SHGs IN INDIA: EFFECTIVENESS OF GOVERNMENT SUPPORT PROGRAMMES TOWARDS REDUCING NPAs

ABSTRACT

The study examines the effectiveness of training and capacity building initiatives taken up by NABARD and Government of India (GOI). The independent variables are the various measures taken up by NABARD for training and capacity building to promote efficiency in the working of Self- Help Groups (SHGs). The dependent variable for the study is Non-Performing Assets (NPAs) arising from SHGs. This study is based on secondary data and E-views are being used as the tool for data analysis. Data for the last six years for six different regions of India have been taken for the study. The paper considers nine independent variables for the study. The panel data in the study is analysed using Fixed Effect Model and Random Effect Model. Findings of this study reflect the measures taken by the GOI which have significant impact on NPAs.

Keywords: SHG, NPA, NABARD, SHGBLP, Microfinance

INTRODUCTION

Financial Literacy and financial inclusion are the two main concerns of financial stability in the country. Because traditional financial institutions have failed to address the credit demands of disadvantaged woman, a quasi-informal loan distribution mechanism has emerged, which should be client-friendly, easy and with few formalities. Self-help groups (SHG) are grass-roots organisations built on the ideas of need and communal action **(*Sudha Rani et. al, 2002*)**. NABARD has been working towards holistic and inclusive development through various incentives including establishing people's organisations like SHGs which has ensured improved access to institutional credit, market accessibility and better price for the produce.

NABARD in 1992 initiated a programme to promote Self Help Groups (SHGs) with a view to linking rural women with banks for savings and credit, to meet their families' needs and to improve their livelihood. This savings led, women-centric, door-step, self-managed microfinance program - Self Help Group (SHG) Bank Linkage Program (SHG-BLP), has appeared as one of world's largest movements of organising the poor into groups, having more than one crore SHGs in its fold, and linking them with banks for credit facilities amounting to more than ₹1 lakh crore (***NABARD Annual report, 2019-20***). There are incredible efforts made by banks, financial institutions and many other agencies involved with SHGs like NRLM, NGOs and other civil society organisations etc. in respect of formation of SHGs and credit linking. Though the praiseworthy efforts have been done but still the work is half done, as nearly 50 percent of SHGs are still there to be credit linked.

SHGs have all evolved into grassroots financial intermediaries that aggressively mobilise savings. They mostly use them for internal financing, but they also keep significant sums in the bank as reserves (***Seibel, H. D., and Dave, H. R. 2002)***. The SHG-BLP programme has reshaped the lives of lakhs of Indian women and made them the live partners in the process of nation building. "Microfinance" being one of the components of Indian economy, is being

emerging as a fast growing sector, though it is still underpeeped. Several previous studies in this area indicated the microfinance sector in India has the potential of reaching at CAGR of 40 percent by 2025. The Indian economy is also expected to reach US$ 5 trillion around the same time.

The self Help Bank Linkage Program (SBLP) which was established in 1992, quickly grew to become the world's largest microfinance program when compared to any other in existence, owing to its low interest rates and flexible payback periods (***Dipti Baishya and Ratul Mahanta.2018***). The study conducted in Pauri, Garhwal district analysed that the rural poor women contributing a lot in an overall development in making their lives better as well as the lives of other poor around them by giving them an opportunity of earning by giving them employment. In this respect the government agencies are providing the rural poor women of the SHGs certain training and credit, to make them learn new occupations and be the entrepreneurs and contribute towards Income Generating activities **(Pandey, 2019)**

SHG-Bank Linkage Program grew out of a project in Indonesia financed by the Gesellschaft fur Technische Zusammenarbeit (GTZ). IN India, the National Bank of Agriculture and Rural Development (NABARD) launched a trail initiative to link 25 SHGs with commercial Bank as a start. The government initiative to help give credit to the poor has made SHGs-Bank Linkage program in India as the largest microfinance programme in the World (**Gupta,Ruchi.2015**). Hence the "linked" SHGs became micro-banks and later were able to access funds from formal banking system (**Dhar, S. N., Sett, K., and Sarkar, S. (2008).** The digitalization of SHG – E-Shakti attempts to address the issues in the ecosystem of SHGs and provide digital solutions. It also creates a database of SHGs and their members and other operation details that would contribute in framing suitable credit policy.

S. N. Bidani (2002) described that Non performing assets, are the smoking gun threatening Indian banks' very stability. NPAs wreak havoc on a bank's profitability by reducing interest income and causing the main loan amount to be written off. The linkages of SHGs with the bank aims at using the intermediation of SHGs between banks and rural people to cut transaction costs for the bank as well as for the rural clients. There are four different models of the linkages between SHG and banks. The adoption of any one model depends on the perception of the bank and the strength of the SHGs and the NGO.

Korankye (2014) studied the trend of defaulting MFI loans and NPA concerns in Ghana was due to poor assessment, poor management, wrong client selection and inadequate loan size, amount other causes, have resulted in the failure of loan repayment and rising NPAs of banks. During the period 2005-2010, commercial bank performance in the areas of priority sector banks, 35.63 times for private banks and 69.09 times for foreign banks. The NPA produced via priority sector advancement during the period 2005-2006, however, was demonstrated in this analysis to be positive (Raman, 2013)

REVIEW OF LITERATURE

SHGs-BLP were concentrated in the southern states (SR), and their performance in the northern states (NE) was unsatisfactory. Bank loan disbursement to SHGs were also higher in SR. Altough the quantity of SHGs savings balances with banks and amount of loan issued to SHGs by banks were lower in NER than in SR, the share dog NPAs to total loan outstanding was greater and the percentages of recovery to demand to total SHGs was lower in the NER. In recent years, the condition of NPAs and the recovery rate in NER has improved. However, this improvement was not equal to India's SR (**Das and Tiken,** 2013).

The purpose of this study is to look at the factors that determine how members of SHGs use financial services and products. Suitability of financial products, accessibility of banking, physical infrastructure, economic condition of SHG members, IT infrastructure, and financial knowledge are all factors that impact financial inclusion of SHG members, according to the research (R. Sankharaj, H Ramananda Singh, S Ranjit, 2017). Over the last ten years, there has been a significant growth in the NPAs in SHG; a region by region study reveals that the number of NPAs has grown in the Southern and Western regions. The banks were not actively monitoring and assiting the SHGs since they were severely limited owing to insufficient manpower and work pressure at their branches. According to the report, demonetization had a minor impact on SHGs repayment of bank loan. For around 2-3 months, demonetization has an effect on new loan granting to SHG members **(CRFIM and BIRD).**

Commercial banks outperform regional rural banks in terms of saving mobilisation and outstanding loan amount, whereas regional rural bank outperform in terms of credit disbursement and non-performing assets against SHG loans. Poor performance in some areas has resulted in the high non-performing assets rate on SHG loans (**Baishya Dipti and Mahanta Ratul**, 2018). Various seminars, workshops and training programs have been conducted to make the stakeholders like bankers, government agencies, the NGOs and the most important SHG members, aware about the micro finance programmes. The NGOs can be said as the player playing the key role in extending support in setting-up the SHG and also nurturing it. These NGOs got support later by other institutions like rural financial institutions, farmers clubs, etc. These institutions got promotional grant assistance by NABARD which acted as a encouragement to take up such work (Muthu, 2014).

A study found that rising NPAs posed a substantial threat to banks and the viability of SBLP. There is a need to encourage groups to spend funds more productively, as well as for banks to undertake good credit recovery management (**Lokhande Ananada Murlidhar**,2016).

SHGBLP has contributed to the sustainability and quality of cooperative organisations, as well as the diversification of impoverished people's livelihoods. Andhra Pradesh SHG bank linkage narrative became a paradigm for the rest of the country to follow. The GoI national rural livelihoods mission (NRLM) was inspired by the success of SHG bank connection initiative in Andhra Pradesh. The research investigated the expansion of the SHG-bank linkage program in Andhra Pradesh, as well as the variables that led to its success. It also

emphasised the Andhra Pradesh state government proactive involvement in strengthening SHG-bank connection (**B. Seetharamaiah**, 2018).

The study at state level conducted during 2005/06 reviewed the eminence of SHGs which were linked with banks till March 1998 under SHG-BLP. The paper portrayed the status of SHGs on various parameters such as continued existence, membership, meetings held, leadership, savings made and loans obtained, loan utilisation and repayment record (**Bhatia, Navin** (2007).

The microfinance program in Rajasthan, India was recognised as one of the most effective and quickly developing programmes in the state level. Microfinance services are primarily offered through two model: SHG-bank linkage and the MFI-bank model. The SHG-bank connection model was emerged as more commonly recognised of the two, namely, commercial banks, regional rural banks and cooperative banks (**Sharma, Babita**, **2017).**

Microfinance has helped in efforts to poverty reduction. Microfinance interventions through SHGs program are widely acknowledged as a successful technique for reducing poverty and increasing the socioeconomic standing of India's rural poor. Under NABARD's pioneering effort, central banks supervision, and the GoI promotional policies, the SHG-bank linkage program in India was quickly increasing its scope. Commercial banks, cooperatives, and regional rural banks, in collaboration with govt. agencies, are implementing the initiative at the grassroots level. **(Thakur, Sarita,2016**).

The South Indian states of India has been in the forefront of connecting SHGs to banks, accounting 71 % of all the SHGs connected to banks in India till 2001. It maintained its lead until 2015, accounting 48 % of all credit linked SHGs in India. To expand the program's reach across India, rate of growth in SHG BLP must be enhanced in the north and north eastern states. Banks taking a proactive approach, such as creating unique funds for lending to SHGs, will assist expand the amount of credit accessible to SHGs (**Annapurna & A. Alimelu, 2017**).

Between 2010-11 and 2015-16, there was a good trend in number of SHGs saving and amount saved by SHGs in all states of India. The predicted mean amount as well as distribution of the number of SHGs and the amount saved differs by state. In terms of loan amount, there is a good trend in expansion of SHGs connected to loans, with the amount disbursed to SHGs in all areas of India except Northern region from 2010-11 to 2015-16. Positive developments have been noted in all regions of India, where a large number of SHGs have been partnered with banks. When compared to growth in outstanding dues of SHGs, the number of SHGs is growth at a slower rate (**K. Harika & R. Ramakrishna, 2017**).

The Southern region stood highest in Region-wise Distribution of Number and amount of SHGs with Savings Linkage. Whereas, the North Eastern and Northern regions showed the lowest over the study period. This privilege is not according to the proportion of Number and percentage of persons by state below poverty lines in India. Total Loan Disbursement and Loan Outstanding show the increasing trend over the study period. NPA to Total Loans

Outstanding against SHGs is still high. SHG-BLP is the most accepted and profitable model showing favourable performance. The sustainability of this SHG-BLP is achieved with the grand network mechanism among the stakeholders **(K.V. Ramesh, 2017**). The study examined the shrinking SHG sector and declining credit flow to deprived populations of Malwa region of Madhya Pradesh (MP) and the issues affecting the performance of SHPI. The key findings were issues like retention of employees, lack of training to employees, SHG federation who are unable to register themselves as MACS, unable to arrest the multiple borrowings of their clients especially in Indore and Ujjain. The need is to make provisions for substantial investment in training and upgradation of SHPI (**Chouksey & Dr. Aradhana, 2019**).

Research Gap Identified

Various researches on the performance of SHGs have been undertaken over the years. Researches have also been undertaken on the government's various measures to minimise NPAs and related studies. From the available studies, not major focus of research is being undertaken to assess the efficacy or utility of various NABARD-supported and sponsored training and capacity-building programmes. Therefore, the study aim to identify the capacity-building strategies, if promoted further, might show to be beneficial in reducing NPAs.

RESEARCH DESIGN AND METHODOLOGY

The current study endeavours to adopt the deductive research for empirical observations.

Research Hypothesis:

$H_{O:}$ There is no significant relationship between the SHGs NPAs and training & capacity building measures taken up by NABARD

H_1 : There is a significant relationship between the SHGs NPAs and training & capacity building measures taken up by NABARD.

Sample & Secondary Data:

Non-Performing Assets of SHGs have been taken as the dependent variable. The independent variables are the various measures taken by NABARD for training and capacity building of SHGs. For the study nine independent variables have been considered. The independent variables are Bankers, Trainers, NGOs, Government Officials, SHG Leaders, Exposure Visits, MEDP, Bankers Meet and NGO Meets. The data have been considered for the period between 2014-15 to 2019-2020 and it is the cumulative data. Each year data has been further considered under six different sections divided as per the geographical locations i.e. Northern Region, North Western Region, Central Region, Southern Region, Western Region and Eastern Region.

The data have been collected here from the NABARD Yearly report “Status of Microfinance in India” (year 2014-15 to 2019-20).

The data provided in "Status of Microfinance in India" is being bifurcated into six geographical regions. The NPA status from the year 2014-15 to 2019-20 for six different regions shows an upward trend. In Northern Region the NPA figures increased from ₹ 16355.18 lakhs to 21206 lakhs. In North Eastern Region it increased from ₹ 8482.57 lakhs to ₹ 26914 lakhs in six years. In Eastern Region it increased from ₹ 68472.45 lakhs to ₹ 101495 lakhs. In Central Region it increased from ₹ 41951.8 lakhs to 56612.66 lakhs in six years. In Western Region it increased from ₹ 17178.19 lakhs to ₹ 33564.66 lakhs during this period. In Southern Region NPA was ₹ 229030.46 lakhs which increased to ₹ 292376.97 lakhs till 2019-20. The NPA data clearly indicated that in all the six regions the NPA figures are showing upward trend. With all the efforts made by NABARD it is true that the economy is having SHG inclusions but with that the NPAs levels is also increasing.

NABARD is continuously intruding in the workings of SHGs and providing continuous support in the form of trainings and capacity building programs to develop efficiency and better capability in the performance of SHGs which involves a lot of funds in sponsoring these programmes. The analysis conducted in this paper takes into consideration the relation between the capacity buildings programmes being organised and promoted by NABARD and its affect on NPAs. The study also tries to attain certain results in reference to the various training and capacity building programmes that which programmes empirically proving to be providing a support for reducing NPAs in SHGs.

NABARD is taking up various initiatives in reference to training and capacity building programmes but for the purpose of study following initiatives have been taken into consideration:

i. Bankers & Bankers Meet: Bankers represent the number of Banks associated with SHGs**.** They provide credit to SHGs based on their performance. They carry out various promotional programmes for credit structure. The number of associated banks in all the six regions have increased over the period of study. In 2014-15 number of banks in Northern Region was 38105 which increased to 53384 till 2019-20. In North Eastern Region it increased from 6963 to 11772 during the period of study. In Eastern region it increased from 122895 to 133879 and in Central region increased from 63262 to 91002 during 2014-15 to 2019-20. In western and Southern region number of banks were 38064 and 61134 respectively in 2014-15 which increased to 50181 and 83354 respectively in 2019-20.

The Bankers Meet also showed increased numbers during the period. It was 2412 and 1041 respectively in Northern Region and North Eastern Region which increased to 4100 and 1917 respectively during the period of study. The easter regions Bankers Meet increased from 9185 to 9786 and Central Region increased from 2989 to 4422 during this period. The Western region showed increase from 2572 to 3551 and Southern region showed increase from 6319 to 8939 over the period of study.

ii. SHG Leaders: Each of the Self-Help Group constitutes three office bearers i.e. President, Secretary and Treasurer. These office bearers are generally known as Group Leaders. These leaders are being selected from the group of SHG members only. These Leaders are generally required to keep the records of the group and attend the meeting and training programmes with the promoting institutions. The role of these leaders is also to motivate the group members and make them work following panchasutra.

The number of SHG leaders showed a tremendous increase during this period of study from 2014-15 to 2019-20. In Northern Region it increased from 55277 to 74699, in North Eastern Region it increased from 184216 to 209421 during 2014-15 to 2019-20. In Eastern Region it increased from 921527 to 1015147. In Central Region it increased from 207315 to 279548 during 2014-15 to 2019-20. In Western Region and Southern Region, the SHG Leaders numbers increased from 151056 and 382871 respectively to 185385 to 399111 during 2014-15 to 2019-20. The data clearly indicates that there are maximum number of SHG Leaders in the Eastern Region of the country but the maximum NPAs from SHGs are contributed from Southern Region.

iii. Trainers: Training of Trainers (TOT) programme

With the goal of training all rural bank managers, a series of Training of Trainers (TOT) programmes for Bankers, SRLM staff, DDMs & Officers are regularly held at BIRD, Lucknow. These trainers have further conducted training programmes of bankers in their respective regions during the year. The purpose of these trainings is to build in efficiency in work performance and develop an efficient system of running a SHG.

The number of Trainers in different regions during the period of study reflect some interesting figures. In Norther Region the number of Trainers did not change and remained to 180. In North Eastern Region there were 141 trainers during 2014-15 to 2018-19 but later increased to 161 in 2019-20. In Eastern Region in 2014-15, the number of trainers was 319 which increased to 414 in 2015-16 and remained the same for the rest of the period under study. In Central Region there were 976 trainers during 2014-15 to 2015-16 and later increased to 1391 which remained the same for the rest of the period under study. In Western Region it was 1487 for 2014-15 to 2015-16 and later increased to 1521 in 2016-17 and remained same till 2019-20. In Southern Region there was no change in the number of Trainers and remained 2088 trainer throughout the period of study. This Southern Region is the one having the highest NPA figures.

iv. Exposure Visits: These visits are being conducted with the motive of providing in hand experience and letting you learn while sharing the experiences. These visits are being promoted and sponsored by NABARD and mostly conducted by BIRD to provide exposure to the SHG leaders and members. With these visits the SHG Leaders and members get first-hand experience on efficiently forming and running a SHG and get to know how to face certain challenges kept arising from time to time.

The number of exposure visits in the Northern Region was 4187 in the year 2014-15, no new visits done in 2015-16 then in 2016-17 the total number reached to 5888 and in the next year i.e. 2017-18 reached to 6754. In the next two years there were no new visits conducted. In the North Eastern Region there were 327 visit, no new visit conducted in 2015-16. This number increased to 429 in 2016-17 and further to 705 in 2017-18. The number remained the same during 2018-20. Thus, no new visits conducted during the last two years of the study in this region. In Eastern region the number of visits conducted during the period increased from 1043 in 2014-15 to 2063 in 2018-19 and the number remained the same for 2019-20. In Central Region cumulative visits in the year 2014-15 were 746 which tremendously increased to 3846 in 2015-16. There were 3100 new visits conducted in Uttar Pradesh in this region. This number increased to 3995 in 2016-17 and further to 4329 in 2017-18 and later no new visits conducted.

In Western Region the Exposure visits increased from 2815 in 2014-15 to 5293 in 2016-17. This number remained same till 2019-20. In the Southern region number of visits were 1582 in 2014-15 which increased in the year 2017-18 to 1871 and after that remained the same.

v. Micro Enterprise Development Program (MEDP): MEDPs are on-location skill development training programmes which attempt to bridge the skill deficits or facilitate optimization of production activities already pursued by the SHG members. Grant is provided to eligible training institutions and SHPIs to provide skill development training in farm/off-farm/service sector activities leading to establishment of micro enterprises either on individual basis or on group basis.

Till 2014-15 there were 31030 MEDPs organised in the Northern Region which increased to 46335 in the year 2019-20. In the North Eastern Region the number of MEDPs increased from 13155 to 23052 during the period of study. In the Eastern region the number of MEDPs high being 83585 in 2014-15 which cumulated to 113794 till 2019-20. In the Central Region, the number of cumulative MEDPs till 2014-15 were 33743 which increased to 43144 till 2019-20. In western Region the number increased from 47004 to 66354 during the period of study. The Southern region recorded the greatest number of MEDPs, the cumulative number was 114289 in 2014-15 which increased to 145951 till 2019-20. This is also the region having highest NPAs.

vi. NGOs & NGO Meets: NGOs are being considered as a Self Help Promotion Institutions (SHPI) with a special task of promoting, building-up and monitoring the SHGs. Many studies reveal that the groups promoted by NGOs are relatively better than other Agencies ***(Priya Basu 2006: Veera Shekhappa, ET, al 2009).*** NGOs link SHGs through a linkage program for the delivery of microcredit. NGO help group members to develop saving habits and they play an important role in promoting leadership qualities through skill training programmes. They also facilitate as an intermediate in initiating the right enterprises and technical skills to SHGs.

The number of NGOs witnessed a tremendous increase in all the six regions of the country, and this is being one of the key drivers for SHGs. In Northern Region the number of associated NGOs increased from 13245 to 17854, in North Eastern Region it increased from 5628 to 7298 and in Eastern Region this number increased from 70493 to 73867 during the period of study. The Central region had 24255 NGOs in 2014-15 which increased to 32431 till 2019-20. In Western Region this number increased from 6449 to 9250 during the period of study. The number of NGOs increased from 7923 to 8800 in the Southern region during 2014-15 to 2019-20. The Eastern Region has the highest number of associated NGOs and the NPAs are comparatively low in this region.

vii. Government Officials: The Government officials are specifically designated officials responsible for directly associating with SHGs for their promotion and capacity building.

The Government Officials are relatively high in the Northern Region as compared to other regions. The number of associated Government Officials were 30154 in the Northern Region in 2014-15which increased to 30228 in 2015-16 and remained the same during the remaining period of study. In the North Eastern Region the number increased from 7493 to 8502 from 2014-15 to 2019-20. In the eastern region this number was 15817 in 2014-15 which increased to 16020 in 2015-16 and remained the same for the rest of the period under study. In the Central region the number of associated Government Officials increased from 7851 in 2014-

15 to 9971 in 2017-18 and remained same after that till 2019-20. In Western Region this number increased from 2390 to 2508 between 2014-15 to 2019-20. In the Southern Region there in no change in the associated numbers of the Government Officials, it remained to 9827 during the whole period of study.

Research Methodology

The panel data in the study is analysed using fixed effect model and Random effect model. By using a fixed effect model, we have tried to explore the relationship between the predictors and outcome variable within a group i.e. region. The fixed effect model removes the impact of time invariant characteristics so that we can get the results of the effect of predictors on outcome variables.

Fixed Effect Regression Model

$$Y_{it}=\beta 1X_{1,it}+\cdots+\beta_k X_{k,it}+\alpha_i+u_{it}$$

Where,
αi (i=1….n) is the unknown intercept for each entity (n entity-specific intercepts).
Y_{it} is the dependent variable (Log of NPA) where i = region and t = year.
X_{it} represents one independent variable (i.e, Bankers, Trainers, NGOs, Govt. Officials, SHG Leaders, Exposure visits, MEDP, Bankers Meet, NGO Meet),
β_1 is the coefficient for that independent variable,
u_{it} is the error term

Random Effect Regression Model

$$Y_{it}=\beta 1X_{1,it}+\cdots+\beta_k X_{k,it}+\alpha_i+u_{it}+e_{it}$$

Where
α_i (i=1….n) is the unknown intercept for each entity (n entity-specific intercepts).
Y_{it} is the dependent variable (Log of NPA) where i = entity and t = time.
X_{it} represents one independent variable (i.e, Bankers, Trainers, NGOs, Govt. Officials, SHG Leaders, Exposure visits, MEDP, Bankers Meet, NGO Meet),
β_1 is the coefficient for that independent variable,
u_{it} is between entity error
e_{it} is within entity error

Model Evaluation

The fixed effect model applied here is to evaluate the regression coefficients significance by t -test and to examine the model goodness of fit by Akaike Criterion Information (AIC).
The random effect is also applied and a hausman test is applied to see the better application.

Table 1: Summary Statistics, using the observations 1:1 - 6:6

Variables	Mean	Median	S.D.	Min	Max
NPA	72200	37800	77800	8480	292000
Bankers	72300	62200	64700	6960	380000
Trainers	929	695	750	141	2090
NGOs	22900	11200	23500	5630	73900
Government Officials	12600	9830	8920	2390	30200
SHG Leaders	339000	208000	302000	55300	102000
Exposure Visits	3000	2060	2040	327	6750
MEDP	65100	46700	41000	13200	146000
Bankers Meet	4730	3580	2850	1040	9790
NGO Meet	5690	3490	5500	959	17600

As the data, we have micro data with 6 years and 6 cross section entities.

Table 2: Model 1: Fixed-effects, using 36 observations
Included 6 cross-sectional units
Time-series length = 6
Dependent variable: l_NPA

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Constant	8.92893	0.389554	22.92	<0.0001	**
Bankers	−1.39412e-06	8.22398e-07	−1.695	0.1048	
Trainers	0.00112466	0.000314374	3.577	0.0018	**
NGOs	8.52718e-06	1.46600e-05	0.5817	0.5670	
Govt Officials	5.02288e-05	1.47003e-05	3.417	0.0026	**
SHG Leaders	9.90354e-07	2.12704e-06	0.4656	0.6463	
Exposure Visits	−0.000188850	7.59041e-05	−2.488	0.0213	**
MEDP	−3.26556e-06	8.55017e-06	−0.3819	0.7064	
Bankers Meet	0.000198410	0.000147495	1.345	0.1929	
NGO Meet	−8.36930e-05	0.000129026	−0.6487	0.5236	

Mean dependent var	10.72015		S.D. dependent var	0.949413
Sum squared resid	0.974561		S.E. of regression	0.215424
LSDV R-squared	0.969109		Within R-squared	0.968095
LSDV F(14, 21)	47.05798		P-value(F)	1.17e-12
Log-likelihood	13.88538		Akaike criterion	2.229233
Schwarz criterion	25.98202		Hannan-Quinn	10.51959
Rho	−0.124004		Durbin-Watson	1.962967

The P value of the predictors (Trainers, Govt officials, Exposure visit) have P value less than 5 percent, hence have significant impact on outcome variable (NPA). The Rho value at -0.124 shows that there is 12.4 percent variance across regions. The P value from the above table showed that the model is significant at 1 percent.

Distribution free Wald test for heteroskedasticity -
Null hypothesis: the units have a common error variance

Asymptotic test statistic: Chi-square (6) = 3763.72, with p-value = 0
The Wald test for heteroskedasticity with P value less than 0 percent, infers that there is presence of heteroskedasticity.

Table 3: Model 2: Random-effects (GLS), using 36 observations
Using Nerlove's transformation
Included 6 cross-sectional units
Time-series length = 6
Dependent variable: l_NPA

	Coefficient	*Std. Error*	*Z*	*p-value*	
Constant	8.75766	0.351078	24.95	<0.0001	***
Bankers	−1.29654e-06	7.57946e-07	−1.711	0.0872	*
Trainers	0.000956699	0.000265160	3.608	0.0003	***
NGOs	7.82031e-06	1.36397e-05	0.5734	0.5664	
Govt Officials	4.78315e-05	1.35775e-05	3.523	0.0004	***
SHG Leaders	1.89716e-06	1.87317e-06	1.013	0.3112	
Exposure Visits	−0.000141605	6.19963e-05	−2.284	0.0224	**
MEDP	−2.71916e-06	7.95709e-06	−0.3417	0.7326	
Bankers Meet	0.000266597	0.000125562	2.123	0.0337	**
NGO Meet	−0.000160995	0.000106080	−1.518	0.1291	

Mean dependent var	10.72015		S.D. dependent var	0.949413
Sum squared resid	1.398487		S.E. of regression	0.227587
Log-likelihood	7.384511		Akaike criterion	5.230979
Schwarz criterion	21.06617		Hannan-Quinn	10.75788
rho	−0.124004		Durbin-Watson	1.962967

'Between' variance = 0.0261772
'Within' variance = 0.0270711
theta used for quasi-demeaning = 0.61657
Joint test on named regressors -
Asymptotic test statistic: Chi-square (9) = 729.249
with p-value = 3.55325e-151
To check whether there is inter-group (or inter-region) dependence, we have applied the BP test.

Breusch-Pagan test –

Null hypothesis: Variance of the unit-specific error = 0
Asymptotic test statistic: Chi-square (1) = 1.26585
with p-value = 0.260547

The P Value is greater than 5 percent, which rejects the interdependence across groups or regions. The P value of the predictors (Bankers, Trainers, Govt officer, Expert visit and Govt Mt) have P value less than 5 or 10 percent, hence have significant impact on outcome variable (NPA). The Rho value at -0.124 shows that there is 12.4 percent variance across regions, which is equal to the fixed effect model result. The P value from the above table showed that the model is significant at 1 percent.

The model goodness of fit by Akaike Criterion Information (AIC) for fixed effect model is 2.23 and model goodness of fit by Akaike Criterion Information (AIC) for random effect model is 5.23, which can infer that fixed effect model is better explaining impact of likelihood of convergence of model.

Further, to examine whether the fixed effect or random effect model is to be selected to explain the relationship and impact of predictors on outcome variables, we have computed the Hausman test.

Hausman test –

Null hypothesis: GLS estimates are consistent
Asymptotic test statistic: Chi-square (5) = 3.03154
with p-value = 0.695124

Since the P value is greater than 0.05, it can be concluded that the Random effect model is best in explaining the panel regression model. Although the Hausman test result preferred the fixed effect model better than random effect model, the coefficient of variables in a panel data with limited time periods are biased, which is called Hurwicz type. This bias can be reduced as the time is increased (Nickell, 1981).

FINDINGS

The empirical result of the regression analysis under the Random Effect Model finds bankers, trainers, government officials, exposure visits and bankers meet as the significant variables in relation with NPAs whereas SHG Leaders, MEDP, NGO and NGO meets are insignificant variables. It implies that SHG Leaders, MEDP, and NGOs and NGO meets are not significantly related with NPAs so in other terms it can be said that these variables are not much responsible for increasing NPAs. However, significant variables like bankers, trainers, government officials, exposure visits and banker meets are significantly related with NPAs.

Further, Bankers and exposure visits have negative relation with NPAs and trainers, government officials and bankers meet have positive relation with NPAs.

The positively related predictors concluded that an increase in their numbers will increase the NPAs. Therefore as per the results, an increase in the number of trainers, government officials and bankers meet are the initiatives which are not much effective in controlling the increasing level of NPAs. On the contrary bankers and exposure visits are negatively related, so these initiatives can be promoted as a tool to control NPAs.

The model can be provided as follows:

NPA = 8.757 – 1.29654 (Bankers) + 0.00095 (Trainers) + 4.78315 (Government Officials) – 0.00014 (Exposure Visits) + 0.00026 (Bankers Meet).

The insignificant factors here in the study is rather also important as the analysis concludes that the predictors which are insignificantly related, or in other terms the factors that are not significantly related are not much affecting the NPAs. Let's take NGOs into consideration which is one of the insignificant variables as per the empirical results. The dataset indicates that the number of SHG associated NGOs are continuously increasing and the number of SHGs promoted through NGOs are also increasing. This in turn concludes that SHGs promoted through NGOs are contributing less in NPA and are better performing in this respect. Many studies reveal that the groups promoted by NGOs relatively perform better than other Agencies ***(Priya Basu 2006: Veera Shekhappa, ET, al 2009)***. In the same way other insignificant variables like SHG Leaders and MEDP initiatives are also not significantly related though their numbers are increasing continuously.

CONCLUSION

The findings of the empirical study concluded that out of nine support and capacity building initiatives undertaken by NABARD five variables have been found significant. Both Fixed Effect Model and Random Effect Model have been applied and with the help of Hausman Test it has been concluded that Random Effect Model is better explaining the relationship. The significant factors are bankers, trainers, government officials, exposure visits and banker meet. The insignificant variables are NGOs, NGO Meet, SHG leaders and MEDP. The important aspect of the study is that the insignificant variables are playing important role in the study. Thus, the results reject the Null hypothesis and accept the Alternate hypothesis. The Breush-Pagan Test has been applied, concluding that there is no interdependence of NPAs in different regions. The findings of the study can be used by the policy makers and the government for adopting strategies towards controlling the increasing volume of NPAs in SHGs.

Limitations and Scope of Further Research

The selected panel data being effectively described by fixed effect model, signifies that fact that panel data has correlated regressors and error terms. It assumes that the individual group slopes and variances are constant. The fixed effect also is applicable in the scenarios where the sample units are selected and not random drawing from populations. The fixed effect model has a tendency to lose degrees of freedom due to the dummy variables for cross

sectional units. For the same, a random effect model is applied. Lastly, the computationally decision to accept the results between fixed effect model and random effect model, Hausman test is applied.

Apart from factors considered in this study for effectively reducing NPA, further analysis can be done by exploring the NPA management techniques adopted by banks and financial institutions like evaluating risk profile of borrowers using CIBIL score, corporate debt restructuring, dispute resolution through lok adalats and debt tribunals, and taking actions as per Insolvency and Bankruptcy Code (IBC).

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