Impact of Microfinance on Poverty Reduction: The Case of Gasha Microfinance Institution

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Abstract

Microfinance can be a critical element of an effective poverty reduction strategy especially for developing countries. More than ever after the success of the Grameen Bank, the system has been duplicated in the different parts of developing world. Ethiopia is also one of the countries where microfinance has been given due consideration as a safety net for the poor to help them overcome the adversities of poverty. The services provided by microfinance institutions is desired to enable the poor to smoothen their consumption, manage their risks better, build their assets gradually, develop their micro enterprises, enhance their income earning capacity, and enjoy an improved quality of life. This study evaluates the impact of Gasha microfinance institution S.Co in the reduction of poverty. For quantitative analysis both treatment and control respondents were drawn with 220 clients (100 treatments and 120 controls) clients using simple random sampling techniques in Gasha. Descriptive statistics and econometric model were applied for analyzing quantitative data. PSM method was employed to analyze the impact of the microfinance *services on poverty reeducation. Consequently the objective of this study is to find out the impact of microfinance towards poverty with a particular reference of Gasha micro finance Institution S.Co. With the above objectives in mind, the research work employed questionnaires, key informants, and focus group discussions to obtain primary data. In addition, secondary sources of data have also been collected from different literature and Gasha annual progress report. The contribution of Microfinance is analyzed based on income, saving, expenditure for health, expenditure for children school, asset accumulation, decision making power, business management skills along with the strength and weakness of the institution among others. The finding indicates that Gasha has made positive contributions to the wellbeing of its client. However, all of Gasha clients are already been involved in a business activity that can generate income for the repayment of the loan. The study revealed that the aim of MFIs to reach out the poorest section of the population has not been achieved due to targeting problems. It was, again, uncovered that, microfinance try as much as possible to reduce the risk involved in giving out unsecured loans. One of their ways of trying to achieve this is by group lending which automatically sideline the poorest since the groups are formed based on the income level of the individual.*

Keywords: Microfinance services, poverty reduction, impact, income, saving, health and education expenditure, Gasha microfinance institution, Ethiopia

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1. INTRODUCTION

1.1 Background of the Study

Poverty is a condition in which low-income people are unable to meet the basic needs of life. This situation leads to many fold difficulties like decreased health status, high illiteracy rate, decreased quality of life etc., and the difficulties force poor people to commit heinous crimes and sometimes commit suicide. Poverty is defined as a situation of having no enough money to meet the basic need of human beings. Zaman (2000) defined poverty in terms of land and he described the ultra-poor as people having less than ten decimals of land and the moderate-poor households as having greater than ten decimals of land. Hulme and Paul (1997) categorized poor into two groups the core poor who have not crossed a minimum economic threshold and whose needs are essential for financial services that are protection, and those above this threshold who have a demand for promotional credit. Moreover, they have discussed that a minimum economic threshold is defined by characteristics such as the existence of reliable income, freedom from pressing debt, sufficient health to avoid incapacitating illness, freedom from imminent contingencies and sufficient resources (such as savings, non-essential convertible assets and social entitlements) to cope with problems when they arise. Weiss et al (2003) defined poverty as an income (or more broadly welfare) level below a socially acceptable minimum and microfinance as one of a range of innovative financial arrangements designed to attract the poor as either borrowers or savers.

Accordingly, the Ethiopian government has made poverty reduction in rural and urban areas as one of its primary concerns among various development plans. In Ethiopia, urban centers which are characterized by lack of adequate employment opportunities, inadequate income, social and political instability

etc., are the government's priority intervention areas in the poverty reduction. As a result, different urban based development program are taking place throughout the nation; one among these is microfinance service in urban areas (Wolday, 2006). The largest proportions of the population do not have access to financial services. Petty trading business operation is severely constrained by lack of finance. As part of this initiation, the National Bank of Ethiopia issued the proclamation number 40\1996 (Gebrehiwot and Mulat, 2005) and revised the proclamation on 626/2009 aiming to provide licensing and supervision of microfinance business (AEMFI, 2010). Microfinance is created in response to the missing credit market for the poor. In the developing countries, most recently for instance, governments are also incorporating microfinance in their strategies towards achieving the Millennium Development Goals that involves halving extreme poverty by the target date, which is 2015(Wolday, 2008). Given the complex nature of poverty together with the current microfinance intermediation approach, it is however, becoming increasingly difficult to judge whether such microfinance services should be advocated as a means of poverty alleviation.

1.2 Statement of the Problem

Gasha Microfinance institution Share Company was licensed in 1998 with ETB 200,000 paid up and ETB 800,000 subscribed capital, and having 756 shareholders with the primary objective of to help poor, particularly women, help themselves by creating access to financial services. As of June 2015 it has over 14,000 clients and its services are provided through 6 branch and sub branch offices located in Addis Ababa, Bishoftu and Adama and their environs. Despite the fact that Gasha microfinance have been providing financial services to the poor in a bid to reduce poverty in the target intervention areas, its impact on poverty has not yet been studied.

The literature on the study of impact of microfinance services on poverty reduction provides mixed results. Some literature argues that microfinance services has brought positive impact to the life of clients, boost the ability of poor individuals to improve their conditions and have taken advantage of increased earnings to improve their consumption level, health and build assets (see for example, Murdoch and Haley, 2001; D'Souza, et al 2007). Other studies such as Hulme and Mosley (1996) and Chowdhury (2009) have shown that microfinance services played insignificant impact towards poverty reduction. The authors argued that poor households do not benefit from microfinance; it is only non-poor borrowers (with incomes above poverty lines) who can do well with microfinance and enjoy sizable positive impacts. They go on arguing that the vast majority of those with starting incomes below the poverty line actually ended up with less incremental income after getting micro-loans.

Most poor people do not have the basic education or experience to understand and manage even low level business activities. Karnani (2007 as cited in Chowdhury, 2009: 37) stated that "most people do not have the skills, vision, creativity, and persistence to be entrepreneurial". Pollin (2007 as cited in Chowdhury, 2009: 2) has also a similar view, and puts it in the following words: "micro enterprises run by poor people cannot be broadly successful simply because they have increased opportunities to borrow money along interest rates charged by microfinance institutions, which are undermining the benefits of borrowers". The credit policy for the poor involves many practical difficulties arising from operation followed by financial institutions and the economic characteristics and financing needs of low-income households

(Shastri 2009). Access to credit can contribute to a long-lasting income and an improvement of the social and economic situation of women (Sarumathi and Mohan, 2011). Even though there are ample literatures on microfinance as an antipoverty tool in Ethiopia, no studies have been endeavored so far to identify the impact of Gasha microfinance institution in reducing poverty. Thus, there are gaps in literatures and knowledge regarding to the issue under discussion. Therefore, this study aims to analyze the impacts of Gasha Microfinance services on poverty reduction in Ethiopia. It explores the benefits gained from using micro-financing services as a mechanism to reduce poverty and pave ways to meet MDGs poverty in the country. The specific objectives of the study are:

1 Investigate the impact of microfinance services of Gasha on the economic status of the clients in terms of income, saving and asset accumulation,
2 To examine the impact of Gasha micro-financial service on the psycho-social empowerment of clients in terms of participation in decision making power, and business management skill.

2. REVIEW OF RELATED LITERATURE

2.1 The Concept of Microfinance

Microfinance is a form of financial development that has primarily focused on alleviating poverty through providing financial services to the poor. Most people think of microfinance as being about micro-credit i.e. lending small amounts of money to the poor. Microfinance is not only this, but it has also a broader perspective which also includes insurance, transactional services, and importantly, savings (Barr, 2005). According to Otero (1999), microfinance is "the provision of financial services to low income poor and very poor self-

employed people". These financial services according to Ledgerwood (1999) generally include savings and credit but can also include other financial services such as insurance and payment services. Schreiner and Colombet (2001) define microfinance as "the attempt to improve access to small deposits and small loans for poor households neglected by banks." Therefore, microfinance involves the provision of financial services such as savings, loans and insurance to poor people living in both urban and rural settings who are unable to obtain such services from the formal financial sector.

Microfinance is the provision of financial services such as loans, savings, micro leasing, micro-insurance and payment transfers to economically active poor and low income households to enable them engage in income generating activities or expand their small businesses. Again, MF is defined as a financial intervention that focuses on the low-income group of a given society. The intervention primarily involves credit services and may also include savings, insurance on credits and savings (Khawari, 2004). Dejene (2003) defined microfinance based on its main characteristics: it is targeting of the poor, promoting small business, building capacity of the poor, extending small loans without collaterals, combining credit with savings, and charging commercial interest rates. Generally microfinance helps low income people reduce risk, improve management, raise productivity, obtain higher return on investment, increase their income, and improve the quality of their lives and those of their dependents (Robinson, 2001). The term microfinance means providing very small loans to help the poor's engaged in productive activities or develop their tiny business (the microfinance gate way, 2008). According to CGAP (2008), microfinance is a supply of loans, savings, and other basic financial services to the poor, including working capital loans, consumer credit, pension, insurance, and money transfer services. Similarly, Hossain

(2002) defines microfinance as, practices of offering small, collateral free loans to members of cooperatives who otherwise would not have access to capital necessary to begin small business or other income generating activities. Microfinance implies providing the poor with savings, credit and insurance facilities to set up or expand income generating activities relating to petty trade, agriculture allied activities and thereby to increase household income security. Microfinance are established based on social collateral rather than physical collateral to increase the general well-being of the poor in the urban areas (Schreiner, 2001). Ledgerwood (2002) defined microfinance as a term that refers to the provision of financial services to low income clients, including the self-employed. Some Microfinance Institution (MFI) also provides insurance and payment services. Moreover, MFI's also provide social intermediation and social services. Thus, according to Ledgerwood, microfinance often includes both financial and social intermediation.

2.1.1 Products and Services of Micro-financial institutes

Since the 1970s, microfinance has much expanded and now includes a wide range of financial products and services. Ledgerwood (1999) have stated that there are four broad categories of products/ services that may be provided to microfinance clients namely,

(i) *Financial intermediation* or the provision of financial products and services such as savings, credit, insurance, credit cards and payment services; (ii) *Social intermediation* or the process of building the human and social capital required by sustainable financial intermediation for the poor; (iii) *Enterprise development services*, non-financial services that assist micro entrepreneurs include business training, marketing and technology services, skills development and subsector analysis; and (iv) *Social services or non-financial services* that focus on improving the wellbeing of micro

entrepreneurs include health, nutrition, education and literacy training. However, the degree to which MFI provides each of these services depends on whether it takes a minimalist or integrated approach. Many MFIs provide savings and credit services without getting involved in related development activities. However, many scholars argues that integrating financial with non-financial services is usually seen as essential in addressing the causes of poverty identified in a particular area or by a particular group of people; it is rarely the case that savings and credit activities alone will reduce poverty (Harper 2003; Johnson and Rogally 1997; Ledgerwood 1999).

2.2 The Link Between Poverty Reduction and Microfinance Services

Poverty remains a matter of growing concern in many developing countries of the world. Today, as other continents continue to register sustainable economic growth and development, Africa is not only lagging behind but is trapped in a vicious circle of borrowing and donor dependency syndrome which some critics point out as one of the causes practically sabotaging real development. Africa has perpetually failed to focus its development efforts on the optimum utilization of the immense natural resources that many countries are endowed with to turn it into wealth to propel their economies and people towards a high level of economic and social development and as a consequence eliminate pervasive poverty. Although Africa is not the only poorest continent, it is the only region where poverty is constantly on the increase. As a result millions of people live each day in abject poverty. Children go without food, their bodies stunted by malnutrition which is wide spread. As a result of this condition the lives of the majority of Africans to be deplorable and an insult to their dignity. Therefore, there is need to change these conditions in order to make poverty history in Africa (World Bank, 2000).

Lack of access to credit is generally seen as one of the main reasons why many people in developing economies remain poor. The inability of conventional banks to address the financial demand of the poor put the consensus that reached to design new strategies for delivering financial services to the poor. The microfinance institutions mainly designed to provide banking services and mobilizing small savings. Currently, there are 33 MFIs licensed and engaged in providing microfinance services to the poor in different parts of the Ethiopia. Properly channeled microfinance services provide the poor households with an opportunity to increase income, increased employment, increase smooth consumption, own resources such as livestock, get self-employed in the informal sector, empower women, improve nutrition and expenditure on health, improve the potential for educating children, use new technologies and inputs of agriculture (Zaid, et al 2001). According to Parker (2000), poverty has always been a concern of microfinance; and some microfinance institutions use methodologies that target the very poor as a separate client groups, while others are based on non-targeted financial services for all those who lack access to formal credit institutions. Sound practice in microfinance institutions is based on the ability to provide appropriate financial services to individuals and households that are otherwise excluded from the financial system. According to Chekol (2002), the changes of indicators show the movements at different levels toward or away from greater economic security are believed to suggest the impact of microfinance interventions in expanding options for poor women and men in relation to the broader development goals of poverty alleviation and economic growth. According to AIMS (2000), domains of household security include income, assets and expenditures. The same study identified

that microfinance impact at household level leads to increased income, increased assets and increased welfare.

2.3 Studies on Impact of Microfinance Services on Poverty Reduction

Impact of microfinance examines two sets of indicators– economic and social indicators at different levels. Economic indicators are normally measurements for microfinance impact as income level and patterns of expenditure, consumption and assets. Social indicators are used to measure the impact of microfinance which became popular in the early 1980s as educational status, access to expenditure on health services, nutritional levels, anthropometric measures and contraceptive use (Hulme, 2000). Despite the variation in the methods used and the results of studies conducted in various countries, the main impact of microfinance are on change in income, expenditure, assets, educational status, and expenditure on health as well as gender empowerment

Many studies in different disciplines used different approaches to assess impact. Khandker (1999) studied the impact of three micro credit institutions in Bangladesh on selected households. The study found that the most important effect of borrowing from a micro-credit provider is its impact on per capita expenditure. The study pointed out that the participation in group-based microfinance shows positive and significant impacts for school enrollment, asset holdings, consumption, nutritional status and household net worth of participants in all three participants. Ledgerwood (1999) pointed that successful microfinance institutions contributing to poverty reduction are particularly effective in improving the living status of the middle and upper segments of the poor. The impacts of microfinance services on income has been analyzed at the individual, household and enterprise levels. Studies conducted in various countries by Hulme and Mosley (1996) found strong evidence of the positive relationship between access to a credit and the

borrower's level of income. The authors indicated that the middle and upper poor received more benefits from income-generating credit initiatives than the poorest. They also discovered that the profit for self-employed activities of households can be increased by participant participation.

Expenditure is another indicator to measure the impact of microfinance. A study by Pitt and Khandker (1998) showed that the clients of the participants could gain from participating microfinance participants in many ways. Income per capita consumption could be increased by accessing a loan from a microfinance participant. Khandker (2003) also conducted research on the long-run impacts of microfinance on household consumption and poverty in Bangladesh by identifying types of impact in six household's outcomes as Per capita total expenditure; per capita food expenditure; per capita non-food expenditure; the incidence of moderate and extreme poverty; household non-land assets. Mosley (2001) pointed out that there was positive impact of microfinance on asset levels. He further stated that accumulation of asset and income status was generally highly correlated, which led to extreme correlation between income poverty and asset poverty. Coleman (2006) investigated the impact of microfinance borrower welfare in Northeast Thailand. He found that there was a slight impact of participant loans on clients' income level. However, he discovered that the village bank had a positive and significant impact on the accumulation of women's wealth, particularly landed wealth but this result included bias from measured impact.

Holvoet (2004) investigated the effects of microfinance on childhood education by examining microfinance participants in India and showed that loans to women had a significant positive impact on schooling and literacy for girls, whereas it remained mainly unchangeable in the case of boys. Pitt and Khandker (2003) found that a credit to the participants provided by a

microfinance institution like the GB could grow school enrolment for children. They found that credit lending to women had a significantly positive impact on schooling of children. Chowdhury and Bhuiya (2004), studied the impact of a microfinance participant, in Bangladesh, and found that both member and nonmember had improved in educational performance. However, the member households benefited much more than poor non-member households. Indicators related expenditure on health issues are also applied as proxies to examine the impact of microfinance. Chowdhury and Bhuiya (2004) found that microfinance participant, led to a good improvement in child survival and nutritional status.

Microfinance also leads to the empowerment of women. Hashemi et al. (1996) studied two main microfinance participants in Bangladesh. They noted that the participation of the participants had important positive impacts on economic security, ability to make small and large purchases, involvement in major household decisions, and relative freedom from domination by the family and awareness on current issues different dimensions of women's empowerment. In another study, Pitt and Khandker (1998) found that the behavior of poor households was significantly changed in case of women's participation in microfinance participant in Bangladesh. It, for example, could be seen that every 100 additional unit credit provided to women by the microfinance participants increased yearly expenditure for household consumption by 18 unit, whereas that provided to men from the same participants grew yearly household consumption expenditure by 11 unit. Assessing microfinance impact has been the main concern of development specialists in order to know whether or not providing financial services to the poor has reduced poverty then improve household income. Khandker (1999) argued that the immediate impact of having access to credit from a micro

finance participant is on employment and income in turn which may have impact on other outcomes such as consumption, nutrition, and education. Hulme (2000) identified three elements of the framework for the study of impacts. The first is the specification of levels at which impacts are assessed. The second is the specification of the types of impact that are to be assessed. The third is models to be used for the study. Impacts can be assessed at different levels. The common units of assessment are the household, the enterprise or the institutional environment within which agents operate.

According to AIMS (2000), impact occurs at the levels of household, enterprise, individual and community. At the household level, microfinance contributes to net increase in household income, asset accumulation and labor productivity. Income invested in assets such as saving and education increases household economic security by making it possible to meet basic needs. This relationship clarifies paths of impact by which microfinance interventions can contribute to the goals of poverty alleviation and economic growth, and thus, households improve their economic well-being. The framework by Ledgerwood (1999) defines domains of impact indicators to measure impact at the household, enterprise, individual and community levels. At the household level, income, assets, consumption expenditure and basic services are indicators of impact assessment. At the enterprise level, five domains of development include the resource base, production process, management, markets and financial performance. At the individual level, three domains of well-being include independent control of resources, leverage in households' decision-making units and community participation. At the community level, four domains of development include net changes in employment and income, forward and backward linkages, social networks and civil participation. Robinson (2001) in a study of 16 different MFIs from all over the world

shows that having access to microfinance services has led to an enhancement in the quality of life of clients, an increase in their self-confidence, and has helped them to diversify their livelihood security strategies and thereby increase their income.

Remenyi and Quinones (2000) household income of families with access to credit is significantly higher than for comparable households without access to credit. They further found that in Indonesia a 12.9 per cent annual average rise in income from borrowers was observed while only 3 per cent rise was reported from non-borrowers (control group). Remenyi notes that, in Bangladesh, a 29.3 per cent annual average rise in income was recorded and 22 percent annual average rise in income from no-borrowers. Sri-Lanka indicated a 15.6 rise in income from borrowers and 9 per cent rise from non-borrowers. In the case of India, 46 per cent annual average rise in income was reported among borrowers with 24 per cent increase reported from non-borrowers. The effects were higher for those just below the poverty line while income improvement was lowest among the very poor.

There are studies in Ethiopia that were designed to indicate the impact of microfinance on the life of the clients. Bourchgrevink *et al.* (2003) clearly indicated that credit has brought positive impacts at household level in Tigray. Kejela (2004) conducted a research work using proportionate pilling exercise and financial return to labor and capital with the purpose of identifying opportunities for economic diversification in Central Tigray. He indicated that financial returns to labor and capital are positive for some cereal crops, vegetable and animals. According to this study, there is need for MFIs to focus on these activities in an attempt to reduce poverty in Central Tigray. There are also other studies that attempted to examine the impact of MFIs in improving the life of the poor. For instance, Mengistu (1998), Berhanu

(1999), and Teferi (2000) tried to see the impact of microfinance on poverty reduction in Ethiopia. However, these studies did not employ the desired methodologies to clearly indicate the impact of microfinance on poverty reduction. This is because they all used loan repayment performances as the best indicator for improvement in income of the clients.

In addition, Daba (2004) used logit model and descriptive statistics to examine the relation between participating in microfinance and the improvement in income. Then, he indicated that OCSSO has made positive contribution towards improving the income of the participant clients. He went on explaining that since the outreach is increasing as the years go by and the loan repayment performance has been 100% for several years, it is possible to argue that OCSSO is contributing to poverty alleviation. But, loan repayment performance cannot be taken as best indicator of improvement in levels of well being because there are people who intentionally commit default of repayment. In addition, people may be forced to pay the money they have borrowed although there is no improvement in their incomes. Berhanu (1999) also studied the impact of credit using descriptive analysis on enterprise income. In his study, he used improvement in living standard as proxy indicator for improvement in incomes of the poor. This again concentrates only on one dimension of well-being, that is income and ignored other important dimensions of well-being like education, expenditure on health, asset building. Getaneh (2005) conducted research using a before and after the participant analysis of impact on clients and shows that ACSI brought very little impact on poverty reduction and enterprise development.

Fiona (2000) and Zaid *et al*. (2001) conducted a research to examine the impact of DECSI on the life of the participant clients using secondary data as

well as descriptive analysis such as percentages; they indicated that DECSI has brought a positive impact on incomes of people in Tigray. Here, one can see the methodological problem the study might have faced in terms of depth of analysis, especially with respect to application of econometric methods. In addition, the findings of Tsehay and Mengistu (2002) on the impact of microfinance among poor women in Ethiopia indicates that the microfinance interventions have brought positive impacts in the improvement of economic status and empowerment of women microfinance participants. This study too used only Chi-Square analysis to investigate the impact of microfinance on poverty reduction. So, it is possible to say that the studies made so far in the field are not exhaustive enough to see the impact of micro-finance on the well-being of the poor in Ethiopia. Samson (2002) also conducted another study in Loume woreda. He used Multiple Linear Discriminant Analysis and indicated that consumption credit users were found to be characterized by greater affiliation to equbs. In addition, participants were found to spend the loan for grain purchase and emergency expenditure on health care, not for the stipulated purpose. This study was aimed at examining financial arrangements and determinants of household credit. Therefore, it was not purely an impact analysis.

On the other hand, Asmelash (2003) using simple descriptive statistical like ANOVA and Chi square conducted a research work in Tigray. He indicated that the credit provided to the poor has brought a positive impact on the life of the participant clients as compared to those who do not get access to microfinance services. He showed that microfinance has brought a positive impact on income, asset building, and access to schools and medical facilities but in all these study there were methodological problem especially econometric application like analyzing without correcting selection bias in the

study area.

3. RESEARCH METHODOLOGY

3.1 Research Approach and Design

The two main types of research approaches used in social sciences are: quantitative and qualitative research approaches. Quantitative research approach refers to the systematic empirical investigation of phenomena and quantitative properties and their relationships. That is to say, it emphasizes on collection of numerical data, which is a deductive approach (Bryman & Bell, 2003). Qualitative research approach refers to all non-numeric data or data that have not been quantified and can be a product of all research strategies (Saunders et al, 2009). It can range from a short list of responses to open-ended questions in an online questionnaire to more complex data such as transcripts of in-depth interviews or entire policy documents. (Saunders et al, 2009). Based on the above approach the researcher used a combination of both qualitative as well as quantitative research method. The researcher believes that using these two (mixed) methods simultaneously enables him to tackle the research problem under the study.

3.2 Data Sources and Data Collection Method

The research used both primary and secondary sources of data. Primary data collected to attain the research objectives regarding to the impact of Gasha service for the economic status of clients, its contribution on improving client's decision making power, self-esteem, and business management skill, and build up their asset as well as participants view of the strength and limitation of Gasha by using Survey/questionnaire, Focused Group Desiccation (FGD), and key informant interviews. In order to address the objective of outreach performance of Gasha Micro financial Institution secondary data source is obtained from unpublished Gasha documents as well

as key informant's interview with Gasha coordinators and project staffs. Data were collected through document review, survey, focus group discussion (FGD), and Key Informants Interviews (KIIs).

3.3 Population and Sampling

Gasha Micro finance Share Company (GMFSC) is a micro financing institution operating under the Ethiopian law. It was established in May 1998 by a local NGO called PRO PRIDE and over 756 clients organized under the savings and credit program of PRO PRIDE. It is led by a five member board of directors elected from among the shareholders. As of June 2015 GMFISC has over 14,000 clients and within this client's 4,125 are active clients (client with loan) and its services are provided through 6 branches and sub branch offices located in Addis Ababa, Bishoftu and Adama and their environs (Gasha, 2015). Gasha serves both rural and urban communities. However the majority of its clients are engaged in the food and drink processing (service) sector. This group represents 69% of total clients. About 36% of the clients hold both voluntary and compulsory savings; while 64% of total clients hold compulsory savings only. Significant numbers of clients have declared that their monthly income ranges between Birr 2,000 and 3,500. This group represents 77% of total clients. Moreover it has been observed that about 85% of the clients of Gasha earn less than Birr 2500 per month. The majority of clients of GMFSC (77%) are taking their loans by offering group guarantee as collateral. Salary, title deeds and Vehicle ownership certificates came as the next common mode of collateral by covering 23% of clients (Gasha, 2015). The institution has currently six branches which four are found in Addis Ababa and two found outside of Addis Ababa (Bishoftu and Adama). To increase the reliability of the study, the researcher is motivated on all of this six branches namely (Entoto, Merkato, Yeka, Kolfe Gojam berenda, Bishoftu and Adama).

The study population refers to the large groups of people or things (Ruane, 2005). The study population for this research are covered staff members, beneficiary from Gasha microfinance institutions and clients who are ready to get services from Gasha MFI in the near future but not yet received the services from Gasha microfinance institutions. In analyzing the impact of microfinance institutions on poverty reduction, focus has been given to the households which are access to and using microfinance services from Gasha more than three years. This population will give priority due to the needy of getting realistic evidence. In deed the total size of the population is 14,154 consisting of both male and female clients who are permanent resident in Addis Ababa, Bishoftu and Adama.

Determining the appropriate sample size is important in research undertaking. Thus, sample size depends on the total number of population, the level of confidence and the maximum deviation from true population that can be tolerated in the study. The study are used two groups of samples namely, experimental or treatment group and control group. Control group are used to avoid the problem of intervening variables (variables that are affecting the output of the research other than independent variables).The researcher applied a simplified formula provided by (Yamane, 1967) as cited by Yilma Muluken to determine the minimum required treatment group sample size at 95% confidence level, degree of variability= 0.5 and level of precision (e) = 10%.

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

Where n is sample size, N is the total number of study population 14,154

Where e is the level of precision

Using the total population of 14,154 and level of precision of 10%, the sample size will calculated as follows.

$$n = \frac{14{,}154}{1 + 14{,}154(0.10)^2}$$

$$n = \frac{14{,}154}{1 + 14154 * .01} = \frac{14{,}154}{100}$$

A total of 120 candidates who are in the training phase or incoming clients were selected as control group. To manage the research within the given time and limited budget, a total of 220 samples are selected. From the total sample size, The treatment group is composed of regular clients who are users of microfinance services at least for three years, whereas control groups are a clients in the training or incoming clients (clients ready to get service from Gasha in the near future but not yet in the pipe line at present). This is done to see whether the improvements in the income of the clients could easily be achieved without joining the microfinance participation. On the other hand, the participant of Key informant interviews and Focus Group Discussion are selected purposively. The selection criterion includes knowledge of micro-finance issues and beneficiaries economic, social situations prior to Gasha services, or are currently using Gasha services.

3.4 Methods of Data Analysis

Descriptive statistics like mean, variance, standard deviations, frequency distributions, and percentages were used to assess the socio economic situations of the sample respondents. From the statistical tools, Chi Square test was used for dummy variables to investigate the difference between the treatment and control groups. In addition the Propensity Score Matching (PSM) was used to estimate impacts of Gasha microfinance services on different indicators

of poverty reduction. Rosenbaum and Rubin (1983) pioneered propensity score matching methodology followed by many other improvements and applications. They define propensity score as conditional probability of treatment given pretreatment characteristics. Their argument is based on the fact that since assignment of subject to treatment and control groups may not be random, the estimation of the effect of treatment may be biased by the existence of confounding factors. They proposed propensity score matching as a way-out to correct the estimation of effect of the participant controlling for the existence of these confounding factors. Based on the idea that the bias is reduced when the comparison is performed using treatment and control who are as similar as possible.

This study applied the propensity-score matching method to match each treatment client with control clients who had (almost) the same probability of joining microfinance participant. A group of control client was selected in this way can then serve as an accurate control group to correct for selection bias. Propensity score is a conditional probability estimator, and any discrete model such as logit or probit can be used as they yield similar results (Caliendo and Kopeinig, 2008). This study employed logit model assuming logistic distribution of the sample mean and variances. The matching estimators are nearest neighbor, stratified, radius and caliper, and kernel matching method all conditional on propensity score. The propensity score model is expressed as:

$$P(x) = Pr\{D = 1/X_i\} = E\{D/X_i\} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where D = (1, 0) the indicators of improvement in income, it is the binary variable whether a participating clients income improve (improvement in income, 1= yes, 0 = otherwise) χ_i = is a vector of pretreatment covariate

propensity score to ensure that matching estimation is done on treatment and control clients that are as similar as possible for effective comparison. As a result given a population of units denoted by (*i*) if the propensity score *P (xi)* is known as average effect of treatment (AET) can be estimated as

$$AET = E\{Y1i - Yoi / Di = 1\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

$$= \{E\{Y_{1i} - Y_{0i} / D_I = 1, P(xi)\}\}$$

$$= E\{E\{Y_{1i} / D_I = 1, P(x_i)\} - E\{Y_{0i} / D_i = 0\ P(x_i\} / D_i = 1\} \ldots\ldots\ldots 3$$

Where AET is the average effect of treatment

Y_{1i} and Y_{0i} are the potential outcome for the two counter factual situations of the treatment client and control client respectively. *P (xi)* is propensity score, D is client variable, where D= 1 if the clients participated in microfinance and 0 otherwise. This model works under two assumptions:

1) **The balancing assumption**: States that participation is shaped by pre participation characteristics or that the balancing of participants and control is through the propensity score. Therefore, if $P(x_i)$ is the propensity score then

$$D \perp X / P_{(X)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

$\perp$ represents independence i.e. exposure to the program participant (*D*) is shaped by the participation covariates (*Xi*) the balancing assumption is thus the propensity score P (*D*) = 1, Xi = P (*xi*).

2) **Conditional independence assumption**: Assume that selection is biased on observable covariate of the subject and treat all the covariates that influence participation and potential outcomes are simultaneously observed. It is expressed as

$$Y_1, Y_0 \perp D / P(xi) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

Where Y_1, Y_0 are potential outcomes with and without the program respectively, D_i is participation variable, $P(x)$ is propensity score. In other words, for a given propensity score exposure to program is random and therefore participant and control clients should be on average observationally identical (Caliendo and Kopeinig, 2008).

A logit model will applied to estimate propensity scores using a composite of predictors characteristics of the sampled clients (Rosenbaum and Robin, 1983) and matching were then performed using propensity scores of each observation. In estimating the logit model, the dependent variable is participation in microfinance services, which takes the value of 1 if a household participates in microfinance service and 0 otherwise. The mathematical formulation of logit model is as follows:

$$p_i = \frac{e^{Zi}}{1 + e^{Zi}} \quad \text{.....6}$$

Where, P_i is the probability of a clients to participate in microfinance services,

$$Z_i = \alpha_0 + \sum_{i=1}^{n} \alpha_1 x_i + u_i \quad \text{.....7}$$

Where I = 1, 2, 3....n
α_0= intercept
α_i = intercept regression coefficient to be estimated
x_i = predictors or explanatory independent variable and
u_i = a disturbance term,
The probability that a household belongs to non-participant or control group is

$$1 - p = \frac{1}{1 + e^{Zi}} \quad \text{.....8}$$

The mean impact of participant in microfinance is given by

$$I = \sum_{J=1}^{P} (Yij1 - \sum_{I=1}^{NP} Yij0) /P \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 9$$

Where, Y_{ij1} is the post intervention income level of beneficiary j, Y_{ij0} is the income level of the i^{th} non-beneficiary matched to the j^{th} beneficiary, P is the total number of participant or treatment client, NP is the total number of non-participant or control and I is income level in birr. Rosenbaum and Robin, (1983), the logit model via which the propensity score is generated include predictor variables that influence the selection procedure or participation in the program and the outcome of interest. Several factors guide selection of predictor variables. In this study, an explanatory variable of the logit model is identified using findings of previous empirical studies on impact of microfinance on household income level, and own field observation. The study includes as many explanatory variables as possible to minimize the problem of unobservable characteristics in the study.

3.5 Definition and Measurement of Variables

A combination of socio economic and demographic variables is used to explain client's participation in microfinance program as well as the outcomes in terms of poverty reduction.

The Dependent Variable of the Model: Participation in microfinance is a dummy variable indicating that whether a clients is treatment or control client, 1 for treatment participating household, and 2 other wise or control clients.

3.5.1 Description of Result Variables and Covariates

1. **Income of Clients (TOINCOM)**: Increasing income gives the households many options, increases consumption possibilities, allows the households the possibility of saving for future, reduces the weaknesses arising from future income failures and gives the children better educational opportunities. Hence, rising household income has a particular place in all poverty reduction programs including Gasha microfinance programs. Therefore, the impact of Gasha micro finance Institute on the income of its participants needs to be evaluated to see the extent to which microfinance programs have been successful in alleviating poverty.

2. **Saving of Clients (SAVR):** MFIs are spending much cost on awareness creation among their users so as to mobilize huge amount of saving and made that saving as a source of money for further lending (Meyer 2002). Saving culture of a people can play key impact in assuring sustainability of microfinance services. Savings can be used in case of emergencies, or to finance major purchases, investments or to smoothen out consumption.
3. **Assets accumulation (FIXA):** Assets accumulation plays a multitude of impacts among clients of microfinance service. The ways in which households use assets to smooth out consumption is a well-documented process. Households purchase assets when their income are better and sell them during the lean periods therefore assets also serve as a form of

saving. Besides an asset accumulation by borrowers is expected to have a positive impact on loan repayment performance having the perception that the assets will be under liability in case of default. In fact material assets which included other physical and financial assets like for instance land, housing, livestock, saving and jewelry, enable people to withstand shocks and expand their horizon of choices (World Bank, 2002). The researcher wants to evaluate the effectiveness of Gasha Micro-financial service on the level of asset accumulation of the clients.

4. **Decision Making Power:** Women's ability to influence or make decisions that affect their lives and their future is measured to be one of the important components of empowerments. Many microfinance institutions focus their attention on women's use of loan and ability to make decisions about loan based enterprises as the most direct impact of their program (Cheston and Kuhn, 2002). Thus, the measure of client's autonomy in the household decision making will constructed to capture client's empowerment status. It will be measured by the extent of their participation and impact in making decisions on issues such as expending money, use of profits from the loan based enterprise, puts loan enterprise income in the saving accounts , buying raw material and selling , using small items and use of loan. In such cases, the Gasha clients will asked whether they have made these decisions mostly alone, jointly with partner /children or spouses made them alone in both before and after the loan.
5. **Number of Clients:** in analyzing the effectiveness of microfinance in alleviating poverty, it is crucial to look at the outreaches performance of MFIs. It is argued that microfinance can play an important impact in poverty alleviation only if the extent of outreach is reasonably large (Tsegaye, 2005). Conversely, if MFIs are restricted to only few

geographical locations or serve only a small fraction of the population or the poor, their importance in poverty alleviation efforts would be limited (Mayoux, 1997). Outreach of microfinance sector can be looked at in numerous aspect among a few are the number of clients outreached and loan disbursed over the years

6. **Age (AGER):** It is continuous variable defined as clients age at the time of interview measured in years. Vigano (1993) noted that with increase in age, it is usually expected that participants get more stability and acquire experience. So we expect this variable to have a positive effect on performance. Hence age of the participant was hypothesized to have positively related to income. In other words, the probability of being microfinance treatment client increases with age.
7. **Sex (SEXR):** This is a dummy variable which takes a value 2 if the household head is female and 1 otherwise. Sex difference among microfinance clients play a significant impact in the economic performance of a given clients. Some empirical evidences demonstrated that sex is important in defining the economic impact of people in Africa (Dey, 1980). More specifically sex differentials can be related to access to microfinance services. This variable is included to differentiate between males and females in the use of microfinance. Women's are generally more likely to participate in small business and assumed to be microfinance client and in microfinance operation females are given priority. Therefore, in this study sex was expected to correlate positively when the participating household head is female.
8. **Marital Status (MARR):** this is a variable whether a household is engaged in marriage or not. Married individuals are more likely than single one`s to participate in microfinance services. Usually microfinance institutions provide small loan and other financial services

depending on individual's behavior and characteristics. Respondents will be ask about their marital status whether they are unmarried, married widow/widower or divorced in their life. The expectation of this variable will be positive relationship with income if a household is married and had family responsibility with participation in microfinance.

9. **Educational status (EDUR):** Household income is expected to be much higher when household head attain a higher level of education. According to Holvet (2004) education is an input in income since it provides the means of earning a higher income via enhancing earning capabilities. It is also a welfare outcome in itself as it allows individuals to participate in decision making that determine the well-being. Literate individuals may get more information about financial services in their residential area than individuals with no formal education.
10. **Family Size (FMSZR):** this variable refers to a total number of family members of the household make their life under one roof regardless of age and sex. Existence of large household size with limited income source could affect participation in microfinance. This indicates that it has positive impact on income. This is due to increased demand for consumption with limited income source. Therefore, the larger household size will become treatment household and it will have positive relationship on income generating ability of the household member.
11. **Dependency Ratio (DPRR):** continuous variable defined as number of dependent household members. This refers to total number of economically inactive members of a household whose age is below 18 years and above 65 years old. This variable tells us the proportion of household members who are dependent on the active members of the family. It was expected that the more the number of dependent in a

household the lower the income level would be because the per capita income lowers as the number of dependent increases.

4. RESULTS AND DISCUSSIONS

4.1 Descriptions of Characteristics of Sample Clients

This section discusses the characteristics of sample respondents by applying descriptive statistics such as mean, standard deviation, percentages, and frequency. Inferential statistics such as Chi square test (for categorical variables) and t-test (for continuous variables) are used for the two groups of sample respondents (programme participants and non-participants) so as to compare them with respect to some socio-economic, institutional and other characteristics that will shed light on the estimation of impact using PSM technique.

1. Association between Socio-demographic Characteristics of Clients and Income

Out of the total 220 respondents in the study area 73.18 % were female-headed and 26.82 % were male-headed households. Among male-headed households, 33.33 % were control clients and 19 % were treatment clients. Likewise, within female-headed households, 81 % and 66.67 % were treatment client and control client respectively. Among treatment clients 81 (81%) of them are female headed and 19 (19%) are male headed whereas among waiting clients only 33.33 % are male headed and 66.67 % are female headed. The statistical analysis showed that there was statistically significant difference in the sex of the household head between treatment and control client household heads at 5% of level of probability (Table 4.1).

Table 4.1 Comparison of Categorical Variable between Treatment and Control group

	Treatment Client		**Control Client**		**Total**		**X2**
Variables	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**	
Male	19	19	40	33.33	59	26.82	
Female	81	81	80	66.67	161	73.18	
Total	**100**	**100**	**120**	**100**	**220**	**100**	**2.41*****
Unmarried	10	10	25	20.83	35	15.91	
						6	
Married	59	59	84	70	143	5.00	
Widow	17	17	4	3.33	21	9.55	
Divorced	14	14	7	5.83	21	9.55	
Total	**100**	**100**	**120**	**99.99**	**220**	**100**	**3.94*****

*** Significant at $p<0.01$

Source: Authors' survey result (2017)

Table 4.1 shows that marital status of the respondents. The result indicates that the majority (78%) of the treatment client respondent and 85.83% of control clients were married. This shows that clients with household responsibilities (married individuals) were most likely to participate in microfinance services. It can also be assumed that married households are most likely to be involved in micro-enterprise activities, in part, because they can get initial capital and support from family. So it is fair to assume that these married household heads were most likely to get support in terms of capital and business ideas from their partners. It also goes with the belief that married individuals are considered to be more responsible and are more unlikely to break promises on their loans than unmarried individuals. This was pointed out by some of the members during the interviews when they were complaining about the default rates on their loans. Some of these members pointed out that unmarried individual just pack overnight and leave the area without anybody noticing their action. Marital status was statistically significant at 1%.

2. Comparison of Continuous Variable between Treatment and Control group

Table 4.2 shows the age distribution of respondents. Age ranged between 22 to 63 years old. The mean age of the head of the household was estimated to be 37.10. Most of the clients belong to the group of 31 to 45 years (40.45 %) followed by age group of 15-30 years (40.00 %) (Table 4.2). The t-test shows that age is statistically significant at 1% probability level. Level of education tends to determine where one works and income level. The respondents were divided into four groups with respect to educational attainment, including those having no formal education, primary school, secondary school and high school or more completed.

Table 4.2 Comparison of Continues Variable between Treatment and Control Client

Variables	Treatment	Control	Total Clients	Mean Diff	t-Value
Mean Age	39.37	35.21	37.1	4.16	2.81***
Mean Education	3.52	6.08	4.92	-2.56	-5.02***
Mean Family size	4.31	3.98	4.13	0.33	2.28**
Mean Dependency ratio	1.58	1.23	1.39	0.35	2.74***

*** Significant at p<0.01, ** Significant at p<0.05, and * Significant at p<0.1

Source: Authors' survey result (2017)

The majority of the respondents have obtained some education level and only 12.27% of the respondents were reported no formal education. Out of the total respondents, about 80% were treatment whereas about 60.83 % were the control clients were received a primary and secondary level of education. This shows the treatment group attained more primary and secondary education than control groups. The proportion of no formal educations for the treatment

clients is about 12% which is much nearly the same with that of the control clients (12.5%). This indicates that there is no difference in no formal education between treatment and control clients. Nearly 88 % of the treatment clients and 87.5% of the control clients have acquired primary, secondary and high school education. But the proportion of control clients (26.67%) with high school complete is by far greater than treatment (8%) clients (Table 4.2). Educational level of respondents has statistically significant influence on participation in microfinance services at 5% level. Sample Family size have an average size of 4.13 persons per household. The maximum Family size observed was 5 while the minimum was 1. The mean Family size of treatment client was 4.31 and that of control client was 3.97. Moreover, 10% of the sample households have less or equal to 2 Family members, 90% of the sampled Family size have more than 3 household members. This shows there is difference between the two categories under consideration. In addition, 90 % of the treatment client households, as well as more than 88% of control client households, reported to have three or more family members and the survey results show much variation in the average household size between the two group households. The t-test shows a statically significant difference in household size at 5% probability level (Table 4.2).

The dependency ratio calculated as the ratio of household members without income to household income earners, reflects the economic activities of a household. Households with higher dependency ratio will be more financially stressed than those with lower ratios. As dependency ratio increases, the need for enough basic needs and financial resource is also increase. This indicates economically productive age has to support itself as well as additional persons for their livelihood. About 75% of the sample clients experience a dependency ratio between zero and one and 17.27% of the sampled clients involved with a

dependency ratio of 2, and 7.73% sample clients experiences 3 to 4 dependency ratio (Table 4.2). Dependency ratio is statistically significant at 1% probability level in influencing impacts of participation in microfinance.

4.2 Differences in Outcome/Impact Variables between Gasha Microfinance Beneficiaries and Non-beneficiaries

The main aim of this study is to assess the impact of Gasha microfinance on poverty reduction. The impact will be measure in economic status of clients like income, saving, and asset holdings of clients. The psycho-social empowerment of clients will be measured in terms of participation in decision making power, and business management skill. The impact would be measured by comparing the means of the treatment clients with control group (non-participants). The t-test statistic and chi square test was used to test for significance.

Table 4.3 Comparison of Outcome Variables between Beneficiary and Non-beneficiary Groups

Variable	Beneficiaries	Non-beneficiaries	t-Value
Mean Income	1120.19	607.84	4.83***
Mean Saving	383.38	222.19	4.56***
Mean Expenditure on Health	361.58	298.44	9.06***
Mean Expenditure on Education	706.84	556.76	10.4***

Source: Authors' survey result (2017)

***Significant at $p<0.01$

1) Mean Income Difference between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

One of the primary objectives of the MFI is to improve the income of the participating clients through the provision of financial services as a business startup and/or expansion loans. If we look at the descriptive statistics for the treatment and control groups, the mean income of treatment client is more than the mean income of the control clients (1120.19 versus 607.84). As indicated the mean difference in income level between the treatment and the control clients is 513 Birr. About 80% of the treatment household reported an improvement in their incomes from the time they accessed financial services from Gasha MFI where as 50.83% of control household respondent expressed an increase in income of the household during the same period with their counter part in treatment group. This shows income level of treatment group is more improved as compared to the control group. Increased incomes from the businesses were, therefore, channeled into enhancing facilities like furnishing house, children's education, food and expenditure on health. The table that present the result for the sample showed that there is statistically significant mean income difference between the beneficiaries and non-beneficiaries of Gash microfinance services.

2) Mean Saving Difference between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

The majority of the (74%) expressed that their participation in the Gasha have given them an opportunity to accumulate savings. However the saving ability of the control group is much less than their counter part (26%). If we look at

the descriptive statistics for the treatment and control groups, the mean saving of treatment client is more than the mean saving of the control clients (383.38 versus 222.19). As indicated the mean difference in saving between the treatment and the control clients is 161.19 Birr. This indicates that treatment group felt empowered because they owned their saving even though it was small, and they still could accomplish gender specific impacts and responsibilities within their households. The respondents appreciated Gasha savings arrangement because saving money at home is problematic due the risks involved such as theft, fire and the temptation to misuse, particularly when there is an additional income.

The FGD result show that many of the respondents have savings account in Gasha but are not aware of the amounts they have and the applicable interest rates. In some cases the clients withdraw all or some of their savings and they start to save all over again. There are also case where respondents feel that the money they have at hand before joining the Gasha is too little to be in a bank. A case in point in this regarded is statement quoted from 42 years old key informant client.

> Before joining the Gasha, I did not have a saving account. Since I had a very small amount of money, it was shameful to go to the bank and deposit it. In addition, I did not have the necessary knowledge of saving to do that. I now have a bank book opened with the Gasha which allows me to deposit my savings upon settlement of the loan (key informant interviewee).

This indicates that the Gasha helped them to earn money and open a saving account relieving them from the feeling of intimidated to deposit small money in their account. Nowadays they can save and deposit a small amount of

money starting from Birr one which they are able to do every time when they go to the Gasha to settle their loans.

3) Mean Health Expenditure Difference between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

Expenditure on health status of the respondent is a critical variable for the wellbeing of the client since a healthy client is more productive and resources that go to medication can be saved or invested in income generating activities, hence progress in income helps to come out of the poverty trap. Health is also an important ingredient in protecting the productivity of the household's effective use of the household scarce resources. Table 4.3 shows that the treatment client respondents about 92 % of the treatment client's respondents had the capacity to meet their medical expense while 8 % of the treatment clients were remain the same in ability to pay the private medical expenses after joining Gasha MFI. About 80.45% of both groups showed an improvement in their economic performance to cover their medical expenses while about 19.55 % of both groups remain the same in economic performance to cover medical expenses which seems to be explained by increasing cost of medication. Majority of the clients had a sick person in the family in the last three years. All the clients could afford to visit health centers and also could afford to pay the medical expenses every time a member of the household could fall sick. This indicates that participation in micro financing activity enabled the treatment clients to cover medical expenses whenever a family member faces sickness.

4) Mean Health Expenditure Difference between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

There were different questions asked to the clients about their expenditure on children's education. The first one sought to find out how many children are

in the household who were in the school age and how many attended school both boys and girls. 74% of treatment clients revealed an improvement in terms of covering their children's schooling expenses whereas that of control client is 70%. This shows there slight difference between the two categories. However, 30% of the control group and 26% of treatment group have no change in expenditure on children`s education. The respondents felt empowered due to the fact that they had a substantial contribution towards the education of their children. Apparently 71.82% of the respondents had children or grandchildren in school ranging from nursery (kindergarten) school age to higher education. The means expenditure for control households was less than that of the treatment households. The participating households had mean expenditure greater than the general mean expenditure for total sample of 220. The t-test (t = 10.40) showed that the difference in expenditure between the groups is significant.

5) Percentage Difference in Asset Accumulation between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

Assets accumulation plays a multitude of impacts among clients of microfinance service. The ways in which households use assets to smooth out consumption is a well-documented process. Households purchase assets when their income are better and sell them during the lean periods therefore assets also serve as a form of saving. Besides an asset accumulation by borrowers is expected to have a positive impact on loan repayment performance having the perception that the assets will be under liability in case of default. In fact material assets which included other physical and financial assets like for instance land, housing, livestock, saving and jewelry, enable people to withstand shocks and expand their horizon of choices (World Bank, 2002). As a result the researcher holds the position of evaluating the effectiveness of

Gasha Microfinance service on the level of asset accumulation of the clients. Out of all respondent 72.27 % of them affirmed that they have fixed and movable asset after joining the microfinance provision. However, 27.73% of them avowed that they didn't possess any movable asset after being the client of Gasha. Subsequently based on the survey result the impact of Gasha microfinance service provision on the respondent asset accumulation will be exhibited in the next table below.

Table 4.4 Asset accumulation of Beneficiaries after joining Gasha (% of respondents)

Outcome Variable	Treatment (N=100)%	Control (N=120) %	Total (N=220)%	X^2
Asset accumulation after joining Gasha				
Yes	91%	57%	72.27%	
No	9%	43%	27.73%	
Total	100%	100%	100%	4.21^{***}

***, **, * significant at 1%, 5% and 10% probability level respectively Source: Authors' survey result (2017)

6) Percentage Difference in Psycho-social Empowerment between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries

The treatment clients were asked whether participation in microfinance program has empowered them. The majority who answered to this question felt that their position in the family had been strengthened, had attained a real change in their lives and self–esteem when they compare themselves to the period before they joined microfinance. Many felt that they can look after their children and educate, afford a nutritious diet to the household and are no longer dependent on others shoulder. Some treatment clients said that with the income they get, have managed to buy housing furniture and fixture while others said that their voices are heard in the household, their contribution in

terms of income, their involvement in the decision making process has increased. On a business level, several participants have managed to set up their businesses and run. As a consequence of this their leadership and business skills have been enhanced. Generally, access to microfinance resources tends to improve participants bargaining position within and outside the household.

There are remarkable changes in the situation of treatment or participants accruing to microfinance intervention. Treatment clients have had their voices strengthened, they have managed to set up their businesses, they are no longer dependents on others and their leadership as their business skills has been enhanced. Moreover, they have gained more confidence that can enable them to stand in public and speak. Some of them have managed to join politics and have been elected on local councils namely Woreda. Now they can attend and speak freely in village meetings.

Table 4.5 Percentage Difference in Business Expansion & Decision Making between Gasha Microfinance Services Beneficiaries and Non-Beneficiaries Improvements

	Treatment	Control	Total	X^2
Impact Variable	(N=100)%	(N=120) %	(N=220)%	
Business expansion				
Yes	84	60	70	
No	16	40	30	
Total	100	100	100	6.69***
Decision making				
Improved	92	68	79	
Remain same	8	32	21	
Total	100	100	100	1.77*

***, * significant at 1%, 5% and 10% probability level respectively Source: Authors' survey result (2017)

Respondents in this study felt that microfinance services had a positive impact on their lives, because they saw an increase in their incomes, they had an opportunity to save money, they could contribute to children's education, and they were better able to purchase household assets. Additionally, most program participating respondents (92.5% Vs. 68%) reported that they felt empowered to decisions because their self-confidence was promoted, leading to an enhanced ability to exchange and learn new ideas from fellow group members. Some respondents believe they learned a lot through group interactions and through exchanging ideas with fellow members. Some of the group members who have had the opportunity to become group leaders such as a chairperson, a secretary and a treasurer in the group, felt empowered and confessed that being leaders within Gasha groups also had a spillover effect. Others have taken responsible social positions in their communities (Table 4.5).

It was apparent from respondents with participating clients that they saw the financial services they received from Gasha microfinance institution as a means to improve the well-being of the entire family and not just to themselves. The majority of the respondents (93%) recognized that self-confidence was raised because they were more in control of their lives, and the feeling of ownership and being successful. In summary microfinance program of Gasha have been empowering them by increasing their business skills, improving their self-esteem, and increasing their impact of decision-making in household and community through improved access to jobs, training, expanded businesses, supervision and group meetings.

4.3 Econometric Estimation Results for the Impact of Gasha Microfinance Services on Outcome Variables

4.3.1 Estimation of propensity scores

The logistic regression model was used to estimate propensity score matching for treatment and control client households. As, indicated earlier, the dependent variable is binary that indicate households' participation decision in the microfinance services. Results presented in Table 4.9 shows the estimated model appears to perform well for the intended matching exercise. The pseudo-R^2 value is 0.376. A fairly low R^2 value shows that program households do not have much distinct characteristics overall and as such finding a good match between treatment and control clients becomes easier. The pseudo- R^2 indicates how well the regresses explain the participation probability. After matching there should be no systematic differences in the distribution of covariates between both groups and therefore, the pseudo- R^2 should be fairly low (Caliendo and Kopeinig, 2008).

The results in Table 4.6 are generally unsurprising and reveal a number of significant covariates of program participation. The probability of a client's participating in microfinance tends to increase with sex being female, individual with married and hold family responsibility, large household size, self-employed or casual occupation, with household ability to save and decrease with the age, educational level and dependency ratio. Sex, family size and dependency ratio were all not statistically significant. This means that there is no relation between sex, family size and dependency ratio with participation in microfinance services. Looking at the result for the logit estimated sample in table 4.9 the intercept (0.755) is positive and significant, showing that the microfinance has positive impact on the reduction of poverty. Eight variables were hypothesized to explain factors affecting participation in microfinance. Out of these five of the variables were found to

be statistically significant at least at 5% while the three were less significant in explaining the variations in the dependent variable. The maximum likelihood estimates of the logistic regression model show that age, marital status, educational level, savings of client and income of clients are important factors influencing access to participation in microfinance in the study area (Table 4.6).

Table 4.6 Logit results of client's program participation

Participation	Coefficients	Std. Err.	Z
Age	0.0419**	0.0164	2.54
Sex	0.2506	0.4551	0.55
Marital status	0.9104***	0.2582	3.53
Education level	- 0.1139**	0.0546	-2.08
Family size	- 0.0484	0.2110	-0.23
Dependency ratio	0.2813	0.2301	1.22
Saving of Client	-0.1696***	0.0307	-5.51
Income of Client	0.0605***	0.0108	5.58
Constant	0.7550**	0.2425	3.11

Pseudo R^2 = 0.376
Log likelihood = -94.5613
LR chi^2 (8) = 114.04
Prob > chi^2= 0.0000

*** and ** Significance at 1% and 5% respectively.
Source: Authors' survey result (2017)

Again it is important to emphasis that all the variables with weak predictive ability included in the logit regression can be still helpful to minimize bias in estimating casual effect in propensity score matching, since the ultimate goal is to not to predict selection in to treatment but to balance covariates and get closer to the observationally identical non participants. Looking into the

estimated coefficients (table 4./), the results indicate that participation in microfinance is significantly influenced by five explanatory variables. Education level and savings of clients are found to have strong and positive relationship with client's participation in the microfinance. The level of significance is at 1% for marital status, saving of client and income of clients, 5% for age and educational level. By contrast age, marital status and income of client has a strong and negative effect on household participation in microfinance service at 5%, 1% and 1% significant level respectively.

The result of the logistic regression model is used to estimate propensity scores for matching treatment client with control client. As indicated earlier, the dependent variable in this model is a binary variable indicating whether the client was a participant in the microfinance. The model is estimated with Stata 14 computing software using the propensity scores matching algorithm developed by Leuven and Sianesi (2003). In the estimation data from the two groups; namely, treatment and control client were pooled such that the dependent variable takes a value 1 if the household was treatment client (in the program) and 2 otherwise. Propensity score matching is a way to "correct" the estimation of treatment effects controlling for the existence of these confounding factors based on the idea that the bias is reduced when the comparison of outcomes is performed using treated and control subjects who are as similar as possible. Since matching subjects on an n-dimensional vector of characteristics is typically unfeasible for large n, this method proposes to summarize pre-treatment characteristics of each subject into a single-index variable (the propensity score) which makes the matching feasible (Shadure, 2009).

The extent to which this bias is reduced depends crucially on the richness and quality of the control variables on which the propensity score is computed and the matching performed. To be more precise, the bias is eliminated only if the exposure to treatment can be considered to be purely random among individuals who have the same value of the propensity score. The propensity score matching (PSM) model were employed to estimate income improvement effects of access to MFIs and loans used for productive business purposes. This model compensates for endogenous binary treatment effects or sample selection bias associated with access to MFIs. Despite some limitations e.g. arising from the unobservability of potentially important determinants of participation in microfinance program, significantly positive effects of MFI access on the multidimensional welfare indicator were confirmed by the model, a result which suggests that MFIs play a significant impact in improving income level. We found that the results from the propensity score matching model were similar to those derived by kernel matching in the PSM model (Shadure, 2009).

Propensity score matching (PSM) constructs a statistical comparison group that is based on a model of the probability of participating in the treatment, using observed characteristics. Participants are then matched on the basis of this probability, or propensity score, to nonparticipants. The average treatment effect of the program is then calculated as the mean difference in outcomes across these two groups. The validity of PSM depends on two conditions: (a) conditional independence (namely, that unobserved factors do not affect participation) and (b) sizable common support or overlap in propensity scores across the participant and nonparticipant samples (Shadure, 2009).

4.3.2 Impact of Gasha Microfinance Services on Poverty Reduction

1) Impact on income of the client

Table 4.7 presents results from the PSM model that was estimated for comparison purposes with the treatment effect model results. Three matching estimators, the inverse-probability weights, the nearest neighbor and the propensity-score matching algorithms were employed for all out come variables as robustness checks. The three estimators result indicate that microfinance has a significant impact on the income of clients. Participants got more monthly income as compared to non-participants. In this respect, the difference between participants and nonparticipants in total monthly income is significant at 1% significant level. ATT results of these algorithms show that participation in the microfinance program increased income of the household by birr 493.31, birr 461.63 and birr 465.49 for inverse-probability weights, nearest neighborhood and propensity-score matching respectively. The average income estimated using the inverse-probability weights matching algorithm is higher than that of the other two matching algorithms. Moreover, there is a slight difference in the average monthly income difference of participant and their counter factual between the results of these algorithms and result of simple t-test (table 4.3) ranging from birr 19.04 to birr 50.72 for inverse-probability weights and nearest neighborhood matching algorithms. This indicate that, the difference revealed with these algorithms is the only difference with participation to microfinance or not and the difference between the result of these algorithms and the result of t-test is the difference with un observable factors. Comparing the results across the different matching methods indicate that the estimated microfinance impact is robust.

Table 4.7 Impact of Gasha Microfinance Services on Poverty Reduction

Outcome Variable	Matching Method	*ATT*	*Std.Err*	*z-value*
Income of Clients	Inverse-probability weights	493.31***	116.53	4.23
	Nearest Neighborhood	461.63***	115.33	4.00
	Propensity-score matching	465.49***	117.34	3.97
Savings of Clients	Inverse-probability weights	155.06***	38.93	3.98
	Nearest Neighborhood	143.90***	38.57	3.73
	Propensity-score matching	144.66***	39.06	3.70
Expenditure on Health	Inverse-probability weights	80.40***	8.31	9.68
	Nearest Neighborhood	82.49***	9.86	8.37
	Propensity-score matching	78.80***	10.80	7.29
Expenditure on Children education	Inverse-probability weights	161.11***	16.39	9.83
	Nearest Neighborhood	135.77***	29.10	4.67
	Propensity-score matching	166.33***	19.20	8.66

*** significant at1% probability level
Source: Authors' survey result (2017)

2) Impact on Saving level of Beneficiaries

Table 4.7 shows that participants save more as compared to non-participants. The ATT result of the above three algorithms revealed that participants' saving status is significant at 1% significant level. Results show that participation in the microfinance program increased the amount of saving of the non-participant by birr 155.06, birr 143.895 and birr 144.66 based on the ATT results of Inverse-probability weights, Nearest Neighborhood and Propensity-score matching algorithms respectively. This means that the amount of saving of treatment client is higher with these figures compared to control clients. All of these figures are smaller compared to the difference of saving between participant and non-participant simple t-test (table 4.3) which is 161.19. This indicates the robustness of the PSM method and this is the reason why the researcher choices this method.

3) Impact on Health Expenditure

Table 4.7 demonstrates that participants‟ expenditure on health is higher as compared to nonparticipants. This indicates that participants have an access to get health treatment for his/her household member. In this respect, the difference between participants and non-participants is significant at 1% probability level. Results show that participation in the microfinance program increased expenditure on health of the household by birr 80.398, birr 82.49 and birr 78.8 using ATT results of Inverse-probability weights, Nearest Neighborhood and Propensity-score matching algorithms respectively. The differences between these results and t-test result ranges from 15.66 to 19.35 for Propensity-score matching and Nearest Neighborhood respectively. Indicating the most robustness of Propensity-score matching algorithm compared to other methods and conservativeness of t-test. This difference comes from the impacts of un observable variables to the researcher. So, the difference between participant and non-participant because of microfinance participation is the result of these algorithms with the best one is the result of Propensity-score matching algorithm.

4) Impact on Children's Education Expenditure

Table 4.7 reveals that participants expend more for education as compared to non-participants. In this respect, the difference between participants and non-participants is significant at 1% probability level. Results show that participation in the program increased expenditure on education of the household by birr 161.112, birr 135.77 and birr 166.63 for ATT results of Inverse-probability weights, Nearest Neighborhood and Propensity-score matching algorithms respectively. From these results, results of propensity score matching is higher indicating its conservativeness compared to other two.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

In this study, the survey analyzed the impact of microfinance on poverty reduction of participants in Gasha micro finance conducted on 220 clients using the technique of propensity score matching. The study used a comprising approach of a treated and a control group. The treated group is composed of clients who participated at least for three years, and the control group is made up of new program entrants or potential clients waiting for the service. The study applied recent advances in propensity score matching methods to assess the impact of microfinance on poverty reduction. Since a baseline survey or randomizations are not feasible options in this case, the study is well suited to matching methods. For the purposes of comparison the study presented estimated results with treatment and control groups separately. There are several attractive features associated with propensity score matching, including the potential to allow for heterogeneous impacts, while optimally weighting observed characteristics when constructing a comparison group. The technique is well suited due to its flexible (non-parametric) nature, not imposing exclusion restrictions or ad hoc assumptions about the functional form of impacts. The method eliminates selection bias due to observable differences between treatment and controls. Although a very limited data set was used, permitting to match on a wide range of household characteristics, the likelihood always remains of latent unobserved factors being correlated with microfinance participation and outcome variables.

In the study area, respondents from the treatment category were found to register an increased income for the last three years in comparison with control group. With respect to client's income improvement, participation in microfinance services definitely has a positive impact for low-income earner

clients. Most of the clients intimated that their participation in the microfinance program has brought about an increase in income level, increase in savings, and increase in total expenditure. The impact in decision making of most of the clients has increased significantly since joining the program. The study also established that through the training and education the field officers offer to their clients before loan dispersed, helps them manage and run their businesses well. The leadership positions the female clients occupy in their various groups has helped build their leadership skills.

5.2 Recommendation

Depending up on the findings of this study, the following recommendations are forwarded. The MFI should be encouraged to give loans to individuals who are not accepted at the group level due to low or no income generation or business activity apart from farming, to uphold the fundamental objective of the MFIs. The MFI should also provide microcredit to the poor who have good business plans to start up their own businesses thereby alleviating them from poverty and not only target the productive poor. To fully achieve their impact of reaching out to the poorest, MFIs must move to the countryside where poverty is endemic in Ethiopia and elsewhere in the developing countries. They can still operate in some area in poor communities and be profitable since the clients are ready to pay whatever interest rate they charge them as they are being provided with a tailor-made products and services they need on a continuous basis.

Finally, sustainable development and poverty reduction objectives can only be successful through the implementation of practical and sound development instruments and strategies. Provision of microfinance is one of the most essential instruments of tackling the problem of poverty and under development. Therefore, such institutions should gain all necessary supports

from the government, the public, funding institutions, and other development stakeholders. The government also can do more in reducing poverty by providing the rural areas with good infrastructure and social amenities to attract more microfinance activities to the extreme poor in those deprived areas. It is only through working together that we can tackle the challenges of poverty in Ethiopia.

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