

# Impact of MGNREGA on Livelihood Security of Rural Households: A Case Study in Bankura district of West Bengal State, India

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## Abstract

This paper has examined the changes in the households' income and employment pattern and has assessed the impact of MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) -a social-security scheme for the rural poor households launched by India Government (2005). This study refers to an exhaustive survey in three villages in Bankura district, West Bengal, India covering 100 households during the year 2011-12. The impact of MGNREGA focusing employment security, income generation, and its governance and future perspectives were dealt in the study. It was found that MGNREGA covered all poor sections of the rural society irrespective of castes, genders or social orders. It was also observed that this project enhanced income as well as savings of rural households. Further, it was noticed that MGNREGA has created rural employment opportunities.

**Keywords:** MGNREGA, Social-Security Scheme, Employment Security, Rural Resource Management, Sustainability

In India, the problems of unemployment and poverty have always been major obstacles to economic development. Like many other developing countries, underemployment and disguised employment are the important phenomenon of unemployment which crippled the rural economy in India. Even during the period of good harvest, the Indian farmers who constitute the major chunk of population are not gainfully employed for the entire year. A part of the urban workforce in India is also subjected to underemployment. Mass migration from rural to urban regions mainly in search of job opportunities is adding to the problems of unemployment and poverty in the country. Therefore, reduction of unemployment and arrest of mass migration has been one of the major objectives in every economic planning for the growth and development of the country. To counteract the problems of unemployment and poverty, the Government had launched various schemes and employment programs of which MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is the first ever law internationally, that guarantees wage employment at an unprecedented scale.

The MGNREGA has some salient features such as: (i) It is a cross-cutting program of reducing poverty by providing employment and income to the poorest in the rural areas, (ii) It provides legal rights to employment, (iii) It provides wages to men and women and thus empowers women socially and economically, (iv) It is open to all rural households, irrespective of their farm-size, household-type, caste and religion, (v) It enhances the bargaining power of poor men and women in the labour market by providing statutory minimum wages.

Thus, MGNREGA fosters conditions for inclusive growth ranging from basic wage security and recharging rural economy to a transformative empowerment process of democracy. Providing employment to the rural poor, enhances their livelihood security by increasing their earnings as well as the expenditure and thereby improves their standard of living. Keeping the ambitious motive of the world's largest poverty alleviation program in mind, a modest attempt is made in this study to assess the impact of MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) on livelihood security of its participants and to what extent the scheme has been successful in achieving its objectives, in Bankura District of West Bengal.

### **Objective**

This study purports to examine the impact of MGNREGA on socio-economic development of rural households in terms of employment, income, expenditure and savings. Similarly, it seems worthwhile to evaluate the impact of the programme on creation of durable assets and development of rural infrastructure. Assessment of constraints and problems faced by the MGNREGA participants and the local implementing agencies seems to be a worthwhile exercise.

### **Materials and Methods**

The present study is addressed to Bankura District of West Bengal which was declared as one of the country's 250 most backward districts out of 640 districts. Besides, it is one of the 11 districts of West Bengal receiving funds from Backward Regions Grant Fund Program (BRGF). A complex agro-Climatic condition described as hot summer, poor rainfall, and undulated land situation with peculiar hydrology-soil combination has greatly influenced the farming system of this district. Poor intensity of cropping (140.88%) indicates that agriculture is becoming a less remunerative enterprise that makes the area ideal for the study. Moreover, this district was covered during the first phase of implementation of MGNREGA for the study of socio-economic impact of that program on rural households.

One block namely, Chhatna has been selected from a total number of 22 blocks contained in the district by Simple Random Sampling Without Replacement (SRSWOR). Out of 13 panchayets in the block, Gosergram panchayet has been chosen by the same method employed in the selection of the block. Three villages namely, Hansapahari, Sheolipahari and Dalpur have been selected by SRSWOR. A total number of 100 respondents, the ultimate sample unit, all of which are MGNREGA participants has been chosen randomly according to the proportionate distribution of total population registered under that scheme in 3 selected villages. The distribution of samples among the three villages is shown in Table-1.

**Table 1:** Distribution of Sample Households in Selected Villages in Chhatna Block of Bankura District, West Bengal

Sample Villages	Number of Respondents
Hansapahari	28
Sheolipahari	37
Dalpur	35
Total	100

The primary data have been collected from the selected respondents on the basis of personal interrogation with an intensive investigation during the period November 2011 to February 2012. Secondary data which are relevant to the study have been collected from different sources like, Final Report on Extent of Decentralization of Local Planning and Finances in West Bengal by Planning Commission, SER Division, Government of India, New Delhi, and websites: [www.negra.nic.in](http://www.negra.nic.in) and [http://bankura.gov.in/sonamukhi\\_kvkdistrict\\_profile.html](http://bankura.gov.in/sonamukhi_kvkdistrict_profile.html).

For the purpose of analysis the following statistical methods have been used in this study:

#### Paired t-test

A comparison between the periods before and after joining the MGNREGA with respect to means  $\mu_1$  and  $\mu_2$  has been attempted to test  $H_0 (\mu_1 = \mu_2)$  with the test statistic

$$t = \frac{\bar{d}}{[s_d / \sqrt{n-1}]} \text{ with } (n-1) \text{ d.f.}$$

\_ k \_

Where,  $d_i = (x_{2i} - x_{1i})$ ;  $d = \sum d_i/n$ ;  $s_d = \sqrt{[\sum (d_i - d)^2 / (n-1)]}$  and  
 $i = 1$

$n$  = Number of paired observations.

#### Linear Discriminant Analysis (LDA)

To identify the factors discriminating the cases between two groups viz., 0(low performing group) and 1(high performing group), the Linear Discriminant Analysis (LDA) has been used with the following prediction equation.

k

$$Z = \sum \lambda_i \cdot Z'_i$$

$i = 1$

Where,  $Z'_i$  represents  $i^{\text{th}}$  factor and  $\lambda_i$  is determinant co-efficient of the  $i^{\text{th}}$  factor and  $Z$  represents a dummy variable (1= high performers i.e.  $\geq 20\%$  increase in income, 0 = low performers i.e.  $< 20\%$  increase in income).

Twelve variables considered for the study are Education ( $x_1$ ), Cultivated area in acres ( $x_2$ ), Family size ( $x_3$ ), Land-man ratio ( $x_4$ ), Farm income in rupees ( $x_5$ ), Non-farm income in rupees ( $x_6$ ), Total consumption expenditure in rupees ( $x_7$ ), Total savings in rupees ( $x_8$ ), Total man days under MGNREGS ( $x_9$ ), Values of total assets in Rupees ( $x_{10}$ ), Expenditure on FPS as % to total income ( $x_{11}$ ) and Expenditure on FPS as % to total expenditure ( $x_{12}$ ).

Normality of populations is the primary requirement as this assumption warrants for precise estimation of probabilities and subsequent test of significance. But it is very difficult to get such data from the field level. To tackle this problem the whole sets of data have been transformed into standard normal variates:

$$Z'_i = [ x_{ij} - \text{mean}(x_i) ] / \text{standard deviation}(x_i); \text{ for } i = 1, 2, \dots, k \text{ and } j = 1, 2, \dots, n.$$

To test the discriminating power of the function, the test statistic (T.S):

$$\text{T.S.} = \frac{n_1 n_2 (n_1 + n_2 - k - 1)}{K (n_1 + n_2) (n_1 + n_2 - 2)} \times D^2$$

Where,  $D^2$  is the Mahalanobis function and obtained as

$$D^2 = \sum_{i=1}^k \lambda_i \cdot d_i ; d_i \text{ is the difference between the means of } X_i$$

Let,

$S_{ij}$  is the variance-covariance matrix

$\lambda_i$  is the determinant function co-efficient, and

$n_1$  and  $n_2$  are sample sizes

The  $\lambda$ 's are obtained by solving the system of equations

$$(\lambda_i) (S_{ij}) = d_i$$

The test statistic follows F distribution with  $k$  and  $(n_1 + n_2 - k - 1)$  degrees of freedom

### Multiple Regression Analysis

The structural stability between each of savings and income has been studied with a view to find out whether the aggregate relationship has changed between the periods i.e. before and after joining the scheme. The following regression equation has been employed to study the variations in the level of savings to change in income.

$$Y_i = \alpha_1 + \alpha_2 D_i + \beta_1 X_i + \beta_2 (D_i X_i) + U_i \dots \dots \dots (1)$$

Where,

$Y_i$  = Savings in rupees

$X_i$  = Income in rupees

$U_i$  = Disturbances

$D_i = \{1, \text{ for the first period}$   
 $0, \text{ for the second period}\}$

Assuming,  $E[u_i] = 0$ , from (1) it can be derived,

$$E[Y_i / D_i = 0, X_i] = \alpha_1 + \beta_1 X_i, \dots\dots\dots(2)$$

$$E[Y_i / D_i = 1, X_i] = (\alpha_1 + \alpha_2) + (\beta_1 + \beta_2) X_i \dots\dots\dots(3)$$

Equations (2) and (3) represent the mean functions of the first and second period, respectively. In equation (1),  $\alpha_2$  is the differential intercept and  $\beta_2$  is the differential slope coefficient, indicating by how much the slope coefficient of the first period's function differs from the slope coefficient of the second period's function.

Similar analysis has been done to study such variation in case of expenditure-income and asset income relationship.

### Henry Garrett Ranking

Constraints and problems faced by the participants have been prioritized by Garrett's Ranking Technique in the following manner:

$$\text{Percentage position} = \frac{100 (R_{ij} - 0.50)}{N_j}$$

Where,

$R_{ij}$  = Rank given for the  $i^{\text{th}}$  item by the  $j^{\text{th}}$  individual and

$N_j$  = Number of items ranked by the  $j^{\text{th}}$  individual.

The percentage position of each rank was converted into scores using Garrett table. For each constraint, scores of individual respondents were added together and were divided by total number of respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in the descending order.

### Results and Discussion

The results obtained from the analysis of data and brief discussions on each finding are presented as follows according to the set objectives.

The main thrust of MGNREGA is to increase the involvement of the backward classes and women in income augmenting activities. The apathy and sluggishness of this section in adopting such activities are often held with socio-economic considerations. The socio-economic features of the respondent households have been studied in the sample areas.

**Table 2:** Number of Respondents Belonging to Different Social Categories in the Sample Villages

Classes	Men	Women	Total	ST	SC	Others	Total	BPL cardholders
Participants(N=100)	64	36	100	49	44	7	100	83

It is clear from the Table-2 that MGNREGS has given opportunities for all classes of people and no gender or caste discrimination was seen. Eighty three (83) respondents out of 100 were BPL card holders which elaborates the emphasis of the scheme on the poorest of the poor.

Table-3 indicates that the average man-days of employment per year were found to be increased from 165.4 days to 222.5 days after the implementation of MGNREGS, reflecting 34.5 % increase over the base level. Similarly the average number of labour force per family, which was 2.0, also increased to 2.3 members after the implementation of MGNREGS in case of participant households reflecting the percentage increase of 15 %. The reason may be that the participation of more women and aged family members who fail to seek employment elsewhere in the scheme works. The average annual wage income earned by participant households also increased from ₹ 19450.25 before MGNREGS to ₹ 24119.42 after MGNREGS implementation with a 24% increase.

**Table 3:** Wage Employment Details of Sample Respondents

Particulars	Participants (N=100)	
	Before	After
Average man- days of employment per year	165.40	222.5 (34.5)
Average number of labour force per family	2.00	2.3(15.00)
Average annual wage income earned (₹)	19450.25	24119.42(24.00)

*Note:* Figures in parentheses indicate percentage increase in person days, number of persons working and annual wage income earned by the participants after the implementation of MGNREGS

It is revealed from Table-4 that, the average consumption expenditure of respondent households after joining the scheme was observed to be ₹ 23056.47 per household per year. The expenditure on education has increased and food expenses decreased after the successful implementation of MGNREGS. Increase in expenditure on all items was observed after the joining of MGNREGA.

**Table 4:** Consumption Expenditure of the Sample Respondent Households

(₹ /household/annum)

Particulars	Before	After
Food items	12769.33 (55.38)	13221.82 (65.00)
Cloth	3458.01 (17.00)	5000 (21.68)
Education	1830.71 (9.00)	2500 (10.84)
Health	1017.06 (5.00)	2100 (9.10)
Others	813.65 (4.00)	686.87 (2.97)
Total	20341.27 (100.00)	23056.47 (100)

*Note:* Figures in parentheses indicate percentage to the total

The average amount of savings made in SHGs was ₹ 1931.22 and ₹ 2310.00 before and after participating in the scheme respectively indicating slight increase in the amount of savings as shown in Table 5.

**Table 5:** Savings Details of the Sample Respondents

(₹/household/annum)

Particulars	Before	After
Number of sample households being members of SHGs	65	85
Savings made in SHGs (₹)	1931.22	2310

The Discriminant Function in order to study the factors affecting the increase in income of some of the respondents group is presented in Table-6. Non-farm income (in INR) was found to be the most discriminating factor among the twelve variables considered for this study, followed by total consumption expenditure (in INR), farm income (in INR), expenditure on FPS (Fair Price Shop) as % to total income, expenditure on FPS as % to total expenditure, total savings (in INR) and total man-days under MGNREGS. Hence, non-farm income mostly from the wage income from MGNREGS and other source contribute the maximum to the increase in total income.

**Table 6:** Factors Responsible for Increase in Income Among Sample Households (Discriminant Analysis result)

Discriminating variables ( $x_i$ )	Discriminant Coefficient ( $\lambda$ )	Mean		d(0-1)	$\lambda \times d$	% Contribution
		(0)	(1)			
Education( $x_1$ )	-0.218	1.120	1.241	0.115	-0.025	0.000
Cultivated Area (acre) ( $x_2$ )	0.338	1.080	1.025	-0.061	-0.021	0.000
Family size (number) ( $x_3$ )	0.090	4.180	3.726	-0.458	-0.041	0.000
Land-man ratio( $x_4$ )	0.750	0.270	0.373	0.096	0.072	-0.000
Farm income (Rupees) ( $x_5$ )	3.996*	5943.130	2642.581	-3300.550	-13189.00	82.540
Nonfarm income (rupees) ( $x_6$ )	6.385*	24570.520	14265.097	-10305.40	-65800.20	411.820
Total Consumption expenditure (rupees) ( $x_7$ )	-5.447*	28157.340	16803.806	-11353.50	61842.710	-387.050
Total Savings (rupees) ( $x_8$ )	-0.944*	2356.080	409.687	-1946.400	1837.399	-11.490
Total man days under MGNREGS (days) ( $x_9$ )	0.511	39.970	33.355	-6.619	-3.382	0.020
Values of total assets (rupees) ( $x_{10}$ )	-0.085	296342.110	304140.320	7798.217	-662.848	4.140
Expenditure on FPS as % to total income ( $x_{11}$ )	-2.763*	3.290	6.605	3.315	-9.158	0.050
Expenditure on FPS as % to total expenditure ( $x_{12}$ )	2.414*	3.520	6.280	2.755	6.650	-0.040
Total						
N		100				
Wilk's lambda value		0.536				
Chi-square		38.074				
Percentage of group correctly classified		82.6%				

Note: \*significant at 5% probability level

Table 7 represents the impact of MGNREGS on some important economic aspects of sample households in the area under study. A positive impact on income and expenditure has been observed in the sample households but no such effect was seen in savings. It implies that the participating households are probably spending their additional income on improvement of their quality of life.

**Table 7:** Comparison of Socio-Economic Situations of the Sample Households Before and After Joining MGNREGS

Particulars	Average Annual Income	Average Annual Expenditure	Average Annual Savings
Before	19450.21	20341.27	-2277.14
After	24119.42	23056.47	3786.33
Paired t-statistics	5.16**	9.37**	0.009

Note: \*\* significant at 1% probability level

The impact of MGNREGA can be seen by examining the functional relationships where dependent variable is influenced, not only by the variable which can be readily quantified on well-defined scale (income), but also by the variable which is qualitative in nature (two periods- before and after joining the scheme). To estimate the effect of change of income on the level of savings or expenditure or assets accumulation a regression procedure has been followed.

**Table 8:** Linear Regression Analysis: Relationship between some Economic Variables and Income

Estimators	Coefficients			Standard Error			t-statistics		
	S	E	A	S	E	A	S	E	A
$\alpha_1$	-4986.6	6423.70	-0.08	803.04	911.30	25536.93	-6.21**	7.05**	0.00
$\alpha_2$	1485.45	-4636.03	-3287.9	927.00	1377.55	38602.60	1.602	-3.36**	-0.68
$\beta_1$	0.21	0.72	-8.58	0.002	0.04	1.05	7.24**	19.19**	0.00
$\beta_2$	-0.04	0.17	9.47	0.037	0.05	1.46	-1.04	3.32**	6.50**
$R^2_{adj}$	0.32	0.88	0.46						
F-ratio	20.62**	324.40**	39.90**						
D.F.	(3,196)	(3,196)	(3,196)						

Note: \*\* significant at 1% probability level

Table- 8 reveals that income has a significant effect in the determination of the extent of savings of the sample members. But the non-significant value of  $\alpha_2$  (1485.45) postulates that saving function of two periods in relation to the income of the sample participants have same slope and same intercepts. It can be stated that the mean savings of the sample members after joining MGNREGA is not different from that of before joining the scheme with the change in income. This is due to the fact that the stakeholders spend the additional income on the welfare of their family. That can be substantiated by the significant value of  $\alpha_2$  (-4636.03) in case of expenditure-income relationship. In other words, it can be said that the sample participants are interested to improve the quality of their life with the additional income earned from the MGNREGS.



**Table 9:** Problems and Constraints Faced by the MGNREGS Participants (Henry Garrett Ranking)

Si. No.	Problems and Constraints	Total Score	Mean Score	Rank
1.	Not sufficient works: less man days than their demand	1628	54.25	I
2.	Lack of proper knowledge of the program	834	27.80	II
3.	Political interference	734	24.46	III
4.	Lack of unity among the beneficiaries for grievance redresses	346	11.53	IV
5.	Lack of transparency in execution in local implementing agency	233	7.76	V
6.	Delayed wage payment	207	6.88	VI
7.	Inconvenient mode of payment(bank)	112	3.73	VII
8.	Not getting work in needed time	80	2.66	VIII
9.	Inadequate work-site facilities(first aids)	31	1.03	IX
10.	Improper wage cuts	27	0.90	X

It is observed from Table-9 that the major problems faced by the beneficiaries are inadequate works, political interference, lack of proper knowledge, lack of unity among the villagers for grievance redresses, lack of transparency in the local implementing agency, delayed wage payment, inconvenient mode of payment, inadequate worksite facilities especially first aids and undue wage cuts. Each registered household is rightfully entitled to get 100 days of employment in a particular financial year but none of the respondents have got it. The reason when surveyed was found out to be lack of the detail knowledge of the Act, inadequate works allotment and lack of harmony and unity among the participants for jointly addressing their demands which was due to some political elements involved.

### Conclusion

There was no discrimination of caste and tribes and genders in the implementation of the scheme. The average man-days of employment per year were increased by 34.5% after joining MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme), average number of labour force per family increased by 15%. The average annual income of the respondents was increased to about 24% after joining the scheme, average annual consumption expenditure were also found to increase by about 14%, but there was no significant change in savings due to MGNREGS.

The factors responsible for increase in income were found to be non farm income followed by total consumption expenditure, farm income, and expenditure on FPS (Fair Price Shop) as percent to total income, Expenditure on FPS as percentage to total expenditure, total savings and total man-days under MGNREGS.

Inadequate works, political interference, lack of proper knowledge, lack of unity among the villagers for grievance redresses, lack of transparency in the local implementing agency, delayed wage payment, inconvenient mode of payment, inadequate worksite facilities especially first aids and undue wage cuts were some of the major problems faced by the sample respondents. Hardships faced by the local implementing agencies were low competence of Panchayat personnel, weak convergence of MGNREGS with other developmental departments that has led to inadequate technical support from concerned departments, delay in payment to beneficiaries due to delay in writing the Measurement Book by the concerned Engineers from block office, interest shown by beneficiaries only in attending to the works undertaken for wage, but not in performing the work satisfactorily, internet problems also hinder the work of updating MIS (Management Information System) in Gram Panchayets.

Thus, the livelihood security for the resource poor's can be ensured by providing technical and professional guidance with the execution of need based and production oriented programmes. Emphasis should also be given on creation of awareness and motivation of the rural households towards the efforts given by the Government. Besides, regular monitoring and evaluation, institutional support for development of skills consistent to the aim of the programme need to be encouraged.

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