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Effectiveness of Microfinance Institutions on Rural Poor Households and its Impact on Reduction of Poverty: A Tool for Socio Economic Development in Rural India

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Key words: Impact, microfinance, poverty reduction, rural poor households and rural, growth

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Abstract: The main aim of the study to understand the socio economic factors of rural poor households that leads to lending of funds from microfinance institutions, to analyze the impact of microfinance on the income of rural poor households living in villages of Gurgaon district in Haryana. The study also investigates the importance and role of microfinance in the reduction of poverty among the rural poor households of Gurgaon district. This study investigates the socio economic growth of microfinance sector among the rural poor households living in the villages of the Gurgaon district of Haryana and also the framework of microfinance programs for rural poor households. To cater the need of the research, the researchers have used primary data through self-constructed structured questionnaire and as far as the secondary data is concerned that was obtained from various reports, web sites and journals, etc. The study is exploratory in nature and studied using panel and pooled data. A systemized and organized study was done to reach the desired objectives of the study. The responses obtained from the respondents, i.e., villagers from 50 villages of Gurgaon district in Haryana using various statistical techniques. Purposive and Judgment sampling technique was used to gather data from the respondents. SAS (Statistical Analysis Software) Version 9.2 and SPSS Version 21 are used for data analysis which includes regression analysis, OLS regression model, Logit and Probit models of regression. The significance of this study is that it focuses on exploring the Socio Economic Growth of Microfinance Sector in India and framework of Microfinance Programme in Rural Poor Households of India and understanding the socio economic factors of rural poor households leading to lending of funds from microfinance programs.

INTRODUCTION

The functioning of enterprises and the prospects of growth of an individual highly depends on the developed or the efficient financial services system which basically enables the capabilities of the individuals. It is observed that the extent of competition or the entrepreneurship that is broadly affected with the efficient and developed financial services system. In India if the parameters of financial services as in other countries being measured, found that India is underserved in the financial services. In India, 40% of households are not availing any banking services. In various states like Bihar, Odessa, Madhya Pradesh, WestBengal, Chhattisgarh, it is very surprising to observe that these states have >50% households that are not utilizing the formal services of Banking industry while in the case of north-eastern states that comprised of various states viz. Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya and Assam about 47.6% households are only availing banking services offered by the banking Industry. In order to improve the economic statues of the developing countries like India, the main cause of concern is poverty. An organization that is offering various financial services to the rural poor people of India are the microfinance institutions. The microfinance institutions has replaced the banks services by offering loans to the members of households especially rural poor households, many such institutions also offer the services of insurance, deposit and some other utility services as the banking industry offers. Various kinds of institutions are considered as microfinance like: credit unions, commercial banks, NGOs (Non-Governmental organizations), cooperatives and sectors of government banks.

In India various NGOs are working in remote rural areas and providing various financial services to the poor people as the access to banking services is not possible in some remotely located areas of India.

Another definition of microfinance is it is a movementhaving an aim as "a world in which as many poor and near-poor households as possible have permanent access to an appropriate range of high quality financial services including not just credit but also savings, insurance and fund transfers". Many institutions promoting microfinance strongly believe that these microfinance programmes will definitely help rural poor people to come out of their poverty if these will participate in various programmes offered by microfinance institutions. Economists believe that these microfinances is a process to promote economic development, helps in generating employment and growth by providing support to the micro-entrepreneurs and small scale businesses.

Literature review: Morduch[1, 2] concluded in his study that for the microfinance institutions to be attracted by the rural poor people if these microfinance institutions follow the principles of good banking will also be the ones that alleviate. Puhazhendi and Satyasai[3] carried out their studyfor NABARD and the main aim of this study was to analyze the impact of microfinance on the socio economic conditions of household members. In this study 11 states were considered and of these states 233 SHGs selected and 560 households were studied. It was concluded that there is an increase of 214% of average savings of households, there is 172% increase in value of assets per household was observed, employment of households increased by 17% and there is a decline in poverty from 42-22%. Schreiner[4] suggested to reach economically disadvantaged clients with financial services requires innovative strategies. There is evidence that an unconventional lender such as the Grameen Bank can lend to poor people in many circumstances that no ordinary commercial bank would want for a customer. The unconventional lender can do so with a reasonable degree of financial self-sufficiency and achieve repayment rates that are significantly higher than for comparable loans by conventional lending institutions. Basu and Srinivastava[5] found that in the case of Andhra Pradesh and Uttar Pradesh in terms of informal sector landings 21% rural households have access to formal sector credit, although, as much as 41% had a deposit account in a formal institutions. Kabeer[6] explained that while access to financial services can and does make vital contributions to the economic productivity and social well-being of poor women and their households, it does not "automatically" empower women, just as with other interventions such as education, political quotas, etc., Therefore, micro finance works as a magic bullet to alleviate poverty and to promote women empowerment and to reduce the role of money lenders in rural credit system. Aghion and Morduch observed and investigated statistically that there is a need to have statistical information if indeed the success stories generally apply to most of the microfinance clients across the board. Roodman and Qureshi observed that even MFIs that do not employ either joint liability or regular group meetings for transaction purposes still tapped into this sensitivity to reputation for delinquency control. NCAER survey revealed that employment per household increased from 314 person days in pre-SHG situation to 400 person days in post-SGH situation, registering an increase by 86 person days (i.e., by 27.3%). Female employment increased by 29.5%- from 122 person days to 158 person days; male employment increased by 26.0% from 192 person days to 242 person days. This indicates that as compared to male members, female members have

benefited more in terms of employment opportunities from the linkage programme. Srinivasan[7] concluded that the SHG Bank Linkage Programme (SBLP) and the Microfinance Institutions (MFIs) put together achieved a growth in their customer base by about 10.8%. Parida and Bandhu[8] had concludes that the context of the availability and accessibility of the basic financial services is low, they states that more than one billion poor people have no access to basic financial facilities which are essential for them to manage their precarious lives.

Objectives of study:

- To explore the socio economic growth of microfinance sector and framework of microfinance programme for rural poor households
- To understand the socio economic factors of rural poor households leading to lending of funds from microfinance programs
- To study the impact of microfinance on the income of rural poor households
- To investigate the importance and role of microfinance in the elimination of poverty among Rural Poor Households of India

Hypothesis of study

The following hypothesis were formulated as follows

Here H_O represents null hypothesis and H_A represents alternative hypothesis

Hypothesis 1:

- H_{01}: there is no significant attraction between the joint liability lending institutions and rural poor households
- H_{A1}: there is significant attraction between the joint liability lending institutions and rural poor households

Hypothesis 2:

- H_{02}: there is no significant relationship between Socio Economic factors of Rural Poor Households in India with that of the lending of funds from microfinance programs
- H_{A2}: there is significant relationship between socio economic factors of Rural Poor Households in India with that of the lending of funds from microfinance programs

Hypothesis 3:

- H_{03}: there is no significant relationship between impacts of microfinance with that of the income of rural poor households
- H_{A3}: there is significant relationship between impacts of microfinance with that of the income of rural poor households

Hypothesis 4:

- H_{04}: there is no significant relationship between microfinance programs with that of the elimination of poverty among rural poor households
- H_{A4}: there is significant relationship between microfinance programs with that of the elimination of poverty among rural poor households

MATERIALS AND METHODS

Profile of area considered for study: The area considered for the study is Gurgaon district of state Haryana. According to the 2011 census Gurgaon district has a population of 1,514,085; this gives it a ranking of 328th in India (out of a total of 640). The district has a population density of 1,241 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 73.93%. With a sex ratio of 853:1000 for females and males respectively, it has a literacy rate of 84.4%. The district has semi-arid vegetation with low and erratic rainfall. Hence, the people rely on an inadequate, fragile and uncertain resource base under constant threat of drought, resulting in food insecurity and under nutrition.

Research design: The study is exploratory in nature and studied using panel and pooled data. A systemized and organized study was done to reach the desired objectives of the study. The responses obtained from the respondents, i.e., villagers from 50 villages of Gurgaon district in Haryanawas analyzed using various statistical techniques. This study was restricted to villagers utilizing microfinance programs in villages of Gurgaon district. The importance of this study is that it focuses on exploring the Socio Economic Growth of Microfinance Sector in India and framework of Microfinance Programme in Rural Poor Households of India and understanding the Socio Economic factors of Rural Poor Households leading to lending of funds from microfinance programs. This study also investigates the Impact of microfinance on the Income of Rural Poor Households of India and the Importance and Role of microfinance in the elimination of poverty among Rural Poor Households of India.

Sources of data: To cater the need of the research, the researchers have used primary data through self-constructed structured Questionnaire and as far as the secondary data is concerned that was obtained from various reports, web sites and journals, etc. to explore the Socio Economic Growth of Microfinance Sector in India and framework of Microfinance Programme in Rural Poor Households of India.

Sampling technique: Purposive and Judgment sampling technique was used to gather data from the respondents.

Data collection technique: A random sample of respondents from 50 villages in Gurgaon district was used. The respondents were divided into two categories viz. category I consisting of 200 respondents who are utilizing microfinance programs.

In the selection of respondents utilizing microfinance programs the criterion was formed that the respondents should not be older than two months in the programme. The names and addresses of the lenders obtained from local offices of the microfinance institutions. Category II consisting of 200 respondents who are not utilizing microfinance programs in the beginning of the study. The data was collected after every six months of same respondents for a period of 12 months by keeping Category II respondents as the control group.

Statistical tools used: SAS (Statistical Analysis Software) version 9.2 and SPSS Version 21 are used for data analysis which includesRegression analysis, OLS regression model, logit and probit models of regression.

About the questionnaire: Self-constructed structured questionnaires were administered every 6 months to both the categories, i.e., Category I and Category II of the respondents. As far as the Category I respondents is concerned utilizing microfinance programs to collect data related to the participation of group, loan schemes, total loan, loan repayment and the household income. As far as the Category II respondents are concerned not utilizing microfinance programs at the starting of study to know the household's socioeconomic factors and understand any welfare changes in the absence of microfinance. Focus group discussions done with the joint liability borrowing groups to get the rapid appraisals and key informants were interviewed using semi structured questionnaire. It helped in providing a platform where issues related to microfinance like group lending and group activities were discussed.

Socio economic factors used in the study: The various socio economic factors are demographic factors, human capital, infrastructure facilities, assets and food security. Demographic factors include distance between village of rural poor household and the nearest market, age of head of household, family size of household, gender of household head, level of education of households, household income and paid employment. Human capital includes number of literate family members, number of working people in family and Education level of household head. Infrastructure facilities include house is temporary or permanent, number of rooms in house, flooring, cooking procedures, toilet facilities and source of drinking water. Assets include livestock, i.e., domestic animals, capital assets, household utensils, electronic items and Land for irrigation. Food security includes ability to grow enough basic food, number of meals in a day and expenditure on basic and luxury food items.

RESULTS AND DISCUSSION

Data analysis and interpretation

Growth of microfinance in India: The overall progress of microfinance from the period 2011-12 to 2014-15 is presented in Table 1.

From Table 2, it is quite clear that the percentage of being poor of respondents utilizing microfinance programs in the beginning and end of survey is reduced by 9% while respondents not utilizing microfinance programs also reduces but at a very small rate of 2% only.

Hypothesis 1:

- H_{01}: there is no significant attraction between the joint liability lending institutions and rural poor households
- H_{A1}: there is significant attraction between the joint liability lending institutions and rural poor households

Relationship between joint liability lending institutions and rural poor households of Gurgaon: Table 3 indicates that the multiple regression analysis identifies that joint liability lending institutions are positively and highly attracted by rural poor households. It is clear that the joint liability lending institutions play a vital role in the lives of rural poor households.

Since, the positive relationship is found between both the variables which imply that the greater the flexibility in the schemes of joint lending institutions greater is the attraction of rural poor households.

Since, $p<0.01$ that means it is significant at 1% level of significance, so, the alternative hypothesis is supported that there is significant attraction between the joint liability lending institutions and Rural Poor Households living in Gurgaon district.

Table 4 shows the association between the joint lending institutions and the rural poor households. The coefficient of correlation between JLI and the rural poor households is 0.827 and the value of R^2 is 0.684. Thus, around three fourth of variation in dependent variable that

Table 1: Growth of Microfinance in India

	2011-12		2012-13		2013-14		2014-15	
Indicators	No.	Change (%)	No.	Change (%)	No.	Change (%)	No.	Change (%)
Loans disbursed (In Mn)	17.43	-	18.32	5	24.46	33	33.43	37
Loan amount disbursed (In Bn)	207.41	-	233.75	13	351.18	50	545.91	55
Gross loan portfolio (In Bn)	168.13	-	174.07	4	248.62	43	401.38	68
Debt funding (In Bn)	58.63	-	100.11	71	150.40	51	276.82	85

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Table 2: Changes in welfare for both Category I and Category II respondents

	Beginning of survey (%)		End of survey (%)	
Categories	Poor	Non poor	Poor	Non poor
Category I	58	42	49	51
Category II	64	36	62	38

Table 3: Relationship between JLI and rural poor households

	Unstandardized coefficients		Standardized coefficients		
Models	B	SE	β	t-values	Sig.
(Constant)	1.728	0.121		11.529	0.000*
Rural Poor Households	0.862	0.042	0.827	11.825	0.000*

Table 4: Regression analysis-JLI and rural poor households

Models	R	R^2	Adjusted R^2	S.E. of estimates	F-values	Sig.
1	0.827	0.684	0.621	0.7218	132.42	0.000*

a:Predictors: (Constant), Rural poor households; b:Dependent variable: JLI

is attraction in JLI is explained by the independent variable rural poor households. Since the Adjusted R square is found to be 0.621 which indicates that 62.1% of the variation in rural poor households' wealth is explained by the JLI. The significant value is found to be 0.000 which is below than 0.01, thus, it is significant at 1% level of significance. Thus, null hypothesis is rejected and alternative hypothesis is accepted. So, there is significant attraction between the joint liability lending institutions and Rural Poor Households living in Gurgaon District.

Hypothesis 2:

- H_{02}: there is no significant relationship between socio economic factors of rural poor households with that of the lending of funds from microfinance programs
- H_{A2}: there is significant relationship between socio economic factors of rural poor households with that of the lending of funds from microfinance programs

Socio economic factors of rural poor households leading to lending of funds from microfinance programs: In the above constructed hypothesis the discrete dependent variable is participation of households in lending of funds from microfinance programs while socio economic factors are the independent variables. The reasons why the poor go for joint liability microfinance loans can be put under two broad categories, i.e., "Survival Driven Entrepreneurship" and "Opportunity Driven Entrepreneurship. Survival Driven Entrepreneurship is that the household could be looking for early and quick survival funds for the household due to the absence of any other opportunity. Opportunity driven entrepreneurshipis that the main objective of households to go for joint liability lending microfinance loans would be to acquire credit but not necessarily because the credit is the only way they could ever make a living for the time being but because the household views credit as an opportunity to acquire the capital that is needed to exploit a "good" income generating idea. The driving factors for household decision of whether to participate or not to participate in JLL micro credit programs are assumed to be socio economic considerations. The expected utility of participation in microfinance lending programs is perceived as:

$$E(M_i) = P_i(M_i) = f(\pi B_i + \beta X_i + \alpha mrk_i)$$

where, E denotes expectation and P_i denotes individual probability, M_i is a discrete dependent variable that equals 1 if the household i participates in JLL micro credit programs 0 otherwise πB is a vector of perceived benefits of participation in JLL micro credit programs βX is a vector of household characteristics αmrk is a vector of village characteristics.

Table 5: Socio economic factors of rural poor households leading to lending of funds from microfinance programs

Independent variables-Socio economic factors	Coefficients	S.E.	Z
Distance between village of rural poor household and the nearest market	-0.7854805**	(0.2882425)	2.24
Age of head of household	0.039281	(0.0985732)	0.24
Family Size of household	0.3273712	(0.4547217)	1.69
Gender of household head	0.3892840	(0.7541986)	2.88
Level of education of household head	0.1862051	(0.6439931)	0.74
Household income	0.8403138**	(0.0562812)	0.022
Paid employment	-0.868321***	(0.5348218)	-3.59
Squared age of head of household (X_8)	-0.0005372	(0.0357140)	-0.38
Squared size of household (X_9)	-0.0683521	(0.0234162)	-0.91
Squared household income (X_{10})	-0.0001783	(0004225)	-0.027**
Squared number of years spend in formal education by head of household (X_{11})	-0.0072338	(.0111873)	-0.65
Constant	-2.88355		-1.53

**Significant at 5%

Table 6: Impact of microfinance on income of households

Variables	Coefficients	SE	Z
Natural log of household income			
Initial amount			
Later Amount	0.0925712*	0.0825819	1.77
Variable used for capturing impact			
Initial impact	0.0015821	0.0247918	0.04
Later Impact			
Participation in microfinance programs			
Non dropouts	-0.7372591*	0.6472812	-1.88
Distance to the nearest main shopping centre along the highway	-0.2479149***	0.0528259	-4.55
Age of head of household	0.0127186	0.02347	1.32
Paid employment	0.0125821	0.0582461	0.38
Size of household	0.1625752***	0.0325677	3.81
Gender of household head	0.135921**	0.042691	2.28
Level of education of household head	0.0358263***	0.0062736	3.20
Squared age of head of household	-0.0000182	0.0001768	-0.02
Squared size of household	-0.0000283***	0.0045801	-2.37
Constant	3.478245***	0.3582366	7.62

R= 0.5728; R^2 = 0.3281; Adjusted R^2 0.3102 : ***Significant at 1 %, **Significant at 5%, * Significant at 10%

From Table 5, it is clear that the respondents are utilizing the microfinance programs in Gurgaon district is significantly explained by the access to market, income of households and the presence of regular household income in to the household. Households with a regular household income are not likely to participate in JLL micro credit programs. On the other hand, household participation in joint liability lending programmes increases with household income but there is a limit beyond which participation decreases with household income. Thus, there is a partial significant relationship between Socio economic factors of rural poor households with that of the lending of funds from microfinance programs.

Hypothesis 3:

- H_{03}: there is no significant relationship between impacts of microfinance with that of the income of rural poor households
- H_{A3}: there is significant relationship between Impacts of microfinance with that of the income of rural poor households

Impact of microfinance on income of households: A model used by Coleman 1999 is adapted as follows:

$$Y_{ijt} = X_{ijt}\alpha + V_j\beta + M_{ij}\gamma + T_{ijt}\delta + \eta_{ijt}$$

Where:

Y_{ijt} = Individual Household Income of the household residing in village j at any time t

X_{ijt} = Vector of Individual Household Characteristics in village j at any time t

V_j = Vector of village fixed effects.

M_{ij} = Membership dummy variable whose value is 1 if household ij is selected in to the microfinance program, otherwise it is 0

T_{ijt} = Number of times a household has borrowed from the microfinance institution at time t

Table 6 depicting the regression results of the first cross sectional analysis of the impact of microfinance programmes on the rural poor households living in villages of Gurgaon district. The results were obtained after the six months of participation of respondents in the microfinance institutions JLL programmes. It is clear from Table 6 that there exists a significant relationship between the size of household and household income up

Table 7: Impact of microfinance on income of households

Variables	Coefficients	SE	Z
Natural log of household income			
Initial amount			
Later amount	0.056281	0.0623912	0.33
Variable used for capturing impact			
Initial impact	0.0326734	0.0362813	1.44
Later impact			
Participation in microfinance programs	-0.5238287	0.6259321	-0.22
Non dropouts			
Distance to the nearest main shopping centre along the highway	-0.2573826***	0.0573832	-4.33
Age of head of household	0.0673278*	0.0347924	1.62
Paid employment	0.0036818	0.0375580	0.02
Size of household	0.1254672***	0.0272818	3.62
Gender of household head	0.0937190*	0.0489203	1.52
Level of education of household head	0.0375925*	0.0095328	1.44
Squared age of head of household	-0.0001753	0.0001983	-0.94
Squared size of household	-0.0038924**	0.0083847	-2.30
Constant	2.725027***	0.8381605	9.62

$R = 0.4773$; $R^2 = 0.2279$; Adjusted $R^2 = 0.2173$; ***Significant at 1 %; **Significant at 5%; *Significant at 10%

to a certain maximum threshold. But it is also observed that beyond the limit of maximum threshold there found to be a negative relationship between the household income of rural poor households and microfinance programmes. It is found that there exists a positive relationship between the education level of head of household with that of the household income. Distance to nearest market also significantly affect the household income. The results also show that households participating in joint liability borrowing had significantly lower incomes than non-parting households and that the amount of loan borrowed in the initial period has a significant positive relationship with household income. Thus from this study it is observed that microfinance has no significant positive impact on household income. The same estimation was repeated again in 12 months with the following results.

It is observed from Table 7 that results are similar to that of the results that were obtained in Table 6, so, once again it is concluded that no positive significant impact on household income due to participation in microfinance programs. Thus in this case null hypothesis is accepted and alternative hypothesis is rejected. So, it can be concluded that there is no significant relationship between impacts of microfinance with that of the income of rural poor households.

Similar results obtained as previous one where there exists a significant relationship between the size of household and household income up to a certain maximum threshold. But it is also observed that beyond the limit of maximum threshold there found to be a negative relationship between the household income of rural poor households and microfinance programmes. It is found that there exist a positive relationship between the education level of head of household with that of the household income. Distance to nearest market also significantly affect the household income. The results also show that households participating in joint liability borrowing had significantly lower incomes than non-parting households and that the amount of loan borrowed in the initial period has a significant positive relationship with household income.

Thus, in this study it is concluded that there is no significant positive impact of microfinance on the income of households living in villages of Gurgaon district. But surprisingly certain statistical changes have occurred in the same households after a period of 12 months. From the second cross section analysis, it is observed that the microfinance programmes participants are not significantly becoming poorer than the non-participants. Thus, it is concluded that, since, there is no such significant impact of microfinance has observed in the income of participants of microfinance but it was also observed that participants are not becoming poorer as compared to that of the non-participants. By this analysis it is difficult to explain such a condition that microfinance institutions are not significantly associated with its impact on the income of the participants while still the microfinance participants are not becoming poorer. The reason can be of the following as either the non-participants of microfinance programmes have become poorer while the participants of microfinance programs have significantly increased their incomes.

Now in order to reach the concrete significant association between the impacts of microfinance on the household income, the difference indifference method is used. While calculating the impact of microfinance on income of households in this process the individual fixed effects were drop out which makes it possible to measure the required impact.

Table 8: Impact of microfinance on income of households (difference in difference)

Variables	Coefficients	SE	Z
Change in income			
Change in impact	0.7395194	0.3608259	1.23
Change in amount	0.0000269*	0.000012	1.34
Constant	1.528517**	0.5920518	2.52

$R = 0.1543$; $R^2 = 0.0238$; Adjusted $R^2 = 0.0201$; ***Significant at 1%; **Significant at 5%; * Significant at 10%

Table 9: Impact of microfinance on income of households (pooled data analysis)

Variables	Coefficients	SE	Z
Natural log of household income			
Initial amount (Y_1)	-0.0827402	0.0729519	-1.32
Later Amount (Y_2)	0.1831704**	0.0752195	2.62
Variable used for capturing impact (Y_3)			
Initial impact (Y_4)	-0.0386105	0.0382602	-0.91
Later Impact (Y_5)	0.0375026*	0.0247026	1.51
Participation in microfinance programs (Y_6)	-0.138505**	0.5389503	-2.21
Non dropouts (Y_7)			
Distance to the nearest main shopping centre along the highway (Y_8)	-0.2386502***	0.0496260	-4.61
Age of head of household (Y_9)	0.02750*	0.0138502	1.51
Paid employment (Y_{10})	0.0063942	0.048205	0.13
Size of household (Y_{11})	0.1386026***	0.038429	2.01
Gender of household head (Y_{12})	0.0897438*	0.0485429	1.71
Level of education of household head (Y_{13})	0.0147953*	0.0073759	1.12
Squared age of head of household (Y_{14})	-0.0001936	0.0001639	-2.02
Squared size of household (Y_{15})	-0.0083859**	0.0038502	-1.92
Constant	3.375979***	0.3759607	7.12

$R = 0.4684$; $R^2 = 0.2194$; Adjusted $R^2 = 0.2014$; ***Significant at 1%; **Significant at 5%; * Significant at 10%

Here, in Table 8, the coefficient of variable impact is of most interest as which is basically the impact of microfinance only and also individual and village impacts are kept as controlled variables. From the above table it is quite clear that there is no significant relationship between impacts of microfinance with that of the income of rural poor households.

As far as the sensitivity of the instruments used are concerned as all the above results showing insignificant results, now it is mandate to use alternative approach to confirm the insignificant results. As far as the alternative approach is concerned, the pooled data regression model with fixed village and individual effects is used by introducing the time dynamics. The reason for using pooled data over the cross sectional data is robustness, as the cross sectional results are may or may not be robust while results of pooled data are robust.

It is clear from Table 9, that there is a significant positive relationship between the size of household with that of income but that is only upto certain maximum threshold and after which larger the households, a significant negative relationship was observed between the size of household and income of household. A significant positive relationship exist between the age of head of the household with that of the income and similar is the case of positive significant association between the education level of head of the household. Closeness to market have significant positive impact on the income of the households.

It is observed in the pooled data regression analysis that in the later period, there is significant positive relationship exist between the impacts of microfinance on the income of households living in villages of Gurgaon district. In the initial period this relationship is found to be insignificant. Thus, it can also be concluded that microfinance attracts the relatively poorer not basically the poorest people in the society.

Thus, for a shorter period there is no significant relationship between impacts of microfinance with that of the income of rural poor households while for the longer period there is positive significant relationship between impacts of microfinance with that of the income of rural poor households.

Hypothesis 4:

- H_{04}: there is no significant relationship between microfinance programs with that of the elimination of poverty among rural poor households
- H_{A4}: there is significant relationship between microfinance programs with that of the elimination of poverty among rural poor households

Determinants of household poverty: From Table 10, it is clear that determinant of poverty for both the participants and non participants in microfinance programmes are the size of the household, gender of the head of household and education level of the head of household as s ignificant positive relationship exist

Table 10: Impact of microfinance on income of households (pooled data analysis)

Variables	Coefficients	SE	Z
Vulnerability			
Participation in microfinance programs (Y_6)	0.3683527	(3.217338)	0.61
Amount that household has borrowed	-0.000482	(0.2749448)	-0.00
Age of head of household (Y_9)	-0.1274953	(0.0274759)	-1.02
Number of Times household has borrowed	-0.138507	(0.1094883)	-1.33
Size of household (Y_{11})	-0.6636809***	(0.253853)	-4.81
Gender of household head (Y_{12})	-0.4486979*	(0.5327475)	-2.81
Level of education of household head (Y_{13})	0.3384859	(0.1375756)	1.13
Squared age of head of household (Y_{14})	0.0003748	(0.0009957)	1.02
Squared size of household (Y_{15})	0.049595728**	(0.0137474)	1.92
Squared Level of education of household head	-0.0276477**	(0.0188529)	-1.618
Constant	4.843679**	(1.864776)	3.601

$R = 0.5054$; $R^2 = 0.2554$; Adjusted $R^2 = 0.2381$; ***Significant at 1%; **Significant at 5%; * Significant at 10%

between these determinants and poverty. It is observed that there is no significant relationship between microfinance programs with that of the elimination of poverty among rural poor households. Thus, in this case the null hypothesis is accepted and the alternative hypothesis is rejected.

CONCLUSION

Joint liability Lending microfinance programs are attracting villagers living in the villages of Gurgaon district not only on the basis of the policies and schemes of the programs but the reason of attraction is the lack of other sources of a regular income.

The discrimination was observed in borrowing of funds among the peer groups as the funds are not in the reach of very poorest who do not have individual household assets.

As repayment of loans is very crucial that will lead to further approval of bigger credits, but it was observed that instead of getting bigger credits the poor households are not able to clear earlier smaller loans and in order to pay the earlier loans they are facing the problem of debt spirals around them.

There found to be a negative relationship between the impact of microfinance on the income of households using cross sectional analysis but when pooled data analysis was considered as the alternative approach, it was found that the results are same for the shorter period but while for the longer period pooled data analysis shows the positive impact of microfinance on the income of household.

There found to be a negative relationship between the microfinance programs with that of the elimination of poverty among rural poor households.

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