UNIVERSITY OF AGDER

A Comparative Analysis of Micro Finances:

An Economic Impact of Micro Finance upon Income Level of People in Kavrepalanchok District, Nepal

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This master's thesis is carried out as a part of the education at the University of Agder and is therefore approved as a part of this education. However, this does not imply that the University answers for the methods that are used or the conclusions that are drawn.

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ABSTRACT

Micro Finance, one of the essential banking services providing institution has a major contribution upon the economic development of people and nation. It targets mostly to low income generating people and assist them to enhance their life style in a better way. It provides financial services to such people and tries to eradicate the poverty from the nation. Kavrepalanchok district in Nepal, with an area of 1,396 square kilometer with the population of more than 450,000 is a gateway to capital city Kathmandu. The people in this district rely upon business and agricultural income. Micro Finance has significant effect upon the level of income in this district. The distance from the main city Kathmandu has also adverse effect upon the level of income and economic development of the people in Kavrepalanchok district. It assists to uplift the level of income of the people here by providing small loan with lower interest rate. It provides loan in a group of people. Micro Finance in this region generally provides its financial services only to women from a single family. Further, Micro Finances with different established dates and locations have their individual economic impact upon their clients. This comparative economic impacts result to their level of financial performance.

Keywords: Agriculture, Business, Economic Development, Income Level, Micro Finance

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LIST OF ABBREVIATIONS

Short Form		Full Form
AIAL	:	Agriculture Income After Loan
AIBL	:	Agriculture Income Before Loan
AIY	:	Agriculture Income for Y observations
BIAL	:	Business Income After Loan
BIBL	:	Business Income Before Loan
BIY	:	Business Income for Y observations
BRI	:	Bank Raykat Indonesia
CIDA	:	Canadian International Development Agency
EI	:	Economic Impact
FDI	:	Foreign Direct Investment
IA	:	Impact Assessment
IAL	:	Income After Loan
IBBL	:	Islami Bank Bangladesh Limited
IBL	:	Income Before Loan
INGOs	:	International Non-Governmental Organisations
IO	:	International Organisations
MFI	:	Micro Finance Institution
MFIs	:	Micro Finance Institutions

MIS	:	Management Information System
NGOs	:	Non-Governmental Organisations
NRB	:	Nepa Rastra Bank
NRs	:	Nepali Rupees
OLS	:	Ordinary Least Square
PLA	:	Participatory Learning and Action
RI	:	Real Income
ROSCA	:	Rotating Saving and Credit Associations
S.D.	:	Standard Deviation
UNCDF	:	United Nations Capital Development Fund
UNDP	:	United Nations Development Programme
UNO	:	United Nations Organisation
WB	:	World Bank

CHAPTER 1

INTRODUCTION

1.1. Background of the Study

This thesis is prepared in order to identify the effects of micro finance institution which will focus upon the economy of rural people. It has revealed the specific impact of various micro finance institutions considering the level of income of people who are the parts of it. The concept of micro finance institution had risen with the objectives of providing very small amount of loans to the entrepreneurs who want to start business on their own. The primary aim of this micro finance institution is to reduce poverty and increase the level of income in order to get poeople above the poverty line, especially in developing country and to increase the economic status of the people and nation. As micro finance institution plays critical role in uplifting the level of income, this thesis tried to explore different level of impact by comparing the financial services provided by them. While comparing such effects, various size and locations are also taken in consideration. Besides, establishment of micro finance institution also does matter so the duration of its service time also has important effects. Based upon all those circumstances, this thesis has somehow able to compare two micro finances and their potential to uplift the level of income of both people and developing nation. From this research, the reader will be able to know the exact information of the position of micro finance services and how well they are serving its people.

1.2. Statements of Problem

A research question is important to figure out because it helps in overall planning process of thesis. The questions act as a guideline to find out investigation and reach to the final conclusion. It summarizes the whole thesis and helps in writing the literature review by constructing logical argument. So, we have also formulated our research question which will guide us to write a good thesis.

What is the impact of micro finance institution upon agricultural income and business income in the economic development of people in Kavrepalanchok district?

1.3. Objectives of the Study

Every research should be supported by objectives of the study as it reflects the researchers writing purpose. The objectives of this thesis are to illustrate:

- How micro finances impact upon the level of income considering agricultural income and business income of people in Kavrepalanchok district in Nepal?
- What is the difference between the two micro finances one with recent establishment and the other serving for long time period, considering their sizes and location from the main city?

1.4. Limitation of the Study

Limitations of this research are:

- The study was focused primarily on change in level of income.
- The study demonstrated the impact upon economic development of the people in Kavrepalanchok district by two MFIs (Micro Finance Institutions) considering size and location as a controlling driver.
- The data interpretation was assessed based on simple OLS (Ordinary Least Square) technique and t-test: Paired Two Sample for Means.

1.5. Structure of the Report

This report is organized in five chapters including the following chapters.

- Chapter 1 *"Introduction"* explains the Background of the study, Statement of problems, Objectives of the study and Limitations of the study.
- Chapter 2 *"Literature Review"* describes the various concepts of Micro Finance, framework, hypothesis and Related Works
- Chapter 3 *"Research Methodology"* explains about the source of data and the used mathematical tools.
- Chapter 4 *"Result and Analysis"* explains about results, analysis and discussion of this research.
- Chapter 5 *"Conclusion, Recommendation, Limitations of two villages and Future Works"* explains the conclusion of the research, recommendations, limitations of two villages and future works.
- *References*

CHAPTER 2

LITERATURE REVIEW

2.1 Micro finance Institution

Micro finance institution (MFI) can be simply defined as a banking service providing institution, that targets mostly to low-income generating individual or group by creating a platform for them to enhance their life style and living standard in a better way. It facilitates its client with various tools of saving, borrowing and insuring services. Micro finance institution mostly aims to eradicate poverty by providing effective financial services to poor people.

In the study by Sarkar (2014), there are billions of people in the world living below the poverty line. Among these poor communities, one child in five does not live to see his or her fifth birthday. One study in 2006 showed that the ratio of the income between the 5% richest and 5% poorest of the population is 74 to 1 as compared to the ratio in 1960, which was 30 to 1 (Khan & Rahaman, 2007). To enhance international development, the United Nations Organization (UNO) announced the millennium development goals, aimed to eradicate poverty by 2015 (Barr, 2005). In this regard, micro finance institution is the form of financial development that has its primary aim to alleviate the poverty (Barr, 2005). Governments, donors and NGOs around the world responded enthusiastically with plans and promised to work together towards the realization of these goals. In the recognition of micro finance institution, the UNO celebrated the year 2005 as a year of micro-credit (Mia, 200), as a result this financing instrument is perceived worldwide as a very effective mean against hunger and poverty, mainly in developing countries.

In Business News Daily (Brooks, C. 2013), Micro finance institution refers to an array of financial services, including loans, savings and insurance, available to poor entrepreneurs and small business owners who have no collateral and wouldn't otherwise qualify for a standard bank loan. Most often, micro loans are given to those living in still-developing countries who are working in a variety of different trades, including carpentry, fishing and transportation. So, micro finance institution encourages poor people to make savings and deposits from the small amount they have which can be used for health, education, and for fulfilling their

primary basic needs. Micro finance institution has come up with very broad concept of providing a kind of banking services to those groups of people who have very low income or have no any employment. So, micro finance institution is an approach to economic development that involves providing an opportunity to low income people. The services provided by micro finance institution are savings, borrowings, loans and deposits and also other social programs such as training and education, health related programs etc.

In the study by Khan & Rahaman (2007), micro finance institution is not a new development but some developed countries as well as developing countries particularly in Asia have a long history of micro finance institution. During the eighteenth and nineteenth centuries, in number of European countries, micro finance institution evolved as a type of the informal banking for the poor. Informal finance and self-help have been at the foundation of micro finance institution in Europe. The early history of micro finance institution in Ireland can be traced back to 18th century. It is a history of how self-help led to financial innovation, legal backing and conductive regulation, and creating a mass micro finance institution movement (Khan & Rahaman, 2007).

2.1.1   Key Concepts

- **Micro finance Institution (MFI)**

The term micro finance institution refers to the financial services provided to the low-income and self-employed people who are beyond the eyes of formal financial and banking institutions. This category of people gets financial services like credit savings and insurance services as well. Beside, it provides other vocational programs like training, health care programs, educational programs etc. to uplift the economic condition of the poor people. The main objectives of these financial services are to reach to the most underdeveloped part of the nation and provide facilities of small loans and deposits for poor households.

- **Economic Development**

Economic development can be defined as the development of the living standard of the people, improvement in the health and safety area of the nation, increment in literacy rate and increment in the welfare of the people as well as whole country. In general, economic

development is the efforts of people, local governments and state towards improving the individual life, better jobs, better education, better ideas and innovation and overall better quality of life. However, it is obvious that economic development can be successful if people, state and local governments are willing to focus on it from their inner core of heart.

- **Salaries**

Salaries are the amount paid by the employer to the employee for the services employee has given. Salaries are fixed according to the company and type of work. Salaries can be paid in various forms like wages and can be paid at monthly, quarterly etc basis. Salaries act as an effective tool for economic development. It is the salary by which people can fulfill their priority and can get rid of poverty. The amount people receive in the form of salary helps to make people and their living standard better which spontaneously leads to the economic development of the nation.

- **Start-up**

In general, start-up is a newly created company which is considered innovative in the process of development. It is a new business which can be in any form and sizes. They are often assumed to be solely technology-based companies, but this is not necessarily true: the essence of startups is generally related to the concepts of ambition, innovation, scalability and growth.

- **Employment**

It is an occupation where people engage in something to earn money and to make their life better. In employment, two parties are involved one is employer and other is employee. Employer hires employee and they go through legal contract. Employee has to perform the assigned task and in return they will be paid by the employer. Simply, employment can be referred as a bridge that helps to reduce the poverty line of the country and assists in the economic growth of the nation. More the people are employed, more the country will be developed.

2.1.2 Introduction to MFI

In one developmential study (Kirkpatrik et al, 2002, p. 173), micro finance institution is a bit of a catch all-term. Very broadly, it refers to the provision of financial products targeted at low-income groups. These financial services include credit, savings and insurance products. A series of neologisms has emerged from the provision of these services, name micro-credit, micro-savings and micro-insurance.

Micro finance institution is the provision of financial services to low-income poor and very poor self-employed people (Otero, 1999, p.8). These financial services generally include savings and credit but can also include other financial services such as insurance and payment services (Ledgerwood, 1999). Schreiner and Colombet (2001, p.339) defined micro finance institution as micro finace is the attempt to improve access to small deposits and small loans for poor households neglected by banks. Also, micro finance institution is defined as the provision of a broad range of financial services to poor, low income households and micro-enterprises usually lacking access to formal financial institutions (Canadian International Development Agency and Micro finance institution, 2002).

Generally, **micro finance** and **microcredit** are termed in a similar way, but there is a distinctive difference in between them which should be brought in notice. Sinha (1998, p.2) states that microcredit refers to small loans, whereas micro finance institution is appropriate where NGOs and MFIs supplement the loans with other financial services (savings, insurance, etc). Therefore microcredit is a component of micro finance institution in that it involves providing credit to the poor, but micro finance institution also involves additional non-credit financial services such as savings, insurance, pensions and payment services (Oikocredit, 2005).

2.1.3 The History of MFI

Over the past centuries, practical visionaries, from the Franciscan monks who founded the community-oriented pawnshops of the 15th century to the founders of the European credit union movement in the 19th century (such as Friedrich Wilhelm Raiffeisen) and the founders of the microcredit movement in the 1970's (such as Muhammad Yunus and Al Whittaker),

have tested practices and built institutions designed to bring the kinds of opportunities and risk-management tools that financial services can provide to the doorsteps of poor people (Helms, 2006). In the study by Wrenn (2005), from the 1950s through to the 1970s, the provision of financial services by donors or governments was mainly in the form of subsidized rural credit programmes. These often resulted in high loan defaults, high lose and an inability to reach poor rural households (Robinson, 2001). Robinson has mentioned that 1980s was found to be a turning point during the evolution of Micro finance institution. Grameen Bank and Bank Raykat Indonesia (BRI) started operating with profitable petty loans and saving services in lump sum amount and received no continuing subsidies, were commercially funded and fully sustainable, and could attain wide outreach to clients (Robinson, 2001).

In 1990s there were accelerated growth in the number of micro finance institutions created and an increased emphasis on reaching scale (Robinson, 2001, p.54). Dichter (1999, p.12) refered to the 1990s as the micro finance institution decade. Micro finance institution had now turned into an industry (Robinson, 2001). Along with the growth in microcredit institutions, attention changed from just the provision of credit to the poor (microcredit), to the provision of other financial services such as savings and pensions (micro finance institution) when it became clear that the poor had a demand for these other services (Wrenn, 2005). In 1997, Microcredit Summit was launched which demonstrated the core importance of micro finance institution. In 2005, Microcredit Summit aimed to reach 175 million of the world's poorest families, especially the women of those families, with credit for the self-employed and other financial and business services, by the end of 2015.

2.1.4 Features of MFI

Micro finance institution is normally introduced to target upon poor people who deprives to uplift themselves from their poor economic condition. Those poor people who are willing to improve their living standard but feel themselves as a handicapped due to the lack of money and high financial risk factors, micro finance institution is a convenient server for them. Micro finance institution has its several features with effective financial products which include (Murray and Boros, 2002):

- Little amounts of loans and savings.

- Short- terms loan (usually up to the term of one year).
- Payment schedules attribute frequent installments (or frequent deposits).
- Instalments made up of both principal and interest, which amortized in course of time.
- Higher interest rates on credit (higher than commercial banks rates but lower than loan-shark rates), which reflect the labor-intensive work associated with making small loans and allowing the micro finance institution intermediary to become sustainable over time.
- Easy entrance to the micro finance institution intermediary saves the time and money of the client and permits the intermediary to have a better idea about the clients' financial and social status.
- Application procedures are simple.
- Short processing periods (between the completion of the application and the disbursement of the loan).
- The clients who pay on time become eligible for repeat loans with higher amounts.
- The use of tapered interest rates (decreasing interest rates over several loan cycles) as an incentive to repay on time. Large size loans are less costly to the MFI, so some lenders provide large size loans on relatively lower rates.
- No collateral is required contrary to formal banking practices. Instead of collateral, micro finance institution intermediaries use alternative methods, like, the assessments of clients' repayment potential by running cash flow analysis, which is based on the stream of cash flows, generated by the activities for which loans are taken.

2.1.5 MFIs in Nepal

Micro finance institution in Nepal consists of both formal and informal institutions that provide financial service to assist in creating income opportunities and self-employment for poverty alleviation. The Central Bank of country, i.e. Nepal Rastra Bank (NRB) controls, regulates and monitors all the financial institutions in Nepal. In order to increase the financial services within the nation, NRB needs to enhance its capabilities to regulate, supervise and monitor large number of Micro finance institution Institutions (MFIs), also focusing with innovative and suitable credit policies. For the poverty alleviation purpose, such action can result to create an enabling environment for MFIs to grow and attain sound financial health.

Studies in Nepal and elsewhere (Rahman and Khander, 1994) have clearly indicated micro finance institution as a powerful tool for alleviating poverty. Also, micro finance institution refers to an array of financial services, including loans, savings and insurance, available to poor entrepreneurs and small business owners who have no collateral and wouldn't otherwise qualify for a standard bank loan (Chad 2013). MFIs in Nepal are serving primarily the micro entrepreneurs who operate or are willing to operate small enterprises. Access of micro entrepreneurs to micro finance institution services provide them with an important tool for improving their efficiency, productivity and welfare while reducing risk. MFIs assist in creating job opportunities to micro entrepreneurs, both wage and self-employment, resulting to earnings of income and poverty alleviation.

The advantages of investing in Nepal lay in its economic potential and an investment-friendly legal environment. The huge potential for economic development comes partially from its geographic location, located conveniently close to the two enormous markets of China and India, and partially from its cultural, biologic, and topographic diversity. Moreover, Nepal's hydropower potential, liberal investment laws, and a strong legal framework promoting an investment-friendly environment make Nepal an attractive target for Foreign Direct Investment (FDI). Even though the largest sources of FDI are China, India, and the United States, Nepal hopes that the favorable situation in both market and resource availability will attract the attention of investors from the European Union as well. European investors can potentially reach the markets of China, India and Nepal with goods and services.

2.2   Framework of MFI

The theoretical framework of micro finance institution comprise of several theories and models that tries to explain how its principle and broad concept supports the sustainability and its existence from the ancient period. Such theories and models have been upgraded at different interval of time which has made the concept of micro finance institution and its performance more flexible and adaptive all around the world.

2.2.1 Theories in MFI

The experience of Muhammad Yunus in the field of micro finance institution has a great impact upon understanding the cause of poverty. As he travelled to the rural areas of Bangladesh, he found many differences than that of existing theories. In the accepted theory, markets were cleared and no one was unemployed or credit-constrained in equilibrium (Greg & Maitreesh, 2010). He along with other experts argued about it based upon their experience. They urged that this statement is false. He found that poor people who were willing to receive loan were not granted because the official lenders could not found those people creditworthy. Besides, other lenders used to charge high interest rates upon such people. In the study by Greg & Maitresh (2010), conclusion of existing theory could not happen in practise since the forces of arbitrage and competition would equalize interest rates, which would only reflect, in equilibrium, the scarcity of capital for the economy as a whole. Such type of conventional model was found to be very inefficient and thus Muhammad Yunus attempted to revolutionize the credit market. There were some other economists like Joseph Stiglitz and George Akerlof who were also against standard model of credit market. All of them focused upon lending to the poor people as well. Greg & Maitreesh (2010), emphasized asymmetric information and transaction's costs and showed that the poor might be credit-constrained even if they have good projects due to these problems. Such credit constraints, unemployment and policy practices are then revolutionized by several theoretical work on micro finance institution. Some of the crucial micro finance institution theory that this paper could focus be joint liability, frequent repayment, sequential lending and dynamic incentives.

Joint liability is one of a theoretical work on micro finance institution. In this concept, several groups of people were created and two different practices were executed. They were explicit and implicit joint liability. In the explicit joint liability, if one of a group member could not repay the loan, all of the members need to repay that individual loan as per the initial contract signed by that group. Above mentioned explicit repayments can be enforced through the threat of common punishment, typically the denial of future credit to all members of the defaulting group, or by drawing on a group savings fund that serves as collateral (Greg & Maitreesh, 2010). In the implicit joint liability, if a group member could not repay the loan, all of the group members will deprive from future loan. This can be attempted even if there are not any initial punishments mentioned upon signed contract. A micro finance institution institute can apply such practices.

Ghatak and Guinnane (1999), reviewed the key mechanisms proposed by various theories through which joint liability could improve repayment rates and the welfare of credit-constrained borrowers. These all have, in common, the idea that joint liability can help alleviate the major problems facing lenders - screening, monitoring, auditing, and enforcement - by utilizing the local information and social capital that exist among borrowers (Greg & Maitreesh, 2010). From this concept, we can also assume that joint liability like micro finance institution and other informal institutions can perform better than a commercial or conventional bank. Such joint liability can access local information about the borrowers (also from neighbors) whereas bank approves the loan from the limited sources about poor people which can result to loan default. An institution that gives poor people the proper incentives to utilize information about their neighbors and to apply non-financial sanctions to delinquent borrowers can do better than a conventional bank (Greg & Maitreesh, 2010).

Apart from joint liability, high frequency repayment of micro finance institution is another aspect concerning contractual mechanisms. Frequency repayment concept is mostly common within micro finance institution companies. As a borrower starts taking a loan, from the same time he is obliged to repay his loan in a regular interval of time also called installments. This aspect of the repayment schedule is usually explained as inducing 'fiscal discipline' among borrowers (Greg & Maitreesh, 2010). Jain and Mansuri (2003), argued that an alternative rationale for this loan repayment structure lies in the difficulty of monitoring borrowers' actions. Besides of moral hazard i.e. unusual risk of repayment possibilities from the borrowers, MFIs are able to use innovative mechanisms like regularly scheduled repayments. This potential of MFIs directly or indirectly influences their both formal and informal lenders to lend the money. Conversely, this installment repayment structure allows informal lenders to survive (Greg & Maitreesh, 2010). This also leads to increase both interest rate and informal lending. Fischer and Ghatak (2009), proposed an alternative theory based on present-biased, quasi-hyperbolic preferences in order to capture the belief of many micro finance institution practitioners that clients benefit from the fiscal discipline required by a frequent repayment schedule. This practice of frequent repayment is important to generate higher interest rates. Frequency repayment leads to reward in future after the initial payment is done, also resulting heavily discounted.

Other than frequent repayment, Roy Chowdhury (2005) and Aniket (2006), highlighted another mechanism often used by MFIs: sequential lending. In sequential lending, loan is not provided to all members simultaneously. Rather, a single person is granted a loan. Unless that person doesn't pay the loan amount and number of installments at stipulated time, the other member is not eligible to take a loan. Sequential lending ignores the problem of borrowers under-monitoring at simultaneous lending. Roy Chowdhury (2005), implicitly assumesed that there is an escrow account such that part of the first-round borrower's revenue is taken away from her and returned to her only if the second-round borrower repays.

2.2.2 Models of MFI

A. The Grameen Model

Before the establishment of Grameen model, most of the poor people from developing countries were excluded from financial services because commercially financial services were targeted to the rich people of society because rich people are capable to repay the loans and can preserve savings. Also, financial service asks for collateral to provide loans which is beyond the capacity of poor people. Poor communities were deprived from the services of banks and formal financial institutions and poor farmers and landless laborers were provided improper financial institutions.

This type of problem of developing countries slowly started decreasing when Dr. Muhammad Yunus came up with the concept of Grameen Model which is becoming one of the most popular models in the field of micro finance institution. During his field visit in Bangladesh he saw poor women who earns small amount of money by making bamboo benches. In the process of interviewing the women he found that she borrow small sum of money from the local lenders in a high interest rates and do her business but the profit margin do not meet her daily basic requirements. So, Dr. Yunus decided to lend a small amount of money to some rural basket-weavers in the form of loans which helps the poor people to survive their life. He recognized that the small amount of money he had given to poor worked for a long run and borrowers were interested to repay the loans. He also found out that the tiny amount not only helped poor to survive their life but also provide personal initiatives which pull out poor people from below the poverty line.So, with the hope of reducing poverty from the country,

he introduced one of the successful models in the micro finance institution industry as "Grameen Bank model".

Grameen Bank emphasizes on finding the poor people who are excluded from formal financial institutions, helps them by providing loans in a reasonable interest rates and emphasize on mobilization of savings. Grameen bank was successful to make sustainable livelihood of poor, reducing poverty line of Bangladesh and improving economic development of poor communities. It serves services like formal financial institution by targeting the poor and providing very small amount of loan by making informal rules and procedures within the group formed. This model was heavily successful among the poor communities in Bangladesh and now there are more than 1084 national branches in Bangladesh. Due to its huge success most of the under developed and developing countries are following this model worldwide.

B. Association Model

Association model is formulated by composing the group or association of youth or women based on different issues like cultural, political, and economical. The association is formed by targeting poor community with the aim of initiating various micro finance institution activities like savings. In most cases, association is of different legal body which works for collection of fee, tax breaks, insurance and many more.

C. Individual Model

Some of the financial institutions provides loan directly to the individual borrower without forming group or associations. This model is targeted to the individual borrower who has very low income and cannot put collateral while borrowing loan. The individual who takes the loan is liable to repayment of the loan and any other group are not responsible if he cannot repay it. Sometimes, this model can be a part of larger credit program such as health awareness, education and other skill training program. This model further helps poor individual to take part in various service oriented program which facilitates sustainable development of poor individual in the society.

D. Group Model

Unlike individual lending, group lending model is based on lending small amount of money to the large number of people in a group. A group is formed with large number of clients but the size varies and group self selects the members who need to receive the loan. Selected member is provided with the loan but each member of the group is responsible to pay the repayment regularly which also serves as collateral. If the selected member is unable to repay the loan each member will be responsible and will not be eligible to take the services of financial institution and further cannot take loan due to the default of group member. Therefore, the main advantage of group lending is all the members equally determine the creditworthiness of the member. Moreover, the group model collectively works for various education and awareness building program, collective bargaining, etc. Group members can be women or youths from a particular society and they can jointly work for the economic welfare of society by taking loans from the financial institutions.

E. Village Banking Model

Village Banking Model was first established by John Hatch during the 1980s in Bolivia which is now widely accepted. It is a kind of financial institutions which supports poor society and communities to form their own associations or village banks. There may be around 20 to 50 members who work collectively for self employment.There comes one sponsor agency which provides loan to the village banks and village banks further provides loan to its members. Village banks provide loan to its members without collateral and also shows the place of investment and mobilizes their savings. The members are responsible for all the activities, make their laws and policies, elect their members, collect and repay the loans. The member should have to pay small amount of money in every four to six months to ensure repayment and peer pressure and peer support among the members works as a bank guarantees. The limit of the loan depends on the savings borrower has made.

F. ROSCA (Rotating Saving and Credit Associations) Model

ROSCA model known as rotating saving and credit associations is a group of individual who work together and contribute equal amount of money in a regular cyclical order. The group is formed from the same ethnic background, same language and same place of origin. This method is widely popular because of its flexibility. This method can be applied in almost

every part of the world thorough the mutual agreement of the group member. Each member contribute equal sum of money and provide the lump sum amount to one of the member. Same process is repeated daily, weekly; monthly or quarterly and the member repay the loan by contributing equal amount of money each time. The winner of the lump sum is decided either by consensus or lottery or bidding.

2.3   Conceptual Framework
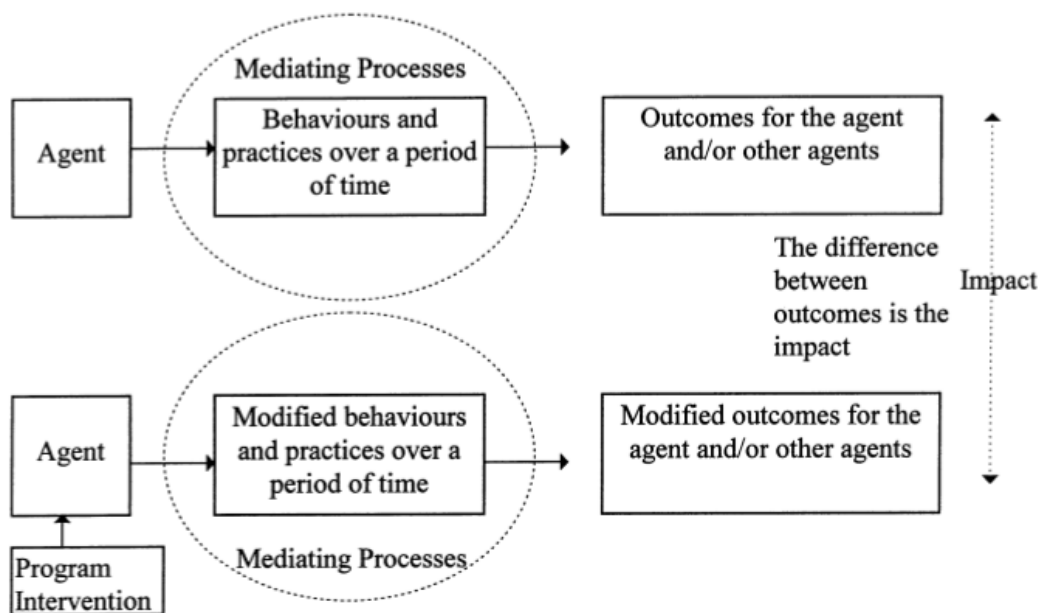
Figure 2.1: The Conventional Model of the Impact Chain (Hulme, 1999)

Hulme (1999), profounded the existing Conventional Model of the Impact Chain as shown in figure 2.1. This model of the impact chain have an assumption that intervention of any object in a subject will lead to change in human behavour of practices to some level resulting to desired outcomes. Impact Assessment (IA) is carried out in the model which is associated with the outcome after an intervention takes place. IA evaluates the difference between outcomes of two agents, one with certain program intervention (eg. MFI's training campaign) and other without any interventions. All changes were influenced by mediating processes like specific characteristics of the agent and of the economic, physical, social and political

environment that influenced both behavioral changes and the outcomes in ways that were difficult to predict (Sebstad et al., 1995).
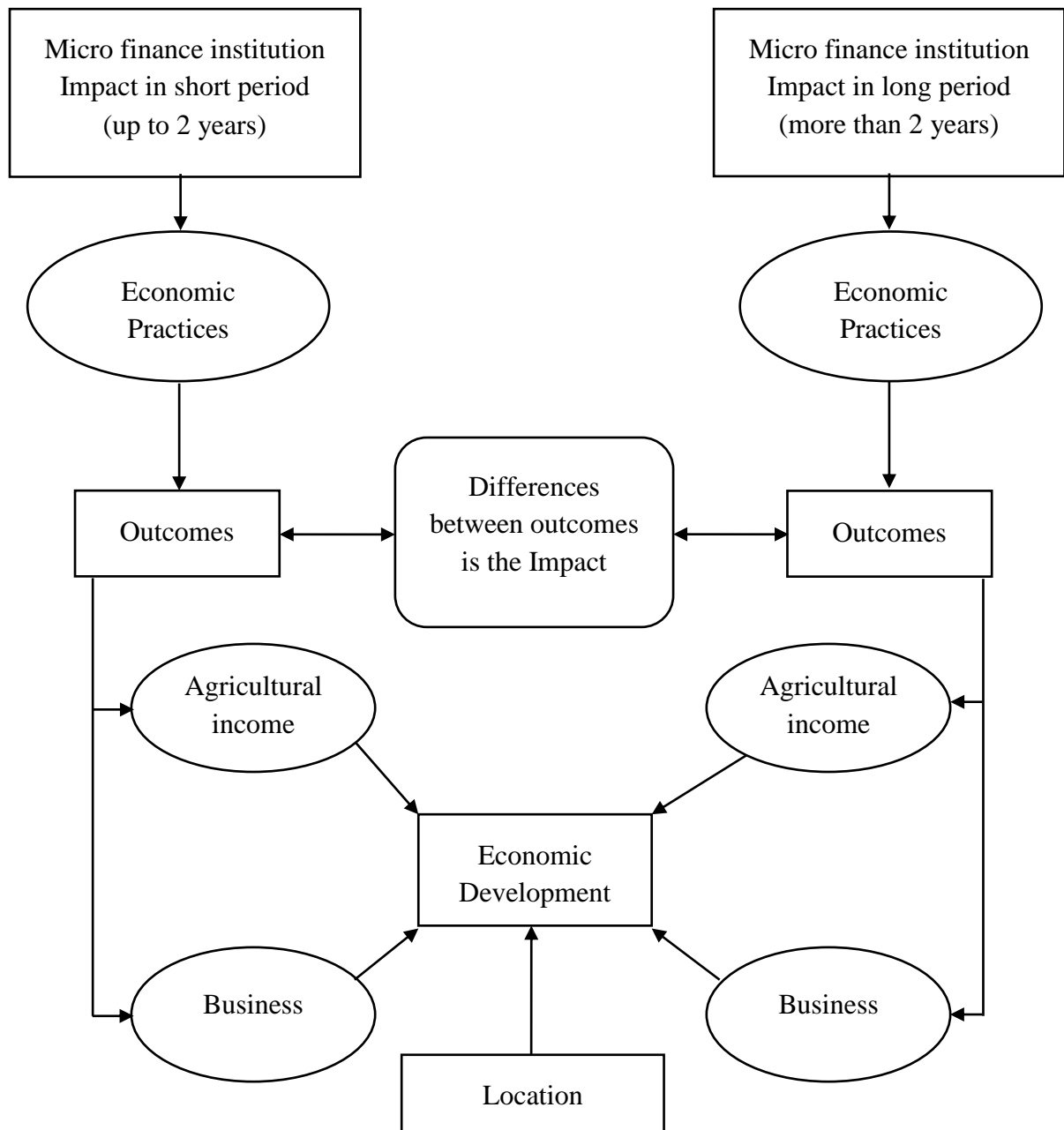
Figure 2.2: Proposed Model of the Impact Chain

Our Research model is only a proposed model of the Hulme's Conventional model of impact chain. It is created to make clear about how micro finance institution impacts economic development of people in Kavrepalanchok district in Nepal. The model explains impact chain

of economic development. Through this model, it is clear that there are two scenarios for the impact on economic development. One is micro finance instlitution impact over short time period (up to 2 years) and other is micro finance institution impact in long time period (more than 2 years). First scenario is contrast upon the outcomes from micro finance institution impact where micro finance institution was established since 2 years. The model further illustrates that what was the economic practices at that 2 years' time and what are the outcomes in the business growth and agricultural income.

Similarly, second scenario explains the impact on economic development after the introduction of micro finance institution and economic practices that is made during the long time period (more than 2 years). This model is also trying to focus on outcomes in the same variables which are affecting economic status of people in the same district. Besides, there are some external factors which influence the overall economic development of the villagers such as size and location of micro finance institution.

Based on model in Figure 2.2, there are three variables used.

Dependent variables: economic development (Income after loan)

Independent variables: agriculture (Income before loan), business (Income before loan)

Control variable: location

Economic development takes place when there is development in each sector of the economy. To make a highly developed economy there must be development in agricultural sector, business growth in every society, increment salaries of each people, startup of new business by individual member and increment in employment level mainly, women employment. So, economic development is highly dependent on those variables.

Where there is presence of dependent and independent variable, control variable also plays significant roles affecting those two variables. In this case, size and location of micro finance institution also impact upon economic development because some micro finance institution may be near from the city center whereas some little farther.

We formulate that there is a relative economic impact either positive or negative relationship between net income and economic exposure for both MFI's respondents. This can be termed as an econometric model with the equation given below.

$$RI = x1 + (x2 \times AIBL) + (x3 \times AIAL) + (x4 \times BIBL) + (x5 \times BIAL) + e_t$$

We delimit the above model for economic impact measurement to:

$$EI = (\alpha 1 \times \Delta AI) + (\alpha 2 \times \Delta BI)$$

Where,

RI =   Real Income

EI =   Economic Impact

AIBL =   Agriculture Income Before Loan

AIAL =   Agriculture Income After Loan

BIBL =   Business Income Before Loan

BIAL =   Business Income After Loan

X =   Intercept

e_t =   Error term at time 't'

ΔAI =   Change in Agriculture Income

ΔBI =   Change in Business Income

α =   Coefficients

Parameters $x1$, $x2$, $x3$, $x4$ and $x5$ are unknown. Those are coefficients showing change in net income from a one unit change in each economic variable.

Here, we develop a relationship between economic variables and net income by estimating the parameters in an Ordinary Least Square (OLS) Regression model. The economic impact model further is used to estimate the MFI's impact upon their respective client's economy.

2.4 Hypotheses

From the above illustration of conceptual model, we drew few of the hypotheses as:

Hypotheses1: Micro finance institution increases agricultural income; increases economic development.

Hypotheses2: Micro finance institution increases business income; increases economic development.

2.5 Related Works

Steward (2010), had mentioned about the conventional model of the Impact chain, adapted from Hulme. Hulme (2000) identified three main elements of a conceptual framework (whether implicit or explicit) of impact assessments: (1) models of impact chains, which reveal the assumptions regarding transmission mechanisms from intervention to impact, (2) unit/levels of assessment, like the individual, household, community, business institution; and (3) types of impacts ranging from economic and social to political impacts, measured by an array of variables. From those three elements, we have covered the model of impact chains from intervention to impact. Further, level of assessment is also performed upon the level of income of people focusing to variables like agriculture, household, business growth or start-up and salary. This paper portrayed only upon economic impacts, rather than social and political impacts.

Besides, Hulme (2000) had identified three broad methodological approaches to study the impact of micro finance institution: 1. the scientific method, in which control groups are used during surveys to produce statistically valid results on impact; 2. the humanities tradition, which makes use of mainly qualitative methods, and does not try to prove impact in terms of statistical probability, but rather interpret plausibility; and 3. participatory learning and action (PLA), which use various participatory qualitative research tools to enable intended beneficiaries to identify their own indicators, monitor change and evaluate causality.

But here in this paper, we have covered only the scientific approach where control variables such as size and location are used to identify the valid results on impact. This paper resists the humanities tradition method to study impact because this paper interprets data upon only

quantitative methods. It has been able to interpret in terms of statistical probability. Further, participatory learning and action method of impact assessment is also not related to our work as this research does not use any participatory qualitative research tools like collecting data from door to door, or observing variables also lacking questionnaires.

There is another similar paper (Khan, 2014) relevant to our paper. They had some crucial investigations upon the impact of micro finance institution on the household income, consumption level and spending on health and education of individual households in the research area. He further made the readers able to understand the contribution of impact of micro finance institution as emerging tool for alleviating poverty and vulnerabilities of under privileged masses. Also, he had been able to use Ordinary Least Square (OLS) technique for the estimation of the model, Gomez and Santor (2001). Using OLS technique the findings shows that the selfemployed individuals who receive the individual loans and running their businesses are earning better incomes than the individuals who have outside sources of income.

Our paper has also been able to investigate upon the impact of micro finance institution, but being specific only upon household income such as agricultural income and business or start-up. Besides, our paper let the reader understand the performance of two micro finances how they have impact upon their respective clients. We have been able to compare their significant performance or output by using several statistical tools and analysis. We have also used OLS technique to show the positive effects of micro finance institution upon the level of income of people.

Also there is yet another paper by Mizanuz & Ahmad (2010), same OLS techniques were used. Mizanuz & Ahmad (2010), had collected primary data from 1,020 respondents working across the country in order to assess the impact of rural development schemes upon the livelihood of poor people. They selected their respondents using multistage random sampling method. The collected data were further analyzed using tabular, graphical and econometrical methods. In our case, we have collected both primary and secondary data from around 50 respondents from each MFI. We also analyzed our available data in the same way but no such random selecting method was carried out while selecting respondents.

In the another paper by Canadian International Development Agency (2002), there were some demonstrations upon the synergies between micro finance institution and other programs. It shows the clear evidence to support potential synergies between micro finance institution and basic social services to the clients. There is increasing impact of individual micro finance institution and its program like basic education and health awareness campaign having their benefits interconnected focusing specifically upon poverty reduction. However, in our paper, we have the interpretations among two such micro finances who have been servicing its clients with or without various campaigns at rural areas. There is also an increasing impact of individual micro finance institution such that such impacts are compared, contrasted and analyzed how efficient those micro finances have been providing financial services to their clients. Unlike to eradicate poverty, our paper focused upon identifying only the change in level of income after the impact.

Similarly, there is another related work to our work by Adhikari & Shrestha (2015), which had some research design aiming to analyze economic impact of the respondents using some effective variables like loanee's income, household income, household consumption, savings, household assets, and improvement in living standards, accessibility to credit and initiation of income generating activities. But our paper has only some specific variables like loanee's income and household income both after and before the loan was taken. We have also interpreted the economic impact of 100 respondents from 12 villages.

Maldonado, Jorge, et al (2005) study investigated micro finance's impact on Bolivian rural households' education choices. It identifies several effects of micro finance that positively influence a household's demand for child education. Micro finance's ability to expand a household's income and serve as an income smoother, the empowering effect it has on women and their ability to make decisions regarding schooling, and the demand micro finance creates for children's education-especially in programs that include an educational aspect for the mother-all lead to higher rates of primary school enrollment and completion.

Schreiner (2002) studied the micro enterprise programs established with the help of micro finance program in the United States of America. These programs have positive impact on

the lives of poor by creating job opportunities, providing a source of income and building assets of their own. These benefits are always higher than the costs. The micro finance program in United States have a positive role to serve the needs of low income and poor people and the developments of micro enterprises have large impact on the industrial sector. Survey showed a good record of repayment of loans in time which shows that micro finance programs are also successful in developed countries.

Coleman (1999) estimated the impact of micro finance program on household characteristics like consumption, health, education and employment by surveying the clients of Khushali bank in Pakistan. For empirical analysis, ordinary least square (OLS) and legit estimation were used. The results showed that program does not have any impact on household consumption, expenditure on food items or education but consists of a positive impact of program on health. The clients of the program who run micro enterprises have more monthly inputs in the business, although the results of these inputs do not seem to show up yet in increase sales and profits in aggregate sources of transport. It could be concluded from the empirical studies that micro finance has emerged as a noble substitute for informal credit and as well as effective and powerful instrument for poverty reduction. Micro finance loans have a strong and positive impact on the productivity and growth of micro enterprises especially in developed countries. People initially borrow loans from these formal institutions to set up their businesses and to expand their businesses at the later stages.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Background

This chapter deals about the data collection, source of data and techniques of data analysis and interpetation.

3.2 Source of data

Two MFIs are selected namely Swabalamban MFI and National MFI. Swabalamban MFI was established on Oct 5, 2001 and National MFI was established on Oct 30, 2014. Swabalamban MFI has been providing its financial service for more than 11 years and National MFI for around 2 years. Swabalamban MFI is 27 kilo meter and National MFI is 23 kilo meter away from the main city Kathmandu. Both MFIs reside in the rural area at Kavrepalanchok district, Bagmati Zone in Nepal. All of the data were collected from 12 villages in Kavrepalanchok district.

The data are collected in both secondary and primary way. Secondary data that we collected are about the level of income of borrowers (respondents) before the loan was taken. We found it easily from the loan file from both micro finance institutions. As level of income after loan taken was not recorded in both institutions we chose to use primary data. Since both micro finance institutions held a weekly meeting where all of the loan taking members are invited in a group, we asked their current level of income after taking loan. But all of the members were not present in the weekly meetings, so we had a telephone talk to some of them and rest we visited to the nearby villages as well.

3.3 Techniques of data analysis and interpretation

For the data analysis technique and its interpretation, we chose Simple Ordinary Least-Square Regression method and t-test:Paired Two Sample for Means. All calculations and interpretations were performed by using MS-Excel tools.

- **Ordinary Least-Squares Regression**

According to the paper by Moutinho & Hutcheson (2011), Ordinary Least-Square (OLS) regression is a generalized linear modelling technique that may be used to model a single response variable which has been recorded on at least an interval scale. The technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded. OLS has classified into two types on the basis of variables,

      i) Simple OLS regression

      ii) OLS regression with multiple explanatory variables.

- **Paired t-test**

A Paired t-test method is used to measure the mean variation over 2 test situations from a same tested group or subject. This method is commonly used to compare the effects of group, i.e before and after intervention. In HCI practice, the paired t-test is also commonly used to compare how a group of subjects perform in two different test conditions (Tang, 2003).

There is an assumption of null hypothesis which states that the mean difference within a paired observation must be equal to zero. As its value is zero, the mean of two paired subjects also tend to be zero. The value of paired t-test null hypothesis is expressed normally in a mean difference.

We have a null hypothesis:

      $H_0: \mu_1 - \mu_2 = 0$

      If $\mu_1 = \mu_2$,

Then we accept a null hypothesis otherwise an alternative hypothesis is accepted rejecting the previous one. Also, a P value less than 0.05 shows positive result and relation within a paired subject.

CHAPTER 4

RESULT AND ANALYSIS

4.1 Background

This chapter deals with all of the statistical calculations and their results. We covered all the regression analysis and their output summary in this chapter. The data were collected and entered in a MS-Excel worksheet and the regression was executed. All of the results from such regression along with graphical lines are interpreted further in this section. Further, comparison of the regression results and the economic impacts between two MFIs were also covered in this chapter.

4.2 Tools

The tools used for calculating our result was Analysis Tool Pak add-in installed in Microsoft excel. Regression analysis, t-test:Paired Two Sample for Means as well as graphical lines were executed and the results are exhibited below.
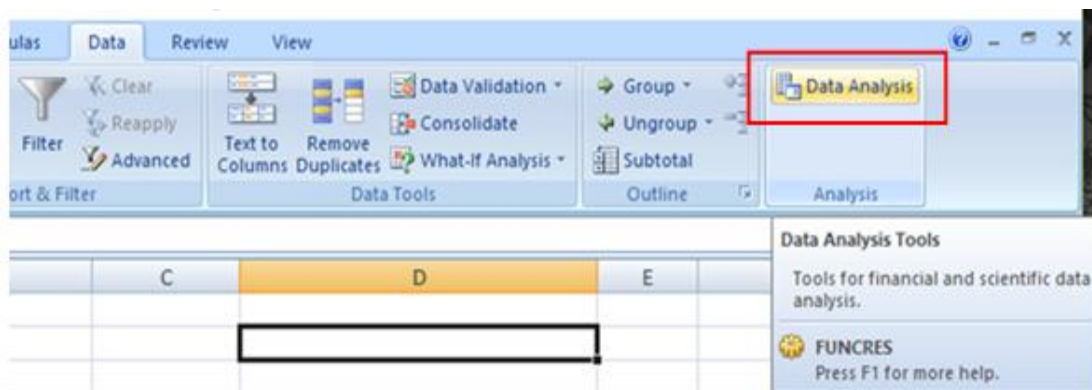
Figure 4.1: Snap shot of Data Analysis ToolPack add-in in ms excel
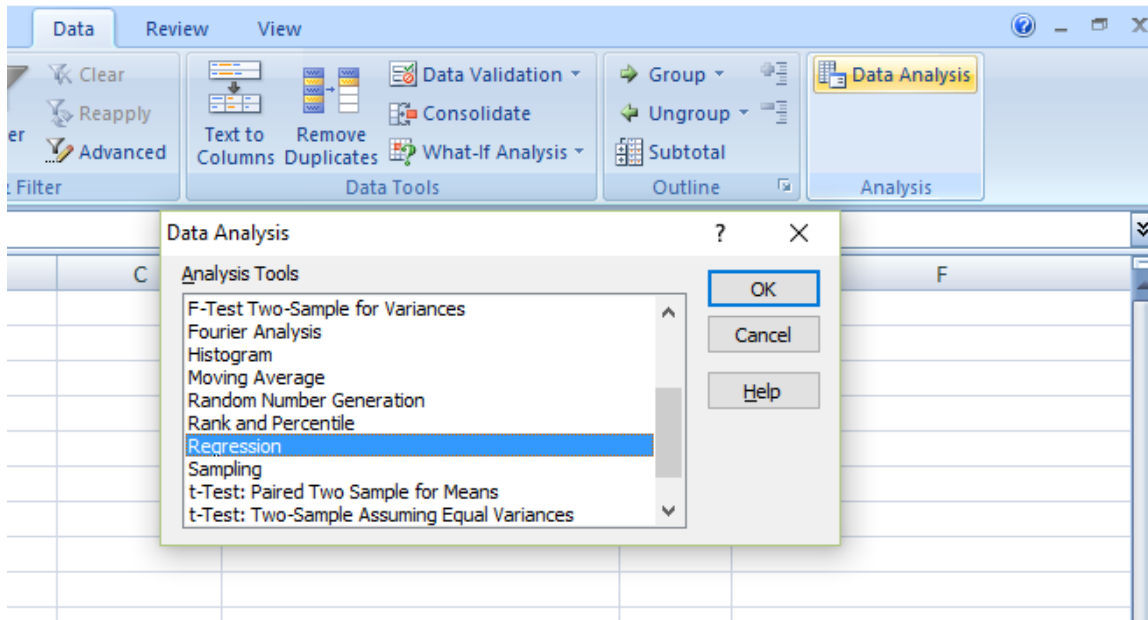
Figure 4.2: Snap shot of Data Analysis window in ms excel

4.3   Data Structure

The main data structures used in this study are enlisted below:

- Datasets consist of attributes:
    - Name
    - Address
    - Agricultural Income Before Loan (AIBL)
    - Agricultural Income After Loan (AIAL)
    - Business Income Before Loan (BIBL)
    - Business Income After Loan (BIAL)
- Used datasets consist of 100 observations with 50 observations from each institution.

4.4   Data Samples

Samples of data used are shown below.

S.No.	NAME	ADDRESS	AIBL	AIAL	BIBL	BIAL
Swabalamban Micro finance Development Bank Limited						
1	Hasta Kumari Raut	Ugratara-1, Janagal, Kavrepalanchok	5000	5000	4000	4000
2	Anita Karki	Ugratara-1, Janagal, Kavrepalanchok	15000	15000	5000	12000
3	Lila Kumari Kc.	Ugratara-1, Janagal, Kavrepalanchok	20000	22000	15000	20000
4	Maiya Khatri	Ugratara-1, Janagal, Kavrepalanchok	15000	18000	7000	7000
5	Nanu Thapa	Ugratara-1, Janagal, Kavrepalanchok	9000	15000	9000	15000
6	Samjhana Raut	Ugratara-1, Janagal, Kavrepalanchok	6000	9000	10000	12000
7	Lalita Kc.	Ugratara-1, Janagal, Kavrepalanchok	9000	20000	15000	20000
8	Heera Kc.	Ugratara-1, Janagal, Kavrepalanchok	3000	8000	15000	15000
9	Kusum Khatri	Ugratara-1, Janagal, Kavrepalanchok	10000	15000	12000	15000

Table 4.1: Data Sample taken from Swabalamban Micro finance Development Bank Limited

National Micro finance Bittiya Sanstha Limited						
S. No.	NAME	ADDRESS	AIBL	AIAL	BIBL	BIAL
1	Sangita Pariyar	Uttar Nala-4, Kavrepalanchok	1000	1000	10000	12000
2	Gyanuka Khatri	Uttar Nala-4, Kavrepalanchok	5000	7000	10000	10000
3	Maiya Dewadi	Uttar Nala-4, Kavrepalanchok	5000	10000	10000	15000
4	Mandira Dahal	U. Nala-5, Kavrepalanchok	15000	18000	10000	12000
5	Sabitri Khatri	Ugrachandi-5, Kavrepalanchok	5000	5000	10000	20000
6	Tara Dawadi	U. Nala-5, Kavrepalanchok	17000	20000	18000	20000
7	Parvati Dahal	Ugrachandi-5, Kavrepalanchok	20000	20000	13000	20000
8	Saraswati Acharya	U. Nala-5, Kavrepalanchok	18000	20000	10000	15000
9	Maiya Dahal	Ugrachandi-5, Kavrepalanchok	5000	7000	30000	30000
10	Subhadra Khatri	U. Nala-5, Kavrepalanchok	25000	20000	10000	10000
11	Anju Kc.	U. Nala-5, Kavrepalanchok	5000	25000	10000	15000
12	Subhadra Shapkota	U. Nala-5, Kavrepalanchok	14000	10000	15000	15000
13	Kanchi Nepal	U. Nala-5, Kavrepalanchok	5000	5000	5000	8000
14	Laxmi Bhattarai	U. Nala-5, Kavrepalanchok	7000	6000	10000	10000

Table 4.2: Data Sample taken from National Micro finance Bittiya Sanstha Limited

4.5 Results of Simple OLS Regression

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.820921737
R Square	0.673912499
Adjusted R Square	0.667119009
Standard Error	4819.80016
Observations	50

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2304457268	2304457268	99.19975415	2.88846E-13
Residual	48	1115062732	23230473.58		
Total	49	3419520000			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2792.389335	1613.654769	1.730475061	0.089970591	-452.080973	6036.859643
X	1.051054161	0.105528508	9.959907337	2.88846E-13	0.838874878	1.263233443

Table 4.3: Result summary for Agricultural Income of Swabalamban MFI

In the above summary, we have run the regression analysis for the agricultural income before and after loan taken from Swabalamban MFI. The interpretation for above summary output is given below:

29

- **Multiple R**

Multiple R is the correlation coefficient between y and x variables, which is a root of square of R.

Here, Multiple R $= \sqrt{R^2} = \sqrt{0.6739} = 0.8209$

So, Correlation coefficient of 0.8209 means highly correlated, i.e. higher the income before loan, higher the income after loan. Correlation coefficient value close to 1 is highly correlated.

- **R^2**

R^2 tells how good the 'Fit' is. The value of $R^2 = 0.8209$ means that 82.09%, we are able to explain the variability in y from x.

- **Significance F**

The significance F close to zero means the regression analysis is good. We have significance F value very close to zero, i.e. 2.88E-13.

- **P value**

While calculating P value we consider confidence level. If we have a confidence level of 95%, then P value should be less than 0.05. But if we have a confidence level of 100%, the P value should be less than 0.01.

Here we have a confidence level of 95% with the intercept P value of 0.0899. It means (1-0.0899) = 0.9101, i.e 91.01%, this intercept is correct and the regression is only satisfactory.

Again, the P value of X variable at 95% confidence level is very close to zero, which means its coefficient is almost 100% correct.

- **Co-efficient**

The co-efficient of intercept is 'a' equals to 2792.38 and co-efficient of Y is 'b' equals to 1.051. So, we have a regression equation:

Y= 1.051X + 2792

Therefore, co-efficient gives the regression line shown below.
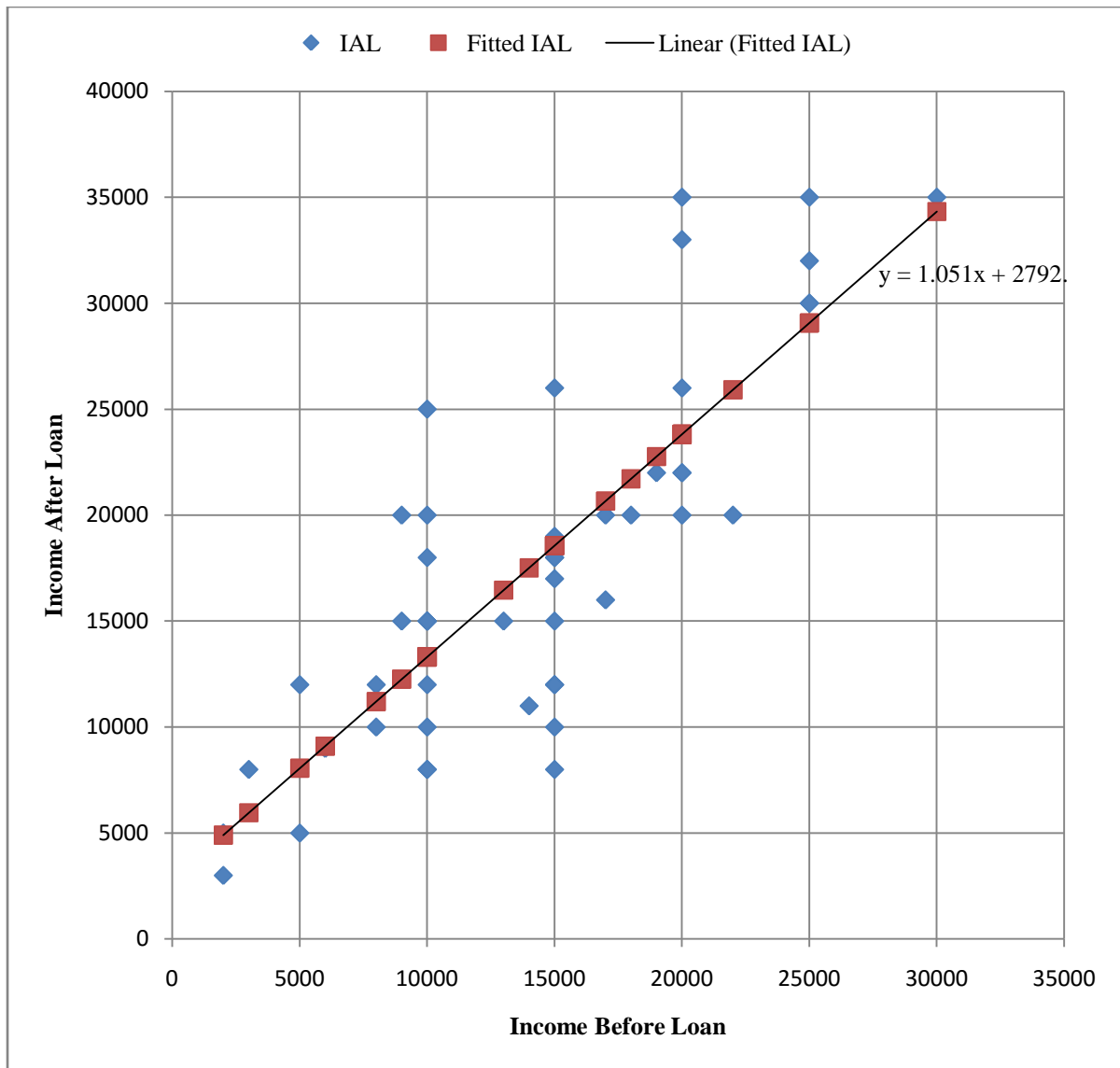
Figure 4.3: Graph for Agricultural Income of Swabalamban MFI

In the figure,

A fitted IAL dot gives the fitted regression line and IAL dots are the observations.

The value of the coefficient of X is 1.051. It shows that a one unit of agricultural income level before micro finance loan taken leads to increase in agricultural income level after loan taken by Rs. 1.051. In this case, as the intercept P value shows insignificancies, this statement may not be correct.

Finally, we can conclude that for 95% times, the value of intercept will be between 452.08 and 6036.85. Also, for 95% times, the value of X will be between 0.83 and 1.26.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.890172317
R Square	0.792406754
Adjusted R Square	0.788081895
Standard Error	5175.72975
Observations	50

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4908167434	4908167434	183.2213954	5.25355E-18
Residual	48	1285832566	26788178.45		
Total	49	6194000000			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3303.958531	1434.290627	2.303548855	0.02562259	420.1239949	6187.793066
X	0.689349359	0.050927374	13.53592979	5.25355E-18	0.586953012	0.791745705

Table 4.4: Result summary for Business Income of Swabalamban MFI

In the above summary, we have run the regression analysis for the business income before and after loan taken from Swabalamban MFI. The interpretation for above summary output is given below:

- **Multiple R**

Multiple R is the correlation coefficient between y and x variables, which is a root of square of R.

Here, Multiple R $=\sqrt{R^2} = \sqrt{0.7924} = 0.8901$

So, Correlation coefficient of 0.8901 means highly correlated, i.e. higher the income before loan, higher the income after loan. Correlation coefficient value close to 1 is highly correlated.

- **R^2**

R^2 tells how good the 'Fit' is. The value of $R^2 = 0.7924$ means that 79.24%, we are able to explain the variability in y from x.

- **Significance F**

The significance F close to zero means the regression analysis is good. We have significance F value very close to zero, i.e. 5.25E-18.

- **P value**

While calculating P value we consider confidence level. If we have a confidence level of 95%, then P value should be less than 0.05. But if we have a confidence level of 100%, the P value should be less than 0.01.

Here we have a confidence level of 95% with the intercept P value of 0.0256. It means (1-0.0256) = 0.9744, i.e. 97.44%, this intercept is correct and the regression is good.

Again, the P value of X variable at 95% confidence level is very close to zero, which means its coefficient is almost 100% correct.

- **Co-efficient**

The co-efficient of intercept is 'a' equals to 3303.95 and co-efficient of X is 'b' equals to 0.68. So, we have a regression equation:

Y= 0.68X + 3303.95

Therefore, co-efficient gives the regression line shown below.
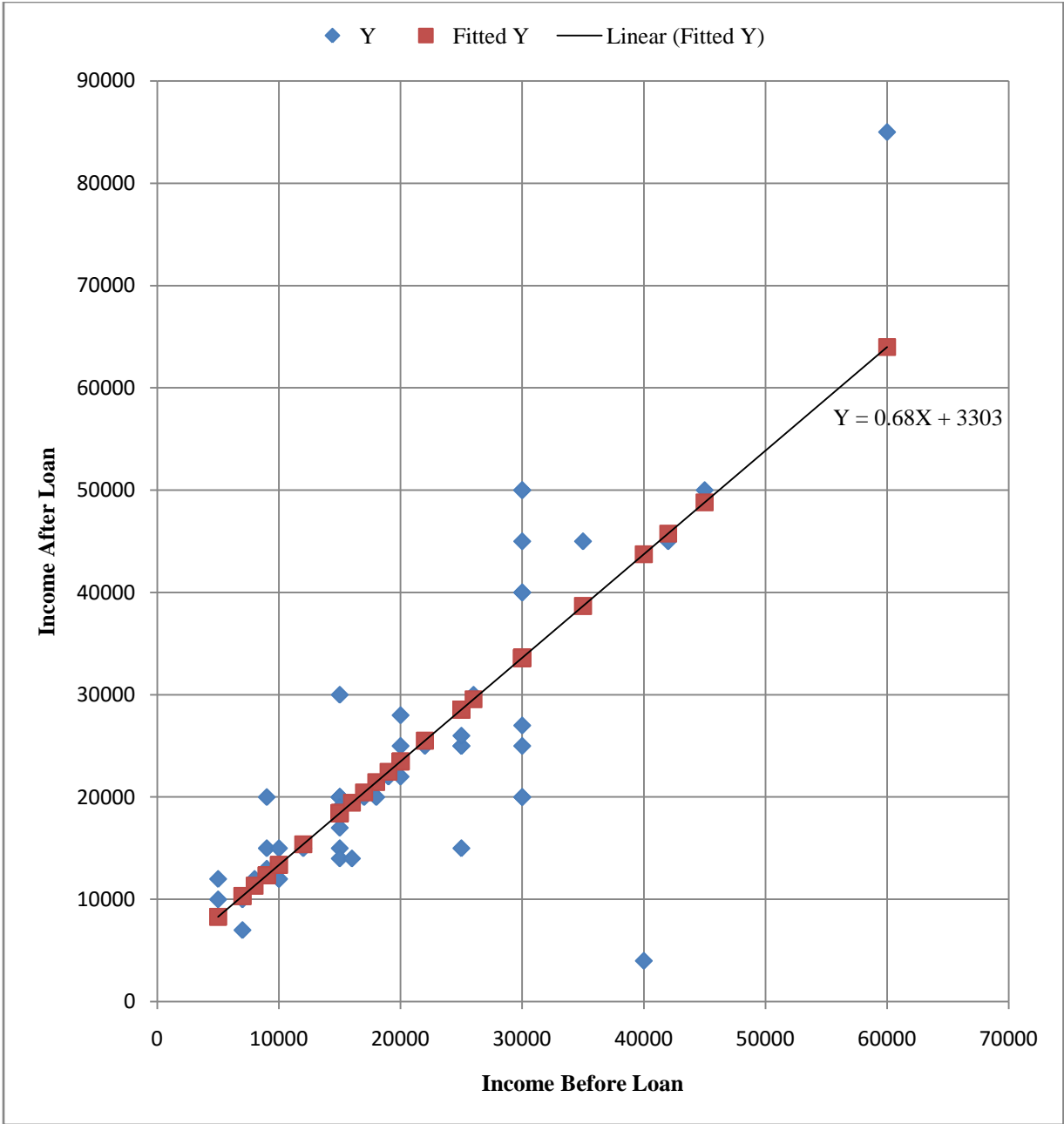
Figure 4.4: Graph for Business Income of Swabalamban MFI

In the above figure,

A fitted IAL dot gives the fitted regression line and IAL dots are the observations.

The value of the coefficient of X is 0.68. It shows that a one unit of business income level before micro finance loan taken leads to increase in business income level after loan taken by Rs. 0.68. In this case, as the intercept P value shows significance, this statement is

correct.Finally, we can conclude that for 95% times, the value of intercept will be between 420.12and 6187.79. Also, for 95% times, the value of X will be between 0.58 and 0.79.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.820599204
R Square	0.673383054
Adjusted R Square	0.666578534
Standard Error	3866.444581
Observations	50

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	1479409102	1479409102	98.96114398	3.00425E-13
Residual	48	717570897.6	14949393.7		
Total	49	2196980000			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	3851.94387	983.1460314	3.917977337	0.000282296	1875.196323	5828.691418
X	0.857389887	0.086187841	9.947921591	3.00425E-13	0.684097621	1.030682153

Table 4.5: Result summary for Agricultural Income of National MFI

In the above summary, we have run the regression analysis for the agricultural income before and after loan taken from National MFI. The interpretation for above summary output is given below:

- **Multiple R**

Multiple R is the correlation coefficient between y and x variables, which is a root of square of R.

Here, Multiple R $=\sqrt{R^2} = \sqrt{0.6733} = 0.8205$

So, Correlation coefficient of 0.8205 means highly correlated, i.e. higher the income before loan, higher the income after loan. Correlation coefficient value close to 1 is highly correlated.

- **R^2**

R^2 tells how good the 'Fit' is. The value of $R^2 = 0.6733$ means that 62.67%, we are able to explain the variability in y from x.

- **Significance F**

The significance F close to zero means the regression analysis is good. We have significance F value very close to zero, i.e. 3.004E-13.

- **P value**

While calculating P value we consider confidence level. If we have a confidence level of 95%, then P value should be less than 0.05. But if we have a confidence level of 100%, the P value should be less than 0.01.

Here we have a confidence level of 95% with the intercept P value of 0.0002. It means (1-0.0002) = 0.9998, i.e. 99.98%, this intercept is correct and the regression is good.

Again, the P value of X variable at 95% confidence level is very close to zero, which means its coefficient is almost 100% correct.

- **Co-efficient**

The co-efficient of intercept is 'a' equals to 3851.94 and co-efficient of X is 'b' equals to 0.8573. So, we have a regression equation:

Y = 0.857X + 3851

Therefore, co-efficient gives the regression line shown below.
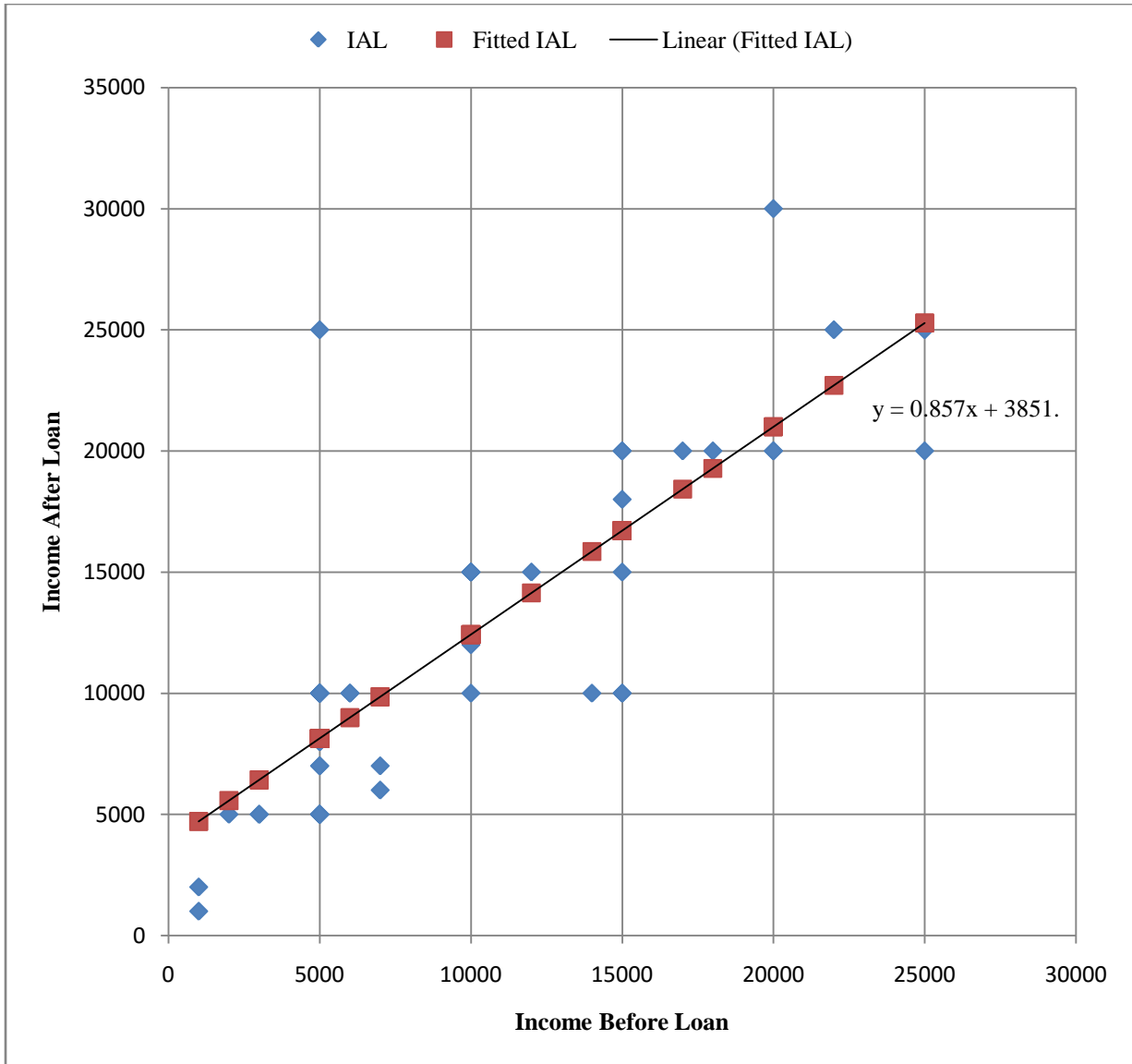
Figure 4.5: Graph for Agricultural Income of National MFI

In the figure,

A fitted IAL dot gives the fitted regression line and IAL dots are the observations.

The value of the coefficient of X is 0.857. It shows that a one unit of agricultural income level before micro finance loan taken leads to increase in agricultural income level after loan taken by NRs. 1.012. In this case, as the intercept P value shows significant, this statement is correct.Finally, we can conclude that for 95% times, the value of intercept will be between 1875.19 and 5828.69. Also, for 95% times, the value of X will be between 0.68 and 1.03.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.965135956
R Square	0.931487414
Adjusted R Square	0.930060068
Standard Error	3222.562558
Observations	50

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6777204347	6777204347	652.6011985	1.35619E-29
Residual	48	498475653.1	10384909.44		
Total	49	7275680000			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2635.473471	783.6135476	3.363231122	0.001520683	1059.912863	4211.034078
X	1.060190529	0.041501136	25.54606033	1.35619E-29	0.976746904	1.143634155

Table 4.6: Result summary for Business Income of National MFI

In the above summary, we have run the regression analysis for the business income before and after loan taken from National MFI. The interpretation for above summary output is given below:

- **Multiple R**

Multiple R is the correlation coefficient between y and x variables, which is a root of square of R.

Here, Multiple R $= \sqrt{R^2} = \sqrt{0.9315} = 0.9651$

So, Correlation coefficient of 0.9651 means highly correlated, i.e. higher the income before loan, higher the income after loan. Correlation coefficient value close to 1 is highly correlated.

- **R^2**

R^2 tells how good the 'Fit' is. The value of $R^2 = 0.9315$ means that 93.15%, we are able to explain the variability in y from x.

- **Significance F**

The significance F close to zero means the regression analysis is good. We have significance F value very close to zero, i.e. 1.356E-29.

- **P value**

While calculating P value we consider confidence level. If we have a confidence level of 95%, then P value should be less than 0.05. But if we have a confidence level of 100%, the P value should be less than 0.01.

Here we have a confidence level of 95% with the intercept P value of 0.0015. It means (1-0.0015) = 0.9985, i.e. 99.85%, this intercept is correct and the regression is good.

Again, the P value of X variable at 95% confidence level is very close to zero, which means its coefficient is almost 100% correct.

- **Co-efficient**

The co-efficient of intercept is 'a' equals to 2635.47and co-efficient of X is 'b' equals to 1.06. So, we have a regression equation:

Y= 1.06X + 2635.47

Therefore, co-efficient gives the regression line shown below.
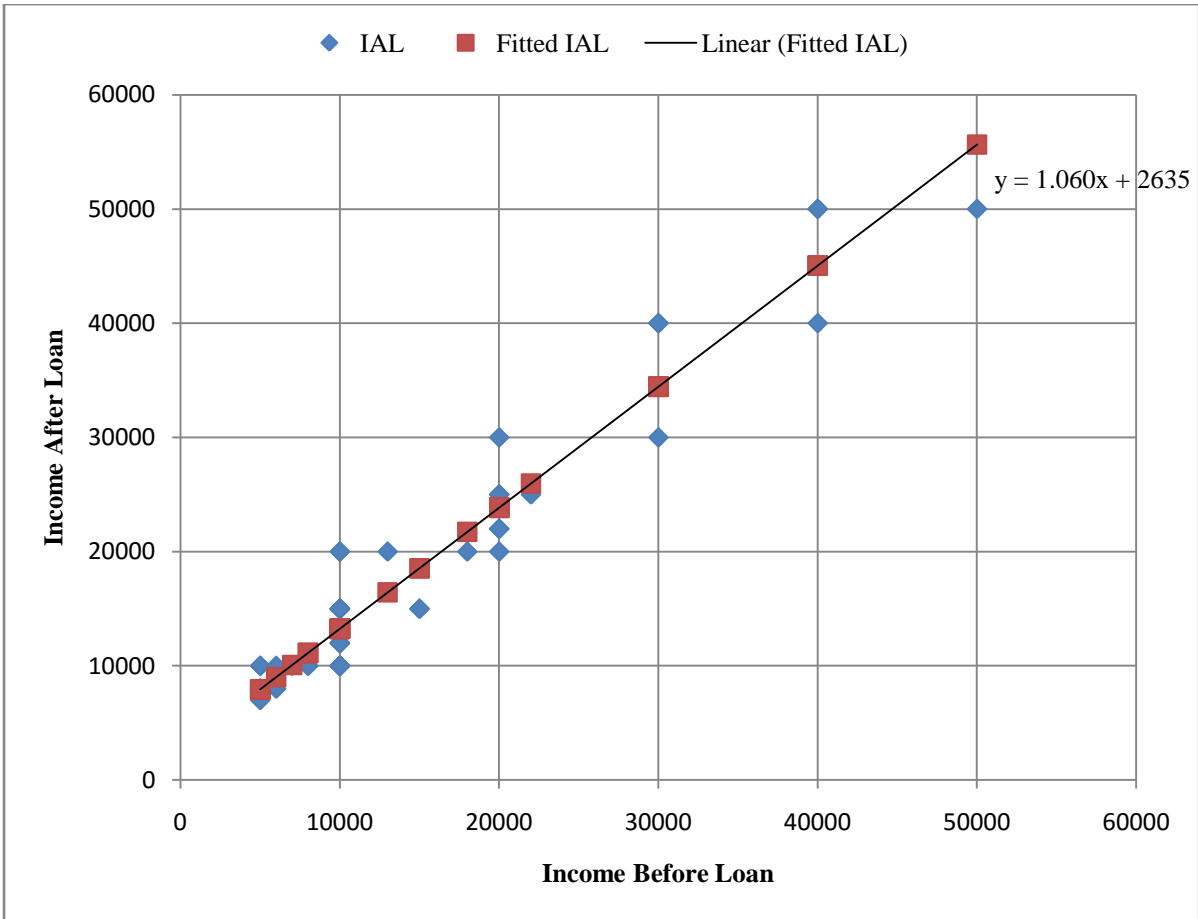
Figure 4.6: Graph for Business Income of National MFI

In the figure,

A fitted IAL dot gives the fitted regression line and IAL dots are the observations.

The value of the coefficient of X is 1.06. It shows that a one unit of business income level before micro finance loan taken leads to increase in business income level after loan taken by Rs. 1.06. In this case, as the intercept P value shows significance, this statement is correct. Finally, we can conclude that for 95% times, the value of intercept will be between 1059.91 and 4211.03. Also, for 95% times, the value of X will be between 0.98 and 1.14.

From all of the above regression analysis and its output summary, we generalized our outcomes in the below table.

	Swabalamban MFI		National MFI	
	Agriculture	**Business**	**Agriculture**	**Business**
Multiple R	0.8209	0.8901	0.8205	0.9651
R Square	0.6739	0.7924	0.6733	0.9314
Significance F	2.88E-13	5.25E-18	3.004E-13	1.35E-29
P value	0.08	0.025	0.0002	0.0015

Table 4.7: Observed P values, Multiple R, R Square and Significance F
by regression calculation

We compared the two MFIs using standard deviation to interpret their economic impact upon the economic development of their respective clients. For that, we estimated our calculation using the economic impact equation:

$$EI = (\alpha 1 \times \Delta AI) + (\alpha 2 \times \Delta BI)$$

Where,

EI means Economic Impact.

α1 and α2 are the coefficient values of X derived from regression summary.

ΔAI and ΔBI are change in ratio of after loan value from fitted after loan value.

Then we calculated the standard deviation from Economic Impact equation and the results are shown below.

MFIs	**Swabalamban**	**National**
Total no. of observations	50	50
Mean average	-0.1248	-0.1864
S.D., σ (Economic Impact)	0.4421	0.5845
Standard Variance, σ²	0.1955	0.3416

Table 4.8: Standard Deviation of Economic Impact

- **Comparing MFIs using Standard Deviation (S.D)**

While comparing two MFIs, we considered that economic impact on those MFIs is normally distributed with the number of observations of 50 each. Therefore, we calculated the standard deviation of economic impact on each of the institute as in the above table.

The statistical calculation is analyzed with the S.D value to economic impact. We can say that more the S.D value of each MFI deviated from zero, more volatile an institute is. It means the MFI with the highest S.D value in economic impact is more exposed to economic shock compared to another MFI.

In our calculation, National MFI with 0.58 has the greater value of S.D compared to Swabalamban MFI with only 0.44 S.D value. It means National MFI is more exposed to economic impact compared to Swabalamban MFI.The graphical representation using Standard Deviation is given below.
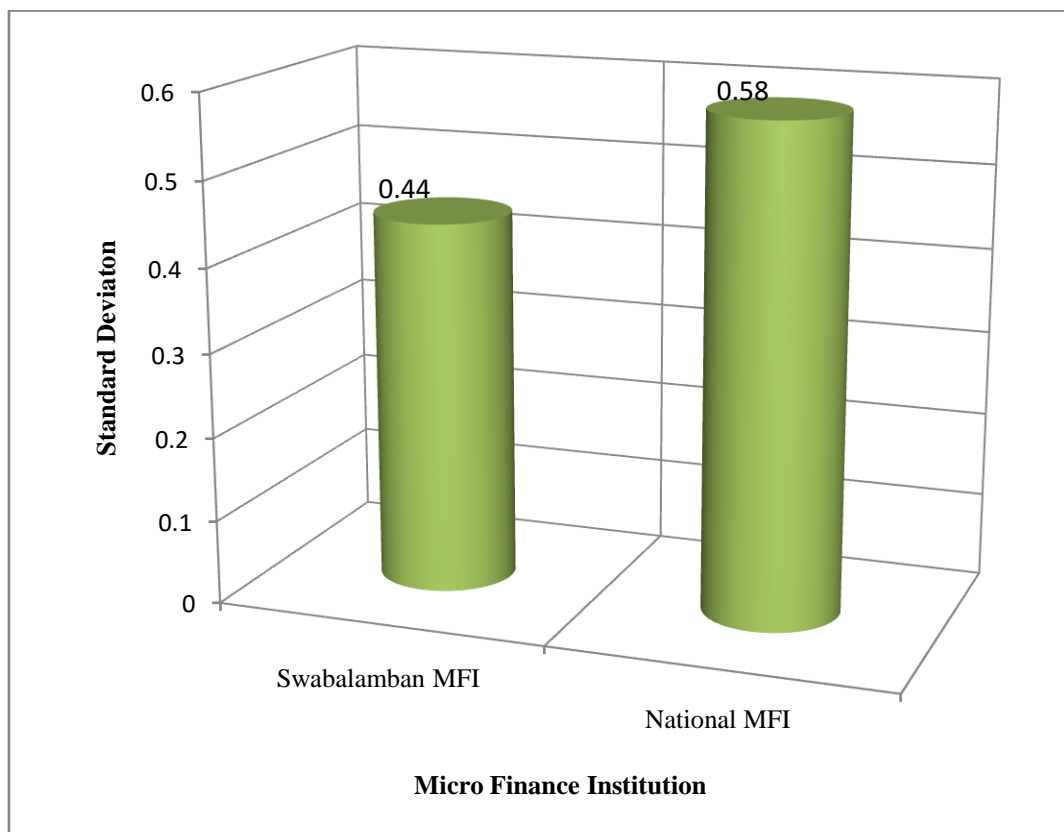

Figure 4.7: Standard Deviation of Economic Impact

- **Comparing MFIs through graphical representations of changes in income**
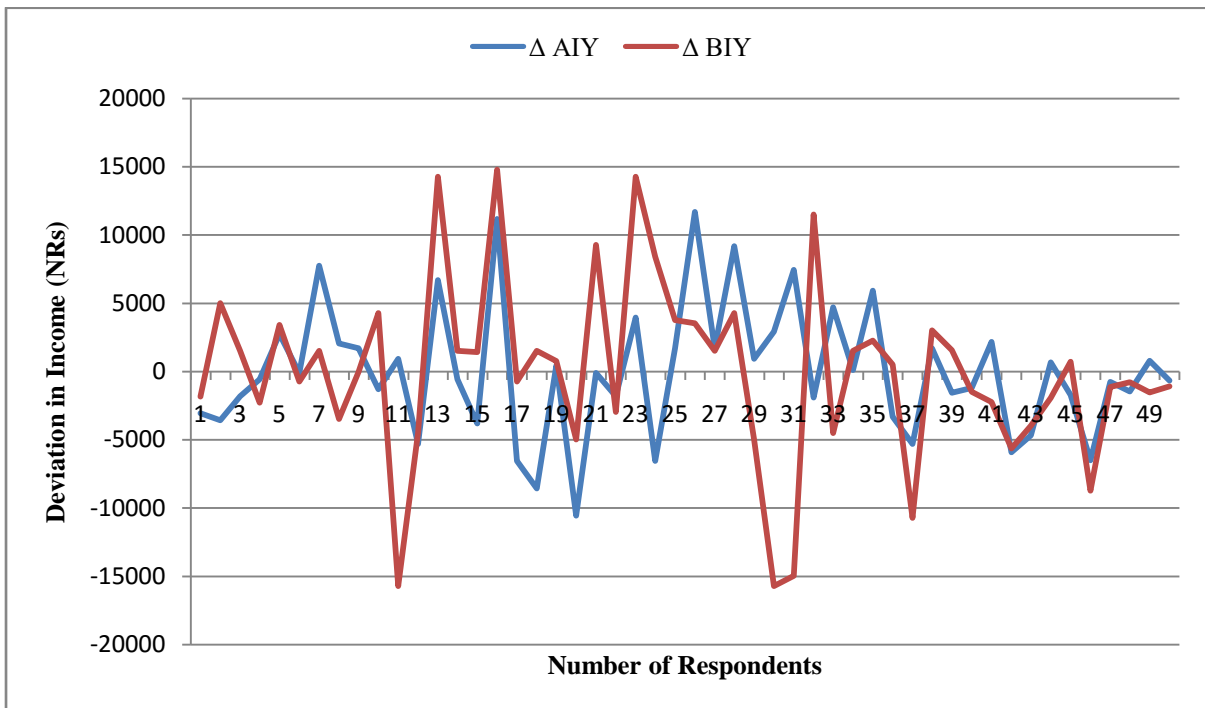

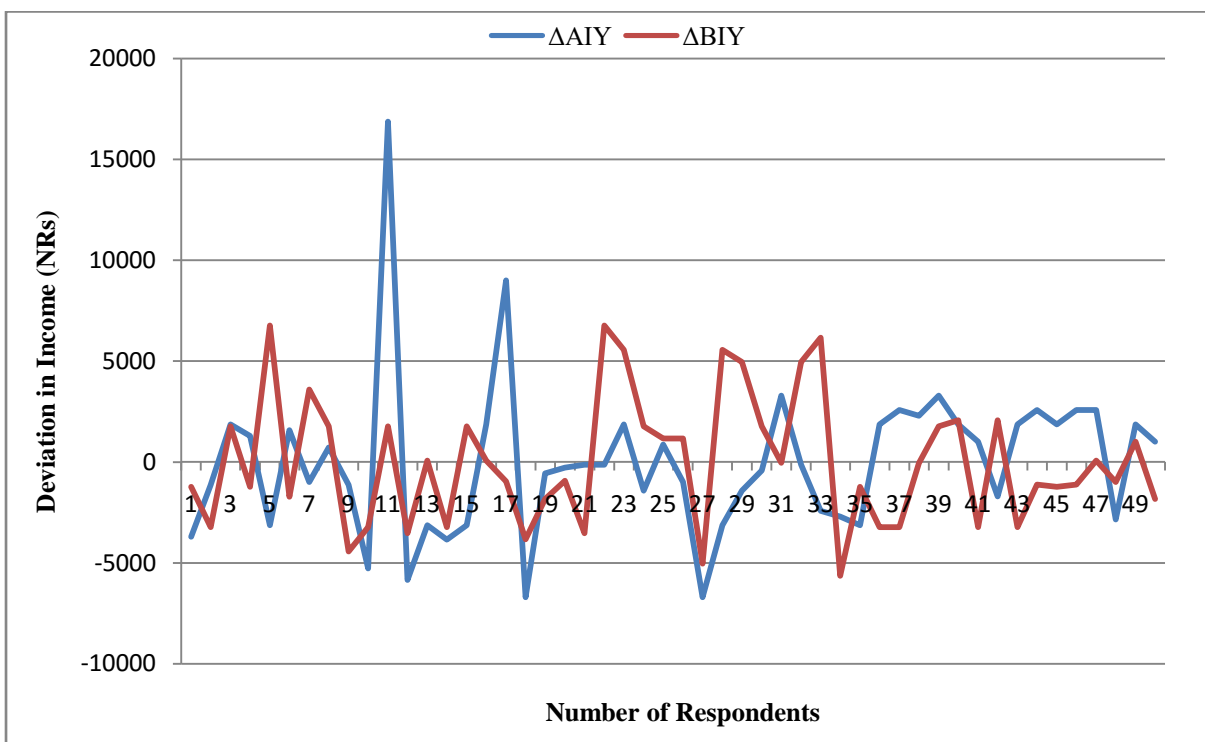*Figure 4.8: Graphical representation of change in income of Swabalamban MFI*

Figure 4.9: Graphical representation of change in income of National MFI

The above two graphical representation gives the idea about change in level of income after loan taken for both MFIs.

In the graph, ΔAIY denotes change in Agriculture Income. It is calculated by subtracting after loan taken agriculture income from fitted loan taken agriculture income. ΔBIY denotes change in Business Income. It is also calculated by subtracting after loan taken business income from fitted loan taken business income. Fitted income gives the appropriate result as it passes through the regression line and its result is more accurate minimizing the standard errors.

So from the graph, we can say that change in agriculture income is highest for the National MFI income exceeding NRs. 15000. But Swabalamban MFI has highest change in agriculture income value of only around NRs.12000. But change in business income is highest for the Swabalamban with the amount of NRs. 15000 comparing to that of National MFI with the highest amount of only NRs. 7000.

Even though we can see that change in business income of Swabalamban MFI is highly fluctuated as its value has also fallen down to negative of NRs. 15000. Therefore we can say that still trend of change in business income of Swabalamban MFI is unsatisfactory.

Rather we can consider that the change in business income of National MFI is more consistent and possess high positive values than that of Swabalamban MFI.

After interpreting all calculations and its results, National MFI is considered to be more positive and highly significant compared to that of Swabalamban MFI. Despite of newly established institute, the economic development of its clients seems to be much better. Also, while comparing the level of income within a National MFI, business income is found to be more efficient than agricultural income in the Kavrepalanchok district. This research area, being close to Kathmandu city have been recently progressing more upon business sector such that more level of income is being generated in this sector here.

We can also say that distance can impact upon the economic development of people to some extent. There is an influencing relation between the distance of the area from main city and the level of income. Lesser the distance from city, higher could be the economic development of the people. This can be illustrated from the below calculations and results.

4.6   Results of t-Test: Paired Two Sample for Means

MFI	Distance (Km)	Mean of Deviation in Income (NRs)
Swabalamban MFI_Agriculture	27	3500
National MFI_Agriculture	23	2500
Swabalamban MFI_Business	27	4220
National MFI_Business	23	3560

Table 4.9: Distance and Mean of Deviation in Income of both MFI

t-Test: Paired Two Sample for Means		
	Distance	*Mean of Deviation in Income*
Mean	25	3445
Variance	5.333333333	503300
Observations	4	4
Pearson Correlation	0.675466788	
Hypothesized Mean Difference	0	
df	3	
t Stat	-9.662674881	
P(T<=t) one-tail	0.001176662	
t Critical one-tail	2.353363435	
P(T<=t) two-tail	0.002353325	
t Critical two-tail	3.182446305	

*Table 4.10: Result of **Table 4.9** by t-test: Paired Two Sample for Means*

From table 4.9 and table 4.10, we have made estimation that distance has some significant effect upon the level of income after loan taken. Table 4.9 gives the idea about the distance of both MFIs from the main city of Kathmandu. The mean of deviation in income is selected which is a mean value of change in level of income after loan was taken.

In order to determine the effect of distance in level of income, we executed a t-Test: Paired two Samples for means. Its result is shown in table 4.10. In the result, we found:

tStat = -9.66

We know that if;

tStat< -tCrititcal two-tail or,

tStat> t Critical two-tail, then we reject the null hypothesis H0.

H0: μ1-μ2 = 0

Where,

μ1 = mean of distance

μ2 = mean of deviation income

So from the result we can say that

tStat = -9.66 < -3.18 = -t Critical two tail.

Therefore, we reject the null hypothesis and state alternative hypothesis H1, i.e.

H1: μ1-μ2 ≠ 0

There is also a significant P one-tail and P two-tail value of 0.0011 and 0.0023 respectively. Therefore, we can conclude that distance really have some significant effect upon level of income after loan taken. From the result of table 4.7 and table 4.8, we can say National MFI have strong positive effect compared to that of Swabalamban MFI. Hence, the distance of National MFI with 23 kilo meter has more positive relation than that of distance of Swabalamban MFI with 27 kilometer from main city. So, location is also termed as a controlling variable in our research model.

4.7   Discussion

In this section, we discuss about our proposed model of impact chain and Hulme's conventional model of impact chain, 1999. Our proposed model is not a derivation of Hulme's conventional model. It only matches with a similar framework designed along with scientific method to access impact.

Our model explains the impact chain of economic development of people in Kavrepalanchok district by using two different MFIs, established in different time series. Their individual economic practices with outcomes are observed. Here, economic practices means taking of loan from MFI. So whatever result in outcome (income level after loan), its impact is assessed by using scientific method (Regression Analysis). Difference in impact between two MFIs is identified, which is also called an Economic Impact.

In Hulme's model (Hulme, 2000), a program intervention is carried out in a particular agent and observed the modified behaviour and its modified outcome. Also, at the same time agent without program intervention is also carried out and observed the behaviour with its outcome. So the difference between such modified outcomes and normal outcome is the impact. Hulme's model covers all of the three impact assessment (IA) method: Scientific method, Humanities Tradition and Participatory Learning and action (PLA).

The common discussion between two models is a Scientific method. The experimental approach is virtually infeasible in the social sciences, because of the nature of the subject matter, and so the approach has been adapted into quasi experiments (Casely & Lury, 1982). Quasi experiments compare the outcome between intervention and without intervention of agent. One of an experimenting method is a multiple regression which has rarely been used in micro finance IA because of its enormous demands, for data on other possible causal factors and its assumption (Mosely, 1997). But in our research, we have used a Simple OLS regression technique such that individual impact upon different variable is easily observed. We also rejected multiple regression analysis as we did not collect large data. In addition, multi-collinearity was ignored in our calculation.

In paper (Hulme, 2000), Hulme has also argued about control variable method that is widely used in medical and agricultural sciences. While using such variable before and after comparision of a specific population is carried out. Before and after program intervention to the same or another population is observed and IA is performed. But in our research, we used a control variable only to identify whether external factor (location) impact upon the economic development or not. For that we selected a paired t-test method.

So, we can say that our proposed model is an identical model of impact chain. It is not dependent upon past research of Hulme's conventional model but rather only possess a smiliar framework or conventional design of impact assessment.

Our empirical result is derived by collecting the data from those people who are excluded from formal financial institutions, as they could not pay the higher interest rate. This is called 'Grameen Model'. Our selected MFIs are also similar to Grameen Banks that help poor people by providing loans in reasonable interest rates. From our empirical result we found 3 of our 4 variables have significant P values. Swabalamban MFI has its P values of 0.08 in agriculture and 0.025 in Business. Similarly, National MFI has agriculture and business P values of 0.0002 and 0.0015 respectively. Such significant values are the result of small loans and lower interest rate, compatible to the Grameen Model.

From our Proposed model (Figure 2.2) of the Impact chain, we have shown the difference between outcomes is the economic impact. It is a result from ecnomic practices of two MFIs. We have calculated the Standard Deviation (S.D) from economic impact equation of $EI = (\alpha 1 \times \Delta AI) + (\alpha 2 \times \Delta BI)$. S.D of economic impact for Swabalmban and National MFI are 0.1955 and 0.3416 respectively, showing the economic impact for National MFI highly vulnerable.

We can also discuss our empirical result similar to another research work (Khan, N.A. 2014). Both of our research have performed OLS techniques to identify the impact of MFI on household income level. One of a similar variable to his research work is impact of micro finance on household income level. Our calculation is specific to household income (agricultural income and business income). Let us compare a regression result of our research for agricultural income of National MFI similar with another research work (Khan, N.A. 2014). From our regression result at table 4.5, we can say that one unit of agricultural income level before micro finance loan taken leads to increase in agricultural income level after loan taken by NRs. 1.012. But in another research (Khan, N.A. 2014), it shows a one unit of micro finance loan taken leads to increase in household income of clients by Rs. 0.056350. This result could be comparatively less from our result due to lack of specific variables on household income.

CHAPTER 5

CONCLUSION, RECOMMENDATIONS AND FUTURE WORKS

5.1   Conclusion

In recent years, mostly in the rural area, the scope and services of MFI has been risen up. It has a major effect on the economic development of low income generating people. The MFIs are being more popular mostly in the developing countries like Nepal, Bangladesh and Bhutan.

The impact of MFI results in increase in level of income of the borrowers. From our calculation and its output summary, we can state that there is a positive relationship between the economic development and change in level of income after loan taken.

In our research area, we found that change in income from business sector is highly influenced rather than that of agricultural sector. Our result may be positive towards business income because this research area is recently getting popular upon business sector. The Kavrepalanchok district is a gateway to enter the capital city of Nepal so that this area has recently become fruitful to invest money upon business and trade. The main place in this district called Banepa has been industrialized in a last couple of years.

Comparing two different size and location of MFI was quite a challenging task in terms of level of income. This research is somehow able to identify the economic impact by MFIs within their respective clients. The level of economic impact was calculated using Single OLS Regression method. Further, Paired t-test was examined to show the effects of location in level of income. After all of the calculations and interpretations, we believed that the research area is greatly affected by business than that of agriculture. Furthermore, a recently established National MFI has more significant result compared to long term serving Swabalamban MFI. It also reveals that National MFI could have low cost of borrowing, less interest rate and convenient way to grant loan.

But still we can uplift the agriculture sector in our research area. From our result, we can see that P value for Agricultural Income is 0.08 and 0.0002 for Swabalamban MFI and National MFI respectively. This means our research area has potential to make growth in agriculture sector. Since this area has a cold trophical climate and situated in a hilly region, potato cultivation could be one of the efficient agricultural source to increase the level of income. There are some challenges to get loan easily to invest upon agriculture. One of a crucial reason could be charging higher interest rate by MFIs. Therefore MFIs should consider upon all those hurdles and minimize it by reducing higher interest rate on loan.

A Central Bank (NRB) has regulated the interest rate for MFI up to 8% (in agriculture) of loan amount. This interest rate on loan can be fluctuated depending upon size of loan, program interventions, MFIs schemes and potential of customer to repay. We can say that lower the interest rate higher the amount of loan. So, easy access upon bigger loan is also a way to economic development.

5.2   Limitations of using only two villages

- Data from only two villages does not provide the efficient and econimc result of whole district because there could be several villages in a district.
- Two villages give similar values as the characteristic of only two villages doesn't give variations in result.
- Clients from only two villages may have taken loan from more than one MFI so that chances of overlapping may exist in the result.

5.3   Recommendations

General recommendations after this research are noted below.

- MFIs have limited resources to promote their services. If the government (Central Bank) monitored upon their budget line, they can launch outreach program regularly such that poor people get benifits from those program.
- As MFI have general meetings with their clients in a week, they should understand the client's major problem with income and try to solve it out. This can be done by distinguishing the higher and lower income people. Both level of income generating

people should be placed in a same group. If lower people could not repay the loan, then other people will repay it unless rest of them deprived from further loan (Group Model). This is an act of helping each other in need.

- Easy access to loan is one of an essential way to increase economy of peoople. It can be done by less doucmentations. Property valauations and collateral requirements can be made convenient.

- The cost of borrowing and interest rate of MFIs loan should be minimized than other banks. It could be a challenging task for MFI's to do so. But NRB can have financial interventions upon the borrowing cost and interest rates. MFI's borrow the amount from different commercial banks with a certain interest rate. Such borrowing rates can be lowered by ammending NRB regulations. If borrowing rate is lowered, ultimately rate of interest for MFI's clients get lowered. Besides, amount of capital deposit in NRB can be lowered so that more number of MFIs can be launched in every rural area of the country.

5.4   Future Works

Direction for future works can be:

- Adding other independent variables like income from salary, remittance and household consumptions with savings can measure economic impact.

- Enhance the use of statistical techniques in calculating data and other statistical applications like SPSS package and E-Views can also provide appropriate result with more extensive graphs and output summary.

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APPENDIX

Reflective Notes by Sachin Regmi

One of a major contribuiting sector upon the economic development of people and nation is termed as a Micro Finance Institution (MFI). MFI provides financial services, especially focusing upon low income generating people and assist to uplift their life style. Its main aim is to eradicate poverty from nation. In order to do so, small amount of loan with less interest rate could be an influencing financial service provided by MFIs. In Nepal, economic development mostly relies upon agriculture and business sector. Therefore, findings from this research reveal that small loans upon those sectors will certainly raise the level of income of people and assist to economic development. Hence, we can say that MFIs have economic impact upon income level of people. From the calculation and its output summary, this research states that there is a positive relationship between the economic development and change in level of income after loan taken. From this research work, it is also obvious that distance of a location from a main city also have feasible impact upon economic development. More the location closed to main city, more the effect in economic development of that area. Moreover, our research area showed an empirical result interpreting that a recently established MFI has more significant result compared to long term seving MFI. From the findings of this research, change in income from business sector is highly influenced rather than that of agricutural sector. The results from our calculation are more positive towards business income because this research area is recently getting popular upon business sector.

MFI's in Nepal is still lacking to serve its clients in a prominent way. They are mostly located in urban and accessible areas and failed to serve mostly in rural and hilly areas. It still failed to reach poorest of the poor people. This has occured due to high operating cost and high interest rates. Therefore, international power is essential to eradicate such major challenges in the developing countries like Nepal. There are some international agencies and unions who are cooperating with MFIs and government to provide better services in order to bring positive changes to economic development. It was found that some of the Interantional NGOs (INGOs) are helping to saving and credit institutions so that the financial services are reached to the poorest of the poor people. Targeting women to raise the economic power is one of an essential step by INGOs. This activity by INGOs is also influenced in our research area since

all of the borrowers of MFIs in our research area are women. Many findings revealed that Interanational Organisation (IO) and INGOs not only engaged upon micro finance program but also with a diversed portfolio of economic development activities in the country. IOs and NGOs have engaged to build up in trainings, rating, Management Information System (MIS) and some aids to their partner MFIs. The UNDP has served with a community based linking program. Associated as a World Bank (WB) partner, UNDP has assist to access finance fund and linking saving groups to formal institutions.

Further, there exist some innovative ideas that can bridge the gap to enhance the performance of MFIs in a country. Such innovative ideas should be taken under consideration by MFIs, government, local and foreign agencies including our research area and units. They are illustrated below.

- Faciliating the customers with certain reward if he/she repaid the loan amount at right time.
- Increasing the size of a loan of a group if that group re-invested the given loan amount and generated the optimum profit.
- All of the MFIs should be inter-connected such that if one MFI goes through bankrupt, the other will try to recover it from such loss.
- Rating of MFIs is a must because rating and rewarding the best MFI and its staff will motivate them to give 100% performance.
- Interest rate on loan can be lowered to such borrowers who had efficiently utilized the loan frequently and repaid loan before due time. For that central bank (government) and international aid agencies can assist to access finance fund. Also, program intervention about such MFI's activities can be carried out such that maximum borrowers get motivated.

MFIs have significant social responsibilities to uplift the welfare and economy of society in a country. The people in the society are the backbones to strengthen the economy of whole nation. They are the major social forces who drive the country in right direction. So, to make them strong financially MFIs play one of a major role by providing different financial and non-financial services and encourage them to develop society and whole nation. Not ony financial services, MFIs in our research area has also been providing non-financial services. It is found very effective as it assist in creating awareness, building capacity and confidence, developing skills, building leadership and management capacity of the members. Such social

and non financial activities have been more effective after the devasting earthquake strike in 2015 in Nepal. The objective of most of the MFIs is to help poor people by providing both financial and non-financial services and eradicate poverty to improve conditions of their life. Therefore this objective is a potential ethical challenge for all of MFIs and they are obviously following their objective to achieve. However, the changing social, economic, political and financial environment within MFIs are creating ethical challenges too, also creating competitive advantage with possible responsible management. The responsibility to MFIs is very significant and so in order to strengthen it, specific actions need to be taken. Awareness raising and institution building contribute to enhance the capacity of target women, so MFIs need to focus upon it. Awareness can be raised by providing pre-group and leadership development training, exposure visits to different micro finance site, appropriate discussion, interaction and effective decision in the center meetings to support welfare and economy of society.

Reflective notes by Usha Kiran Gautam

Micro finance institutions (MFIs) play an important role to run the country in the path of economic development by bridging the gap between formal banks and rural poor of the nation. MFIs specially focus upon the lower income people and provide loans and other financial services in order to eliminate poverty and to uplift the economic development of the country. In most of the developing countries, poor people are generating their income by taking the loans from MFIs in a reliable rate of interest. Nepal is also one of a developing country having many poor and rural areas. In case of Nepalese scenario, agriculture is the main occupation for most of the people. But nowadays, people are engaging in small business by taking the loan from micro finances. Through our thesis we are trying to find the impact of MFIs to the economic development of poor people in Kavrepalanchowk district of Nepal. We are taking two MFIs for comparative analysis to show which MFI has greater impact in the economic upliftment of poor people in that villages. According to our research, we found that people are taking loan from MFIs mostly for small business purpose and some other for agricultural purpose. From our analysis and calculations, we are able to find out that level of income and economic development has positive relation after loan taken. Economic development is also highly influenced by the location of MFIs. From our research, we found that the MFI which has close distance to the city area have high impact comparative to MFI with far distance from that city. People are generating high income from the MFIs closer in

distance than other. Due to the distance near to the city, people are more interested to invest in business and as a result, they are getting higher level of income than the people investing in agriculture.

Firstly, the international agencies or external forces play significant role in Nepal to eradicate poverty and enhance the life style of poor people. MFIs alone could not succeed to work on it due to the requirement of high funds. So, it needs both financial and non financial aids from both NGOs and INGOs. A joint initiaive of UNDP and UNCDF had a project "Enhancing Assess to Financial Services" that was conducted under the supervision of NRB. This project have encouraged MFIs through technical and grand support to provide services of formal savings and credit for rural women. Our research area also resemble with the target women. ADB is another interanational force that has been providing housing finance to low income generating people in a developing countries like Nepal since late 1970s. Housing sector creates growth in an economy resulting to increase in level of income of people. Besides, UNDP, UNCDF and WB are such external forces that suport the effort of government of Nepal. Mututally, they access to both financial and non financial services to urban and rural low income people through different beneficiary projects.

Secondly, innovation is very useful for the MFIs as well as our thesis unit because it helps MFIs to improve its performance by bringing various innovative ideas and programs. Most of the MFIs fail to meet the customer requirements and only provide access to credit. As MFI's target is the poorest people of the nation, those people are not aware about innovative ideas. They take the loan but they are not enough educated to utilize the amount in a proper way. Therefore, MFIs should be aware that they should introduce client-friendly products and practices. After loan taken, clients may not use the innovative ideas of investing the money; as a result, they may not succeed to generate profits. This type of situation makes the MFIs fail to meet the goal of eliminating the gap between rich and poor of the nation and ultimately profit level will be very low. Moreover, MFIs should have to be very crucial in terms of both providing loans and making financial returns of their clients. This could achieve by launching educational program, various trainings and value chain support to their clients. Besides, MFIs can organize various programs to award and reward the best clients, to provide more loans for

good performers to reinvest and to motivate the clients to utilize the amount effectively in productive sectors.

Lastly, MFIs has important social responsibility that should be carried out in order to sustain in the society and to meet the competitive challenges with their competitors. MFIs relating to our thesis are also equally responsible towards its society. MFIs should provide both financial and non-financial services in order to bring the economic development of the society. Financial services should be provided in order to make the business growth, and provide capital for start-up. Non-financial services are being more helpful in creating public awareness, women empowerment and increasing skills, knowledge and capacity of its members as well as other people in the society. We can see that MFIs of our unit analysis are trying to meet the social responsibilities by providing various financial and non-financial services but they are equally facing ethical challenges to operate in the changing environment. Changes in societal, political, economical and technological factors are creating many ethical challenges, but they are very conscious towards social responsibilities and working towards their objective of improvising the life style of poor people.