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   INTRODUCTION

   REVIEW OF LITERATURE

   NEED/IMPORTANCE OF THE STUDY

   STATEMENT OF THE PROBLEM

   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

   SCOPE FOR FURTHER RESEARCH

   ACKNOWLEDGMENTS

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   APPENDIX/ANNEXURE

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- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

IMPACT OF MICROFINANCE SERVICES ON POOR WOMEN'S HOUSEHOLDS IN AHMEDABAD: AN EMPIRICAL STUDY

DR. PRATAPSINH CHAUHAN
DEAN
DEPARTMENT OF BUSINESS MANAGEMENT
SAURASHTRA UNIVERSITY
RAJKOT

AMIT A RAJDEV
ASST. PROFESSOR
ATMIYA INSTITUTE OF TECHNOLOGY & SCIENCE
RAJKOT

ABSTRACT
Microfinance services refer to those financial services that include small loans, insurance and pension facilities to poor and needy people. The objective of micro-finance services is to help poor and marginalized people to come out of poverty by providing them small loans for productive purposes. The present paper analyses the economic impact of micro-finance services on poor women's households in Ahmedabad city. The major variables of the study include annual household income, expenditure and asset positions. The changes in borrowers' annual income, expenditures and household assets have been analyzed using before and after joining micro-finance organizations. Statistical tests like Paired T-test, Wilcoxon Sign test and Logistic Regression have been used to analyze the impact of micro-loans. It is found that micro-finance services have helped to increase monthly income of women borrowers and thereby leading to increase in annual household income and expenditure. However, the impact of micro-loans on various assets like number of owned houses, area of house and cultivable land is not found to be significant.

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KEYWORDS
Impact Assessment, Micro-finance, Self-help Groups.

INTRODUCTION
Microfinance services refer to those financial services that include small loans, insurance and pension facilities to poor and needy people. Small loans constitute the major part of microfinance compared to other products like insurance and pension schemes. The journey of microfinance (in its actual form – 'micro-credit') started in 1974 by Prof. Muhammad Yunus in Bangladesh and for this movement he was awarded Nobel Prize in 2006. Conceptualizing micro-finance in Indian context again is a difficult task. As argued by Sriram M. S. and Upadhyayula S. R. (2002), micro-finance in India, is generally understood but not clearly defined. Micro-finance is conceptualized as the activity which is provided by the alternate sector (NGOs) with a laudable intention and non-exploitative connotations. The Task force of National Bank for Agricultural and Rural Development defines as "the provision of thrift, credit card and other financial services and products of very small amounts to the poor in rural, semi-urban or urban areas enabling them to raise their income levels and improve living standards." Further as mentioned by Dasgupta R. (2005), micro-credit is not a new concept in India. Priority sector credit in general and weaker section credit in particular was actually a kind of microcredit. What is new in microfinance is perceived as a paradigm shift in the quality of micro-finance delivery.

REVIEW OF LITERATURE
Mosley P. (2001) conducted small surveys on four microfinance institutions, to analyze the impact of microfinance on poverty; he found that all the institutions examined have a positive influence in terms of increasing income and in reducing poverty levels, whatever measure of poverty is used. Further, he found that between 10 to 20 percent of the borrowers crossed the poverty line between 1993 and 1999 as a consequence of microfinance that is they would not have crossed the poverty line in any case. **Puhazhendi V. and Badatya K. C. (2002)** analyzed the impact of SHG Bank Linkage Programme on SHG members. They surveyed 115 SHGs from Orissa, Chhattisgarh and Jharkhand and found that while there was no change in asset structure in 52 per cent of the sample households, about 45 per cent of them registered increase in assets between pre and post SHG situations. **Panda D. (2009)** found that the highest impact of self-help group based intervention was found for household savings, followed by literacy position, migration reduction, employment days, expenditure on household consumables, expenditure on education, assets position, income and expenditure on food.

OBJECTIVES
The present research work is carried out to measure the economic impact of micro-finance services (especially micro-loans) on poor households in Ahmedabad city. Therefore, the objectives of the research work are as mentioned below:
- To analyze the impact of microfinance interventions on participants' annual household income.
- To analyze the impact of microfinance interventions on participants' annual household expenditure.
- To evaluate the impact of microfinance interventions on households' asset position.

HYPOTHESES
H0: There is no significant difference between mean annual household incomes of women respondents from various sources before and after availing microfinance services.
H0: There is no impact of microfinance related loan variable on increase in annual income of household.
H0: There is no significant difference between mean household expenditure of women respondents from various sources before and after availing microfinance services.
H0: There is no significant difference between mean household assets of women respondents before and after availing microfinance services.

RESEARCH METHODOLOGY

The present research work being descriptive and exploratory in nature, a structured questionnaire was developed and used for getting insight into feelings and perceptions of loan recipients availing microfinance services. The target population comprises of all women (aged 18 or above) who have availed microfinance services and residing in Ahmedabad (Gujarat). The convenience sampling method was used and 100 women participants were identified. As Self-help Groups organized meetings weekly or fortnightly, interviewer personally visited the places and after meetings all women respondents were interviewed in local language for impact assessment. To analyze the significant differences in mean income, expenditures and assets, paired T-test and Wilcoxon Sign test were used. The normality of data was analyzed using Kolmogorov – Smirnov test. Further, to analyze the impact of microfinance loans on annual income of borrowers' household; logistic regression was used.

DATA ANALYSIS

DESCRIPTIVE STATISTICS

The sample includes all women aged 18 or above for analysis purpose. The average age of women respondents is 34 years and thus found to be in middle age group (See Table 1.1).

TABLE 1.1: DESCRIPTIVE STATISTICS

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Age (Mean Years)	34.19	100.00	100.00	100.00
Religion				
Hindu	75	75.00	75.00	75.0
Muslim	24	24.00	24.00	99.0
Christian	1	1.00	1.00	100.0
Marital Status				
Married	97	97.00	97.00	97.00
Separated	2	2.00	2.00	99.00
Divorce	1	1.00	1.00	100.0
Type of Family				
Nuclear	28	28.00	28.00	28.00
Joint	72	72.00	72.00	100.0
Family Size (Mean Number)	4.87	100.0	100.0	100.0
Number of Income Earners in Family (Mean)	2.28	100.0	100.0	100.0
Education				
No Education	44	44.00	44.00	44.00
Primary	44	44.00	44.00	88.00
Secondary	10	10.00	10.00	98.00
Higher Secondary	1	1.00	1.00	99.00
Graduation and More	1	1.00	1.00	100.0
Employment Status				
Self-employed	74	74.00	74.00	74.00
Wage-employed	11	11.00	11.00	85.00
Unemployed	3	3.00	3.00	88.00
Employed in Family Business	12	12.00	12.00	100.0
Annual Household Income (Mean Amount in Rupees)	74,270.00	100.0	100.0	100.0

Source: Survey Data

The sample is dominated by Hindu women (75%) and most of them are married (97%). Out of total sample (n=100) almost two third (72%) of women respondents are residing in joint family and average family size is found to be five while an average of two members in a family are found to be employed.

Most of poor women respondents are found to be illiterate (44%) while other forty four percent of women respondents completed primary schooling. Therefore, the sample is dominated by illiterate women and women having primary schooling. Further, almost two third of women respondents (74%) are self-employed while only three percent are found to be unemployed. The average annual income of household is Rs. 74,270 that suggesting still there is a need to increase the income level.

Further, Table 1.2 shows monthly income level of women respondents surveyed. It shows that before availing microfinance services there were 68 percent of women having monthly salary of less than rupees 2,500. While after availing micro-loans, this percentage has come down to only thirty. Similarly, the percentage of women earning monthly salary in the range of Rupees 2,501 to 5,000 has increased from seventeen percent to fifty one percent. It shows that microfinance has been effective in increasing the monthly income of loan recipients.

TABLE 1.2: RESPONDENT'S PROFILE: MONTHLY INCOME

Monthly Income	Before	After
Less than Rs. 2,500	68	30
Rs. 2,501 to Rs. 5,000	17	51
Rs. 5,001 to Rs.7,500	00	04
More than Rs. 7,500	00	00
Effectively Employed (Total)	85	85
Missing (Unemployed & Employed in Family Business)	15	15
Total	100	100

Source: Survey Data.

CHANGES IN ANNUAL HOUSEHOLD INCOME

To measure the changes in annual household income, women respondents were asked about the sources of household income before and after availing microfinance services. These changes in income level are presented in Table 1.3.

Analysis of changes in annual household income from various sources shows positive trend in before and after availing microloans. The percentage increase in annual household income ranges between 24 percent (in case of poultry) to as high as 51 percent (in case of services). In absolute sense, the highest change in mean income is observed from livestock (Rs. 13,833.33/year) followed by crops (Rs. 12,045.45/year).

To analyze the significant differences in mean incomes from various sources, paired T-test is used that requires data to be normal. The normality of data was analyzed using Kolmogorov – Smirnov test and results are displayed in parenthesis (Column no. 2 & 3) of Table 1.3. Most of the data are found to be non-normal. Therefore, Wilcoxon Sign (non-parametric) test is used where data are non-normal. The output of, both paired T-test and Wilcoxon Sign tests shows all p values less than 0.05 (Column no. 7). Therefore, null hypothesis is rejected and it is found that there is significant difference between mean annual household incomes of women respondents before and after availing microfinance services.

TABLE 1.3: CHANGES IN ANNUAL HOUSEHOLD INCOME

Sources of Income	Before (Mean in Rs.)	After (Mean in Rs.)	Change of Income (in Rs.)	Percentage	t-value/ Wilcoxon test z-value	Sig. (t)/Sig. (w)
Crops	31409.09	43454.55	12045.455	38.35	9.499	0.000
	(0.200)	(0.200)				
Fruit Selling	25000.00	31687.50	6687.500	26.75	2.945	0.010
	(0.185)	(0.200)				
Vegetables	26791.67	33458.33	6666.667	24.88	-3.175	0.001
	(0.002)	(0.039)				
Livestock	28666.67	42500.00	13833.333	48.26	-2.201	0.028
	(0.000)	(0.003)				
Poultry	28142.86	35000.00	6857.143	24.37	-2.226	0.026
	(0.016)	(0.200)				
Small Business	31684.78	39815.22	8130.435	25.66	-3.882	0.000
	(0.009)	(0.002)				
Labor Selling	28426.83	38207.32	9780.488	34.41	-4.962	0.000
	(0.017)	(0.006)				
Service	23285.71	35214.29	11928.571	51.23	9.371	0.000
	(0.010)	(0.200)				
Others	16339.29	23696.43	7357.143	45.03	-4.289	0.000
	(0.000)	(0.114)				

Source: Survey Data

CHANGES IN ANNUAL HOUSEHOLD EXPENDITURE

Women respondents were also asked about changes in annual household expenses before and after availing microfinance loans. The results of the same are displayed in table 1.4. The output shows that all heads of expenditures have increased after the usage of small loans. The highest change was observed in house repair and maintenance which has increased by Rs. 4,156. The output shows that food expenses have increased by thirty percent.

The test results of Kolmogorov – Smirnov shows non-normality of data as p values are found to be less than 5% level of significance (Column no. 2 & 3). Therefore, Wilcoxon Sign test was used in all cases. The output of Wilcoxon Sign test shows that p values are less than 5% level of significance rejecting the null hypothesis. So, it can be said that there is significant difference between mean household expenditure of women respondents from various sources before and after availing microfinance services.

TABLE 1.4: CHANGES IN ANNUAL HOUSEHOLD EXPENDITURES

Expenses	Before (Mean in Rs.)	After (Mean in Rs.)	Change of Income (in Rs.)	Percentage	Wilcoxon test z-value	Sig.
Food	12893.00	16839.00	3946.000	30.61	-8.518	0.000
	(0.000)	(0.001)				
Medication	1748.00	2629.00	881.000	50.40	-6.266	0.000
	(0.000)	(0.000)				
Education	1252.75	1710.44	457.692	36.53	-6.088	0.000
	(0.000)	(0.000)				
Clothing	1921.00	2527.00	606.000	31.55	-8.106	0.000
	(0.000)	(0.000)				
Furniture Purchase	283.78	1575.68	1291.892	455.24	-4.791	0.000
	(0.000)	(0.000)				
Repair & Maintenance	434.21	4590.79	4156.579	957.27	-4.880	0.000
	(0.000)	(0.000)				
Festival/Recreation	2350.51	3096.97	746.465	31.76	-8.012	0.000
	(0.000)	(0.000)				
Others	15315.62	20734.38	5418.750	35.38	-4.258	0.000
	(0.007)	(0.008)				

Source: Survey Data

CHANGES IN ANNUAL HOUSEHOLD ASSET POSITION

The changes in household asset position are presented in Table 1.5. Micro-loans are expected to have positive impact on household assets like livestock, vehicles, jewellery etc. It is observed that poor households have been benefited in terms of vehicles and agricultural equipment that have increased by 91 percent.

The test results of Kolmogorov – Smirnov shows non-normality of data as p values are found to be less than 5% level of significance (Column no. 2 & 3). Therefore, Wilcoxon Sign test was used in all cases. The changes in number of owned houses and area of house do not indicate significant impact of micro-finance services as p values are more than 5% level of significance. Further, changes in number of livestock, cultivable land and amount in jewellery shows statistical significant differences but do not indicate significant impact in absolute terms. Therefore, we failed to reject the null hypothesis.

TABLE 1.5: CHANGES IN ANNUAL HOUSEHOLD ASSET POSITION

Assets	Before	After	Change	Percentage	Wilcoxon test z-value	Sig.
Owned House (in Number)	0.94	0.99	0.045	4.78	-1.732	0.083
	(0.000)	(0.000)				
Livestock (in Number)	1.19	1.74	0.556	46.72	-3.638	0.000
	(0.000)	(0.000)				
Vehicles (in Number)	0.97	1.79	0.885	91.24	-7.901	0.000
	(0.000)	(0.000)				
Electronic Goods (in Number)	2.64	4.68	2.040	77.27	-4.141	0.000
	(0.000)	(0.004)				
Agriculture Equipment (in Number)	1.40	2.68	1.280	91.42	-8.243	0.000
	(0.000)	(0.000)				
Jewellery (in Rs.)	10710.20	13613.27	2903.061	27.11	-5.382	0.000
	(0.000)	(0.000)				
Are of House (in sq. ft.)	393.57	406.44	12.87	3.25	-1.342	0.180
	(0.001)	(0.000)				
Cultivable Land (in acre)	0.9130	1.13	0.21739	23.81	-2.060	0.039
	(0.000)	(0.000)				

Source: Survey Data

IMPACT OF MICROFINANCE SERVICES

To measure the impact of microfinance services on household annual income, the following logistic regression model originally developed by **Rahman M & Ahmad F (2010)** is modified and used for present research work.

TABLE 1.6: LIST OF INDEPENDENT VARIABLES

Variables	Type of Variable
X1 = Distance of Branch From Borrowers house (DIST)	Binary
X2 = Amount of Loan (LOAN)	Categorical
LOAN 0 (< Rs.10,000)	
LOAN 1 (Rs. 10,000 to Rs. 20,000)	
LOAN 2 (>Rs. 20,000)	
X3 = Years of Membership (YMEM)	Continue
X4 = Number of Income earners in the household (EARNER)	Continue
X=5 Education of Women Borrower (EDU)	Categorical
Education 1	
Education 2	
Education 3	
Education 4	
Education 5	
X=6 Monthly Income of Woman borrower after joining MFI (MINC)	Categorical
Less than Rs. 2,500	
Rs. 2,501 to Rs. 5,000	
Rs. 5,001 to Rs. 7,500	
More than Rs. 7,500	

Source: Rahman M & Ahmad F (2010)

$$\mathrm{Ln}\left[\frac{\mathrm{Pi}}{1-\mathrm{Pi}}\right] = \alpha 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + ui$$

Where,

Pi = Probability that borrowers' annual household income has increased.

1 – Pi = Probability that borrowers' annual household income has not increased.

Xi = Independent Variables discussed in table 1.6.

Bi = Coefficient to be estimated and μ = error term.

The results of logistic regression model have been discussed below:

OVERALL MODEL EVALUATION

A logistic model is said to provide a better fit to the data if it demonstrates an improvement over the intercept-only model (also called the null model). An intercept only model serves as a good baseline because it contains no predictors.

Omnibus Test of Model Coefficients is a test of null hypothesis that there is no difference between the model with only a constant and the model with independent variables **(See Table 1.7)**. As the test gives a Chi-square of 37.687 on 11 degree of freedom, significant value of 0.000 ($p < 0.05$); the alternate hypothesis is supported. Therefore, it can be said that predictors have a significant effect and create essentially a different model.

TABLE 1.7: MODEL SUMMARY & GOODNESS OF FIT

Omnibus Test of Model Coefficients (Model)			Goodness of Fit Statistics (Hosmer – Lemeshow Test)			Cox & Snell R Square	Nagelkerke Square
Chi-Square	Degree of Freedom (df)	Sig.	Chi-Square	Degree of Freedom (df)	Sig.		
37.687	11	0.000	6.808	8	0.557	0.421	0.648

Source: SPSS Output

GOODNESS OF FIT STATISTICS & MODEL SUMMARY

Goodness of fit statistics (Hosmer-Lemeshow Test) assesses the fit of a logistic model against actual outcomes. It is a test of null hypothesis that there is no difference between observed and model-predicted values. Therefore, well-fitting models show non-significance on the Hosmer-Lemeshow (H-L) Goodness-of-fit test. The inferential goodness of fit test (H-L test) yielded a $\chi^2(8)$ of 6.808 and is insignificant ($p>0.05$), suggesting that the model is fit to the data well **(Table 1.7).** In other words the null hypothesis of a good model fit to data is tenable.

Two additional descriptive measures of goodness-of-fit presented in Table 1.7 are R^2 indices, defined by Cox and Snell (1989) and Nagelkerke (1991), respectively. These indices are variations of the R^2 concept defined for the Ordinary Least Square (OLS) regression model. In linear regression, R^2 has clear definition: It is the proportion of the variation in the dependent variable that can be explained by predictors in the model. Attempts have been made to yield an equivalent of this concept for logistic model. None, however, renders the meaning of variance explained **(Long, 1997, Menard, 2000).** Further, as cited by **Gujarati D (2003)**, conventionally computed R^2 is of limited value in dichotomous response models; the use of the coefficient of determination as a summary statistic should be avoided in models with qualitative dependent variable **(Aldrich J. and Nelson F, 1984)**.

TABLE 1.8: CO-EFFICIENT ESTIMATES OF INDEPENDENT VARIABLES IN LOGIT MODEL

Variables	B	Wald	Df	Sig.	Exp(β) (e^{β})
Distance of Branch (DIST)	1.082	1.432	1	0.231	2.952
Amount of Loan (LOAN)					
LOAN 0 (< Rs.10,000) [b]	-	-	-	-	-
LOAN 1 (Rs. 10,000 to Rs. 20,000)	2.181	3.055	1	0.080**	8.855
LOAN 2 (>Rs. 20,000)	0.223	0.021	1	0.885	1.250
Years of Membership (YMEM)	1.323	5.061	1	0.024*	3.754
Number of Income earners in the household (EARNER)	2.044	2.024	1	0.155	7.720
Education of Women Borrower (EDU)					
Education 1[b]	-	-	-	-	-
Education 2	-1.722	1.829	1	0.176	0.179
Education 3	-3.093	2.192	1	0.139	0.045
Education 4	21.323	0.000	1	1.000	1.821
Education 5	14.368	0.000	1	1.000	1.738
Monthly Income of Woman borrower after joining MFI (MINC)					
Less than Rs. 2,500[b]	-	-	-	-	-
Rs. 2,501 to Rs. 5,000	3.707	6.616	1	0.010*	40.715
Rs. 5,001 to Rs. 7,500	23.110	0.000	1	0.999	1.088
More than Rs. 7,500***	-	-	-	-	-

Note: [b] reference category, *p<0.005, **p<0.10, ***Note: No Woman borrower in the category.

Source: SPSS Output

VARIABLES IN EQUATION

The statistical significance of individual regression coefficients (i.e. βs) is tested using the Wald chi-square statistic. It is a test of null hypothesis that the β coefficient is equal to zero. The variable in the Equation output also provides Exp (β); it is known as the odds ratio predicted by the model. This odds ratio can be computed by raising the base of the natural log to the β^{th} power, where β is the slope from the logistic regression equation.

From **Table 1.8**, the probability of the Wald statistic for the variable – LOAN 1 is 0.080 which is less than level of significance of 0.10 and therefore the null hypothesis that the β coefficient is equal to zero is **rejected** (Column 4). For the variable – LOAN 1, β is $e^{2.181}$ = 8.855. It suggests that those women respondents that borrowed amount between Rs. 10,000 to Rs. 20,000 from micro-finance institutions are 8.85 times more likely to have increased the odds of increase in annual household income compared to those borrowing amount less than Rs. 10,000.

Similarly, a unit increase in years of membership of woman borrower increases the odds of increase in annual household income by 275 percent. Further, those women borrowers whose monthly income falls in the income category of Rs. 2,501 to Rs. 5,000 are 40.71 times more likely to have increased the odds of increase in annual household income compared to those women borrowers earning less than Rs. 2,500.

CROSS-VALIDATION USING CLASSIFICATION ACCURACY

If the probability of the event is greater than or equal to 0.5, we shall predict that the event will take place. Accordingly SPSS will classify a subject into the 'Yes' category (increase in annual household income) if the estimated probability is 0.5 or more; similarly if the estimated probability is less than 0.5; SPSS will classify a subject into the 'No' category (Not increase in annual household income).

TABLE 1.9: CLASSIFICATION TABLE & CROSS VALIDATION OF MODEL

Sample	Classification Table			Sensitivity P(Correct/Event did occur)	Specificity P(Correct/Event did not occur)	Overall Percentage
Training Sample						
	Predicted		Total			
Observed	No	Yes				
No	9	6	15			
Yes	5	49	54	90.74%	60.00%	84.10%
Total			69*			
Holdout Sample						
	Predicted					
Observed	No	Yes				
No	2	0	2			
Yes	1	13	14	92.9%	100.00%	93.8%
Total			16*			

*Note: 15 unemployed women respondents have not been considered in SPSS software for regression analysis.

Source: SPSS Output

In analysis of Training Sample, the classification table shows that this decision rule allows us to correctly classify 49/54 = 90.7% of the subjects where the predicted event (increase in annual household income) is observed **(See Table 1.9)**; that is known as Sensitivity or Hit ratio of prediction.

It is also found that the rule allows us to correctly classify 9/15 = 60% of the subjects where the predicted event is not observed which is known as Specificity of prediction. Similarly, cross validating both of these measurements with holdout sample, it is found that Sensitivity and Specificity have increased to 92.9% and 100.00% respectively. Overall, percentage correct for analysis sample is 84.10% that has increased to 93.8% for holdout sample. With these improvements as both the overall and group-specific levels, the logistic regression model is deemed acceptable in terms of classification accuracy.

CONCLUSION

Micro-finance services help poor people to come out of poverty by providing an opportunity for self-employment. It is observed that those women borrowers who have availed micro-finance services have been benefited economically. The monthly income of women beneficiaries, those residing in Ahmadabad city, has increased and it has also resulted in increase in annual household income. The major factors that have increased household income of poor family include microfinance loans, monthly income of women borrowers, distance of branch from borrower's house and years of membership in micro-finance organizations. The impact of micro-loans on asset positions especially number of owned houses, area of house and cultivable land is not significant. Microfinance services require further support from development organizations to help poor women to come out of poverty.

REFERENCES

1. Aldrich, J. and Nelson, F. (1984), "Linear Probability, Logit and Probit Models", Sage Publications.
2. Dasgupta, R. (2005), Microfinance in India: Empirical Evidence, Alternative Models and Policy Imperatives, Economic and Political Weekly, Vol.40, No. 12, 1229.
3. Gujarati D. N. (2003), Basic Econometrics, Tata McGraw Hill, New York.
4. Hair, J., Black, W., Babin, B., Anderson, R. and Tatham, R., (2009), "Multivariate Data Analysis", Pearson Education, New Delhi.
5. Long, J. S., (1997), "Regression models for categorical and limited dependent variables", Sage, Thousand Oaks, CA.
6. Menard, S., (1995), "Applied logistic regression analysis" (Sage University Paper Series on Quantitative Applications in the Social Sciences, 07–106), Sage, Thousand Oaks, CA.
7. Mosley, P., (2001), "Microfinance and Poverty in Bolivia", The Journal of Development Studies, Vol. 37, No.4, 101-132.
8. Panda D. (2009), "Assessing the impact of Participation in Women Self-help Group-based Micro-finance: Non-experimental Evidences from Rural Households in India", International Journal of Rural Management, 5(2), pp. 197-215.
9. Puhazhendi V and Badatya K. C., "SHG – Bank Linkage Programme for Rural Poor – An Impact Assessment", Paper Presented at the Seminar on SHG-Bank Linkage Programme at New Delhi on 25-26 November, 2002.
10. Rahman, M. and Ahmad, F., (2010), "Impact of Microfinance of IBBL on the rural poor's livelihood in Bangladesh: An empirical Study", International Journal of Islamic and Middle Eastern Finance and Management, Vol. 3, No. 2, pp. 168-190.
11. Sriram, M. S. and Upadhyayula S. R., (2002), "The Transformation of Microfinance Sector in India – Experiences, Options and Future", Journal of Microfinance, Vol.6, No. 2.

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