CHAPTER-I

INTRODUCTION

1.1 Background

Nepal is one among poor economies in the world with a diminutive GDP of 20 billion USD (MoF 2014/15). According to Nepal Living Standard Survey (NLSS) 2010/11 about a quarter (25.16 percent) of the population of the country is below poverty line. The poverty rate of rural population (27.4 percent) of the country is higher as compared to rate of urban population (15.5 percent). According to the same survey per capita income of Nepalese individuals is NPR 41,659 and income of bottom seventy percent of total population of the country comprises of 43.3 percent of its total national income. This is an indication that both poverty and economic inequality prevails in the country.

Nepal Human Development 2014 report predicts Human Development Index (HDI) value of Nepal as 0.54 and Nepal ranks 145^{th} in terms of HDI ranking. When comparing HDI values of different regions of the country there are differences in HDI values of one region of the country to another. Of the five development regions the Central development region has the largest HDI value (0.56) and the Far-Western development region has the least (0.49).Thus, Nepal is relatively behind in terms of human development as compared to other countries and to add to it human development index varies for different parts of country.

According to NLSS 2010/11 nominal average household income of Nepalese households is NPR 202, 374. Nearly three quarter of households (73.9 percent) own farm land, and farming sector on an average comprises nearly quarter (27.7 percent) of household income. Similarly, the same survey shows that non-farm sectors comprise of 37.2 percent of household income and remittances comprises of 17.2 percent of total household income. Of all the employed population 12.6 percent work on wage employment in non-agricultural sector and 10.7 percent work in extended economy. Households of Nepal are receiving income from agricultural sector, non-agricultural sector, extended economic sector as well as from abroad.

Many factors account for changes in income of households of Nepal. For example, untimely monsoon can affect paddy transplantation in those regions where irrigation is unavailable (see Synnott 2012). Many migrant workers of migrant sending households are not paid on time or not paid completely by their employers in the destination country where they work (see Paoletti 2014). The number of tourists coming for recreational activities in Nepal fluctuates due to socio-economic/natural shocks to the country (see Kunwar and Chand 2016). The load shedding hours in the country has significantly affected the industrial sector (see Shrestha 2010). Therefore, there are many reasons due to which income of Nepalese household changes. When household income decreases household borrowings can be useful to meet household needs.

While one of the reasons for households participating in credit market could be decrease in their income but there are various other reasons due to which households participate in credit market. For example, in April 2015 the Central region of the country was affected by earthquake due to which many households lost their houses and many individuals lost their jobs. When households suffered economic loss due to earthquake many of them borrowed loan from different sources as they attempted to return to their situation before the earthquake (see lord 2016). Similarly during festival seasons and agricultural activities households might need greater sum of money which they fulfill by borrowing loan. At occasions households might have to make big spendings such as during higher education of children, during marriage ceremony of family members, during major health treatments of family members or during religious/recreational traveling. If household savings cannot cover these big spendings then households might have to borrow from external sources. Similarly, income and accumulated wealth of poor households might be insufficient to meet their household expenditure and hence these household might need to borrow loan from external sources.

This research intends to find out in what ways socio-economic characteristics of Nepalese households determine the participation of households in credit market. This study also analyzes if socio-economic characteristics of households are important in determining sources from which households borrow credit as well as if socio-

economic characteristics of households are important in determining use of household loan between consumption and productive activities.

1.2 Statement of the Problem

Households vary in terms of size, location, gender composition, education level completed, income earned and wealth accumulated**.** Households with bigger size usually have greater family needs and possibly a greater need to borrow loan. Households located in remote areas might not have access to banks and financial institutions in a nearby location and these households need to rely on relatives, friends or neighbors for borrowing loan. Households in which family members are illiterate might decide not to use banks and financial institutions to borrow loan just to avoid paperwork. A wealthy household with a lot of accumulated wealth might never need to borrow loan.

Households can use their loan for daily consumption or for production such as farm or business activities. Households whose size are large and have low income might use loans in meeting their daily consumption needs. Similarly, during agricultural season households might use loans to buy fertilizers and seeds. Similarly, for example, an educated household head might borrow loan to start a new business of private school whereas an uneducated household might not be able to carry out such business.

The financial services in Nepal have been growing and access to financial services for Nepalese households is increasing (Microsave 2014). However, household credit market of Nepal does not only rely on banks and financial institutions. Household borrowing from friends and relatives at the time of financial need is very common in Nepal. Banks and financial institutions in Nepal are mostly concentrated in urban areas (Microsave 2014). Therefore, many rural households need to travel to urban areas for using banks and financial institutions to borrow loan. The other challenge faced by rural households while borrowing loan is in meeting the collateral requirements of banks and financial institutions (Microsave 2014). Similarly, some financial institutions (such as agriculture bank) provide loans for specific purpose but monitoring if such loans have been used in appropriate ways is challenging.

This research in particular answers the following three research questions:

(i) Do socio-economic characteristics of household affect household decision for taking loan?

(ii) Do socio-economic characteristics matter for choice between formal and informal sources of borrowing?

(iii) What are the factors affecting household decision for use of borrowed amount especially between consumption and productive activities?

A detailed discussion of what are formal and informal sources of loan as well as how are uses of loan categorized between productive and consumption is discussed in chapter three. However, describing briefly, in the context of this research, formal source comprises of bank and financial institutions, NGO or relief agencies, and cooperatives.

1.3 Objectives of the Study

This study carries out statistical analysis to answer the research questions discussed above. There are three major objectives of this study:

(i) To find out the socio economic determinants of the household decision to participate in the credit market;

(ii) To examine the factors affecting household choice between formal and informal sources of borrowing;

(iii)To identify the factors influencing households decisions for use of borrowed amount especially between consumption and productive activities.

1.4 Significance of the Study

This study intends to find out if socio-economic characteristics of household determine its participation in the credit market. For example, if this study finds that a number of socio-economic characteristics are important in determining the participation of household in the credit market then it can be deduced that household credit market participation in Nepal is not only determined by availability of financial services but socio-economic characteristics of household as well.

The outcome of this research can be useful in developing targeted policies. For example, suppose this research finds that literacy status of household head is

significant in determining participation of household in the credit market. Further, the research is able to predict by what percent household in which household head is literate is more likely to involve in credit market as compared to household in which household head is illiterate. Then suppose if the government implement a program to increase literacy rate of Nepal then the findings of the research can be useful to estimate the percentage change in household participation in the credit market as a consequence.

1.5 Limitations of the Study

This study relies on information obtained from statistical analysis to meet the objectives of this study. Listed below are limitations of this study:

(i) This research uses secondary data so analysis is based on the variables already contained in the dataset. Therefore, the level of disaggregation was limiting factors in some of the cases and proxy variables have been used.

(ii) In some cases socio-cultural ties can also determine the nature of household borrowing. In some communities the ties between households might be so strong they almost and always choose to borrow from their neighbors. Such socio-cultural ties are not considered in this study.

(iii) Other external factors such as occurrence of natural disasters or economic instability prevailing in the community can also affect household borrowing. Such external factors have not been considered in the analysis.

1.6 Chapter Plan

This thesis has been divided into six chapters. The chapter one contains background, statement of the problem, objectives of the study, significance of the study and limitations of this study. The chapter two contains literature review of other studies carried out in Nepalese context and international context. The third chapter explains the research methodology used to carry out this research. The fourth chapter presents the overview of current credit market of Nepal. The fifth chapter is discussions of results obtained from analysis. The sixth chapter makes conclusions based on the findings of the study as well as provides recommendations.

CHAPTER-II

LITERATURE REVIEW

This chapter reviews some of the earlier studies carried out both in the context of Nepal and outside of Nepal and are related to this study. The review of theoretical models related to this study is carried out in earlier section whereas review of empirical studies related to this study is carried in later section. The literature review is carried out from books, journal articles, reports of development practitioners and thesis work of graduate students.

2.1 Theoretical Concept

A mathematical derivation (extracted from Zeller (1994) and Perloff (2001)) describing how household borrowing contributes to consumption smoothing is presented below:

The standard model of a household which maximizes utility (U) for consumption (C) and leisure (L) is,

Max U= U (C, L) …….Equation 2.1

Utility is separable over periods and utility over two periods is,

$U= U (C_1, L_1) + U (C_2, L_2)$ …….Equation 2.2

A household faces a time constraint (T) in each period, i,

$T_i = W_i + L_i$ ……..Equation 2.3

The time is spent either in wage employment hours (W) or in leisure (L). Let r denote wage rate in the market.

Income(Y) of a household can be expressed as a function of wage rate (r) and work hours (W). This assumes that household receives income only from wage employment.

$Y_i = r_i * Wi$ ……Equation 2.4

In the absence of household borrowings/savings the household spends Y_1 and Y_2 in periods 1 and 2. Assume that household borrows amount D in period 1 and repays the same amount in period 2 (for simplicity it is assumed that there is no interest charged in household borrowings). If instead household lends certain sum of money to another household in period 1 then D would be negative.

After the household borrowings there are changes in household budgets (B) of both the periods.

$B_1 = Y_1 + D$ ……..Equation 2.5

$B_2 = Y_2 – D$ ……..Equation 2.6

From (5) and (6),

$(B_1 – B_2)/2 + (Y_2 - Y_1)/2 = D$ ……..Equation 2.7

Here due to possibility of household borrowing even though household income fluctuate the household can have same budgets in both the periods.

If $B_1 = B_2$, then from equation 2.7,

$(Y_2 - Y_1)/2 = D$ ……..Equation 2.8

Thus, household borrowings can be used in narrowing household income fluctuations or in other words can be used for consumption smoothing. A rational consumer would opt for household borrowing only if it maximizes utility.

Chen and Chivakul (2008) mention that in a period of low income household borrows loan from external sources and in a period of high income household repays loan to lenders. Borrowing and lending is always possible in a well functioning market. By participating in a credit market household maximizes utility by smoothing marginal utility.

2.2. Review of Empirical Study

The review of empirical study is carried out both in international and national context as presented below.

2.2.1 International Context

Zeller (1994) uses a probit model to find out determinants of access to formal (cooperative) credit in rural Gambia. The author uses four explanatory variables, namely, age of farmer, per capita annual household income, a dummy variable if a family is extended family and sex of household head. The findings indicate that old individuals have advantage over young individuals in their access to credit and the households with higher per capita household income have higher access to credit.

Vaessen (2001) examines the factors which determine the accessibility of rural credit for the case of a rural bank, the Fondo de Desarrollo (FDL) Rural, in Northern Nicaragua. The study finds that from the point of view of households the variables related to the willingness of household to take a loan, the access to networks of information and recommendation related to bank staff/existing clients significantly influence the probability of having credit from the FDL. The study then suggests that advertising about FDL in some ways such that the community members are aware of FDL activities can increase FDL credit activities.

Chen and Chivakul (2008) analyze the determinants of household credit demand and credit constraints in Bosnia and Herzegovina. As possible determinants of demand of household credit market the author tests four variables namely , age, net wealth, current income and education. The authors initially predicted an inverted U-shaped relationship between borrower's age and household credit demand. The authors assumed that because income increases with age the borrower's demand for credit increases with age (higher income in future means higher ability of borrower to repay loan) but after a threshold age as the borrower can no longer expect higher income in future then the demand for credit decreases consequently. The research findings found an inverted U-shaped relationship between age of borrower and household credit demand. Initially authors suggested that the higher is the net wealth of household the more it can afford desired consumption and hence less need to borrow loan. This suggests a negative relationship between net wealth and household credit demand. The findings of the study predicts that for low net wealth credit demand of household increases as net wealth increases however for high net wealth of household the credit demand of household decreases as net wealth increases. Initially author suggested that the relationship between income and demand for credit is rather unpredictable. On

one hand as income increases the household might be able to meet its needs so there is less need to borrow loans and on the other hand as income increases the household has more chances of getting collateral based loan. The findings of the study found that for low income household demand for credit increases as income increases but for high income household demand for credit decreases as income increases. The author initially suggested the relationship between education level and credit demand to be positive but the findings showed that up to certain point credit demand increases with education but in case of individuals who have completed higher education credit demand decreases with increase in education level.

Mohammed (2009) uses Heckman Selection model to determine factors that determine access to credit. According to the study for female headed households only a variable total household income determine household credit access whereas for male headed household variables, namely, total household income, value of total productive assets owned by household and degree of market integration of household determine household credit access. The study depicts that there can be differences in decisions made by households in the credit market based on sex of household head.

2.2.2 National Context

Bhattarai (2007) carries out research on financial liberalization and role of commercial banks in poverty reduction. The study suggests the following recommendations in order to improve banking services to the poor: (i) the poor households must be provided with subsidies and transfers to access microfinance services, (ii) the financial institutions should not be concentrated in urban areas, (iii) some alternative of collateral based loans should be identified as poor does not have assets to use as collateral, (iv) banking procedures for lending to small business must be simplified, (v) banks should agree moveable property as collateral as small businesses often have only moveable property, and (vi) private Banks should prioritize small businesses not just wealthy individuals. This study suggests that in order to improve banking access of poor the banks should come up with pro-poor lending schemes.

Katuwal (2009) uses a probit model to determine socio-economic determinants of credit market participation in the context of Nepal. Household participation in credit

market is a binary dependent variable(Y) where Y=1 if the household participates in credit market. The independent variables tested in the model are briefly discussed below. The independent variable household size has significant and positive relation with the dependent variable. The author explains this is because as household size increases there is more need for household consumption expenditure. The relationship between independent variable per capita food consumption and the dependent variable is negative and significant. The author uses per capita food consumption as proxy for wealth and suggests that wealthy households have sufficient resources and these households need to rely less on the credit market. The author identified an inverted U-shaped relationship between independent variable age of household head and the dependent variable. The study found negative and significant relationship between an independent variable education of household head and the dependent variable. The author explains that as the education level of individual increases his/her income increases as well so there is less need to participate in the credit market. The study found positive but insignificant relationship between the independent variable sex of household head and the dependent variable. The author mentions that this is because female headed households could be risk averter and have weaker socio-economic ties. The study found the relationship between independent variable poor/non-poor and the dependent variable is negative but insignificant. The author explains that this is because non-poor households have their own resources and they need to rely less on credit market. The study found that the relationship between independent variable rural/urban and the dependent variable is negative and significant. The author explains that households in urban areas can generate income on their own so they have less need to participate in the credit market. The author makes conclusion that socio-economic characteristics of households play an important role in determining household access to credit.

Khanal (2010) carried research on impact of agriculture credit on agriculture production. The study finds that medium and large scale farmers have mostly benefited from the scheme of agriculture credit while small and marginal farmers still rely on traditional sources. The author mentions there is need of regularly monitoring and supervising for effective use of the credit.

Uprety (2010) carried out research on role of micro-credit bank on economic upliftment of women: a case study of Paschimanchal Grameen Bikas Bank. The study suggests that even though government has come up with some policies targeted to improve micro-credit access of poor the satisfactory results have not been observed due to managerial challenges encountered by the micro-credit institutions. The findings suggest the need to apply strategic approaches by microcredit institutions in order to control and monitor micro credit institutions.

Aryal (2014) carried out study to find out role of micro-credit to economic improvement of women: a case study of Manushi Micro-Finance at Bidur Muncipality, Nuwakot District. The study highlights that benefits have not reached to poor because it is difficult to identify who is poor and who is non-poor. The study finds that satisfactory results have not been observed due to managerial challenges encountered by institutions. The study highlights that after being involved in microcredit borrowing fooding and clothing habits of borrowers changed.

Katuwal (2015) carried out study to find out role of microfinance in employment generation based on survey carried out in Hansposa VDC of Sunsari District. The study found that of all the borrowers who borrowed loan from microfinance eighty percent used it to carry out different type of business. The study thus suggests that microfinance institutions have played positive role towards employment generation.

Pandey (2015) carried out study on role of microfinance in employment generation based on the survey carried out in Aanandavan VDC. The author mentions that after the emergence of microfinance institutions there is reduction in interest rate which is needed to pay while borrowing loans in the VDC. Similarly, the presence of saving group in the VDC means an easier access of loan to the residents at the time of emergency.

Chalise (2016) carried out study on role of microfinance to achieve millennium development goals based on survey carried out in Bharat Pokhari VDC of Kaski District. The author compares the poverty rate of microfinance borrowers and non-borrowers. The poverty rate of microfinance clients is lower. Similarly, food security is also higher among micro finance clients. The study suggests that the role of micro finance can be very important to achieve millennium development goals.

2.3 Conclusion of Literature Review

Some studies reviewed above provide evidence that socio-economic characteristics of household are useful in determining participation of household in the credit market. Some studies mention that collateral requirements can be restricting access of financial services to the poor. Some studies pointed out monitoring and supervising of loan is very necessary for effective use of loan. There is evidence both at national and international context that socio-economic characteristics of households are important in determining participation of household in the credit market. The decisions made by the household affect mostly the demand side of credit market but for successful operation of credit market the supply side in the credit market is also of equal importance.

CHAPTER-III
RESEARCH METHODOLOGY

This research is carried out to figure out socio-economic determinants of household credit market participation in the context of Nepal. Most of the findings of this study are based on statistical analysis of secondary data. However, in the next chapter an overview of credit market of Nepal is presented where attempt has been made to highlight about different types of institutions involved in credit market in Nepal.

3.1 Research Design

This research carries out analysis in three different ways: (i) to determine which of the socio-economic characteristics of household determine its participation in credit market, (ii) to determine which of the socio-economic characteristics of household determine the choice of source of loan between formal or informal source, and (iii) to determine which of the socio-economic characteristics of household determine the choice of use of household loan between business/farm or personal. This is a quantitative research. Three different econometric analyses are carried out to meet the research targets. For econometric analyses credit market participation related variables are dummy dependent variables and socio-economic characteristics of household are independent variables. The statistical significance of regression coefficients of independent variables are used to find out if any particular socio-economic characteristics of household has effect on particular dependent variable. A five percent significance level is chosen to find out if regression coefficients are statistically significant.

3.2 Nature and Source of Data

This research uses secondary source of data for analysis. The raw data are obtained from NLSS 2010/11 as provided by Central Bureau of Statistics of Nepal. The dataset has 5988 household in total but some variables used in this research have missing information for some variables. Household weights of surveyed 5988 households are included in the dataset. Using these household weights in the analysis means the results can generalized for entire nation.

This research requires dividing the source from which loan is obtained into formal and informal source. The division has to be based on how the question regarding source of household loan has been asked by NLSS 2010/11. An eleven different sources has been mentioned in the questionnaire which are divided as follows: a source is formal if the loan is obtained from Agricultural Development Bank, Commercial Bank, Grameen Type Bank, NGO or Relief Agency, Cooperatives and Other financial institutions and a source is informal if the loan is obtained from Relatives/friends, Landlord/employer, Shopkeeper, Money lender and Other (see Ferrari 2006). The basic idea is that any source which requires paperwork to obtain loan (or the loan that is officially recorded) is a formal source and those which do not require paperwork is informal source. However in the above classification a judgment of author has been used. For example, borrowing loan from employer is categorized as informal mostly because labour economy of Nepal is highly informal. This research requires dividing use of loan of households as business/farm use or personal use. As NLSS 2010/11 questionnaire has already divided use of household loan into business/farm use or personal use so dividing use of household loan into two categories is rather easier.

3.3 Method of data analysis

The data obtained from NLSS 2010/11 are analyzed in Stata version 13. The data analysis starts with obtaining summary statistics pertaining to share of households with loan, average number of household loan, average amount of household loan, formal or informal source of loan and use of loan in productive or consumption activities. As a next step of analysis three different econometric models (discussed in detail below) are analyzed. Household weights are used in all steps of analysis.

3.4 Econometric Analysis

This study uses a model in which household tries to maximize its utility from the available resources given the household has access to market which works well. As explained in chapter two this study regards that household borrowing can contribute to consumption smoothing and hence utility maximization. The utility maximizing household participate in the credit market (loan participation=1) if the loan is expected to increase household utility and household does not participate in the loan

market (loan participation=0) in opposite situation. Similarly, a household borrows from formal channel as opposed to informal channel if it increases household utility and a household uses loan for productive activity as opposed to consumption if it increases household utility.

3.4.1 Logistic Regression Models

The dependent variables used in this study are binary. As the outcome variable is dichotomous logistic regression models which are described below are used in analysis. Usually logistic regression is well suited for describing and testing hypothesis about relationship between binary outcome variable and one or more binary or continuous predictor variable (Peng 2002).

A simple logistic regression model (see Peng 2002) can be explained as:

$$\text{Logit}(Y) = \alpha + \beta X + \epsilon \quad \text{.....Equation 3.1}$$

In equation 3.1 Y is a dependent binary variable, α is a regression constant, β is a collection of regression coefficients, X is collection of independent variables, and ϵ is an error term. The values of α and βs in logistic regression are estimated by maximum likelihood (ML) method.

Alternatively logistic regression can be defined as:

$$\text{Logit}(Y) = \text{natural log (odds)} = \ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta X \quad \text{.....Equation 3.2}$$

In equation 3.2 π=Probability (Y=1, for specified value of X) $= \frac{e^{\alpha+\beta X}}{1+e^{\alpha+\beta X}}$.....Equation 3.3

The econometric model used in this research is build looking into the model used in Katuwal (2009). Katuwal (2009) uses probit model to identify socio-economic determinants of credit market participation in Nepal using NLSS 2003/04 data. An additional independent variable 'time required to access closest bank' has been added in this newly developed model.

The general econometric model used in this research is:

Logit (Y) = α +β_1 age+ β_2 agesquare + β_3 sex + β_4 literacy + β_5 hhsize + β_6 land + β_7 food + β_8 poverty + β_9 location + β_{10} beltone + β_{11}belttwo + β_{12} regionone + β_{13} regiontwo + β_{14} regionthree + β_{15} regionfour + β_{16} access + ϵ ……Equation 3.4

In equation 3.4, Y is a dependent variable as explained in table 3.1. Table 3.1 contains three different dependent variables as three different econometric models are analyzed in this research. However, the set of independent variables tested in all three models are same and these independent variables are defined in table 3.2. There are two dummy variables pertaining to ecological belts and four dummy variables pertaining to development regions in table 3.2. In both dummies pertaining to ecological belt the value for dummy is zero if Hill region and in all four dummies pertaining to development regions the value for dummy is zero if Central development region.

Table 3.1: Description of dependent variables

Model	Variable	Description of variable
Model 1	Y_1	Y_1=1 if a household has a loan Y_1=0 if a household does not have a loan
Model 2	Y_2	Y_2=1 if a household borrows loan from a formal source Y_2=0 if a household borrows loan from an informal source
Model 3	Y_3	Y_3=1 if a household uses loan for business or farm use Y_3=0 if a household uses loan for personal use

Table 3.2: Independent Variables Determining Credit Market Participation

Independent Variables	Nature of Variable
Age of household head(age)	Continuous
Square of age of household head (agesquare)	Continuous
Sex of household head (sex)	Dummy (0 if female, 1 if male)
Education of the household head (education)	Dummy(0 if illiterate, 1 if literate)
Household size (hhsize)	Continuous
Land holding in hectare (land)	Continuous
Per capita food consumption in NPR (food)	Continuous
Poor/non poor (poverty)	Dummy(0 if poor and 1 if non-poor)
Rural/Urban (location)	Dummy (0 if rural and 1 if urban)
Ecological belt one (beltone)	Dummy (1 if mountain, 0 if otherwise)
Ecological belt two (belttwo)	Dummy (1 if Terai, 0 if otherwise)
Development Region one (regionone)	Dummy (1 if Eastern Development Region, 0 if otherwise)
Development region two (regiontwo)	Dummy (1 if Western Development Region, 0 if otherwise)
Development region three (regionthree)	Dummy (1 if Mid-Western Development Region, 0 if otherwise)
Development region four (regionfour)	Dummy (1 if Far-Western Development Region, 0 if Otherwise)
Time required to access closes bank (access)	Continuous

CHAPTER-IV

OVERVIEW OF CREDIT MARKET OF NEPAL

According to NLSS 2010/11 nearly two third of Nepalese households borrowed loan in the past one year preceding the survey. The average number of loans of households of Nepal is approximately 1.6. Of the total number of loans borrowed by Nepalese households 29.2 percent of those are borrowed from formal sector- 26.3 percent among rural households and 45.8 percent among urban households. The major source of credit is relatives both in rural and urban context of Nepal.

Table 4.1: Percent Distribution of Credit Sources of Nepalese Households

Type of Financial Institution	Urban	Rural	All Households
Bank/Financial Institutions	35.9	17.2	20
Relatives	42.4	52.6	51.1
Money Lenders	7.1	16.5	15.1
NGO/Relief Agencies	3.9	4.2	4.1
Cooperatives	6.0	4.9	5.1
Others	4.7	4.6	4.6

Source: NLSS 2010/11

4.1 Credit Market of Nepal: Financial Institutions

The banking and financial statistics report of mid-July 2015 of Nepal Rastra Bank categorizes banks and financial institutions as: commercial banks are categorized as class A institution, development banks are categorized as class B institution, finance companies are categorized as class C institution and micro finance development banks are categorized as class D institution. In this chapter the information about these four classes of institutions as well as information about saving and credit cooperatives banking activities, financial intermediary non-governmental organizations and cooperatives is presented. The statistics related to cooperatives are obtained from statistics of cooperative enterprise report of 2014 of ministry of cooperatives and poverty alleviation.

Of the total loans and advances issued by institutions which belong to four different classes mentioned above 77.9 percent of those are issued by commercial banks, 13.7 percent by development banks, 4.6 percent by finance companies and 3.9 percent by micro-finance development banks.

4.1.1 Number of Financial Institutions

According to the bank and financial statistics report of 2015 of Nepal Rastra Bank (NRB) there are 30 different commercial banks with 1682 different branches; there are 76 different development banks with 823 different branches; there are 47 different finance companies with 216 different branches; there are 38 different micro finance development banks with 1143 different branches; there are 15 different saving and credit cooperatives limited banking activities; and there are 27 different financial intermediary non-government organizations. As of 2014 there are 31,170 different cooperatives in Nepal.

Table 4.2: Number of Financial Institutions

Type of Financial Institution	Number in 2015	Number of Branches in 2015
Commercial Banks	30	1682
Development Banks	76	823
Finance Companies	47	216
Micro Finance Development Banks	38	1143
Saving and Credit Cooperatives Limited Banking Activities	15	-
Financial Intermediary Non-Government Organizations	27	-
Cooperatives	31,170	-

Source: Nepal Rastra Bank, 2015 & Ministry of Cooperatives and Poverty Alleviation, 2014

Among the five development regions the Central development region in which capital city of the county, Kathmandu, is located contains the greatest number of financial institutions as shown in table 4.3. The Mid-Western development region and the Far-Western development region contain relatively few financial institutions as compared to other three regions.

Table 4.3: Number of Branches of Financial Institutions by Development Regions

Type of Financial Institution	Eastern	Central	Western	Mid-Western	Far-Western
Commercial Banks	309	835	293	152	93
Development Banks	105	294	322	74	28
Finance Companies	23	125	57	9	2
Micro Finance Development Banks	314	398	228	120	83
Cooperatives	5727	15203	4924	3343	1980

Source: Nepal Rastra Bank, 2015 & Ministry of Cooperatives and Poverty Alleviation, 2014

4.1.2 Asset/Liability Structure of Financial Institutions

As shown in table 4.4 commercial banks have 78.7 percent asset/liability share of financial institutions. Though commercial banks are major institutions of Nepalese financial sector their access/use for household borrowing is very limited in rural parts (see table 4.1) when a vast majority of population of country resides in rural parts (83 percent according to national census of 2011). Similarly, development banks have 13.6 percent share of asset/liability, finance companies has 5.8 percent and microfinance development banks and rural development banks combinedly have 2.6 percent. Together these four classes of financial institutions account for 20 percent of total household loans (see table 4.1).

Table 4.4: Asset/Liability Structure of Financial Institutions

Financial Institution	Share (percent)
Commercial Banks	78.7
Development Banks	13.3
Finance Companies	4.8
Micro Finance Development Banks and Rural Development Banks	3.1

Source: Nepal Rastra Bank, 2015

4.2 Policies Governing Credit Market in Nepal

Nepal Rastra Bank (NRB) is the central bank of Nepal. It is responsible for the licensing and regulation of financial institutions (FIs) under the Nepal Rastra Bank Act of 2002 and this act permits NRB to license, regulate and supervise banks and financial Institutions. The detailed guidelines for banks and financial institutions of Nepal are provided in the Banks and Financial Institutions Act (BAFIA). The act also describes in what terms and conditions class A, class B, class C and Class D financial institutions can provide loan. Table 4.5 below lists the licensing authority and governing act for different types of financial institutions operating in Nepal.

Table 4.5: Financial Institutions and Governing Acts

Financial Institution	Governing Act	Licensing Authority
Commercial Bank	BAFIA, 2006	NRB
Development Banks	Established under Company Act, 1964, and governed by Development Bank Act,1996 (later by all-encompassing BAFIA,2006)	NRB
Finance Companies	Finance Company Act, 1985	NRB
Microcredit Development Banks	Development Bank Act, 1996 (later by BAFIA, 2006)	NRB
Saving and Credit Cooperatives	Co-operative Act, 1992	NRB or Department of Co-operatives
Financial intermediary non-governmental organizations	Financial Intermediary Societies Act, 1999	NRB
Postal Savings Banks	Post Office Saving Bank Regulations, 1976	NRB
Insurance companies	Insurance Act, 1992	Insurance Board
Contractual saving institutions (Employees Provident Fund and Citizen Investment Trust)	Citizen Investment Trust Act, 1990, and Karmachari Sanchaya Kosh (Employees Provident Fund) Act, 1962	NRB

Source: Microsave, 2014

CHAPTER-V

SOCIO-ECONOMIC DETERMINANTS OF CREDIT MARKET

The socio-economic condition of household can affect household decisions including its decisions in credit market. This chapter presents the statistical information regarding the relationship between socio-economic characteristics of households and the decisions made by households in the credit market. The first section (section 5.1) of the chapter includes descriptive tables which describe differences in credit market participation among households with varying socio-economic characteristics. The next section (section 5.2) describes the results obtained from econometric analysis.

5.1 Credit Market Participation of Nepalese Households

As roughly two out of three households participate in credit market understanding about decisions of households in the credit market is important to understand more about characteristics of Nepalese households. Approximately, two-third (65.3 percent) of households in Nepal has one or more loans borrowed either from formal or informal sector. The formal sector comprises of banks and financial institutions, NGO or relief agencies and co-operatives whereas informal sector comprises of relatives/friends, land lord/employer, shopkeeper and money lender.

The share of loans borrowed through formal sector is approximately 29.21 percent. The share of loans borrowed for business or farm use as opposed to personal use is approximately 26.25 percent. The average amount of loan borrowed by Nepalese households is approximately NPR 106 thousand.

5.1.1 Proportion of Households with Loan

Table 5.1 lists the proportion of households with loan for households with different socio-economic characteristics. The proportion of households with loan is nearly equal in between male headed and female headed households. The households are divided into four different groups based on age of household head. As compared to other three groups the group with age of household head above sixty has lower proportion of households with loan. The households with age of household head in between 30 and 59 years are more likely to possess loan as compared to other two groups. The possible reason could be households with age of household head in

between 30 and 59 have stronger socio-economic ties and hence these households are more trusted by lenders. The share of households with loan is not very different for households with illiterate and literate head of households. The households with household size five and more are more likely to possess loan as compared to households of smaller size. The possible reason is as the household size increases household expenses increase as well and hence there is greater need for households to borrow loan. The richest quintile households are less likely to possess loan as compared to households belonging to other four quintiles. This is possibly because the richest quintile households already have sufficient wealth and hence there is less need to borrow loan as compared to households belonging to other four quintiles. The poor households are more likely to possess loan as compared to non-poor households. This is again because poor households do not have sufficient wealth and hence there is greater need to borrow loan.

The rural households are more likely to own loan as compared to urban households. As economic activities are more common in urban area it is usually easier to find employment in urban area. If household members have employment then there is possibly less need for household to borrow loan. Among the three ecological belts households of Mountain region are more likely to own loan and among the five development regions Mid-Western development region households are more likely to own loan.

Table 5.1: Percentage Distribution of Households with Loan

Characteristics of Household	Yes	No
Sex of Household Head		
Male	64.81	35.19
Female	65.63	34.37
Age of Household Head		
15-29	61.64	38.30
30-44	69.91	30.09
45-59	67.50	32.50
60+	53.93	46.07
Education of Household Head		
Literate	64.81	35.19
Illiterate	65.26	34.74
Household Size		
1	43.80	56.20
2-4	60.46	39.54
5-6	71.33	28.67
Greater than six	68.95	31.05
Consumption Quintile of Household		
Poorest	69.60	30.40
Second	68.57	31.43
Third	69.17	30.83
Fourth	66.57	33.43
Richest	55.41	44.59
Poverty Status of Household		
Poor	68.12	31.88
Non-Poor	64.26	35.74
Rural/Urban Location of Household		
Urban	50.91	49.09
Rural	68.76	31.24
Ecological Belt		
Mountain	71.19	28.81
Hill	63.46	36.54
Tarai	65.73	34.27
Development Region		
Eastern Development Region	67.36	32.64
Central Development Region	62.29	37.71
Western Development Region	64.70	35.30
Mid-Western Development Region	70.14	29.86
Far-western Development Region	63.53	36.47
Total	65.03	34.97

Source: NLSS 2010/11 data analysis

5.1.2 Borrowing from Formal and Informal Channels

As depicted in table 5.2 male headed households are more likely to borrow from formal channels as compared to female headed households. This is possibly linked to higher female illiteracy rate (as borrowing from formal channels would require paperwork and illiterate borrowers might choose to borrow from informal channels to avoid paperwork). The 30 to 44 age group (head of the household) has the greatest tendency to borrow from formal channels. As shared in next table the households with age of household head in between 30 and 44 are more likely to borrow loan for business or farm use. It is possible that business loans are borrowed from formal channels such that financial transactions are officially recorded.

The households in which household head is literate is more likely to borrow loan from formal channel. This is possibly because if the household head is illiterate s/he might choose to borrow from informal channel to avoid paper work. The richer quintile to which household belongs to the more likely it is to borrow loan from formal channels. Usually the richer quintile households borrow greater amount and to borrow larger amount households might need to approach formal market. The non-poor households are more likely to borrow from formal channels and the reason is possibly the same which is mentioned above. The urban household is more likely to borrow from formal channel and this is most likely linked to greater access of formal channels in urban area.

Among the three ecological belts, Tarai households are most likely to borrow from formal channels. Among the five development regions, the Eastern and Central region households are more likely to borrow from formal channels as compared to other three regions.

Table 5.2: Percent Distribution of Source of Household Loan

Characteristics of Household	Formal Channel	Informal Channel
Sex of Household Head		
Male	30.14	69.86
Female	26.86	73.14
Age of Household Head		
15-29	28.50	71.50
30-44	32.11	67.89
45-59	28.72	71.28
60+	23.69	76.31
Education of Household Head		
Literate	36.21	63.79
Illiterate	21.35	78.65
Consumption Quintile of Household		
Poorest	17.17	82.83
Second	20.33	79.67
Third	27.88	72.12
Fourth	30.70	69.30
Richest	44.62	55.38
Poverty Status of Household		
Poor	17.67	82.33
Non-Poor	32.17	67.83
Rural/Urban Location of Household		
Urban	45.86	54.14
Rural	26.27	73.73
Ecological Belt		
Mountain	20.36	79.64
Hill	24.54	75.46
Tarai	35.62	64.38
Development Region		
Eastern Development Region	31.03	68.97
Central Development Region	30.91	69.09
Western Development Region	27.43	72.57
Mid-Western Development Region	25.69	74.31
Far-western Development Region	27.56	72.44
Total	29.21	70.79

Source: NLSS 2010/11 data analysis

5.1.3 Use of Household Loan

As depicted in table 5.3 male headed households are more likely to borrow loans for business or farm use as compared to female headed households. This could be because male headed household have better socio-economic ties which is necessary for entrepreneurship. The households with age of household head in between 30 and 44 are more likely to use loan for business or farm use. The households with age of household head in between 30 and 44 possibly have growing kids and child rearing might require greater income and hence there is greater need of doing business. The households with literate household head are more likely to use loan for business or farm use. This is possibly because when the household head is literate he or she might have better entrepreneurship skills.

The richer is the quintile to which household belongs to the more likely it is in borrowing loan for business or farm use. It could be because richer quintile households have better capacity to conduct business and have enriched networks. The non-poor households are more likely to borrow loan for business or farm use and it is possibly because these households have enriched networks required for entrepreneurship.

The urban households are more likely to borrow loan for business or farm use. It could be due to availability of more integrated market in urban area for business. Among the three ecological belts households belonging to Terai region are more likely to borrow loan for business or farm use and among the five development regions households belonging to Central development region are more likely to borrow loan for business or farm use.

Table 5.3: Percent Distribution of Use of Household Loan

Characteristics of Household	Percent of Loans Used in Business or Farm Use	Percent of Loans Used in Personal Use
Sex of Household Head		
Male	28.86	71.14
Female	19.61	80.39
Age of Household Head		
15-29	26.71	73.29
30-44	29.04	70.96
45-59	25.16	74.84
60+	21.55	78.45
Education of Household Head		
Literate	32.77	67.23
Illiterate	18.92	81.08
Consumption Quintile of Household		
Poorest	17.71	82.29
Second	22.57	77.43
Third	24.80	75.20
Fourth	27.01	72.99
Richest	35.86	64.14
Poverty Status of Household		
Poor	18.56	81.44
Non-Poor	28.22	71.78
Rural/Urban Location of Household		
Urban	33.83	66.17
Rural	24.91	75.09
Ecological Belt		
Mountain	22.12	77.88
Hill	23.52	76.48
Tarai	29.79	70.21
Development Region		
Eastern Development Region	26.31	73.69
Central Development Region	28.80	71.20
Western Development Region	23.35	76.65
Mid-Western Development Region	25.74	74.26
Far-western Development Region	24.38	75.62
Total	26.25	73.75

Source: NLSS 2010/11 data analysis

5.1.4 Distribution of Average Number of Loans

The information about average number of loans among households which has loan is presented in table 5.4. The average number of loans of Nepalese households is 1.57. The average number of loans of male headed households is slightly greater than that of female headed households. The age group 45 to 59 (age of household head) has the highest average number of loans as compared to other age groups. The households in which household head is literate is more likely to possess greater average number of loans as compared to households in which household head is illiterate. The third quintile household has the highest average number of loans as compared to households of other quintiles. The average number of loans possessed by non-poor households is greater than that of poor households. The average number of loans possessed by rural households is greater than that of urban households. The households of Mountain region possess greater average number of loans as compared to households of other two regions. The households of Western development region possess greater average number of loans as compared to households of other development regions.

Table 5.4: Distribution of Average Number of Loans

Characteristics of Household	Average Number of Loans
Sex of Household Head	
Male	1.64
Female	1.53
Age of Household Head	
15-29	1.55
30-44	1.55
45-59	1.62
60+	1.50
Education of Household Head	
Literate	1.60
Illiterate	1.52
Consumption Quintile of Household	
Poorest	1.48
Second	1.53
Third	1.61
Fourth	1.60
Richest	1.59
Poverty Status of Household	
Poor	1.52
Non-Poor	1.58
Rural/Urban Location of Household	
Urban	1.44
Rural	1.59
Ecological Belt	
Mountain	1.82
Hill	1.55
Tarai	1.54
Development Region	
Eastern Development Region	1.59
Central Development Region	1.47
Western Development Region	1.67
Mid-Western Development Region	1.64
Far-western Development Region	1.50
Total	1.57

Source: NLSS 2010/11 data analysis

5.1.5 Distribution of Average Amount of Loan (per loan)

The average amount (per loan) of loan borrowed by Nepalese households is approximately NPR 106 thousand which is approximately equal to half of average nominal annual household income (see Chapter-I). However, there is a lot of variation in average loan amount borrowed based on differences in socio-economic characteristics of households.

The average amount borrowed by male headed households (approximately NPR 119 thousand) is higher as compared to the average amount borrowed by female headed households (approximately NPR 72 thousand). This is possibly because male headed households have better socio-economic ties and have higher access to credit. It appears there is positive relationship between age of household head and the average amount borrowed by household. This could be because as the age of household head increases the household might be receiving greater income (as the household head might be more experienced) and such greater income and accumulated wealth can be used as collateral in borrowing higher amount. On an average the households with literate household head borrow higher amount and this could be because households with literate household head are more trusted by lenders. The richer is the quintile to which household belongs to the higher is the average amount borrowed by household. This could be because richer quintile households possibly have more assets to use as collateral when borrowing loan. The same could be the reason for non-poor households borrowing larger average amount as compared to poor households. The urban households borrow larger average amount as compared to rural households and this is possibly because cost of living in urban area is higher than cost of living in rural area. Among the households belonging to three ecological belts the households of Hilly region borrow the largest average amount and among the households belonging to five development regions the households belonging to Central region borrow the largest average amount.

Table 5.5: Distribution of Average loan amount (per loan) borrowed by households

Characteristics of Household	Average Amount Borrowed (NPR)
Sex of Household Head	
Male	119264
Female	72074
Age of Household Head	
15-29	56572
30-44	82224
45-59	115650
60+	174526
Education of Household Head	
Literate	156439
Illiterate	49214
Consumption Quintile of Household	
Poorest	29360
Second	32844
Third	38962
Fourth	68667
Richest	322116
Poverty Status of Household	
Poor	30367
Non-Poor	125297
Rural/Urban Location of Household	
Urban	379762
Rural	57483
Ecological Belt	
Mountain	53747
Hill	146493
Tarai	75398
Development Region	
Eastern Development Region	60666
Central Development Region	182204
Western Development Region	108547
Mid-Western Development Region	39315
Far-western Development Region	48155
Total	105939

Source: NLSS 2010/11 data analysis

5.2 Socio-Economic Determinants of Credit Market Participation

The results based on the logistic regression models described in chapter three are presented in this section. The regression is carried out using the NLSS 2010/11 dataset. The values of Wald Chi (as shown in table 5.7, 5.9 and 5.10) which shows the overall significance of model is significant for all of the three models. The correlation coefficients between independent variables as shown in correlation table (see Annex I) is in between -0.5 to 0.5.

5.2.1 Determinants of Credit Market Participation

The main purpose of carrying out this logistic regression (model one as explained in chapter three) is find out which of the socio-economic characteristics of household head and household of Nepal determine if a household has loan or not. The output of this regression is based on 5120 different observations of the dataset. The summary statistics of the relevant variables considered in this regression is presented in table 5.6.

As shown in table 5.6 of all of households considered in this regression 66.51 percent of households has loan. The average age of household head is 46.5. Similarly, average per capita food consumption of a household is NPR 20216 and average land size owned by household is 0.020 hectare. Similarly, average time required to access the nearest bank by households is 3.63 hours. Nearly one quarter of total households is female headed household and nearly half of all household heads are literate. Approximately, one out of five households is poor households and vast majority of households (84.66 percent) are rural households. The distribution of households in Mountain, Hill and Terai regions are 7.29, 45.18 and 47.54 percent respectively. The distribution of households in Eastern, Central, Western, Mid-Western and Far-Western regions is 24.83, 32.67, 20.39, 13.04 and 9.07 percent respectively.

Table 5.6: Summary Statistics of Variables Analyzed

	Mean(Standard deviation)	Minimum-Maximum
Age of Household Head	46.5 (14.0)	11-95
Per Capita food Consumption of a Household (Yearly) in NPR	20216 (11724)	1815-208728
Land Owned by Households in Hectare	0.020 (0.038)	0-0.79
Household Size	4.91 (2.36)	1-20
Time required to access nearest Bank in hours	3.63 (8.60)	0-124.5
Variable:	Percent	
Percent of Households with Loan	66.51	
Percent of male (female) headed Household	73.29 (26.71)	
Percent of literate (illiterate) household head	49.47(50.43)	
Percent of Poor(non-poor) Household	21.25 (78.75)	
Percent of Urban(rural) Households	15.34 (84.66)	
Percent of Households in Mountain	7.29	
Percent of Households in Hill	45.18	
Percent of Households in Tarai	47.54	
Percent of Households in Eastern Development Region	24.83	
Percent of Households in Central Development Region	32.67	
Percent of Households in Western Development Region	20.39	
Percent of Households in Mid-Western Development Region	13.04	
Percent of Households in Far-Western Development Region	9.07	

Source: NLSS 2010/11 data analysis

The results of this regression are presented in table 5.7 and the table depicts marginal effect for each independent variable (the table with estimated values of regression

coefficients are presented in Annex II).The dependent variable(Y) of this model is household credit market participation where Y=1 if a household participates in credit market and Y=0 if a household does not participate in credit market. The regression is carried out using sixteen different independent variables.

Two different age related independent variables, namely, age of household head and square of age of household head, has been tested in this model. The relationship of independent variable age of household head with the dependent variable is positive and significant. The relationship of independent variable square of age of household head with the dependent variable is negative and significant. Combing these two age related variables, there is an inverted U-shaped relationship between age of household head and the dependent variable. This implies that up to certain age of household head the probability of household borrowing loan increases and after that threshold age the probability of household borrowing loan decreases.

The relationship of dummy independent variable sex of household head with the dependent variable is not statistically significant. However, based on a sign of marginal effect of the variable it indicates that female headed households are more likely to participate in the credit market. Similarly, the relationship of dummy independent variable literacy status of household head with the dependent variable is not significant. However, based on signs of marginal effect of the variable it indicates that households with literate household head are more likely to participate in credit market.

The relationship of independent variable household size with the dependent variable is positive and significant. This implies that as the household size increases by one unit the probability of household participating in credit market increases by approximately 1.7 percent. It can be expected that as the household size increases household expenses and needs increases as well and hence there is greater need for the household to participate in credit market. The relationship of dummy independent variable poor/non-poor with the dependent variable is not statistically significant. However, based on a sign of marginal effect of the variable it indicates that non-poor households are more likely to participate in the credit market.

There is negative and significant relationship of independent variable per capita food consumption with the dependent variable. When the per capita food consumption increases by NPR 1000 the likelihood of household participating in credit market decreases by approximately 0.183 percent. It is possibly because the households with higher per capita food consumption are richer households which do not need to borrow from external sources to meet their household needs.

The relationship of dummy independent variable rural/urban with the dependent variable is negative and significant. This indicates that rural households are 14.3 percent more likely to participate in credit market as compared to urban household. It could be because in rural parts the sources of income for households could be limited and hence they need to borrow loans from external sources.

The relationship of independent variable time required to access the closest bank with the dependent variable is not significant. However, based on a sign of marginal effect of the variable it shows that as time required to access the closest bank increase the household is more likely to engage in credit market.

There are two dummy variables pertaining to ecological belt. The first result indicates that households in Mountain region are more likely to be involved in household borrowing as compared to households in Hilly region but the regression coefficient is statistically insignificant. The second result shows that households in Tarai region are less likely to be involved in household borrowing as compared to households in Hilly region but the regression coefficient is statistically insignificant.

There are four dummy variables pertaining to development regions. The first result shows that households in Eastern development region are more likely to be involved in household borrowing as compared to households in Central development region but the regression coefficient is insignificant. The second result shows that households in Western development region are less likely to be involved in household borrowing as compared to households in Central development region but the regression coefficient is insignificant. The third result shows that households in Mid-Western development region are more likely to be involved in household borrowing as compared to households in Central development region but the coefficient is insignificant. The fourth result shows that households in Far-Western Development Region are less

likely to be involved in household borrowing as compared to households in Central development region but the regression coefficient is insignificant.

Table 5.7: Logistic Regression: Determinants of Credit Market Participation

Dependent Variable(y): Loan Market Participation	dy/dx	Standard Error
Independent Variables (x):		
Age of Household Head (age)	0.0173060	0.00303*
Age Square of Household Head (agesquare)	-0.0002141	0.00003*
Sex of Household Head (sex)	-0.0265817	0.01752
Education of Household Head (literacy)	0.0026884	0.01656
Household Size (hhsize)	0.0176198	0.00376*
Land Owned by Household in Hectare (land)	0.2250361	0.20584
Per Capita food Consumption of a Household (food)	-0.0000018	0.00000*
Poor/Non-poor (poverty)	0.0326122	0.02057
Rural/Urban (location)	-0.1432765	0.01772*
Time required to access nearest Bank in hours (access)	0.0002585	0.00095
Ecological belt one (beltone)	0.0322904	0.02836
Ecological belt two (belttwo)	-0.0170224	0.01651
Development Regions One (regionone)	0.0176610	0.01941
Development Regions Two (regiontwo)	-0.0088531	0.02014
Development Regions Three (regionthree)	0.1609030	0.02271
Development Regions Four (regionfour)	-0.0476614	0.02692
Number of Observations		5120
Wald Chi2(16)		235.37
Prob > Chi2		0.00000
Pseudo R2		0.0373
Log Likelihood		-3241661.5

Source: NLSS 2010/11 data analysis

*Significant at <1 percent, ** significant at <5 percent

Note: There are 5988 households in the dataset. However, the regression had to be carried out based on information of 5120 households because for some variables analyzed in regression the information is missing for some variables.

5.2.2 Determinants of Source of Household Loan

The purpose of this regression (model two as explained in chapter three)is to determine which of the characteristics of household head and household are important in determining source (formal and informal) from which household borrows loan. The formal sector includes banks and financial institutions, NGO or relief agencies and co-operatives whereas informal sector includes relatives/friends, land lord/employer, shopkeeper and money lender. The results of this regression are based on 5180 different observations of the dataset. The summary statistics of relevant variables used in this regression is presented in table 5.8.

As shown in table 5.8 of all of loans borrowed by households (considered in this regression) 27.97 percent is borrowed through formal channel. The average age of household head is 45.6 and the share of female headed households is 28.4 percent. The average yearly household per capita food consumption is approximately NPR 19924 and average household size of households is 5.08. The average time required to access the nearest bank in hours is 3.92 hours. Of all household heads nearly half of them are literate and of all households nearly one in five households is poor households. Vast majority of households (88.27 percent) are rural households. The distribution of loan of households by ecological belts for Mountain, Hill and Terai is 9.13, 44.73 and 46.14 percent respectively. The distribution of loan of households by development regions for Eastern, Central, Western, Mid-Western and Far-Western region is 25.68, 30.71, 21.09, 14.27 and 8.25 percent respectively.

Table 5.8: Summary Statistics of Analyzed Variables

	Mean(Standard deviation)	Minimum-Maximum
Age of Household Head	45.6(12.9)	14-88
Per Capita food Consumption of a Household	19924(10580)	2725-115622
Land Owned by Household in Hectare	0.023(0.043)	0-0.79
Household Size	5.08 (2.30)	1-20
Time required to access nearest Bank in hours	3.92(8.82)	0-124.5
Variable:	Percent	
Percentage of household loans from formal (informal) channels	27.97(72.03)	
Percent of male(female) headed Household	71.6(28.4)	
Percent of literate (illiterate)household head	51.51(48.50)	
Percent of Poor (Non-poor)Household	21.28(78.72)	
Percent of Urban (rural)Households	11.73(88.27)	
Percent of Households in Mountain	9.13	
Percent of Households in Hill	44.73	
Percent of Households in Tarai	46.14	
Percent of Households in Eastern Development Region	26.68	
Percent of Households in Central Development Region	30.71	
Percent of Households in Western Development Region	21.09	
Percent of Households in Mid-Western Development Region	14.27	
Percent of Households in Far-Western Development Region	8.28	

Source: NLSS 2010/11 data analysis

The results of regression analysis are presented in the table 5.9 and the table shows marginal effect for each independent variable (the estimated values of regression

coefficient are presented in Annex III). The dependent variable (Y) of this regression is source of loan where Y=1 if the source of loan is formal channel and Y=0 if the source of loan is informal channel. The description of formal and informal channel has been discussed in chapter three.

The relationships of two independent variables age of household head and square of age of household head with the dependent variable are statistically insignificant. However, based on signs of marginal effect of the variables an inverted U-shaped relationship can be predicted between age of household head and probability of household borrowing loan from formal channel.

The relationship of dummy independent variable sex of household head and the dependent variable is positive and statistically insignificant. However, based on sign of marginal effect of the variable male headed household has greater likelihood of borrowing from formal channel. The relationship of dummy independent variable literacy status of household head with the dependent variable is positive and statistically significant. Household in which household head is literate is approximately 9.4 percent more likely to use formal channels to borrow loan. Possibly illiterate households choose informal channels to borrow loans because borrowing from formal channel requires paperwork.

The relationship of independent variable household size with the dependent variable is positive and statistically significant. As the household size increases by one unit the probability of household borrowing loan from a formal channel increases by 0.96 percent. This is possibly because large size households have more property which if required can be used as collateral when borrowing loan.

The relationship between independent variable size of land owned and the dependent variable is negative and statistically significant. The finding predicts that when the land owned by household increases by one hectare the probability of household borrowing loan from formal source decreases by 41.2 percent. This is possibly because households with large land size are agricultural households from rural parts. In rural parts the formal sources of household loan might be less available. The relationship of independent variable per capita food consumption with the dependent variable is positive and significant. The finding predicts that when per capita food

consumption of household increases by NPR 1000 the probability of household borrowing loan from formal channel increases by 0.23 percent. It is possibly because households with greater per capita food consumption are wealthier and wealthier households might have better access to formal sources of borrowing.

The relationship of dummy independent variable urban/rural with the dependent variable is positive and significant. The households of urban locations are 9.06 percent more likely to borrow loan from formal channels. This is possibly because in urban locations there is greater access to formal channels of household borrowing. The relationship of independent variable time required to access the closest bank with the dependent variable is negative and significant. The finding predicts that when the time required to access the closest bank increases by one hour the probability of household borrowing through formal channel decreases by 1.07 percent. It can be expected that if banks are located further away from households then households are less likely to borrow from banks if alternative sources of borrowing is available.

There are two dummy independent variables pertaining to ecological belts. The first result shows that households in Mountain region are more likely to borrow from formal source as compared to households in Hilly region but the regression coefficient is statistically insignificant. The second result shows that households in Tarai region are more likely to borrow from formal source as compared to households in Hilly region and the regression coefficient is statistically significant.

There are four dummy independent variables pertaining to development region. The first result shows that households in Eastern development region are more likely to borrow from formal source as compared to households in Central development region but the regression coefficient is statistically insignificant. The second result shows that households in Western development region is less likely to borrow from formal source as compared to households in Central development region but the regression coefficient is statistically insignificant. The third result shows that households in Mid-Western development region are more likely to borrow from formal source as compared to households in Central development region and the regression coefficient is statistically significant. The fourth result shows that households in Far-Western development region are more likely to borrow from formal source as compared to

households in Central development region but the regression coefficient is statistically insignificant.

Table 5.9: Logistic Regression: Determinants of Source of Household Loan

Dependent Variable: Source of Loan	dy/dx	Standard Error
Independent Variables:		
Age of Household Head (age)	0.0045232	0.00330
Age Square of Household Head (agesquare)	-0.0000550	0.00003
Sex of Household Head (sex)	0.0068836	0.01652
Education of Household head(literacy)	0.0942797	0.01467*
Household Size (hhsize)	0.0096262	0.00313*
Land Owned by Household in Hectare (land)	-0.4122623	0.19632**
Per Capita food Consumption of a Household (food)	0.0000023	0.00000*
Poor/Non poor (poverty)	0.0935943	0.01660*
Rural/Urban (location)	0.0906473	0.01785*
Time required to access nearest Bank in hours (access)	-0.0107436	0.00212*
Ecological belt one (beltone)	0.0404909	0.02994
Ecological belt two (belttwo)	0.0671524	0.01603*
Development Regions One (regionone)	0.0187000	0.01782
Development Regions Two (regiontwo)	-0.0112353	0.01866
Development Regions Three (regionthree)	0.0468042	0.02281**
Development Regions Four (regionfour)	0.0501059	0.02684
Number of Observations		5180
Wald Chi2(16)		318.96
Prob > Chi2		0.0000
Pseudo R2		0.0686
Log Likelihood		-3061146.8

Source: NLSS 2010/11 data analysis

*Significant at <1 percent, ** significant at <5 percent

Note: These results are based on households which has loan and if a household has multiple loan it is counted as multiple different observations in analysis.

5.2.3 Determinants of Use of Household Loan

The purpose of this regression (model three as explained in chapter three) is to determine which of the characteristics of household head and household are important in determining use (business/farm or personal) of loan which the household borrows. The results of this regression are based on 5180 different observations of the dataset. The summary statistics of relevant variables used in this regression is presented in table 5.8 (see earlier section). Of all the loans of Nepalese households considered in this regression 25.21 percent of those loans is borrowed for business/farm use and 74.79 percent of those loans is used for personal use.

The results of regression analysis are presented in table 5.10 and the table depicts marginal effect for each independent variable (the estimated values of regression coefficients are presented in Annex IV.) The dependent variable (Y) of this model is use of loan where Y=1 if the use of loan is for business or farm use and Y=0 if the use of loan is for personal use.

The relationships of two independent variables age of household head and square of age of household head with the dependent variable are statistically insignificant. However, based on the signs of marginal effects of these two independent variables an inverted U-shaped relationship can be predicted between age of household head and the likelihood of household to use of loan for business/farm.

The relationship of independent variable sex of household head with the dependent variable is positive and significant. Female headed households are approximately 6.4 percent less likely to use household loan for business or farm use as compared to male headed households. This could be because female headed household has weaker socio-economic connections to start a new business. The relationship of independent variable literacy status of household head and the dependent variable is positive and significant. The households in which household head is literate is approximately 9.3 percent more likely to use loan for business or farm use as compared to household in which household head is illiterate. This is possibly because if the household head is literate then he/she possibly has better skills to start a new business.

The relationship of independent variable per capita food consumption with the dependent variable is positive and significant. As per capita food expenditure of

household increases by NPR 1000 its likelihood to use loan for business/farm increases by 0.23 percent. This is possibly because households with higher per capita food consumption are richer households and richer households might have better socio-economic connections to start a new business.

The relationship of independent variable household size with the dependent variable is positive and significant. A unit rise in household size increases the likelihood of household using loan for business/farm by 1.54 percent. It could be because in larger household there are more people to work on business or farm if the family starts new business or farm activity. The relationship of the independent variable land size and the dependent variable is negative and insignificant.

The relationship of the dummy independent variable rural/urban with the dependent variable is positive and insignificant. The relationship of the dummy independent variable poor/non-poor with the dependent variable is positive and significant. Non-poor households are 6.4 percent more likely to use loan for business or farm use. This is possibly because non-poor households have better socio-economic connections to start a new business/farm.

There are two dummy independent variables pertaining to ecological belt. The first result shows that households in Mountain region are less likely to use loan for business or farm use as compared to households in Hilly region but the coefficient is insignificant. The second result shows that households in Tarai region are more likely to use loan for business or farm use as compared to households in Hilly region and the coefficient is significant.

There are four dummy independent variables pertaining to development region. The first result shows that households in Eastern development region are less likely to use loan for business or farm use as compared to households in Central development region but the coefficient is insignificant. The second result shows that households in Western development region are less likely to use loan for business or farm use as compared to households in Central development region and the coefficient is significant. The third result shows that households in Mid-Western development region are more likely to use loan for business or farm use as compared to households in Central development region but the coefficient is insignificant. The fourth result

shows that households in Far-Western development region are more likely to use loan for business or farm use as compared to households in Central development region but the coefficient is insignificant.

Table 5.10: Logistic Regression: Determinants of Use of Household Loan

Dependent Variable: Use of Loan	dy/dx	Standard Error
Independent Variables:		
Age of Household Head (age)	0.0012008	0.00320
Age Square of Household Head (agesquare)	-0.0000262	0.00003
Sex of Household Head (sex)	0.0636448	0.01545*
Education of Household head(education)	0.0927882	0.01370*
Household Size (hhsize)	0.0153716	0.00309*
Land Owned by Household in Hectare (landsize)	-0.0298380	0.16372
Per Capita food Consumption of a Household (consumption)	0.0000023	0.00000*
Poor/Non poor	0.0646463	0.01652*
Rural/Urban (ruralurban)	0.0232657	0.01614
Time required to access nearest Bank in hours (accesstime)	-0.0022987	0.00094**
Ecological belt one (b1)	-0.0004592	0.02454
Ecological belt two (b2)	0.0393586	0.01517*
Development Regions One (d1)	-0.0230432	0.01654
Development Regions Two (d2)	-0.0481091	0.01708*
Development Regions Three (d3)	0.0143041	0.02057
Development Regions Four (d4)	0.0031504	0.02357
Number of Observations		5180
Wald Chi2(16)		207.15
Prob > Chi2		0.0000
Pseudo R2		0.0425
Log Likelihood		-2998308.4

Source: NLSS 2010/11 data analysis

*Significant at <1 percent, ** significant at <5 percent

Note: These results are based on households which has loan and if a household has multiple loan it is counted as multiple different observations in analysis.

CHAPTER VI
FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Findings

The findings of this study are based on output of regression analysis where variables pertaining to household credit market participation are dependent variables and those pertaining to socio-economic characteristics of household are independent variables. The variables, namely, age of household head, size of household, per capita food consumption of household and urban/rural location of household significantly influence the participation of household in the credit market. The variables, namely, literacy status of household head, size of household, size of land of household, per capita food consumption of household, poverty status of household, urban/rural location of household, time required for access to the closest bank for the household, a dummy variable pertaining to ecological belt and a dummy variable pertaining to development region significantly influence the choice of source of household loan between formal and informal source. The variables, namely, gender of household head, literacy status of household head, size of household, per capita food consumption of household, poverty status of household, time required to access to the closest bank for the household, a dummy variable pertaining to ecological belt and a dummy variable pertaining to development region significantly affect the decision of households as regards to whether to use loan for business/farm use or for personal use.

6.2 Conclusion

This study provides evidence that socio-economic characteristics of households are useful in understanding the decisions made by households in the credit market. First, the decision of a household whether or not to participate in the credit market is affected by its socio-economic characteristics. Second, when the household decides to participate in the credit market the next decision of the household whether to borrow loan from formal market or informal market as well as whether to use loan for business/farm use or personal use is also affected by socio-economic characteristics of household. Thus based on findings of the study it can be concluded that it is necessary

to consider household socio-economic characteristics in order to understand behavior of household in the credit market.

6.3 Recommendations

As the study was carried out based on the data collected from all parts of Nepal here are some recommendations to Nepalese government and other stakeholders based on findings of the study:

(i) Even though financial services are mostly concentrated in urban area rural households are more likely to participate in the credit market as compared to urban households so it is very necessary to expand credit services in rural parts as well.

(ii) The wealthy households (household with higher per capita food consumption) are less likely to participate in the credit market. Therefore, bank and financial institutions should not only target rich households as their clients.

(iii) The educated households are more likely to borrow loan from formal channels. Therefore, as literacy rate of country continues to improve there could be increase in the demand of formal credit market.

(iv) The non-poor households are more likely to borrow loan from formal channels. This is possibly because poor households cannot meet collateral requirement. Therefore, to bring poor into formal credit market banks and financial institutions has to develop pro-poor collateral requirements.

(v) Male headed households are more likely to use loan for business/farm use. This is possibly because female headed households have weaker socio-economic connections. Therefore, female headed households should be given priority in entrepreneurship development activities.

REFERENCES

Aryal, K. M. (2014). *Role of Microcredit to Economic Improvement of Women: A Case Study of Manushi Micro Finance at Bidur Muncipality, Nuwakot District.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Bhattarai, I.(2007). *Financial Liberalization and Role of Commercial Banks in Poverty Reduction.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University

Central Bureau of Statistics (2011). *Nepal Living Standards Survey 2010/11 Volume I.* Kathmandu: Central Bureau of Statistics.

Central Bureau of Statistics (2011). *Nepal Living Standards Survey 2010/11 Volume II.* Kathmandu: Central Bureau of Statistics.

Central Bureau of Statistics (2011). 2011.*Poverty in Nepal 2010/11*. Kathmandu: Central Bureau of Statistics.

Central Bureau of Statistics (2012). *National Population and Housing Census 2011 (National Report)*. Kathmandu: Central Bureau of Statistics.

Chalise, M.(2016). *Role of Microfinance to achieve millennium development goals in Nepal: A Study of BharatPokhari VDC, Kaski District.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Chen, K.C and Chivakul, M. (2008). What drives household borrowing and credit constraints? Evidence from Bosnia and Herzegovina. *IMF working paper WP/08/202.*

Ferrai, A. , Jaffrin, G. and Shrestha, S.R.(2006). Access to Financial Services in Nepal. *Conference Edition.* The World Bank

Government of Nepal and United Nations Development Programme(2014). *Nepal Human Development Report 2014.* Kathmandu: Government of Nepal and United Nations Development Programme.

Kunwar, R. R. and Chand, U. (2016).Natural Disaster and Heritage Tourism. A study on the impacts of Earthquake in Bhaktapur, Nepal. *Journal of Tourism and Hospitality Education*. ISSN: 2467-9550. Asian Institute of Technology and Management.

Katuwal, K.(2009). Do Socio-Economic Factors Matter on Access to Formal Credit Market in Nepal? Determinants of Formal Credit Market Participation. *The Economic Journal of Nepal. 32(3):127*

Katuwal, R. K. (2015). *Role of Microfinance in Employment Generation: A Case Study of Hansposa VDC of Sunsari District.*Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Khanal, V.L. 2010. *Role of microfinance in employment generation, a case study of Hansposa VDC of Sunsari District.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Lord, A., Sijapati, B., Baniya, J., Chand, O., & Ghale, T. (2016). Disaster, Disability, & Difference: A Study of the Challenges Faced by Persons with Disabilities in PostEarthquake Nepal. Published by Social Science Baha and the United Nations Development Programme in Nepal: Kathmandu.

Microsave (2014). *Understanding the Demand for financial services in Nepal.* Published by United Nations Capital Development Fund.

Ministry of Cooperatives and Poverty Alleviation (2014). *Statistics of Cooperative Enterprises 2014.* Nepal Government: Ministry of Cooperatives and Poverty Alleviation.

Ministry of Finance (2015).*Economic Survey Fiscal Year 2014/15.* Kathmandu: Government of Nepal.

Mohamed, K.S. & Temu, A.E. (2009). Gender Characteristics of the determinant of access to formal credit in rural Zanzibar. *Saving and Development 33(2): 95-111*.

Nepal Rastra Bank (2015). *Banking and Financial Statistics*. *No. 61*. Kathmandu: Nepal Rastra Bank. Mid-July.

Pandey, T.P. (2015). *Role of microfinance in employment generation, a case study of Hansposa VDC of Sunsari District.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Paoletti, S, Nicholson, E. T., Sijapati, B. and Farbenblum, B.(2014). *Migrant Worker's Access to Justice at Home: Nepal*. Published by Open Society Foundations.

Peng, C.J., Lee, K.L. and Ingersoll, G.M. (2002). An Introduction to Logistic Regression Analysis and Reporting. *The Journal of Educational Research 96(1).*

Perloff, J.M. (2001). *MicroEconomics*. Delhi: Pearson Education Asia.

Shrestha, R. S. (2010). Electricity Crisis (Load Shedding) in Nepal, Its Manifestations and Ramifications. *Hydro Nepal. Issue No. 6.*

Synnott, P. (2012). *Climate Change, Agriculture & Food Security in Nepal: Developing Adaptation Strategies and Cultivating Resilience*. Mercy Crops Nepal.

Uprety, D. R. (2010).*Role of Micro Credit bank to economic upliftment of women, a case study of paschimanchal Grameen bikash bank.* Unpublished M. A. thesis submitted to Central Department of Economics,Tribhuvan University.

Vaessen, J. (2001). Accessibility of rural credit in northern Nicaragua: the importance of networks information and recommendations. *Saving and Development, 25(1): 5-32.*

Zeller, M. , Braun, J. V., Johm, K. & Puetz, D.(1994).Sources and terms of credit for the rural poor in the Gambia. *African Review of Money Finance and Banking ½: 167-186.*

ANNEX

Annex I: Correlation Coefficient between Independent Variables

Variable	age	sex	literacy	hhsize	land	food	poverty	location	access
age	1.000								
sex	0.239	1.000							
literacy	-0.321	0.229	1.000						
hhsize	0.078	0.271	-0.002	1.000					
land	0.120	0.070	-0.010	0.041	1.000				
food	0.029	-0.035	0.162	-0.363	0.047	1.000			
poverty	0.050	-0.021	0.163	-0.267	0.033	0.434	1.000		
location	-0.069	-0.010	0.203	-0.079	-0.164	0.198	0.099	1.000	
access	0.032	0.048	-0.089	0.054	0.197	-0.102	-0.141	-0.208	1.0000
beltone	0.021	0.018	-0.040	0.002	0.202	-0.015	-0.080	-0.085	0.215
belttwo	-0.002	0.032	-0.021	0.118	-0.431	-0.099	0.014	-0.000	-0.256
regionone	0.032	0.040	-0.001	-0.014	0.058	-0.004	0.049	-0.027	-0.010
regiontwo	0.0392	-0.075	0.031	-0.029	0.018	0.047	0.051	-0.048	-0.106
regionthree	-0.047	-0.021	-0.046	0.046	0.061	-0.106	-0.064	-0.094	0.173
regionfour	-0.046	-0.053	-0.022	0.027	0.011	-0.139	-0.145	-0.035	0.121

Annex II: Logistic Regression: Determinants of Credit Market Participation

Dependent Variable: Credit Market Participation	Coefficient	Standard Error
Independent Variables:		
Constant	-0.80866	0.33084*
Age of Household Head (age)	0.07844	0.01372*
Age Square of Household Head (agesquare)	-0.00097	0.00014*
Sex of Household Head (sex)	-0.12170	0.08108
Education of Household head(literacy)	0.01218	0.07505
Household Size (hhsize)	0.07986	0.01708*
Land Owned by Household in Hectare (land)	1.02003	0.93319
Per Capita food Consumption of a Household (food)	-0.00001	0.00000*
Poor/Non poor (poverty)	0.14581	0.90890
Rural/Urban (location)	-0.61386	0.07409*
Time required to access nearest Bank in hours (access)	0.00117	0.00432
Ecological belt one (beltone)	0.14978	0.13485
Ecological belt two (belttwo)	-0.07711	0.07469
Development Regions One (regionone)	0.08063	0.08927
Development Regions Two (regiontwo)	-0.03997	0.09060
Development Regions Three (regionthree)	0.07363	0.10491
Development Regions Four (regionfour)	-0.21024	0.11600

*Significant at <1 percent, ** significant at <5 percent

Annex III: Logistic Regression: Determinants of Source of Household Loan

Dependent Variable: Source Household loan	Coefficient	Standard Error
Independent Variables:		
Constant	-2.73375	0.41407
Age of Household Head (age)	0.02376	0.01736
Age Square of Household Head (agesquare)	-0.00029	0.00018
Sex of Household Head (sex)	0.03629	0.08745
Education of Household head(literacy)	0.03629	0.08745*
Household Size (hhsize)	0.50558	0.01647*
Land Owned by Household in Hectare (land)	-2.16527	1.03063**
Per Capita food Consumption of a Household (food)	0.00001	0.00000*
Poor/Non poor (poverty)	0.53233	0.10338*
Rural/Urban (location)	0.44167	0.08185*
Time required to access nearest Bank in hours (access)	-0.05643	0.01154*
Ecological belt one (beltone)	0.20450	0.14597
Ecological belt two (belttwo)	0.35066	0.08252*
Development Regions One (regionone)	0.09711	0.09168
Development Regions Two (regiontwo)	-0.05951	0.09966
Development Regions Three (regionthree)	0.23632	0.11152**
Development Regions Four (regionfour)	.025071	0.12871

*Significant at <1 percent, ** significant at <5 percent

Annex IV: Logistic Regression: Determinants of Use of Household Loan

Dependent Variable: Use of Household loan	Coefficient	Standard Error
Independent Variables:		
Constant	-2.62000	0.41270
Age of Household Head (age)	0.00659	0.01758
Age Square of Household Head (agesquare)	-0.00014	0.00018
Sex of Household Head (sex)	0.36441	0.09311*
Education of Household head(literacy)	0.51175	0.07640*
Household Size (hhsize)	0.08435	0.01702*
Land Owned by Household in Hectare (land)	-0.16374	0.89845
Per Capita food Consumption of a Household (food)	0.000012	0.00000*
Poor/Non poor (poverty)	0.37614	0.10276*
Rural/Urban (location)	0.12461	0.08477
Time required to access nearest Bank in hours (access)	-0.01261	0.00517**
Ecological belt one (beltone)	-0.00252	0.13479
Ecological belt two (belttwo)	0.21510	0.08239*
Development Regions One (regionone)	-0.12856	0.09370
Development Regions Two (regiontwo)	-0.27554	0.10202*
Development Regions Three (regionthree)	0.07739	0.10986
Development Regions Four (regionfour)	0.01722	0.12843

*Significant at <1 percent, ** significant at <5 percent