomous outcomes variable in that it is an extremely flexible and easily usable model from mathematical point of view and results in a meaningful interpretation. In view of this, the logistic function is selected for this study that can be expressed as yes or no responses. In this study, to analyze the influence of independent variables, the logistic regression is employed on the dichotomous dependent variable, household graduation from PSNP. i.e. (0), if household is not graduated from PSNP and (1), if household is graduated from PSNP. The PSNP beneficiaries are expected to be graduated from the program after they have reached the households graduation benchmark within the five years. Moreover, authors like Arega (2012), Yibrah (2013) and Hayalu (2014) used binary logistic model to reveals the main factors determining the household's graduation from the PSNP and the same cases. These all reasons made the suitable choice of the econometric model of binary logistic models for the proper analysis of the same cases.

According to (Gujarati 1995) the functional form of logit model is specified as follows.

$$p_{i=E\left(Y=\frac{1}{X_i}\right)}=\frac{1}{1+e^{-(\beta_o+\beta_i X_i)}}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

Where, p_i is the probability of safety net beneficiary graduated or not given x_i

e denote the base of natural logarithms, which is approximately equals to 2.718

Xi represents i^{th} explanatory variables and

α and β_i are parameters to be estimate

Hosmer and Lemshew (1989) noted that the logit model could be written in terms of the odds and log of odds, which enables one to understand the interpretation of the coefficients. The odds ratio implies the ratio of the probability (pi) that an individual would choose an alternative to the probability (1-pi) that he/she would not choose it. The odds ratio is the ratio of the probability that household graduation be determined (Pi) to the probability of a household graduation not determined $(1-Pi)$.

$$1-P_i=\frac{1}{1+e^{Z_i}}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

The odd ratio can be written as:

$$\frac{P_i}{1-P_i} = e^{Z_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Equation 4 obtained dividing graduated by non graduated ones:

$$\frac{P_i}{1-P_i} = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{z_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

The ratio of the probability that households will be graduated to the probability that it will be ratio of non- graduated.

Finally, taking the natural log of the equation (4) we obtain:-

$$z_i = \ln\left[\frac{P_i}{1-P_i}\right] = Z_i = \beta_o + \beta_1 X_1 + \beta_2 X_2 \ldots + \beta_n X_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Where P_i = is probability of being graduated range from 0 to 1

Z_i = is function of an explanatory variable (x) which is also expressed as:-

$$Z_i = \beta_o + \beta_i X_i + \beta_2 X_2 + \cdots + \beta_n X_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

β_o = is an intercept

$\beta_{1,}\beta_{2\ldots.}\beta_n$ = are slopes of the equation in the model

L_i = is log if odd ratio, which is not only linear in Xi but also linear in parameters

X_i = is vector of explanatory variables

If the disturbing term (U_i) is introduce, the logit model becomes

$$Z_i = \beta_o + \beta_i X_i + U_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (9)$$

Where Z_i = is dependent variables (graduation)

X_i = is vector of explanatory variables

B_i = is vector of estimated coefficient of the explanatory variables (parameters)

U_i = is disturbance term.

Hence, the above econometric model was used in this study to analyze determinants variables that influence rural household graduation from productive safety net program.

Zi= (β0+β1 SEX +β2 AGE + β3 EDUC +β4 HDR +β5 ACCR + β6 TAME + β7 LDH +β8 OFFFARM+β9 TLU+β10 EXTESCON+β11 CHFERT+β12 IMPSED β13 TFI+β14 IRRGAC+ +β15 COOMSH.

Where, SEX=Sex of households, AGE= Age of household, EDUC = Education of household head, HDR= Household Dependence Ratio, ACCR= Access to credit, TAME= Targeting mechanism, LDH= Land holding, OFFFARM= Off-farm income, TLU= Live Stock Ownership, EXTESCON = Frequencies of extension contact, CHFERT= Use of chemical

fertilizer, IMPSEED=Use of improved seed, TFI= Total farm income, IRRG= Irrigation Access and COOMSH=Membership to cooperative

3.6.2.1. Estimation producer

The model selected for analysis is the binary logit model, to estimate the influence of the hypothesized the explanatory variables on the household graduation from PSNP. The parameters of model were estimated using the iterative maximum likelihood (ML) estimation procedure, which yields unbiased, efficient and consistent parameter estimate. This method is better than Ordinal Least Square (OLS). The method of Ordinal Least Square does not make any assumption about probabilistic nature of the disturbance term (Ui) (Maddala, 1992; Gujarati, 1988). Due to the non- linearity of the logistic regression model, an iterative algorithm is necessary for parameter estimation. According to Maddala (1989) the ML method is very general method of estimation that is applicable to a large variety of problems.

Before estimating the logit model, existence of multicollinearty among the continuous variables was tested and associations among discrete variables were also verified. Kothari (1990) noted that it is necessary to check if multicollinearty exists among the continuous variables and verify the associations among discrete variables. The reason for this is that the existence of multicollinearty affects seriously the parameter estimates. If multicollinearty turns out to be significant, the simultaneous presence of the two variables will attenuate or reinforce the individual effects of these variables. Needless to say, omitting significant interaction terms incorrectly will lead to a specification bias.

Therefore, Variance Inflation Factor (VIF) technique was employed for identifying whether the problems of multicollinearty among continuous explanatory variables exist or not (Gujarati, 2006). If value is greater than 10, it is used as a signal for strong multicollinearty among the selected continuous explanatory variables. A popular measure of multicollinearty associated with the VIF is defined as

$$VIF(X_j) = \frac{1}{1-Rj^2} \quad \text{..... (10)}$$

Where R^2_j is the coefficient of determination, and the variable X_j is regressed on the other explanatory variables.

Similarly, there may be also interaction between discrete explanatory variables, which can lead to the problem of multicollinearty. To detect this problem, coefficients of contingency was computed from survey data at follows. The contingency coefficients are computed as follows:

$$CC = \sqrt{\frac{\chi 2}{n + \chi 2}} \qquad (11)$$

Where C = coefficient of contingency, χ^2 = chi -square random variables and n= total sample size. As a rule of thumb, variable with contingency coefficient below 0.75 shows weak association and value above it indicates strong association of variables.

The coefficients of the interaction of the variables indicate whether or not one of the two associated variables should be eliminated from model analysis (kotari, 1990).

3.7. Definition of Variable and Working Hypotheses

There are two types of variables in this study i.e. dependent and independent variables.

3.7.1. The dependent variable

The dependent variable in this study is household's graduation from PSNP. It`s dichotomous variables which takes the value of 1 if household graduated and, 0 otherwise.

3.7.2. Independent variables

The key independent variables which are expected to have influence households' graduation from PSNP were categorized in to demographic, socio-economic and institutional factors. These variables were selected on the basis of theoretical explanations, literature and personal observations. Therefore, in the following section potential explanatory variables those are supposed to influence household graduation from productive safety net program in the study area to be explained as follows. The following explanatory variables were hypothesized to have an influence on household's graduation from PSNP.

1. Sex of household head (SEX). It is dummy variable which takes the value 1, if the household head is male and, 0 otherwise**.** As asserted by Christina *et al.,* (2001) male headed household heads have more exposure to external information and have better access to agricultural technologies than female headed farmers. Chirwa and Matia (2010) also

supporting the aforementioned idea and contended the greater possibility that male headed households have to become food self-sufficient earlier than female headed households. In this study male household head was hypothesized to have positive influence on household graduation from PSNP; i.e. being male have can increase chance of graduation from PSNP.

2. Age of Household (AGE). Age is a continuous variable which measures the age of the household head in number of years. As confirmed by Bashir & Schilizzi (2013) age of the household head increases the amount of cumulative asset increases as a result of an increase in live capital like livestock. Moreover, as age of households' head increases, they can acquire more knowledge and experience and pre - assume vulnerability and risk conditions of food insecurity and the chance of a household to become more food secure increases. In this study age of household head was hypothesized to influence food security status positively.

3. Education level (EDUC). It is continuous variable which is measured in number years of schooling. According to CRDA (2012) household who attend formal schools three times more likely to support family food need as compared to the non educated ones. The result of the study has supported the significant contribution of education on the capacity of the household to make food available to the family throughout a year. UNPD (2012) confirmed that educated people are typically better informed and have greater access to media and technology; they also tend to be more engaged in their communities and in political activities and their livelihood activities too. In this study it was hypothesized education level influence graduation positively.

4. Household Dependence Ratio (HDRATIO). It is a continuous variable which measured by dividing inactive labor force (age less than 15 and above 65) by the active labor force (age between 15 and 65) with in a household. As asserted by Hayalu (2014) households who have high dependency ratio have low probability of graduating from PSNP. Abebaw (2010) also supporting the aforementioned idea and contended the household dependency ratio and food insecurity have positive relationship. In this study it was hypothesized that high dependency ratio negatively influence household's graduation capacity from PSNP as well as food insecurity; i.e. being households who have large number of dependents have lower probability of graduation compared with households who have lesser number of dependents

5. Access to credit (ACCR). It is dummy variable which takes the value 1, if the household accessed credit and 0 otherwise. Credit is an important instrument to solve liquidity problem that farm households are facing. Households who have access to credit; they could purchase agricultural inputs and livestock. According to Burns & Solomon (2010) credit access can ensure households food self-sufficiency. In this study it was hypothesized to have positive influence on household's graduation from PSNP.

6. Targeting mechanism (TAME). It is dummy variable which takes the value 1, if household full family size targeted and 0 otherwise. According to MoARD (2010) if a household is identified as being chronically food insecure and eligible for the PSNP, all household members are listed as clients of the program. The beneficiary households of this program are expected to have all their family members, who exist during the program targeting should be included in the program support except new born children, who are born after the program targeting. This is because to become food self-sufficient and to protect asset depletion, the food gap of each and every person in the family should be fulfilled. It was hypothesized that households with full family targeting positive influence household graduation.

7. Land holding (LDH). Land is continuous variable measured in number of hectares (owned, shared and rented) by the household. According to Mulugeta (2002) a larger size land implies more possibility of production and availability of food grains. Land is one of the key productive resources for the small holder farmers to generate their livelihood. It was hypothesized that size of land hold by the house hold large size positive influence household graduation from the program; i.e. households who have better land holding is better capacity to withdraw from food security problem and external assistance.

8. Off-farm income (OFFFARM). It is continuous variable measured by the amount of birr that the farmer earned other than farming activity. According to Sisay (2010) off-farm activities have a potential to improve the living standard of the poor and hence have a greater tendency in reducing income inequality, as it is important source of income for the poor society. A graduated household, according to MoARD (2006) has been defined as the one who could satisfy his or her annual food consumption needs independent of PSNP

transfers. In this study, it was hypostasized household participation in rural off-farm income generating activities positive influence graduation from PSNP.

9. Livestock ownership (TLU). It is continuous variable defined as the total livestock's owned by a household heads measured by the number of Tropical Livestock Unit (TLU). According to Haile *et al. (*2005) livestock contribute to household's economy in different ways, for instance, as a source of pulling power, source of cash income, source of supplementary food, and means of transport. Besides, livestock are considered as a means of security and means of coping during crop failure and other calamities. Yibrah (2013) also supporting the aforementioned idea and contended rural households with better animals holding are more likely to graduation from the PSNP supports. This is because; households with better livestock holding are more tolerant on the occasion of any shocks like drought and other natural hazards. In this study, household head that have more livestock is hypothesized positive influence household graduation from PSNP.

10. Frequency of extension contact (EXTESCON). It is continuous variable which refers to the number of contacts per year that the respondent makes with development agents. Therefore, farmers who have contact with development agents have better access to information on technology and the need for change, and hence have better possibility to change their intent into action (Dereje, 2008). In this study, it was hypothesized increase frequency of extension contact with development agents is positive influence household's graduation from PSNP; i.e. increase frequency of extension contact enhance likelihood of graduation from PSNP

11. Use of chemical fertilizer (CHFERT). It is dummy variable which takes the value 1, if a household uses chemical fertilizers and, 0 otherwise. Fertilizer use improves productivity per unit of cultivated area. According to Amsalu and Beyene (2012) households using more agricultural inputs have a probability to be food secure and specially, fertilizer is considered as a very important farm input that impacts higher production. Households using fertilizer are expected to have better food production capacity than the non-users (Babu and Tashmatov, 1999). In this study, it is hypothesized that the household's who use chemical fertilizer are expected to be sooner graduate than non-users.

12. Use of improved seed (IMPSEED). It is dummy variable which takes the value 1, if household uses improved seeds and, 0 otherwise. According to Dorward *et al*. (2003) improved seeds can increase agricultural productivity by boosting overall production, which in turn contributes to attaining food security at the household level. Moreover, using improved seeds have positive association with household food security. Household who could have used improved seed was believed to have positive relation with graduation. Hence, it is hypothesized that the household's who use improved seed are expected to be sooner graduated than non-users.

13. Total farm income (TFI). It is continuous variable measured in amount of money the household earns annually from their farm activities. It is an income or a monetary value of products which are obtained directly from crop production and livestock. It includes farm products which are used both for home consumption and for sale. According to Hayalu (2014) the rural households with better farm income have better possibility to be graduated from the program. In this study, it was hypothesized better farm income positively influence household graduation from PSNP; i.e. increase in total farm income increase the likelihood of graduation.

14. Irrigation Access (IRRGAC). It is dummy variable which takes the value1, if households have access to irrigation and, 0 otherwise. According to Berhane *et al.,* (2013) confirmed access to irrigation as significant factor affecting graduation from PSNP. Yibrah (2013) also supporting the aforementioned idea and contended that households with access to irrigation have the chance to produce more than twice in a year. The annual total production of these households will become two or three times bigger than the beneficiaries who have no irrigable land. As a result, households with irrigable land have the higher probability of leaving the program within a shorter period of time. In this study, it was hypothesized that uses of irrigation positively influence household's graduation from PSNP; i.e. household uses irrigation graduate sooner

15. Membership to cooperative (COOMSH). It is dummy variable which the value 1, if the household head is member and 0, otherwise. According to Bezabih (2009) cooperatives are pillars for agricultural development and food security and play a crucial role in reducing poverty, improving food security and generating employment opportunities. Membership to

cooperatives also will increases households access to services that might be approved by being member. Cooperatives serve as an important source of credit and input. Due to this, a rural household who is a member of cooperative has more chance to get credit for farm input. In this study, being member of cooperatives was hypothesized to positively influence probability of household graduation from PSNP.

4. RESULTS AND DISCUSSION

This chapter presents and discusses the results of determinants of rural households' graduation from productive safety net program in the study area. It is organized in to four sections. Section one presents the results of the descriptive statistics on the demographic, socio-economic, and institutional characteristics of sample households. Section two presents the empirical result of econometric analysis of determinants of rural household graduation from PSNP. Section three presents' perceptions of beneficiaries towards graduation from PSNP, household survey, focus group discussion, key informant interview and personal observation are used as data sources. The last section deals opportunities and challenges for rural household to graduation from the program in the area under investigation.

4.1. Characteristics of Sampled Respondents

4.1.1. Characteristics of sampled respondents for categorical variables

Sex of sampled respondents

About two third of the respondents were male headed household and the remaining 34.3% of respondents were female headed household. The proportions of male headed households were higher than female headed households. This shows that most beneficiary households are headed by males (See Figure 4).

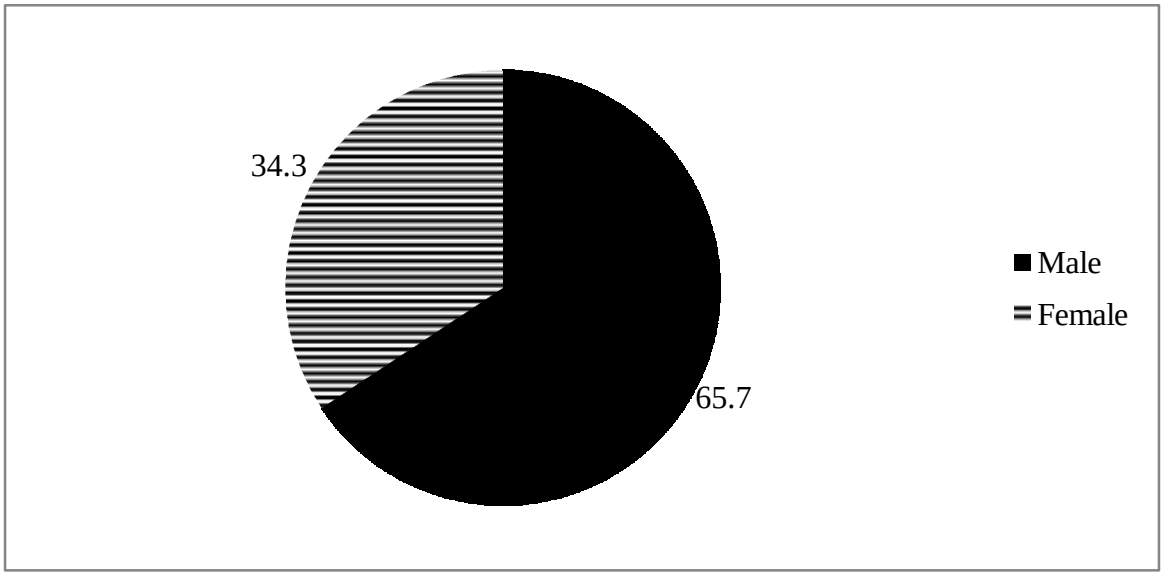

Figure 4: Sex of Sampled Respondents (%)

Sources: Own survey (2018)

Religion of Sampled Respondents

About (63.7%) of the sampled respondent were Protestant followers whereas only 2% of the sampled respondents were Muslim followers in the study area (See Table 3)

Table 3: Religion of Sampled Respondents

Religion	Number of Respondents	Percent
Muslim	4	2.0
Orthodox	51	25.0
Protestant	130	63.7
Others	19	9.3
Total	204	100.0

Source: Field Survey (2018)

Marital status of the sampled Respondents

The majority of the sampled respondents (91.7%) were married while only 2.9% of the sampled respondents were widowed (See Figure 5).

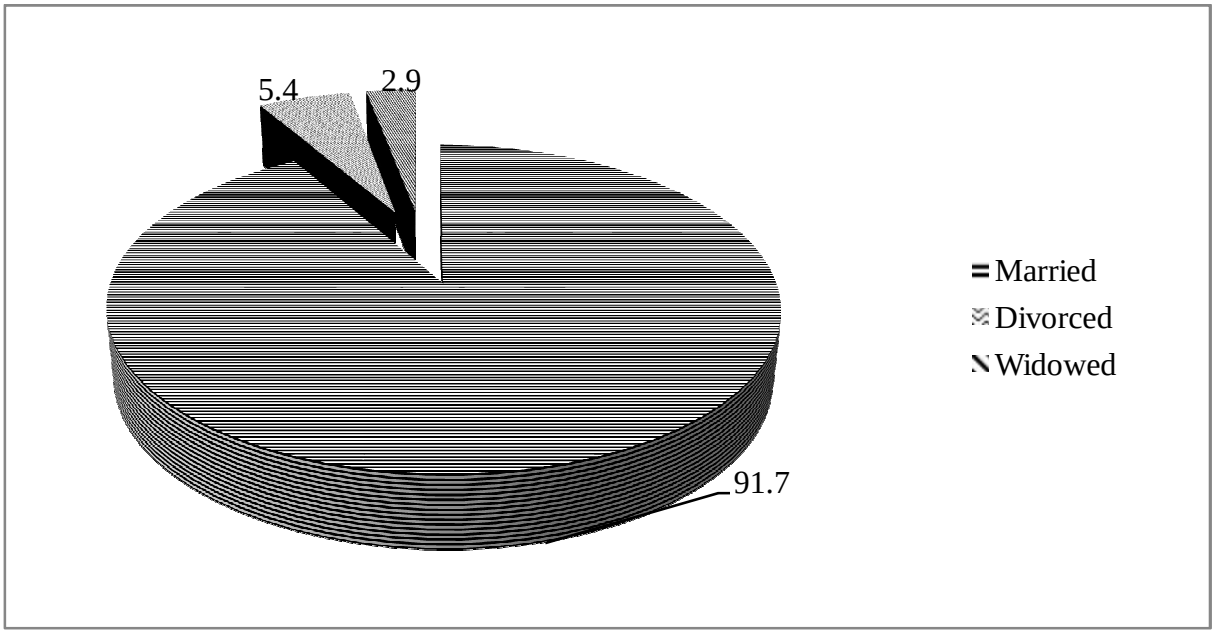

Figure 5: The Marital Status of Sampled Respondents (%)

Sources: Own survey (2018)

4.1.2. Characteristics of sampled respondents for continuous variables

As indicated in Table 4, mean age of sampled respondents was 42.54 with standard deviation of 7.132. The maximum age of the respondents was 65 while the minimum age of the sampled respondents was 28. Thus, results indicate that all of the household heads overwhelming in the productive age. The mean dependency ratio of the respondents was 1.25, this means 4 active person(productive) of the family members expected to support 5 non-active (dependent family members) with standard deviation of 0.751. The maximum dependency ratio of the respondents was 3.3 while the minimum dependency ratio was 0.2. The farm land holding of sampled respondents ranged from 0 to 0.75 hectare. The average farm land size was 0.32 hectare with standard deviation of 0.165.

Table 4: Characteristics of Sampled Respondents for Continuous Variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Age of respondents	28	65	42.54	7.132
Dependence ratio of sampled respondents	0.2	3.3	1.25	0.751
Farm land size of by hectare	0.00	0.75	0.32	0.165

Source: Field Survey (2018)

4.2. Descriptive Analysis

This section deals with the interpretation and discussion of the findings from descriptive analysis.

4.2.1. Graduation status of sampled respondents

In the study area there is low level of household graduation status, among 204 surveyed sampled households only 78 are graduates from the PSNP and the remaining 126 of the surveyed sampled households are not graduated from the program. It means that (38.2%) of the respondent households were graduates and (61.8%) of them were not graduates (See Figure 6).

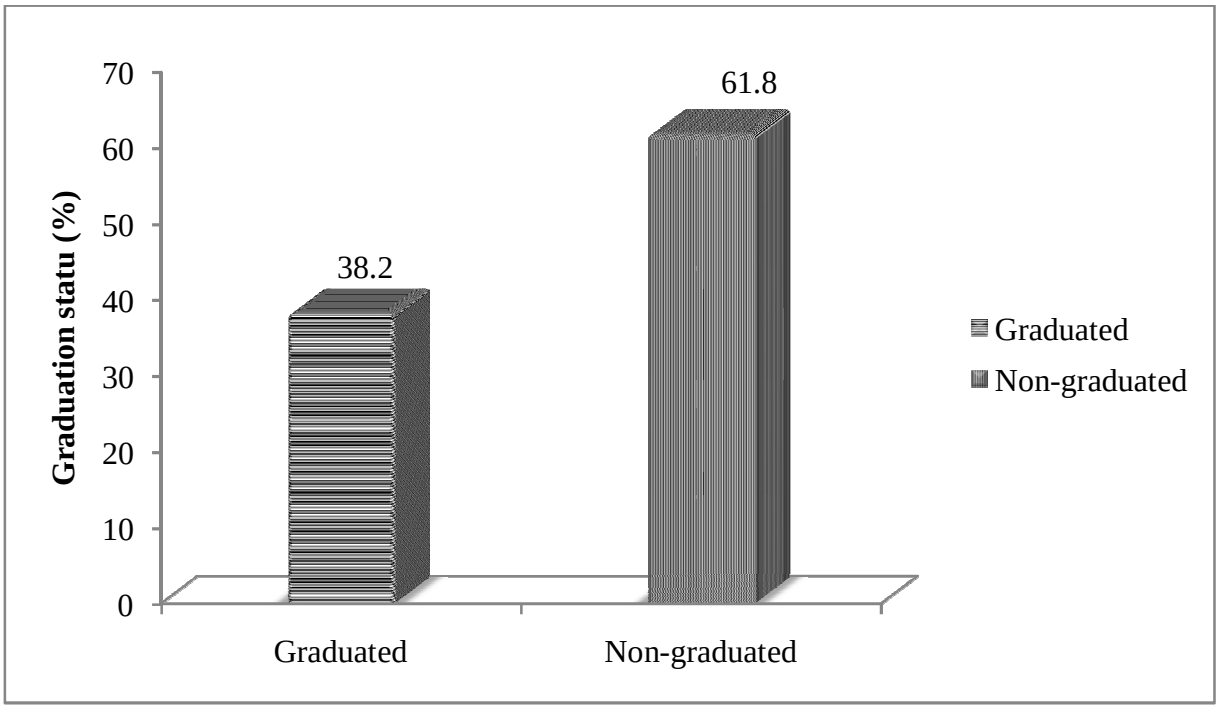

Figure 6: Graduation Status of Sampled Respondents

Sources: Own survey (2018)

Table 5: Descriptive Analysis of Discrete Variables

Variables		Graduates(N)		Non-graduates(N)		(χ^2)
		Freq	%	Freq	%	
Sex	Male	52	66.7	82	65.1	0.054^{NS}
	Female	26	33.3	44	34.9	
Targeting mechanism	FFT	51	65.4	28	22.2	37.824^{***}
	Not FFT	27	34.6	98	77.8	
Credit access	Yes	69	88.5	58	46	36.910^{***}
	No	9	11.5	68	54	
Use of chemical fertilizer	Yes	77	98.7	114	90.5	5.485^{**}
	No	1	1.3	12	9.5	
Use of improved seed	Yes	42	53.8	38	30.2	11.34^{***}
	No	36	46.2	88	69.8	
Access to irrigation	Yes	12	15.4	7	5.6	5.511^{**}
	No	66	84.6	119	94.4	
Membership to cooperative	Member	36	46.2	28	22.2	12.815^{***}
	Non- member	42	53.8	98	77.8	

***and ** Significant at P<0.01and P<0.05, respectively

NS =Not significant

Source: Field Survey (2018)

4.2.2. Sex of sample household head

Out of 204 sampled respondents, about two third of them were male headed households, while only 70(34.3%) of them were female headed household. When we see comparison by graduation status, the proportion of female headed household in the both graduated and non-graduated groups were similar (33.3% and 34.9% respectively). The proportion of male headed households is almost the same for graduated and non- graduated households (66.7% and 65.1% respectively) (See Table 5). The chi-square test result shows that there is no significant association between male headed households and female headed households in their graduation status.

The PIM of safety net program encourages women access to safety net benefits and their participation in food security task forces. It also indicated that widows and other female household heads are more likely to need direct support, and that pregnant and breastfeeding women should be exempt from the public works. It also allows for public works to be carried out on private land owned by labor poor female-headed households. As per of PIM, in the study area priority was given to female headed households to be selected as a beneficiary of the program. Key informant revealed that, male and female PSNP participants are assigned not similar tasks and special consideration is given to women regarding the nature of work that they are assigned to do in the program. The program participate both men and women to benefit them equally. Addition to this, the payment of the program is made to women as they spend it on the household and not on the alcohol drinking like men. Regardless of this truth in the study area, graduation statuses were found to have no association with sex of sampled respondents. The finding is in line with the finding of Arega (2012), who founded the insignificant impact of sex for households' graduation in Lay Gaint district of Amhara region, Ethiopia. Besides, the finding contradicts with the finding of Hailu and Seyoum (2015), who founded male headed households graduate sooner than that of the female headed households in Emba Alage District, Northern Ethiopia.

4.2.3. Targeting mechanism

As indicated in Table 5, out of the sampled respondents in this study 61.3% head of household beneficiary were not fully family targeted. When the two categories seen separately status of family targeting, among the graduated households 65.4% of fully family

targeted but from non graduates beneficiaries' majority of (77.8%) not fully family targeted. It was hypothesized that fully family targeted could contribute for sooner graduation from program. The chi- square result revealed that there was significant association between (χ^2 =37.824) in graduated and non-graduated households in terms of targeting mechanisms at P<0.01. This implies that, whole family targeting could benefit from the program was critical for households which enable them to accumulate assets and enhance the way out to graduation.

As clearly stated in PSNP programme implementation manual (2010) if a household is identified as being chronically food insecure and eligible for the PSNP, all household members should be listed as clients of the programme. That is, the transfer that a household receives each month will be calculated by all family members, regardless of their age, even if some family members are only infants. All this clearly shows that full family targeting is directly related with the household graduation from his/her problem of chronic food self-insufficiency. On the issue of fully family targeting kebele key informants were explained the following points:-

Quota given to the beneficiary from woreda was few, but the needy people in our kebele was more than the stated quota, If we include all family member of those selected household head, we address, only few household head in the kebele due to that we reduced the eligible actual household family size. Finally, discussants underlined that they perceived when all family members addressed with program; the family is able to graduate early from food insecurity and program dependency.

The results are in line with the finding of Slater *et al*. (2006), who confirmed that targeting mechanism affect household's graduation from productive safety net program. Likewise, report by Save the Children UK (2008) also affirmed that partial family targets and dilution of transfer as the main problems inhibiting household graduation from PSNP

4.2.4. Credit access

As indicated in Table 5, about 62.3% of the total sampled households had access to credit. The proportion of household that received credit was 88.5% and 46% for graduated and non graduated household respectively. It was hypothesized that access to credit has positive

influence on household's graduation from PSNP. The chi- square result revealed that there was significant association between (χ^2=36.910) graduates and non- graduates in credit access at P<0.01.

Credit is one of very important stimulants for the improvement of the livelihood of rural poor. FGD noted that credit helps the households to purchase agricultural inputs such as fertilizer, improved seeds, and engage in income generating activities which in turn increase production as well as income of household and secure the calorie level of the households. In the case of our survey results, most of graduated sampled respondents have participated in credit services. However, majority of non- graduated sample respondents did not participate in credit services. This is because of low access of credit and failure to repay former loan.

This result is in line with the findings of Yibrah (2013) the likelihood of graduating for program participants increases when a household has access to credit in Eastern zone of Tigrai regional, Ethiopia. Besides, the finding contradicts with the finding of Arega (2012), who founded the insignificant impact of credit access for households' graduation in Lay Gaint district of Amhara region, Ethiopia.

4.2.5. Use of chemical fertilizer

As indicated in Table 5, about 93.6% of the households from both graduated and non - graduated have used chemical fertilizer in the last cropping season. Specifically 98.7% of the graduated and 90.5% of the non graduated households used chemical fertilizers. In general, all most all the graduated beneficiaries' used chemical fertilizer this could be important to increase their production and the speed up the program graduation. The chi- square result revealed that there was significant association between (χ^2=5.485) graduates and non-graduates in chemical fertilizer utilization at P<0.01. Therefore, it can be concluded that use of chemical fertilizer is appropriate to differentiate between the graduates and non-graduates.

Use of chemical fertilizer for crop production plays a vital role in increasing the productivity of the land. In the study area, use of fertilizer is one of the major inputs for crop production. FGD explain that the major reasons for high use of fertilizer for safety net beneficiaries is the availability of fertilizer at the right time and enough amounts either in cash or credit. Key

informants interview is also supporting the aforementioned idea and contended inorganic fertilizers such as urea and DAP were common in the study area, but almost all farmers especially PSNP beneficiaries were not following the recommended amount of fertilizer per area of crop land due to different reasons. Therefore, they were making use of smaller amount of fertilizer than the recommended amount because, as claimed, high cost of fertilizer and lack of money. This results consistence with the study by Amsalu and Beyene (2012) households using more agricultural inputs have a probability to be food secure and specially, fertilizer is considered as a very important farm input that impacts higher production.

4.2.6. Use of improved seed

As indicated in Table 5, about 53.8% households graduated households used improved seed and the rest 46.2% households did not used improved seed. On the other hand, 69.8% of current beneficiaries did not use improved seed in the study area. The chi- square result revealed that there was significant association between (χ^2 = 11.34) graduates and non-graduates in improved seed utilization at $P<0.01$. This implies that graduated beneficiaries better used improved seed compared to non- graduates beneficiaries.

Use of high yielding variety has a great potential to improve farm outputs and thereby increase food supply and income for the household. It is an important source of productivity growth and makes a difference in food security status of farm households. Key informants noted that households using improved seed are more likely to be food secure than those who did not apply. Improved seed and other technological inputs help farmers to augment productivity and to boost production. Farmers can enhance their production by using high yielding varieties and other complementary farm. The capacity of improved seed purchase and crop produced is taken as one of important criteria for PSNP graduation, which means if the household has better production, that household is reduced from the program immediately. This results in line with findings of Tesfaye (2005), who contented as the improved seeds can increase agricultural productivity by boosting overall production, which in turn contributes to attaining food security at the household level.

4.2.7. Access to irrigation

As indicated in Table 5, from total sampled households only 9.3% who have access to irrigation while 90.7% sampled households who have not access to irrigation. The result of the survey further indicated that 15.4% of the graduated and 5.5% non- graduated sampled households have access to irrigation in the study area. The chi- square result revealed that there was significant association between (χ^2 = 5.511) graduates and non-graduates in irrigation access at P<0.05. This implies program beneficiary who have use irrigation were in better condition in terms of production than those non users. The finding is in line with the findings of Berhane *et al.* (2013), who contended as the access to irrigation as a significant factor affecting graduation i.e. household with access to irrigation graduate sooner. Similarly, the study by Hashemi and Montesquieu (2011) indicate the irrigation ensures food security and self sufficiency.

4.2.8. Membership to cooperatives

As indicated in Table 5, out of total sampled respondents about, 31.4% were cooperative members. However, comparing the two categories 46.2% of sampled respondents from graduated were member to cooperatives while only 22.2% of non- graduates sampled respondents were members to cooperatives. Membership to cooperative was hypothesized to have positive and significant relationship with graduated from PSNP. The chi- square result showed that there was significant association between (χ^2 = 12.815) graduates and non-graduates in membership to cooperative at P<0.01.

In the focus group discussion, participants also confirmed that they use the cooperatives to save their money and of course borrow when it need it. Program beneficiary to be member of cooperative would facilitate access to credit, access to extension information and access to market. This is importance to enhance household graduation from PSNP. In addition, household who are members of cooperatives are in a better condition to access financial resources and invest in their farm and to bridge the food gap in the time of sacristy.

4.2.9. Education status of sampled respondents

As indicated in Table 6, mean of educational level of sampled respondents was 3.12. This was followed by maximum and minimum value of 12 and 0 respectively having the standard deviation of 3.349. The mean educational level of the graduates' sampled respondents was 3.76 while that of non- graduated was 2.72. The mean educational level difference of two groups was 1.034. Graduates sampled households had better level of educational achievement on average years of schooling than non-graduates sampled households. The t- test result shows that there was statistically significant mean difference (t=2.163) between graduated and non -graduates sampled respondents in education level at $P<0.05$. Therefore, this result indicates the more the household head is educated the better will be the food security status and the chance to be graduated from the program than those who have uneducated. This could be an implication that graduated beneficiaries have better educational status than non-graduated beneficiaries.

Table 6: Educational Status Sample Household Head in Relation to Graduation Status

Sampled household head	Graduated		Non graduated		t-value
	Mean	SD	Mean	SD	
Education	3.76	3.42	2.72	3.356	2.163**

Sources: Field survey (2018)

Focus group discussion participants also explained that education contributes for households' food security and livelihood improvement. Educated households heads can lead their family in better ways in any development angle. Even to communicate up to woreda concerned office during any problem towards eligibility, targeting and other unnecessary action on the program for example early graduation, the literate or educated households' heads have better probability than those of uneducated households. Key informant interview also supporting the aforementioned idea and contended the households' education level significantly contributed for program graduation due to the capacity that they have to analyze situations in different angles including the graduation criteria and guideline of graduation. This finding is in line with Ali (2013) level of education increases the probability of being graduated from PSNP increases; that can also be supported the finding of (Ertmer, 2005), who had purported

the low level of literacy limits peoples innovative behaviors, as it tends to restrict their knowledge and own experiences or what has been transmitted by traditional.

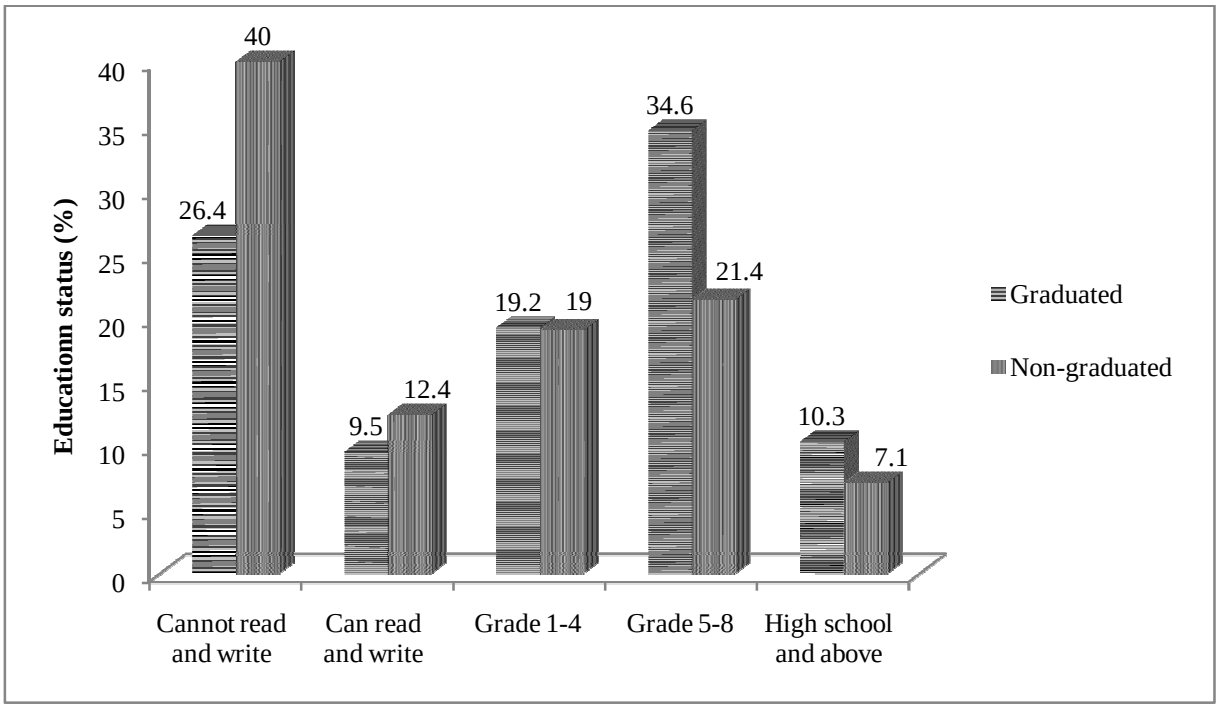

Figure 7: Distribution of Sampled Household by Education Status (%)

Sources: Field survey (2018)

Out of 204 sampled respondents one third (34.67%) were cannot read and write. In this section educational status of sampled respondents in relation to graduation status was assessed. Accordingly, 26.4% graduated sampled household heads and 40% of non- graduated beneficiary household heads were cannot read and write. This figures shows can't read and write sampled respondents are relatively more crowded in non-graduated beneficiary category than graduated. Among high school and above education level attended sampled households 10.3% were found to be graduated and 7.1% non- graduated (See Figure 7).

Table 7: Descriptive Statistics for Continuous Variable

Household head	Graduated		Non graduated		t-value
	Mean	SD	Mean	SD	
Age	45.97	6.78	40.41	6.508	5.837**
Dependency ratio	0.8722	0.538	1.4837	0 .77	-6.139***
Farm land size in hector	0.39	0.16	0.27	0 .15	5.284***
Extension contact	22.9	8.635	17.57	8.002	4.503**
Off farm income	1988	1203.07	737	903.35	8.447***
Livestock holding in TLU	2.06	0.71	1.33	0.76	6.865***
Total farm income	2659.5	997.22	1589	854.6	8.798***

***and ** Significant at P<0.01and P<0.05, respectively

Source: Field Survey (2018)

4.2.10. Age of household head

As indicated in Table 7, mean age of sampled respondents was 42.54 years. This was followed by maximum and minimum value of 65 and 28 years respectively having the standard deviation of 7.132. The mean age of graduated sampled respondents was 45.97 years and that of non- graduated was 40.41 years. The mean age difference of two groups was 5.56 years. The t- test result shows that there was statistically significant mean difference (t=5.873) between graduated and non -graduates in age of sampled respondents at P<0.05.

Age plays important role in food security and graduation from program. In this study age of household increases, it was hypothesized that beneficiaries acquires more knowledge and experiences. In other words, it was expected that older households more probably to be graduated from program dependency than younger households. Besides older people have more access to land than younger people as young people have to wait for land redistribution or they have to share with families (Asghar and Muhammad 2013). As assured in the FGD with community, aged households have better resource including land than those of young peoples and have better probability to graduate from program dependency. This indicates that as age of household increases, they can acquire more knowledge and experience and pre-assume vulnerability and risk conditions of food insecurity and the chance of a household to become more food secure. This finding agrees with Welteji *et al.* (2014), who pointed out as age of household heads increases the graduation status of the households will increase in the

case of Bale Zone, Southeast Ethiopia. In addition, if age of household increases their livelihood experiences and better possession of farm land.

4.2.11. Dependency ratio of sample households head

As indicated in Table 7, the average dependency ratio of sampled respondents was 1.25. This means 4 active person (productive) of the family members expected to support 5 non- active (dependent family members). This was followed by maximum and minimum value of 3.3 and 0.2 respectively having the standard deviation of 0.751.When comparisons are made from graduation status perspective, the non-graduates are large dependency ratio than graduated sampled households. The mean dependency ratio of graduated sampled respondents was 0.8722 and that of non- graduated was 1.4837. The mean difference between two groups was 0.6115. In this study as number of dependents of household increases, it was hypothesized that negatively influence household's graduation capacity from PSNP as well as food insecurity; i.e. being households who have large number of dependents have lower probability of graduation compared with households who have lesser number of dependents. The t- test result shows that there was statistically significant mean difference (t=-6.139) between graduated and non -graduates sampled respondents in dependency ratio at $P<0.01$.This indicates that non- graduates households have larger proportion to non-active to active members compared to the graduated households. This result in line with findings of MOFED (2002) and Hilina (2005) the family to have high dependency ratio and possibly be poor than those who have small size of family who could have low dependency ratio.

Dependence ratio is measured by percentage or the ratio of unproductive size of family member to productive size of family member. Household members aged below 15 and above 64 are considered as dependents and dividing it by household members whose age is between 15 - 64 resulted in dependency ratio.

4.2.12. Farm land holding

The overall mean farm land size of sampled respondents was 0.32 hectare. The land holding had a range which ranged from 0.00 and 0.75 hectare with standard deviation 0.165.This figure is found to be less than the national average of 1.24 ha (CSA, 2006), which is said to be sufficient to produce household food requirement. As showed in survey results sampled

respondents have a farm land size of less than 1.24 ha (this is the national average cultivated land size). Out of total sample respondents 5(2.5%) are found to be landless. When we compare the distribution of total land holding with respects household graduation status, the mean average land holding graduates and non- graduates households was 0.39 and 0.27 hectare respectively The t- test result shows that there was statistically significant mean difference (t=5.284) between graduated and non-graduates sampled respondents in farm land holding at P<0.05.This implies that households who have large farm land size are more probably to be food secure than who have smaller land size due to the fact there is high possibility to produce more food(See Table 7).

Land is one of the key productive resources for the small holder farmers to generate their livelihood. Moreover, the land holding is the main criteria for PSNP graduation. When the households have better land holding, the community assumes that he/she has the potential to secure family food and graduate early from PSNP. As asserted by key informants, land holding are critical resources which determining the food security situation of the households. It also noted that land is in study area is becoming more fragmented and scarce due to growing population size. This finding agree with Frankenberger and Sutter (2007),who affirmed that difference in farm size among PSNP beneficiaries will have a significant effect on their graduation. As a result, land size is one of the criteria for graduation of households.

4.2.13. Frequency of extension contact

As indicated in the Table7, the average extension contact of the total sample respondents was 19.6 times/year. This was followed by minimum and maximum value of 6 and 36 numbers of visits per year respectively having the standard deviation of 8.932. The average frequency of extension contact by graduated respondents is 22.9 and non- graduated are 17.57. The t- test result shows that there was statistically significant mean difference (t=4.503) between graduated and non -graduates sampled respondents in frequency of extension contact at P<0.05, indicating that, graduated sampled households have more frequency of extension contact with extension agents and hence more probably to food secured; i.e. being graduated from PSNP. This result is also in line with that of Ali (2013),who confirmed that extension contact is one of the most institutional factors which affecting graduation status of the households.

4.2.14. Off farm income

As indicated in the Table 7, the mean annual off farm income of sampled respondents' was 1,215.30 ETB/year. This followed by minimum and maximum value of 0.00 and 4,500 ETB/year income obtained from off farm activities respectively having the standard deviation of 1191.85.when graduation status perspective seen, the graduated were found to be more involved in off farm activities than the non- graduates sampled respondents. The mean off farm income among graduated and non-graduated respondents is 1,988 ETB/year and 737 ETB/year respectively. The result demonstrated that the mean difference between two sample respondents groups regarding of off farm activities were 1,251 ETB/year. There was much difference between graduated and non graduated beneficiaries regarding of an annual off farm income. The t- test result shows that there was statistically significant mean difference (t=8.447) between graduated and non -graduates sampled respondents in off farm income at $P<0.01$. The result shows that a household with better off farm income have better performance in graduation status than those with less off farm income.

Off-farm employment was one of the sources of income for smallholder households in the study area. Off farm activities would play an important role to diversify the sources of household's livelihood. Besides agricultural production, very common off-farm practices in the study area are mainly from participating daily labor, fire wood sell, guard in rural different governmental institutions, wage labor, charcoal sales, grass sales, renting out of pack animals (donkey).Among 204 total sampled respondents, 68.1% have experience of participating in these off-farm activities and only 31.9 % did not participate in any off-farm activities in the study area. Similar result was found by Sisay (2010), who confirmed that off-farm activities have a potential to improve the living standard of the poor and hence have a greater tendency in reducing income inequality, as it is important source of in-come for the poor society. Beside, Fekadu and Mequanent (2010) study also revealed that smallholder's farmers who solely depend on farm activities have inadequate income to purchase farm inputs and fulfill family needs and thus, they are found to be food insecure.

4.2.15. Livestock holding

As indicated in Table 7, the mean average of total sampled respondents under the survey in TLU was 1.61. This was followed by minimum and maximum value of 0.00 and 3.6 unit of tropical livestock respectively having the standard deviation 0.819.The survey result showed that graduated sampled respondents own larger average size of livestock (2.06%) in terms of TLU as compared to non-graduates (1.33%).The result demonstrated that the mean difference between two the sample household groups regarding of livestock holding were 0.73 TLU. The t- test result shows that there was statistically significant mean difference (t=6.865) between graduated and non -graduates in livestock ownership at $P<0.05$.

In the study area mixed farming is practiced with livestock and crop production. As it confirmed in many studies farmers who have better livestock ownership status are likely to be graduate from program. This is also ensured at key informant interview of household heads and government office holders that livestock holding is taken as the main criteria for household graduation in the community that is why livestock holding is an indicator of wealth to graduate or to stay in the program.

Livestock holding plays important role with households' graduation from chronic food self-insufficiency and it mainly used for beneficiary households as criteria for PSNP graduation. It can serve as a critical input in farm operations as it enhances production and is also an important source of capital through which considerable income is generated in the study area. In our survey data graduated and non- graduated noticeably differ in the number of livestock owned, i.e. more livestock was kept by households that were graduated from PSNP.As noted by Anderson *et al*. (2011) livestock ownership is one of the criteria's for beneficiary graduation from PSNP program. Similarly, Yibrah (2013) rural households with better animals holding are more likely to graduation from the PSNP supports. This is because; households with better livestock holding are more tolerant on the occasion of any shocks like drought and other natural hazards. Livestock has a good contribution to graduation and it is expected that those households with high livestock unit will graduated sooner. The study by Hailu and Seyoum (2015) in Emba Alage District, Northern Ethiopia also supports this argument toward livestock holding.

4.2.16. Total farm income

As indicated in Table 7, the mean annual farm income of sampled respondents was 1,998 ETB/year. This followed by minimum and maximum value of 0.00 and 5,220 ETB/year income obtained from farm activities respectively having the standard deviation of 1048.3. Accordingly, the graduated and non graduated respondents had annual farm income is 2,659.5 ETB/year and 1,589 ETB/year respectively. The mean difference of annual farm income for both categories was 1,070 ETB/year. The t- test result shows that there was statistically significant mean difference (t=8.798) between graduated and non -graduates sampled respondents in farm income at $P<0.01$.

In this study households have better farm income, it was hypothesized positively influence household graduation from PSNP; i.e. increase in total farm income increase the likelihood of graduation. The key informant result also ensure that if the households produces better from own small farm land by using agricultural inputs and advanced methods of production these households should be graduated early from food insecurity problem. The better farm income provide more possibility to graduate from PSNP than those of less producers and the government office taken the level farm income as one of criteria for the program graduation. Study conducted by Hayalu (2014), who confirmed that households with higher farm productivity are more likely to graduate from PSNP in Southern Tigray, Northern Ethiopia.

4.3. Econometric Model Analysis Result

In this section, the binary logistic regression first specified. The main purpose of this section is to specify a logistic regression model fitted to identify the potential variables affecting graduation from productive safety net program in the study area. Using the household graduation status as dependent variables where by a value of 1 is given to household was graduated from program and 0 otherwise. Therefore, in this section binary logistic regression used to determine the influence of independent variables and to examine why some of the beneficiaries become graduated from program soon and others why not graduates in intended time in the study area.

4.3.1. Multicollinearty Diagnostic

Before undertaking econometric estimation, it is necessary to check the problem of multicollinearty or association among the potential independent variables. There are two measures that are often suggested to test the existence of multicollinearty. These are: Variance Inflation Factor (VIF) for association among the continuous explanatory variables and contingency coefficients for discrete variables. VIF shows how the variance of an estimator is inflated by the presence of multicollinearty (Gujarati, 2003).The larger the value of R_i^2 the higher value of VIF (X_i) causing higher co-linearity in the variables (X_i).

For continuous variables according to Gujarati (2006) if the value of VIF is 10 and above, the variables said to collinear (if the value of R_i^2 is 1, it would result in higher VIF and causes perfect multicollinearty between the variables). In order to see the degree of association between discrete variables contingency coefficient were computed. To detect this problem, coefficients of contingency were compounded from survey data. As a rule of thumb, variable with contingency coefficient below 0.75 shows weak association and value above it indicates strong association of variables. According to the collinearly diagnosis result, there was no multicollinearty problem among the variables. The values for Contingency Coefficient for the discrete variables were less than 0.75 and the values of Variance Inflation Factor (VIF) for the continuous variables were less than 10, absence of serious multicollinearty. Accordingly, there was no multicollinearty problem in both cases (See Appendix Table 3 and Table 4). After checking of multicollinearty problems, model analysis was conducted.

4.3.2. Results of binary logistic regression model

The binary logit model was employed in this study to analyze determinants of household's graduation from the PSNP in the study area. Using the household graduation status as dependent variable where by a value of 1 is given to households graduates from program and 0 for the non- graduates households. Accordingly, fifteen independent variables were hypothesized to have influence on household graduation from PSNP in study area and were included in the model. Results of the model showed that out of the fifteen explanatory variables that were entered in the model, eight variables were found to be statistical significant.

Table 8: Binary Logistic Regression Estimates of Determinant of Household Graduation from Productive Safety Net Program.

Explanatory variables	B	S.E.	Wald	Sig.	Exp(B)
Sex of household head	0.094	0.543	0.030	0.862^{NS}	1.099
Age of household head	0.077	0.039	3.825	0.050**	1.080
Education level of household head	0.164	0.083	3.951	0.047**	1.179
Dependence Ratio	-1.095	0.516	4.500	0.034**	0.335
Access to credit	3.057	0.733	17.413	0.000***	21.258
Targeting mechanism	2.514	0.626	16.109	0.000***	12.351
Land holding in hectare	-0.694	2.373	0.085	0.770^{NS}	0.500
Off farm income in birr	0.001	0.000	4.335	0.037**	1.001
Livestock ownership in TLU	1.047	0.410	6.514	0.011**	2.850
Frequency of extension contact	0.002	0.034	0.004	0.949^{NS}	1.002
Use of chemical fertilizer	0.058	1.612	0.001	0.971^{NS}	1.060
Use of improved seed	0.593	0.565	1.104	0.293^{NS}	1.810
Total farm income	0.001	0.000	4.346	0.037**	1.001
Access to irrigation	-1.045	0.929	1.267	0.260^{NS}	0.352
Membership to cooperative	0.778	0.638	1.489	0.222^{NS}	2.178
CONSTATNT	-10.778	2.774	15.092	0.000	0.000

*** And ** indicates significant at 1% and 5% probability level respectively. NS: Not significant

Numbers of Obs	204	-2Log likelihood	103.033
Prob > chi2	0.0000	Chi-square value	168.37
Nagelkerke R^2	76.4%		
Percent correctly predicted (R^2)	89.2		
Sensitivity/Correct prediction of graduated beneficiary (%)	83.3		
Specificity/Correct prediction of non-graduated beneficiary (%)	92.9		

Source: Model output

Notes: Exp (B) shows the predicted changes in odds for a unit increase in the predictor

4.3.3. Interpretation of Empirical Results

Before using the model, the goodness of fit of the model was carried out, the result indicated that model correctly predicted (89.2%) of the sample cases, (83.3%) as graduates and (92.9%) as non-graduates. Hence, the model parameter estimates best fitted. After this, among the variables hypothesized to influence rural household graduation from PSNP, eight variables were found to be statistical significant. These are age of household, education level, household dependency ratio, access to credit, targeting mechanism, off farm income, livestock ownership in TLU unit and total farm income. The significant explanatory variables which have influences on rural household graduation from PSNP are discussed below.

Age of household head: This variable was hypothesized to have positive influence on household graduation from productive safety net program. It is significant at P<0.05 and has positive association with household graduation from program. All other variables remain constant; the odds ratio suggests that one unit increase in age of household head would cause the likelihood of graduation from the productive safety net program to increase by the factor of 1.08.The positive influence of this variable indicates those aged households are more likely to be graduated than those of relatively younger households because older household heads have enough land allotted to them by the previous land redistributions. Fafchamps and Pender (2000) in Ethiopia, those who rent -in land tend to be younger farmers who did not benefit from the latest round of government reallocation. Similarly, those who rent-out often are older farmers, who generate much needed additional revenue from the rental of land. Moreover, as the age of household head increase the possibility to have accumulated wealth also increase and aged household heads have more capital than a younger ones. In addition, the possible explanation for such positive influence is that an older household head devotes his/her time on farming activities compared to young farmers. Furthermore, as age increases, one can acquire more knowledge and experience becoming effective in exploiting these experiences. This result is an agreement with the finding of Teshome (2014), who clearly shows as age of the household head increase the likelihood of graduating from the program increase in the Southern Region, Ethiopia. Contradicting with the earlier finding Ali (2013), who confirmed that age of household head was found insignificant association with the household graduation from PSNP in Northern Wollo zone.

Education level of household head: The other important independent variable in the study is education level which is positively and significantly influence household graduation from productive safety net program at P<0.05. The positive influence of this variable shows educational back ground of the household head positively influences the household graduation from productive safety net program. All other variables remain constant; the odds ratio suggests that one unit increase level of education would increase household graduation from productive safety net program by the factor of 1.179. As the level of education increases, the likelihood of household graduating from the program increase. The survey result indicated that households with better education have more probability to graduate than those who are not educated. This implies that better educated household will be able to adopt modern farm

technologies on their farms thus improving their farm productivities. This result is in line with finding of Yibrah (2013), who affirmed that households with better education have more possibility to graduate than those not.

Household Dependency Ratio: As hypothesized, the Betta coefficient of dependency ratio was negative and significant (at $P<0.05$), indicating that a high dependency ratio have low probability graduating from safety net program. All other variables remain constant; the odds ratio suggests that one unit increase number of dependents would decreases likelihood of graduating from program by the factor of 0.335. This could expose the family to have high dependency ratio and possibly be non-graduate than those who have small size of family who could have low dependency ratio. Therefore, household that has large number of non productive family size have a low likelihood of graduating from PSNP and face difficulty to graduate from the program. This result is an agreement with the finding of Yibrah (2013), Hailu and Seyoum (2015) and Hayalu (2014), indicates in their studies that households who have high dependency ratio have low probability of graduating from PSNP.

Access to credit: This is very important and influential independent variable in determining household graduation from PSNP which is hypothesized to be positively associated with graduation and found to be significantly related to household graduation from PSNP at $P<0.01$. This positive association implies that the households with more access to credits have probability to graduating from the program sooner than these household without credit access. Access to credit is one component of HABP, the main complementary program for PSNP basically to facilitate graduating of beneficiaries from PSNP. All other variables remain constant; the odds ratio suggests that PSNP beneficiary households who have credit access would have the likelihood to be graduated from program increases by the factor of 21.258 unit. This indicates credit is a crucial dependent variable in the determining household graduation from PSNP. Several earlier studies also revealed that credit is one of the determinants that affect the probability of graduation from PSNP Yibrah (2013), who affirmed that households with access to credit have more likelihood of graduating from PSNP than households who have no access to credit in Eastern zone of Tigrai region, Ethiopia.

Targeting mechanism: Targeting mechanism was hypothesized to have be positive association with dependent variable and found to determined household graduation from

program significantly at P<0.01. Fully family targeting was essential for a beneficiary to accumulate assets and enhance probability being graduated from safety net program. All other variables remain constant; the odds ratio suggests that change of households targeting mechanism from not fully family targeting to fully family targeting would the likelihood of household graduation from the PSNP also increase by the factor of 12.351. Full family targeting could contribute for sooner targeted household graduation and increases their likelihood of graduate. This result agrees with Desalegn (2017), who stated as targeting mechanism influence graduation status positively and significantly in Babile District, Oromia Region, Ethiopia.

Off farm income: This variable was hypothesized to have positive influence on household graduation from PSNP in the study area. It is significant at P<0.05 and positively associated with graduation from productive safety net program. Positive association of this variable shows the importance of off farm activates in influencing household graduation from productive safety net program. This implies that the likelihood of graduation increases with households' participation in off farm activities. In other words, off farm activities participants have more probability to be graduated than non- participants. All other variables remain constant; the odds ratio suggests that one unit increase off farm income would the likelihood of household to be graduating from program increases by the factor of 1.001. Further, the results showed that engagement in the off farm activities can enhance graduation of program beneficiaries households. This finding is consistent with finding of Zelalem (2014), who advocated as households engaged in off farm activities are endowed with additional income and less likely to be food insecure in Gurage Zone, SNNPR, Ethiopia, but contradicting with the earlier finding of Arega (2012) indicates on his study off farm income and graduation insignificantly associated in Amhara region Lay Gaint district.

Livestock holding: Livestock holding of household is another determinant factor that positively associated with independent variable. It was found to be determining household graduation from productive safety net program significant at P<0.05 and positively associated with household graduation. This indicates that households who have more livestock holding graduated faster than households with less number of livestock holding. In other words, if households' livestock possession were increased, their graduation status would also respond

positively. This is because households with more livestock produce more milk, milk product, and money from their selling. All other variables remain constant; the odds ratio suggests that increase of one unit of livestock in term of TLU would the probability of household to be graduating from program increases by the factor of 2.85. This result is in agreement with the findings of Arega (2012) and Yibrah (2013), which clearly showed that as program participants who have more of livestock in term of TLU have had more probability graduation from the PSNP.

Total farm income: As hypothesized, total farm income is another determinant factor which influences graduation positively and significantly (at $P<0.05$). The significant mean difference implies that households with better farm income have high chance to graduate than these household without farm income. All other variables remain constant; the odds ratio suggests that increase of one unit of total farm income would have the likelihood of household to be graduated from program increases by the factor of 1.001. This implies households produces better production from own small farm land by using agricultural inputs and advanced methods of production these households should be graduated early from food insecurity problem. This result also in line with that of Arega (2012), who confirmed that farm households participating in the farm activities and then if produce a lot their probability of graduation would be fastened in Amhara region Lay Gaint district.

4.4. Perception of Beneficiaries towards Graduation from Productive Safety Net Program

This section is focused at exploring beneficiaries' perception towards graduation from productive safety net program in the study area. In order to get confirmatory information and insight into, beneficiary perception on rural household graduation from PSNP in the study area is an appropriate issue to be assessed. During the survey of this study, efforts were made to understand beneficiaries' perception towards graduation. In view of this, a five point Likert Scale was developed and the interview was administered to the respondents to understand their perception of beneficiaries on households' graduation from PSNP. Positive statements were rated 1 to 5 (strongly agree to strongly disagree) and scoring pattern was reversed for negative statements. A sum of all responses for a sampled respondent becomes a total score

which is suitable analysis using chi square test. The analysis of survey result on perception of beneficiary towards graduation is presented in (Table 9).

Table 9: Perceptions of Respondent Households towards Graduation from Program

HHs Perception towards graduation	Graduated		Non- graduated		Grand total		Chi square (χ^2)
	Freq	%	Freq	%	Freq	%	
Positive	34	43.6	24	19	58	28.4	
Neutral	1	1.3	2	1.6	3	1.5	14.274***
Negative	43	55.1	100	79.4	143	70.1	
Total	78	100	126	100	204	100	

*** Significant at P<0.01

Source: Field Survey (2018)

As indicated in Table 9, majority of beneficiaries (70.1%) have negative perception towards graduation from the program support. When we compare graduated and non- graduated households, about 79.4% of non- graduated beneficiaries were not willing to be graduated from the program support while more than half of them (55.1%) of graduated beneficiaries' also negative perception towards graduation from the program. The chi-square analysis computed and there have significant association between the household perception towards graduation between graduated and non graduated beneficiaries at (χ^2 =14. 274, P<0.01) significant level. This association indicates that, households who have positive perception about their graduation from PSNP are more likelihood to be graduated than those who are negative perception towards the idea of graduation.

This result is in agreement with prior expectation and the finding of Aschale *et al.* (2012), who affirmed that rural household, may hide or deliberately deplete their assets to stay and continue as a program beneficiary; even they may not exert their labor effort effectively and exhaustively on their farm production works. Beside this, Erine (2005) also confirmed that rural households with nature of dependency do not like to be graduated from the program not to lose the PSNP payment.

Household survey results showed that, more than half of the graduated households have negative perception towards graduation. This indicates that household's dependency problem. Only 19% of the non- graduates beneficiaries have positive perception towards graduation

while 79.4% of non- graduates beneficiaries have negative perception towards graduate from the program. Sabates-Wheeler *et al.*, (2012) pointed out similar with this findings in Tigray and Oromia regions describes there is low confidence among current beneficiaries (32.9 percent of the sample households in Tigray and 46.9 percent in Oromiya have no confidence to graduate from the PSNP). The reason for high dependency syndrome among the beneficiaries' households is fear of recurrent drought and limited opportunities to access easily after graduation.

Furthermore, qualitative data were used in exploring beneficiary perception towards graduation from productive safety net program which were collected through conducting focus group discussion and interviewing key informants. Moreover, the evidences obtained from qualitative data were also used in strengthening quantitative data gathered in the household survey.

The information gained from the focus group discussion and key informant interviews supports the data gained from survey method. Major problems for rural households' graduation from program mentioned by key informant interview revealed that majority PSNP beneficiaries are unwilling to graduate from the program(negative perception), hiding of assets during assessment of graduation, low initial asset base, dependency syndrome and fully use the transfer to buy food and are not in a position to by productive assets. Moreover, in FGD, there are no clear criteria for graduation in the area and majority of them were said to be graduated without quantitative asset produced by the beneficiaries. This may create depreciation of trust between beneficiaries and woreda safety net task forces. Therefore, it is difficult to say all beneficiaries graduate from the program reached the regional benchmark. The other issues also raised during FGD, program beneficiaries' lack of interest to graduate from the program, limited access to loans, the concept of graduation itself being unpopular among PSNP beneficiaries and beneficiary households who have low work habit and want to stay longer in the programme.

According to woreda Agriculture and Natural Resources office, due to availability of program transfer, beneficiaries have developed dependency syndrome and have become reluctant to improve their lives. They are not willing to use their potential to improve their livelihood by themselves and unwilling to invest their time and resources to improve their own wellbeing in

the study area. In the study area there is low level of graduation achievement. The Productive Safety Net Program was launched in the woreda since 2005. Yet, graduation is the main goals of the Productive Safety Net Program whereby the beneficiaries were expected to become food self-sufficient; build enough household assets and no longer in need of external assistance. But the issue of graduation is very controversial in the study area. The main reason here is the beneficiaries' perception for graduation was very infants and some household those who not want to graduate from the program. The finding of Teshome (2014) strengths the finding of this study, graduation are also influenced by perception of the program beneficiary. Identified on his study most of the beneficiaries respond as they want to be program beneficiaries until their life. On his study from the total beneficiaries of the district 84.2% PSNP beneficiaries have negative perception towards graduation from the program. In the key informant interview, PSNP coordinator concluded that

Most of program beneficiaries' perception towards graduation is negative. Most of the PSNP beneficiaries don't want to graduate because they want to keep their benefits, since being in these programmes provides them with a regular income, free access to services and a safety net that they do not want to lose. Program beneficiaries were not willing to graduate even during supervision and follow up to identify the level of living and income condition of the beneficiary, they try to hide their assets and incomes, so it needs more awareness creations for beneficiary households.

From the above discussion, it can be concluded in the study area there is dependency syndrome among most of the beneficiary households because, from total sampled respondents 70.1% were not willing to graduate from the program support. Addition to these focus group discussion and key informant interviews confirms the survey results. As a result, graduation from the program was not implemented according to the rules set out for its implementation. Generally, in the study area there are number of gaps in implementation and graduation of the beneficiaries from the program. The situation in identifying graduation indicators and assess whether they can graduate or not in the given intended time period is lacking.

4.5. Opportunities and Challenges for Rural Households Graduation from PSNP

Graduation is the main goals of the Productive Safety Net Program whereby the beneficiaries were expected to become food self-sufficient; build enough household assets and no longer in need of external assistance. According to Doyogena woreda office of Agriculture and Natural Resource report, the study area has plain topography, favorable weather condition and high market potential. As a result, large amount of agricultural products are supplied to different markets in the area. But graduation rates have fallen far behind expectation, with only 54.8% of beneficiaries having graduated from PSNP in the study area. In this section is focused what are the opportunities for rural household graduation from productive safety net program and why graduation was not implemented according to the rule set out for its implementation manual in the study area.

4.5.1. Opportunities for rural household graduation from PSNP program

The PSNP makes specific efforts to ensure productive safety net clients are enabled to move towards graduation, through the linkages it makes with other programmes and the wider enabling environment. There are many possibilities in study area to improving their livelihood of productive safety net program beneficiaries, in order to graduates from the program. Some of these are discussed here.

Ecological related opportunities

The PSNP program creates an environment more conducive to economic growth and poverty reduction through greater access to social, physical and market infrastructure and enhancing the natural resource. As discussed above the study area has plain topography, favorable climate condition for crop production and high market potential. As a result, large amount of agricultural products are produced and supplied to different markets in the area. This favorable environments are should help increasing production, achieve food security and finally they lift themselves out of their dependency from this program.

Institutional related opportunities

According to key informant from woreda Agricultural and Natural Resources office, the number of development agents in the study area become increasing. All kebeles have development agents assigned, now in most of the kebeles there are four and above diploma and degree holders, one each in the areas of crop production, livestock production and natural resources management. In the study area, development agents, who live with the rural households, provide new technologies, and having close supervision, are essential partners for bringing agricultural development in the area. This could be an opportunity to increasingly reach rural households seeking extension services.

During focus group discussion, it was also revealed that PSNP beneficiaries especially public work beneficiaries spent much of their time with the extension workers and they are equally exposed to the extension service. As a result, they get technical assistance from the development agents and to make them involved in development activities to boost their production and productivity. Government extension services provided by development agents and the support of finance from productive safety net program have all been creating an enabling environment for program beneficiaries in getting access to various agricultural technologies and inputs. These supporters play vital roles in helping PSNP beneficiary households enhance their production capacity, diversify products to help them meet their food needs, create assets, and finally graduate from PSNP.

Policy related opportunities

The overall strategy to promote graduation, PSNP participants were to have access to the other food security, which was financed through a federal government specific purpose grant to regions and the donor-financed food security project. Households were provided subsidized credit to rebuild their asset base (in the case of the food security project which targets the poorest of the poor) or to purchase household packages, which were various combinations of agricultural inputs sometimes based on a business plan developed with support from the extension service. Participation in a combination of the other food security programs would allow households to graduate out of chronic food insecurity within three to five years (Andersson *et al*., 2011).

According to PIM the major objective of Productive Safety Nets Program is consumption smoothing function, allowing households to meet a critical food gap and reduce or eliminate their transitory food insecurity. Slater *et .al*, (2006) also state that most significant is the status of the rural and wider national economy, and the role of economic growth in enhancing production, job creation, demand creation, market stimulation, increasing purchasing power, increasing public expenditure and, in sum, wealth creation and poverty reduction. The PSNP is designed to protect the existing asset and ensure minimum level of food consumption, the Other Food Security Program (OFSP), and more resent House Asset Building Program (HABP), is designed to encourage household to increase incomes generated from agricultural activities and to build up assets so that they will be able to graduate from program. As asserted by Slater and McCord (2013) combination of PSNP and OFSP can push households up towards graduation, there also needs to be an enabling environment to pull them up and aid graduation process.

4.5.2. Challenges for rural household graduation from productive safety net program

During this study, there are different challenges identified as possible risks for those who have graduated from the PSNP in the study area. Lack of interest to graduate (dependency), the component of PSNP is not successfully implemented, unpredictable PSNP payment, rainfall variability, lack of uniform understanding of the graduation benchmark, shortage of cultivated land and partial family targeting. In addition, shortage of HABP loan capital from donor and government side as well as low credit repayment from beneficiaries side were challenges in speeding up the rate of graduation. Moreover, Graduation is difficult to achieve. Need for strong link between PSNP and household asset building activities to ensure graduation.

Table 10: Rainfall Condition, Predictability and Purchasing Power of PSNP Payment

Characteristics		Frequency	Percentage
Rain comes on time?	Yes	21	10.3
	No	183	89.7
	Total	204	100
PSNP payment sufficient to graduate from program?	Yes	65	31.9
	No	139	68.1
	Total	204	100
PSNP payment is predictable?	Yes	137	67.2
	No	67	32.8
	Total	204	100

Source: Own survey (2018)

As indicated in Table 10, about 89.7% of sampled household were affected by bad rain fall condition. Almost 90% of the surveyed respondents report negative effect of rainfall variability on their livelihood in the study area. Obviously, productive safety net program beneficiaries have small land holdings and cannot afford irrigation or other investment, a decline in productivity has a direct impact on their food security.

During key informant discussion with the woreda Agriculture and Natural Resources office and food security coordination, it was noted that if rainfall is favorable (in terms of timeliness, distribution and amount) importance to improve households food security situation. Since good rain fall condition shape local food production, fluctuation of rain fall has significant implication for rural community particularly food security of poor families. Agricultural production activities largely depends on natural rainfall, because irrigation activities not common due to shortage of water in the study area. Therefore, variations in rainfall have a direct effect on the on food production and household income. Besides, the bad rainfall condition especially fluctuation of rainfall (later on and early off) is causes food insecurity. These bad rainfall conditions have negative impact on the likelihood of households' graduates from PSNP. Similarly, Sabates-Wheeler and Devereux (2011) in their study identified in Ethiopia unpredictable rain are an environmental constrainer, since a poor rainfall can undermine PSNP livelihood packages that aim to promote crop and livestock production and which affect the food security of the beneficiaries and their graduation from the PSNP

As indicated in Table 10, Greater portion (68.1%) of sampled households responded that payment of the PSNP was not sufficient to be graduates from productive safety net program. The transfer should not be considered as means for food security rather than something which support households' livelihood through prevention of productive assets from depletions for the sake of food consumptions. In addition to these problems of inaccuracy in household asset and living condition assessment make the graduation late. Moreover, during focus group discussions, it was indicated that the transfers was not sufficient for consumption of the household member. So it was difficult for household to graduate from productive safety net program as well as food security. It is also revealed that the amount of transfers is too little (125 birr per individual per month) and this amount of money had nothing to do to change livelihood of the program beneficiary. The payment also lasted only for six months. This

creates the challenge of achieving the graduation of intended households to food secure status. This clearly indicates households who do not have minimum level of an asset difficult to graduate from the program at the intended time.

As indicate in Table 10, about 32.8% of sampled households responded that PSNP payment unpredictable. According to our survey, majority of sampled respondents reported that they had encountered delays in PSNP payments. Predictability of transfer is the other institutional factor expected to affect graduation from PSNP. Predictable transfer helps participant households to purchase food at low food price seasons since the transfer is through cash. In contrast to this, delays of payments had negative implications for most of the affected households. Moreover, when payments were made in a timely manner, households were able to appropriately plan their expenditure, including investments. Unpredictable transfer affects the household's likelihood to participate in other income generating activities. Fekadu and Mberengwa (2009), in their study pointed that in SNNPR unpredictable nature of PSNP transfers affects the livelihood of beneficiaries because the payment was not transferred during better grain markets. Even if there is grain at that time it is difficult to purchase because of its expensiveness coincided with ''Hungry season'' a period of chronic food shortage in most parts of the country.

The household survey result showed, the component of PSNP is not successfully implemented and has limitation in achieving for PSNP beneficiaries in the study area. The main reason here is shortage of HABP loan capital from donor and government sides as well as low credit repayment from beneficiary's side were limitation in speeding up the rate of graduation and to cover more beneficiaries of the programme. Access to credit is the essential element in achieving program objective that means household graduation from program. Although the program is designed to provide linkage to credit loans, the number of PSNP beneficiary who have been provided access is below expectations in the study area.

According to Pankhurst (2009) graduation from the PSNP is a long term process that will not be possible if only PSNP resources are available. It requires that the same households receive interventions from Other Food Security Programme (OFSP) consisting of household packages and credit. Other development programmes also contribute to this process. For this to occur, additional interventions are required to build household assets and address vulnerabilities that

make households food insecure.Hence, graduation arises from the combined effect of FSP components and other development processes, not from the activities of the PSNP alone. That means integration of PSNP and other food security programs is vital to graduate the beneficiaries out of food insecurity.

The survey result also showed that majority of household's perception towards graduation from the program is supposed to have other challenges on the achievement of the program ultimate goal. This increases dependency syndrome that beneficiaries with nature of dependency do not like to be graduated from the program and not to lose the transfer. Key informants revealed that in their area majority of non graduates program beneficiaries do not like to use their own efforts exhaustively on their own livelihood activities, even they may hide and deliberately deplete their assets and they like to stay in the program. Also, program beneficiaries lack of interest to be graduated (even if they reach the bench mark of graduation), hiding assets during wealth registration and ranking in order to not to graduate and leave the program, problem of deceiving (using the money they get from credit service for other purposes and not paying back for the government). On other hand, the kebele food security task forces, who are responsible for implementing graduation, do not function properly due to lack of organization and information.

According to the result of the survey, 61.3% of the sampled respondents were not included the all family member of the eligible household in to the program. This result confirmed by focus group discussion large number of household head in their kebele, due to that they reduced the actual family size of the eligible household. These problems were common and persistence almost all sampled kebeles. Therefore, the process of targeting were not done in fair way because the majority of beneficiaries of their families member were not included in to the program and this is contradicted to the program guide line.

In the implementation manual clearly stipulated concerning to beneficiary selection criteria. (MoARD, 2010) if a household is identified as being chronically food insecure and eligible for the PSNP, all household members will be listed as clients of the programme. Therefore, full family targeting is one of the most important principles of productive safety net program and it is critical to the graduation potential of the programme as it relies on all households' members being able to acquire sufficient resources in the long term. Due to partial family

targeting most of the program beneficiaries' who showed resistance not to graduates from the program because their families was not fully targeted. This creates the challenge of in the study area achieving the graduation of indented households to food secure status.

From field observation and information obtained from program beneficiaries in the study area, Governmental staff running the safety net at the community level informed us that they use quotas; others said they graduated after 5-years enrolment, while some beneficiaries explained their graduation was motivated by politics or other personal motives. Berhane *et al*. (2013) also found that some clients felt that they were graduated for political reasons, others based upon quotas and others based on the duration they were enrolled. Other concerns poor monitoring and follow up system due to overlapping responsibility of members and quota based PSNP beneficiary graduation in the study area. Similarly, the study by Farrington *et al*. (2007) in their study in Ethiopia observes, weak monitoring system of the productive safety net program and graduating beneficiaries. This low monitoring official hampers the graduation process in the study area and forced beneficiaries to leave the intervention without reaching the intended benchmark stated in the program documents. As a results, difficult to achieved overall goal of the productive safety net program.

Generally, graduation from PSNP has challenges; because of the graduation is a long-term and complex process that requires regular investments from the PSNP and in household asset building, together with improvements in the enabling environment. In the study area, the component of PSNP is not successfully implemented and has limitation in achieving resilience for PSNP beneficiaries. Access to credit is the essential element in achieving household graduation from PSNP. Although the program is designed to provide linkage to credit loans, the number of sampled households who have been provided access is below expectations. Lastly, from the above discussion, it can be conclude that there was gap between PSNP and other food security programs coordination in the district. This all factors expected to influences graduation from PSNP in the study area.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter is the last chapter for this thesis. It contains a brief narration of objective, research methodology and findings of binary logit model. Finally, from the findings, conclusion and useful recommendations were drawn.

5.1. Summary

The study was conducted in Doyogena woreda, Southern Nation, Nationalities and people's Regional state. The main objective of this study was to analyze determinants of rural household graduation from PSNP in study woreda. The study tries to assess perception of beneficiaries towards graduation from productive safety net program and opportunities and challenges for rural household's graduation from PSNP.

A two-stage sampling procedure was used to select sample households. Primary data were collected from sampled respondents: from which information obtained on; demographic, socio-economic and institutional aspects was obtained through structured interview schedule. Secondary data were collected from various secondary sources to supplement the data obtained from the survey. Pre-tested structured interview schedule were employed to collect the necessary information. Furthermore, the study was supplemented by focus group discussion, key informant interviews and personal observation. The analysis was done with help of descriptive and econometric methods of analysis. Binary logistic regression model was used to analyze the major graduation determinants of PSNP at the household level.

Descriptive analysis result shows among 204 sampled respondents78 (38.2 %) are graduated from the program and the remaining 126 (61.8%) of the sampled respondents are not graduated from the program. The t-test and chi-square test results showed that there were variations between graduates and non-graduates sample respondents among continuous variables in age, education level, dependency ratio, total farm income, frequency of extension contact, livestock ownership, off farm income and farm land holding influences household graduation from PSNP. On the other hand among discrete variables, chi-square result showed targeting mechanism, participation of credit; chemical fertilizer use, improved seed use,

irrigation access and membership in cooperatives were found to have significant association with graduation status at 1 percent and 5 percent level of probability.

The result of binary logistic regression model revealed that out of fifteen independent variables include in the model, about eight explanatory variables were found to have a significant influence on graduation status. The significant explanatory variables which have influences on household graduation in the study areas were age, education level, dependency ratio, livestock ownership, off farm income, total farm income, access to credit and targeting mechanism were found to have positive and significant influence on household graduation from PSNP while, dependency ratio had shown negative and were significant variables used to predict households' graduation from productive safety net program.

The result of the study indicates as the graduation process was not implemented according to the graduation guidance note and the implementation manuals in the study area. Majority of beneficiaries have negative perception towards graduation, limited access to loans and the concept of graduation itself is being unpopular among PSNP beneficiaries and beneficiary households who have low work habit and want to stay longer in the programme. Besides, lack of uniform understanding of the graduation benchmark; the process of targeting were not done in fair way because the majority of beneficiaries of their families' member were not included in to the program and this is contradicted to the program guide line. On the other hand, study area has plain topography, favorable climate condition and high market potential. As a result, large amount of agricultural products are supplied to different markets in the area. Addition to this, PSNP beneficiaries especially public work beneficiaries spent much of their time with the extension workers and they are equally exposed to the extension service. This should help increasing production, achieve food security and finally they lift themselves out of their dependency on this program.

5.2. Conclusion

PSNP as a government social protection program was planned initially to bring different positive impact on alleviation of chronic food insecurity in the under study area. In doing so, graduation of PSNP is the ultimate goal of the program. However, household graduation performance has been below expectation in the study area, among 204 surveyed sampled households only 38.2% were graduated from the program and the remaining 61.8% of the sampled households were not graduated from the program support. As a result of this, this research paper aimed as examining the determinants of household graduation from PSNP.

The likelihood of household graduation from PSNP in the study area was influenced by different demographic, socio-economic and institutional factors. The logistic regression model result revealed that there was significant variation between graduated and non- graduated household in terms of age, education level, dependency ratio, credit access, targeting mechanism, livestock ownership, off farm income and total farm income.

Age of household head is one among significant variables and positive association with household graduation. This means aged households are more likely to be graduated than those of relatively younger beneficiaries. This is because; older household can get enough land to support their livelihood to compare to younger household. Education level of households is other variable which associated with graduation significantly and positively. This implies that households being more educated have more chance to graduate from the program. Addition to this, the better educated household head are more active accepting new technology and better capacity manage own resources, credit received and use them properly. The model result also shows that, dependency ratio of the household has negatively and significantly influences graduation status in the study area. The negative and significant relationship indicates that household with large number of non productive family size have a low likelihood of graduating from PSNP because of the increase in consumption. As a result, household with greater household size are more likely to be food insecure as compared with households with smaller household size.

Whereas credit access is another explanatory variables has positive and significant contribution on the household graduation from productive safety net program. The households

with more access to credits have probability to graduating from the program sooner than these household without credit access. Targeting mechanism is other significant variables which affects household graduation from the PSNP. The positive and significant relationship indicates that full family targeting mechanism could contribute for sooner graduation of households. Full family targeting was crucial for a household enable them to accumulate assets and enhance likely being graduated from safety net program. Off farm income positively influence household graduation from PSNP. Participation in off farm activities can enhance the graduation of program beneficiary. In other words participants have more probability to be graduated than non- participants.

Livestock ownership also among the significant variables with positive associated to household graduation. This indicates that households who own large number of livestock holding graduated faster than those who have smaller number. Total farm income is another determinants factor which influence household graduation from program positively and significantly. The households with better farm income have high chance possibility to graduate from the program than those who few farm income.

The results from the qualitative methods indicate that the causes of poor graduation performance achievement in the study area are psychological factors such as household negative perception about graduation from the program support. Beneficiary's perception has highly influences probability of graduation from program and influence on the achievement of the program goal. Program beneficiaries lack of interest to graduate (even if they reach the bench mark of graduation), hiding assets during wealth registration and ranking in order not to graduate and leave the program. On the other hand, the component of PSNP is not successfully implemented and has limitation to follow the producer program implementation manual (PIM) in the study area. Although the program is designed to provide linkage to credit loan, the numbers of beneficiaries who have been provide credit access is below expectations.

5.3. Recommendation

Based on the finding of this study, the following specific recommendations were forwarded.

- Age of the household has positive and significant influence on the graduation from productive safety net program in the study area. Therefore, productive aged members of the household should participate in different income generating activities and diversify their livelihood strategies that help them to escape from chronic food insecurity. Moreover, intervention that involve aged households enable to share their life long experience to younger household should be devised and implemented.
- Education level of household head has positively and significantly influences household graduation in the study area. Hence, action must be taken by the concerned bodies at all level in collaboration with Community Based Organizations to strengthening education at different levels for youth and adults in accessible distances. The provision of education especially central level education and training for skill formation especially for the people in their working age should be given more emphasis.
- In the study area, dependency ratio was negatively and significantly influences household graduation from PSNP. Awareness creation should be the first task to tackle this problem. Hence, governmental and non governmental institutions need to strengthen family planning program in order to have optimum household size.
- The study revealed that livestock has positive and significant influence on the household graduation. Therefore, necessary efforts should be made to improve livestock through the provision of adequate veterinary services, improved water supply, introduction of artificial insemination and proper grazing. Moreover, the government should be give necessary attention on introduction and distribution of crossbreed animals should be widely implemented to increase the productivity of livestock.
- Targeting mechanism in this study was one of the positive and significant determinant factors of household graduation. Therefore, the criteria set should be established transparent and approved by all community members. In addition, local level implementers should follow the graduation guidance note and the PSNP implementation manual.

- Credit access has positive and significant influences on the household graduation from productive safety net program. Financial institutions need to scale up their outreach through delivering sufficient credit to program beneficiaries. Stockholders must provide resources to further fund the collateral portion of the of micro credit components of PSNP. Beside this, woreda administration and the regional government should strengthened microfinance institution services delivery. Thus, barriers on the supply side of credit should be redesigned to make them more flexible and affordable to the poor.
- Off farm income activities have become a supportive income sources and able to determine household graduation from program in the study area. Promoting off farm activities are essential especially for those who have fragmented and narrow land holding with densely populated nature of settlement is the study woreda. In this regard, interventions that enhance off farm activities in sustainable manner need to be designed. Therefore the rural development strategy attention should be given in promoting such activities in the rural areas.
- Farm income influences household graduation from program positively and significantly in the study area. Government and non-government organizations working in the area to strengthen linkage among farmer, extension and research to the required levels highly recommended in order to make the technology more suitable to end users.
- Household perception towards graduation is influences on the achievement of program goal in the study area. In this aspect action is also needed to foster positive perception and shapes the perception of beneficiaries' towards graduation through training and awareness creation by the government experts and administrators at each level.
- Government officials to puts considerable efforts in creating awareness to the benchmark used and the time of graduation from the productive safety net program. Moreover, woreda food security coordinator office (process) should address unpredictable (late payment) of PSNP. Finally, the author recommends further research might be needed to identify determinants of household graduation from productive safety net program and to understand beneficiary perception towards graduation.

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7. APPENDICES

7.1. Appendix I

Table 1: Conversion Factors Used to Estimate Tropical Livestock Unite (TLU)

No	Type of livestock	TLU unite
1	Horses	1.1
2	Oxen	1
3	Cow	1
4	Weaned calf	0.34
5	Heifer	0.75
6	Calf	0.25
7	Donkey (adult)	0.7
8	Donkey (young)	0.35
9	Sheep(adult)	0.13
10	Sheep(young)	0.06
11	Goat(adult)	0.13
12	Goat(adult)	0.06
13	Hen	0.013

Source: Strock *et al.* (1991), Cited in Taddele (2011)

Table 2: Specification of Explanatory Variables for the Model Estimation

No	Variable	Measurements	Categories	Expected sign
1	Sex of household head	1 = male 0 =female.	Dummy	Positive
2	Age of Household	Years	Continuous	Positive
3	Education level	Year of schooling	Continuous	Positive
4	Household Dependence Ratio	Percentage/ratio	Continuous	Negative
5	Access to credit	1 =Yes 0 =No	Dummy	Positive
6	Targeting mechanism	1 =full family targeted 0= Not FFT.	Dummy	Positive
7	Land holding	Hectare	Continuous	Positive
8	Off-farm income	Birr	Continuous	Positive
9	Livestock ownership	Number of livestock	Continuous	Positive
10	Frequency of extension contact	Number of days	Continuous	Positive
11	Use of improved seed	1= Yes 0 = NO.	Dummy	Positive
12	Use of chemical fertilizer	1i=Yes 0 =NO	Dummy	Positive
13	Total farm income	Birr	Continuous	Positive
14	Irrigation Access	1 =Yes 0 =No	Dummy	Positive
15	Membership to cooperative	1 =Yes 0= No	Dummy	Positive

Table 3: VIF for Multicollinearty Diagnosis

Variable	VIF	1/VIF
Education	1.06	0.943027
Total farm income	1.75	0.571613
Farm land size	1.42	0.706025
Total livestock in TLU	1.45	0.690705
Total off farm income	1.28	0.778234
Frequency of extension contact	1.13	0.861984
Age	1.15	0.868422
Dependence ratio	1.11	0.897456

Sources: Model output, 2018

Table 4: Contingency Coefficients (CC)

Variables	Sex	Credit	Cooperative	Targeting	Irrigation	Fertilizer	Seed
Sex	1.0000						
Credit	0.0549	1.0000					
Cooperative	-0.0676	0.2431	1.0000				
Targeting	-0.0189	0.0585	-0.0821	1.0000			
Irrigation	-0.0526	0.1452	0.2922	0.0222	1.0000		
Fertilizer	-0.0195	-0.0375	0.0899	0.0838	0.0146	1.0000	
Seed	0.0518	0.1490	0.1277	0.0622	0.1226	0.2096	1.0000

Sources: Model output, 2018

7.2. Appendix II

Jimma University

College of Agriculture and Veterinary medicine

Department of Rural Development and Agricultural Extension

Master of Rural Development (RD)

Household Survey Questionnaire

General Introduction

Dear respondent, my name is Birhanu Mamo. I am master's student at Jimma University in the department of Rural Development and Agricultural Extension. Currently, I am conducting research for my thesis in the special field of Rural Development; my research topic entitled Determinants of rural household graduation from productive safety net program (PSNP) in Doyogena woreda, SNNPR, Ethiopia. The objective of this study is to analyze major determinants of graduation of rural household from PSNP in the study area. The answer given by the respondents for this research will be kept confidentially and only used for the purpose of this study.

Date of interview_____ Code No _____

1. Peasant Association or (Kebele) _____ Age _____
2. Sex of the respondent 1. Male [ ] 2. Female [ ]
3. Marital status (circle one) 1. Single 2. Married 3. Divorced 4. Widowed 5.
4. Religion of the household head (circle one) 1. Muslim 2. Orthodox 3. Protestant 4. Others (Specify) _____
5. Educational status 1.Not read and write [ ] 2. Read and write (adult education) [ ] 3. Literate (formal education) [ ]

If literate write educational level_____

6. Are you graduated from PSNP? 1. Yes [ ] 2. No [ ]
7. Family size of the households _____ Males _____ Females_____
8. From the total household how many numbers are participate in the safety net program

Male_____ Female _____Total_____

9. How many numbers are not included Male_____ Female_____ Total_____

10. Age category of family members:

< 5 years ____ 5- 15 years _____ 16-65 years _____>65 years _____

11. Is there any family member with age above 15 but not employed in any kind of job? _____ If yes, how many are they? _____

2. Economic status/Households access to productive resources

12. Do you have your own farm land? 1. Yes [ ] 2. No [ ]

13. If your answer for number 12 is ''Yes'' how many timad? "One timad"= (0.25 ha) ____
How much this is used as cultivated land_____ Grazing _____Forest/tree _____others_____

14. How did you get the land? 1. Inheritance 2.Gift 3. Rent 4. Buy 5. Re distribution

15. If the answer is "No" for Q 14, what is your major livelihood? (Allow multiple answers)

1. Selling labor 2. Sale of local drinks 3. Share cropping 4. Raring and selling animals 5. Selling fire wood and charcoal 6. Hand craft products 7.Others/ specify_____

16. What are the most important problems recurring in your last year's crop production

1. Drought 2. Crop disease 3. Flooding 4. Bad weather. 5. Others_____

17. What is level of your land productivity status? 1. Productive 2. Medium 3. Unproductive

18. Do you use traditional methods to improve your soil fertility and increase productivity?

1. Yes [ ] 2. No [ ]

19. If your answer is yes for Q 18, which method/ input you used last year

1. Manure 2. Fallowing 3. . Crop rotation 4. Others_____

Credit service

20. Do you have access to credit? 1. Yes [ ] 2. No [ ]

21. If the response is yes for Q 20, on which one you have been participated and how much you received? (More than one response is possible)

	Credit provider			
Amount of loan	HABP	OMO	Vision fund	Others sources specify
in Cash				

In kind if any				

22. If you answer of number 21 is ‘’No’’ what is the reason? Please specify _____

23. In which year/month was it borrowed? _____

24. Is there any part of the loan not paid back? _____

Access to agricultural extension services and Farm inputs

25. Do you have access to advice from development agents? 1. Yes [ ] 2. No [ ]

26. If your answer for the above question is ‘’yes’’ how many times (days) the development agents give you technical advice in month? Please specify: _____

27. Do you use chemical fertilizer for your farm? 1. Yes [ ] 2. No [ ]

28. If your answer for the above question 27 is ‘’yes’’ How much kg of chemical fertilizer do you use for your farm? _____ Kg

29. Do you use improved seeds? 1. Yes [ ] 2.No [ ]

30. If yes, how often you use it? 1 Always 2. Sometimes 3. Never

31. If you don’t use any type of farm inputs, or only some types, what is your reason for that?

1. Shortage of money 3. Because I am not willing 4. Luck of awareness 4. Too expensive

5. Inadequate supply 6. Other reasons specify _____

Off-farm income

32. Do you or any member of your family have off-farm job? 1. Yes [ ] 2.No [ ]

33. If yes to 32, indicate the type of work and annual income for the year 2017 E.C.

	Description	Average amount of money you get per year	
		Quantity	Value(birr)
1	Working on daily labour		
2	Selling charcoal		
3	Selling fuel wood		
4	Selling alcoholic drink (Tela, Tejj, Areke)		
5	Selling tea, coffee, bread		
7	Selling grass or fodder (for livestock)		
9	Trading local market goods (Cereals flour, kocho, cereals, vegetable)		
10	Trading livestock’s and livestock products		
12	Rented cart animal (donkey)		
13	Received from equb		

14	Remittance from relatives (transfer received)		
16	Other (specify it)		
	Total		

Questions related to Livestock ownership

34. Do you have/own livestock? 1. Yes [ ] 2.No [ ]
If yes to 34, how many of the following livestock do you have?

No	Local type of animal	Numbers of animals
1	Oxen	
2	Cow	
3	Heifer	
4	Weaned calf	
5	Calf	
6	Horses	
7	Donkey (adult)	
8	Donkey (young)	
9	Sheep(adult)	
10	Sheep(young)	
11	Goat(adult)	
12	Goat(adult)	
13	Hen	
14	Others	

35. How do you see the trend of your livestock number for the last three years?

1. Increase 2. Decrease 4. No change

36. If the answer is yes for Q 35 is "Decreasing", would you mention the main problem that results this? (Allowing multiple response) 1 shortage of feeds 2. Animal disease

3. House hold economic problem 4.others specify _____

35. For what purpose you mainly use your livestock and their products?

1. For sale (cash income) 2. For food 3. For both sale and food

Irrigation Accesses

37. Do you have access to any type of irrigation? 1. Yes [ ] 2. No [ ]

38. If the answer for Q 37 is "Yes", Amount of irrigable area? _____timad

39. How many times do you produce crop per year by irrigation? _____

40. Type of crop do you produce by irrigation? _____

41. Amount of income do you get from irrigation crop production in one year? _____

42. If the answer for Q 37 is "No" what is the reason?

Please specify_____

43. Have you ever faced labor shortage for your farm works? 1. Yes [ ] 2. No [ ]

44. If the answer is Yes for Q 43, what measure did you used to overcome it? 1 Hire labor 2.Labor exchange 3. Help from friends and relatives 4. Land renting 5. Other options ___

Household perception towards PSNP graduation

No	Likert Item	Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	PSNP help me to produce my asset, I will graduate after sometimes					
2	PSNP is a timely support to recover me from food insecurity					
3	By using PSNP support, I will produce my own asset & leave the chance for other household					
4	PSNP is free gift from government, I have the right to be benefited as a citizens.					
5	Graduation from PSNP is not must					
6	I have to be supports by PSNP regardless of my asset accumulation					

Questions related to the household food source

45. What are your major food crops you often grow?

1. Inset 2. Wheat 3. Teff 4. Pulses 5. Maize 6.Potatoes 7. Other crop/ specify _____

46. How much crops you are you growing on your farm?

1. One crop 2. Two crops 3. Three crops 4. More than three crops
5. Other crop/ specify_____

47. How much quintals of crop did you produced last year? _____

What is the estimated farm income of your household in the year 2009 E.C

No	Description	Total yield last year(Qtl)	Market price last year(one Qtl)	Amount consumed (Qtl)	For sell(Qtl)	Income per year (Birr)
	Crops					
1	Maize					
2	Wheat					
3	Teff					
4	Pulses					
5	Potatoes					
	Others					

	Livestock					
6	Income from sold of animals					
7	Income from livestock bi-products					
	Others					

48. What is your major cash crop you often grow? 1. Avocado 2. Coffee 3. Onion

4. Potatoes 5. Pulses 6. Teff 7. Other crop/ specify _____

Related to membership to cooperatives

49. Is there any farmers' cooperative in your area? 1. Yes [ ] 2. No [ ]
50. Are you a member of farmers' cooperative? 1. Yes [ ] 2. No [ ]

51. If the answer is yes for Q. 49, would you mention the name of the cooperatives?

_____ _____

52. What benefits did you gain by being membership of such cooperatives?

1. Income increased 2. Labour Shared 3. Credit used 4. Others specify_____

53. If the answer is no Q 50, what is the reason 1.No information 2. No interest

3. No cooperatives in my kebele 4. Other specify_____

54. Have cash transfer of Productive Safety Net Programme payment sufficient to be graduates from program? Yes [ ] 2. No [ ]

55. Was Productive Safety Net Programme payment accountable and predictable?
Yes [ ] 2. No [ ]

56. Did the rain come on time? 1. Yes [ ] 2. No [ ]

57. Was there enough rain on your fields at the beginning of the rain season?

1. Enough 2. Too much 3. Too little

58. Did the rain stop on the time on your field? 1. on time 2. Too late 3. To early

Thank you for your cooperation!

Appendix II: Checklist for Focus Group Discussion

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For kebele food security task force and community food security task force

Date: _____

1. In your opinion, what do you think the cause of food insecurity in your area?
2. How does beneficiary households identified for PSNP?
3. Could you say something about PSNP and its graduation?
4. How do beneficiaries' think about their graduation from PSNP?
5. Do you think the PSNP beneficiaries are created a household asset after they involved in to the program?
6. Are the complementary programs (credit, access to extension program and others) accessible to all beneficiaries?
7. Who is deciding to graduate the beneficiaries from the program?
8. The processes of graduations are under taken by a pre - setting quota system or by setting criterion from the government?
9. What do you think are the main problems in implementation of graduating households from PSNP?
10. What are determinants factors of household graduation from PSNP
11. What is your opinion towards on the process of graduation?
12. Do you think full family targeted for HHs selected for the program?
13. What are the challenges for PSNP beneficiaries to be not graduated from program?
14. What are the opportunities for PSNP beneficiaries to be graduated from program?
15. Do you have any other comments on our discussion?

Appendix III: Checklist for Key Informant Interview Questions

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For kebele leaders, Development Agent (DA) and experts from Woreda Agricultural and Natural Resource Management Office

Name: _____

Date: _____

1. PSNP started since in 2005 in Doyogena woreda and do you think the program improved the food security situation of the beneficiaries? Explain
2. Is the support from HABP/OFSP is implementing according to PIM manual? If not why
3. In your opinion, those graduated peoples were really food secured?
4. Are the PSNP transfer flexible, predictable and participatory?
5. Who made the major decision making roles during beneficiary selection?
6. Do you know the criteria to say a household head graduate or not?
7. What is your benchmark for graduation?
8. What are determinants factors of household graduation from PSNP?
9. What do you think are the main problems in graduating households from PSNP?
10. What is your opinion towards on the process of graduation?
12. What is perception of beneficiary about PSNP graduation?
13. What are the challenges for PSNP beneficiaries to be not graduated from program?
14. What are the opportunities for PSNP beneficiaries to be graduated from program?
15. What are problems related to payment of Productive Safety Net Payment?

Appendix IV: Checklist for Personal Observation

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- ✓ Terrain features
- ✓ Dominant crop types
- ✓ The condition of livestock
- ✓ Population density
- ✓ Socio-cultural features of the community
- ✓ The practice of PSNP transfer
- ✓ PSNP public work activities