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What motivates to participate in an employment guarantee programme in India? A logit model analysis

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Abstract

The present study attempts to identify the factors that motivate participation of real stakeholders in the Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) in India. The study used primary data collected through personal interview schedule from the households of the tribal dominated district-Mayurbhanj of the state Odisha of India. By using a logit regression model it is found that the awareness, age, caste, years of education, household size, political affiliation and BPL card holding are positive predictors of participation in MGNREG Programme, whereas gender, per capita land holding, off-farm opportunities and annual family income are negative predictors of participation in the programme. Whereas, the divergence results found between the tribal and non-tribal community for the sample. Better targeting of the real stakeholders for active participation in the Programme is the central concern for policy makers.

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1. Introduction

Economic development and issues relating to it are important for both rich and poor countries of the world. While maintaining development is a matter of concern for the rich countries, accelerating the pace of development is indeed more pressing for the poor countries to ensure growth and justice. However, poor countries are plagued by skewed distribution and underutilisation of resources leading to poverty, illiteracy, unemployment, low consumption, low investment and the like. Development economists have often cautioned that unless poverty is eradicated, growth potential of an economy cannot be harnessed justifiably. The key to the redistribution of resources lies in the creation of employment opportunities for the poor. Employment induced growth is hailed as a demand driven approach to full employment. The post-depression reconstruction in the west stands testimony to this school of thought which is aptly guided by the Keynesian approach. There are arguments from diverse perspectives that support this approach to development. It can be firmly believed that mass employment programmes have the ability to enhance demand and get the economy out of the shackles of recession. Mass employment programmes can assist enhancing consumption smoothening linked welfare effects and promoting savings led investments, both private and public. As the consumption propensity is higher for the poor compared to that of the rich (Keynesian), this mode of redistribution of income may bring about improved market demand leading to increased economic activities, enhanced output, higher employment and so on. Besides, mass employment programmes are basically guided by welfare motives, a larger goal of societal importance. In developing countries, there are evidence of impoverishment, malnutrition and death on account of lack of alternative sources of livelihood. Policy induced rural work programmes can be considered as pragmatic efforts to generate non-farm employment opportunities to sustain consumption and income especially during the times of distress (Sen, 1981).

The Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) can thus be construed as a timely intervention. Even after six decades of India's independence, the country still fails to arrest abject poverty, illiteracy, malnutrition, social inequality and so on. A legally-binding rights-based programme of this kind is expected to bring about a turnaround in the rural economy by eradicating all the above social malice. MGNREGP can improve sustainable rural livelihoods through spill over effects thereby enabling the poor manage their risks and opportunities effectively. There is no denying of the importance of policy

and programme actions for employment generation to ensure food security amongst poor than direct food subsidy strategies (Von Braun, 1995).

2. An Overview and Performance of Mahatma Gandhi NREGP (MGNREGP)

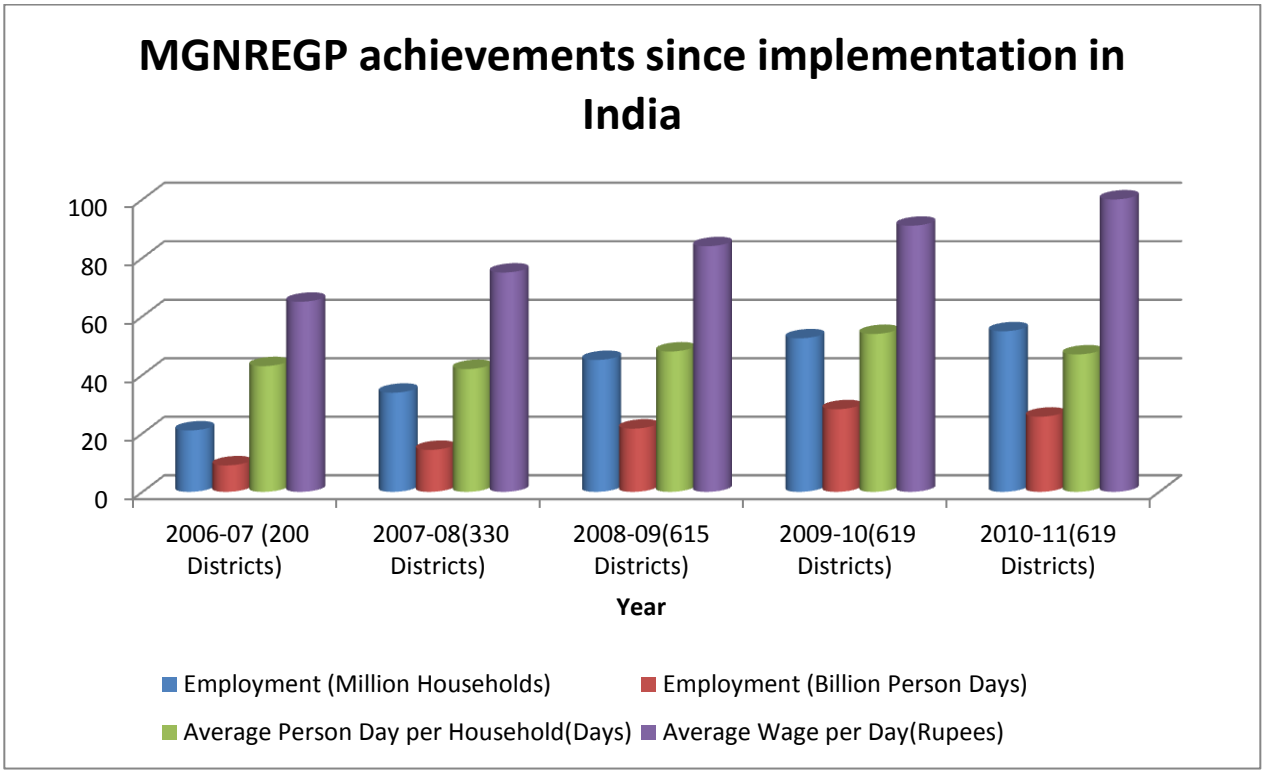
Government of India introduced the world's one of the largest development programmes in human history, the National Rural Employment Guarantee Scheme (NREGS). This flagship programme was enacted by the Government of India as the National Rural Employment Guarantee Act (NREGA) in September 2005. The NREGS came into effect, on a pilot basis, in February 2006 in 200 economically disadvantaged districts of the country. In the second phase of implementation, it was extended to 130 additional districts and the remaining districts were covered in the third phase on April 1, 2008. The programme was dedicated to the Father of the Nation from 2nd October 2010, the birth day of Mahatma Gandhi and since then it is known as MGNREGS. This social welfare programme is primarily intended to enhance the livelihood securities of the people in rural areas by supplementing wage employment opportunities to the unskilled labour force. The programme is in force with the intention that it would act as a strong safety net for the poor in the wake of lack of alternative employment opportunities. In an attempt to ensure the rural economy to grow, the scheme is expected to regenerate the rural natural resource base for sustainable livelihood by carrying out soil and water conservation activities. What is considered most crucial is the empowerment of the poor through the provision of a rights-based law. MGNREGA gives rise to programmes that develop not from its wilful benevolence, but as a legally binding response by the state to a right to work that is enshrined in law. The constraint of resources cannot thus be cited by the government as an excuse for failing to provide works (Ambasta et al., 2008) . Quality of works is central to the implementation of this programme. There is complete abolition of contractors from the implementation of MGNREGP, thereby getting rid of rampant corruption and labour exploitation that was in vogue in earlier schemes.

The other key attributes of this scheme are time bound guarantee, labour-intensive work, decentralised participatory planning, women's empowerment, work site facilities and above all, transparency and accountability through the provision of social audits and right to information. The unprecedented use of information technology in this programme is considered to bring about greater transparency through intensive monitoring and faster execution. The payment of wages

through bank and post office accounts is another innovative step that is likely to reduce fudging of the muster rolls on the part of the implementing agencies since the actual payments are beyond their reach. There is an effort to separate payment agencies from implementing agencies and thereby preventing embezzlement of wages (Vanaik and Siddhartha, 2008).

It may thus be inferred that MGNREG programme is just not a welfare initiative. It is a development effort that can take the Indian economy to a new trajectory. It has three distinct goals- protective, preventive and promotive. It protects the rural poor from vulnerabilities by providing them demand based employment. It prevents risks associated with agricultural investment and forced migration of the rural poor. It brings in buoyancy in rural economy via increased consumption demand. All these pertain to suggest that MGNREG programme can act as a growth engine by expanding rural resource base and integrating the rural economy with the rest. The achievements of MGNREGP are presented in Figure-1.

Figure 1. Achievements of MGNREGP since Implementation in INDIA



Source: www.nrega.nic.in

MGNREGP which has been adopted in India as a strategy of inclusive growth is alleged to have several shortcomings. Though it's effective and fare implementation at the grass root level may bring social equity and strengthen income resource base of the poor, the fruits of its

implementation are yet to be realised. The benefits of the program to the non-poor instead of the poor can exercise the former's economic power and contribute to the campaign funds of the major political parties in exchange for preferential treatment in welfare services (Jha et al., 2009).

Many researchers have pointed out that the major benefits of Employment Guarantee Scheme have been limited to certain geographical pockets in general and to certain groups of people in particular due to lack of awareness amongst the potential beneficiaries of the scheme (Ganesh Kumar et al., 2004). Since the blend of participation and welfare measures appear to enhance both organisational performance and quality of life (Summers and Hyman, 2005), the success of the MGNREGP depends largely on people's participation and creation of employment as an entitlement among the rural poor (Dreze, 2007; Roy et al, 2008). With this backdrop the present paper makes a modest attempt to enquire about the determinants of participation of tribal and non-tribal poor in MGNREGP and the impact of participation on their standard of living.

3. Empirical Model, Data and Methods

3.1. Data and Methodology

The present study is based on the primary data collected from Mayurbhanj district of the Indian state of Odisha to identify the factors that motivate participation of rural tribal poor in MGNREGP. Selection of the district is purposive as majority of tribal population lives in Mayurbhanj and also based on the performance indicators of MGNREGP in the state of Odisha of India. The multistage random sampling method was used to gather the information for this study. The population is of heterogeneous character in terms of race, sex and religion, but the sample is of homogeneous in character. It may be noted here that Mayurbhanj is one of the most backward districts in the state Odisha of India where a large proportion of the people belong to tribal and other socially and economically disadvantaged communities and it has been declared as the fully Scheduled district of the State Odisha. The tribes constitute 56.6 per cent of total population of the district, though the population of Mayurbhanj is only 6 per cent of the State's total population (GOO, 2008). Geographical remoteness, concentration of major tribal population, high rate of illiteracy, large forest area, poor marketability, agriculture based occupation are the key features of Mayurbhanj.

The data were collected for this study during February 2010 through personal interview by using administered and structured questionnaires. Using a multistage random sampling method, MGNREGP beneficiary and non-beneficiary households were selected in four stages (e.g. District, Blocks, Gram Panchayats and Households). In the first stage the Mayurbhanj district was selected for the study, in the second stage 5 blocks were selected according to the performance in MGNREGP, in the third stage Gram Panchayats are also selected according to the performance indicator and finally at the end households were selected at random from that Gram Panchayats. A sample of 164 beneficiaries and 98 non-beneficiaries was collected from 10 GPs of 5 Blocks from the Mayurbhanj district for this study. In this sample, 16 beneficiaries and 10 non-beneficiaries of the MGNREGP were interviewed at random from each Gram Panchayat of the Mayurbhanj district. So, 160 beneficiaries with additional 4 beneficiaries were interviewed from the 10 GPs of the district for the study. Likewise 98 non-beneficiaries from 10 GPs have been interviewed as a control group for the study instead of 100 non-beneficiaries. Due to time and cost constraint a sample of 262 were collected for the study.

3.2. Econometric Modelling

We assume that several socio-economic and political factors either hinder or help job seekers to participate in MGNREGP in this study. A logit regression analysis has been carried out to know the determinants of participation in MGNREGP. A dummy dependent variable assuming value one if a job seeker is participating and otherwise zero has been generated. For comparison purpose, the dummy variable tribal community have been generated. Explanatory variables selected are based on the assumption that the socio-economic status, level of awareness about MGNREGA and education of the job seekers along with several other attributes might influence whether a potential job seeker is participating or not in this programme. Variables used in this study are mostly binary response variables. The participation in MGNREGP is the dummy dependent variable and awareness, age, sex, caste, education, household size, per-capita land holding, off-farm opportunities, political factor, BPL card holding and household income are the explanatory variables in the model. Multicollinearity test has been carried out to see the existence of linear relationship among the explanatory variables. From the estimated result it is found that the problem of multicollinearity among the independent variables is not a serious concern (as VIF doesn't exceed 10 or tolerance exceeds 0.1 for the variables). So the explanatory

variables included in the model are free from multicollinearity. The detail description of the variables used in the model and collinearity diagnostics (Table-4) is given in the appendix.

Logit Model for Estimation:

$$\boldsymbol{Logit}\left(\boldsymbol{E}\left[\boldsymbol{Y_i}\middle|\boldsymbol{x_{1,i}},\ldots\ldots,\boldsymbol{x_{m,i}}\right]\right)=\boldsymbol{Logit}(\boldsymbol{p_i})=\ln\left(\frac{\boldsymbol{p_i}}{\boldsymbol{1-p_i}}\right)=\boldsymbol{\beta_0+\beta_1 x_{1,i}+\cdots+\beta_m x_{m,i}}$$

$$L_i=\ln(P_i/1-P_i)=\beta_1+\beta_2 Awareness+\beta_3 Sex+\beta_4 Age+\beta_5 SC+\beta_6 ST+\beta_7 OBC$$
$$+\beta_8 Edu+\beta_9 Land+\beta_{10} Offfarm\_opr+\beta_{11} Hsize+\beta_{12} Political+\beta_{13} BPL+\beta_{14} Income+u_i$$

4.Results and Discussion

4.1. Summary Statistics

Table 1. Summary Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
Participation	262	0.626	0.485	0	1
Awareness	262	0.435	0.497	0	1
Sex	262	0.885	0.319	0	1
Age	262	40.626	12.606	20	70
Tribal Community	262	0.541	0.499	0	1
Caste SC	262	0.260	0.439	0	1
Caste ST	262	0.542	0.499	0	1
Caste OBC	262	0.145	0.353	0	1
Years of Education	262	4.191	4.370	0	15
Per capita land holding(Acre)	262	0.291	0.472	0	4
Off-farm opportunities	262	0.092	0.289	0	1
Household size	262	4.344	1.728	1	10
Political affiliation	262	0.740	0.439	0	1
BPL card holder	262	0.702	0.458	0	1
Annual Income(Rupees)	262	9622.00	14864.85	490	146000

Source: Author's calculation

The summary statistics of the variables of key interest are discussed below (Table-1). Maximum variables used in the analysis are dummy binary response variables. The total number of respondents is 262. Out of total respondents 142(54.2%) are from tribal community and rest 120(45.8%) are from non-tribal community. The age of the respondents varies from 20 to 70 with the average of 40 years. The years of schooling ranges from 0 to 15 with the average of 4 years of schooling. The per capita land holding varies from 0.01 to 4 acres with the average land holding of 0.3 acres. The land holding size 0 indicates households having

no agricultural land for the cultivation. The household size varies from 1 to 10 with the average members of 4. The household's annual income varies from Rs.490 to Rs1, 46,000 with the mean income of Rs9,622.

4.2. Correlation Analysis

The correlation analysis shows that, the variables awareness, age, caste ST and OBC, household size, political affiliation and BPL card holding are positively related to participation in the programme, whereas sex, caste SC, years of education, per capita land holding, off-firm opportunities and annual income are negatively related to participation in MGNREGP(Table-2).

Table 2. Correlation Coefficient Analysis

Variables	Participation in MGNREGP	P-Value	Obs.
Awareness	0.2011**	0.0011	262
Sex	-0.0798	0.1979	262
Age	0.2403**	0.0001	262
Tribal Community	0.0493	0.4267	262
Caste SC	-0.0102	0.8699	262
Caste ST	0.0493	0.4267	262
Caste OBC	0.0496	0.4241	262
Years of Education	-0.1506*	0.0147	262
Per capita land holding(Acre)	-0.1741**	0.0047	262
Off-farm opportunities	-0.0827	0.1823	262
Household size	0.2363**	0.0001	262
Political affiliation	0.4780**	0.0000	262
BPL card holder	0.3592**	0.0000	262
Annual Income	-0.2479**	0.0000	262

Source: Author's calculation
Note: * Significance level of 5% against a two-sided alternative
** Significance level of 1% against a two-sided alternative

4.3. Logit Model Estimation

The result(see Table-3) for the whole sample shows that the awareness, age, caste, years of education, household size, political affiliation and BPL card holding are positive predictors of participation in MGNREG Programme, whereas gender, per capita land holding, off-farm opportunities and annual family income are negative predictors of participation in the programme. The level of household awareness about the key provisions of MGNREGP is found

to be positively related to participation for the tribes, but it is negatively related in case of non-tribes, although not significant. The probability of participation increases by 17.5 percentage points for the tribes if they were more aware about the programme and the probability reduce by 26.6 percentage points for the non-tribes. The t-test shows that there is no significant difference between the tribes and non-tribes in the level of awareness.

Another interesting result is that of gender discrimination in MGNREG programme. The probability of participation falls by 20.7 percentage points for the tribal males, while the probability increases by 3.0 percentage points for the non-tribal males. The result indicates that more female tribal workers are participating in the programme compared to their male counterparts. The sex of the household head is observed to have negative and significant relation with participation for the tribes and opposite relation for the non-tribes to confirm the above finding. As expected, age of the household head is positively related to participation and it is significant (at 1 per cent level) for the tribes, which implies that senior household members were participating more compared to their younger counterparts. With the increase in the age of the household head the probability of participation increases by 1.3 percent for the tribes and slightly higher by 2.5 percent for the non-tribes.

The results also show that people from all socially and economically disadvantaged groups are participating in the programme. The participation in the programme by these caste groups (SC, ST and OBC) is found to be positive and significant. This indicates that the economically disadvantaged groups of people are more interested for MGNREGP works. The probability of ST caste people participation in the programme is 52.2 percentage points, which is more than Sc caste (33.2 percent) and OBC caste (39.7 percent). The variable, years of education, is observed to be positively associated with the participation for the tribes but negatively for the non-tribes. As years of education increases, the probability of participation for the tribes increases by 2.1 percent where as it reduces by 1.4 percent for the non tribes. This suggests that tribal educated job seekers in Mayurbhanj have less alternative employment opportunities compared to other groups. The t-test shows that there is significant difference between the tribes and non-tribes in the years of education.

Table 3. Logit Estimates of Participation by community in MGNREGP in Mayurbhanj District of India

	All		Tribal		Non-Tribal	
Variable	Coeff.(S.E.)	Marginal Effect (dy/dx)*	Coeff.(S.E.)	Marginal Effect (dy/dx)*	Coeff.(S.E.)	Marginal Effect (dy/dx)*
Awareness[#]	0.605 (0.420)	0.1295	0.891 (0.617)	0.1750	-1.101 (0.696)	-0.2669
Sex	-1.145 (0.498)**	-0.2040	-1.353 (0.712)**	-0.2076	0.121 (1.763)	0.0300
Age	0.043 (0.017)***	0.0093	0.064 (0.021)***	0.0130	0.101 (0.101)	0.0252
Caste SC	1.896 (0.823)**	0.3323	----	----	5.164 (2.324)**	0.8482
Caste ST	2.535 (0.894)***	0.5226	----	----	----	----
Caste OBC	3.155 (1.057)***	0.3972	----	----	7.211 (3.369)**	0.9076
Years of Education[#]	0.034 (0.057)	0.0075	0.104 (0.079)	0.0212	-0.056 (0.084)	-0.0140
Per capita land holding(Acre)	-0.879 (0.595)	-0.1917	0.085 (0.843)	0.0172	-8.819 (3.090)***	-2.1991
Off-farm opportunities	-0.669 (0.603)	-0.1569	-1.452 (0.700)**	-0.3403	-1.754 (2.075)	-0.3615
Household size	0.377 (0.102)***	0.0821	0.166 (0.109)	0.0338	1.271 (0.287)***	0.3170
Political affiliation	3.193 (0.518)***	0.6630	2.904 (0.659) ***	0.6149	6.603 (3.140)**	0.8186
BPL card holding	2.584 (0.508)***	0.5642	1.801 (0.547)***	0.3944	6.970 (2.819)***	0.8609
Annual Income	-0.009 (0.000)***	-0.00002	-0.003 (0.000)	-0.000009	-0.004 (0.000)**	-0.00008
Constant	-7.275 (1.522)***		-4.833 (1.407)***		-18.237 (10.418)	
Predicted Probability of Participation	---	0.6785	---	0.7149	---	0.4749
Observations	262		142		120	
Wald chi^2	63.51		49.85		46.74	
Prob > chi^2	0.000		0.000		0.000	
Pseudo R^2	0.469		0.426		0.679	
Log Pseudo-likelihood	-91.96		-52.79		-25.84	

Source: Author's calculation

Notes: * Significance level of 10% against a two-sided alternative, ** Significance level of 5% against a two-sided alternative, *** Significance level of 1% against a two-sided alternative, Figures in the parentheses are robust standard errors, (*) dy/dx is for discrete change of dummy variable from 0 to 1 and # t-test applied to find out the significant difference between the tribal and non-tribal groups and t-values for the years of education is 2.2037 and for awareness is 0.4452.

As expected, per capita landholding size is found to be a negatively and significantly related to participation for the non-tribes, while it is opposite for the tribal's. With the increase in the size of the land holding, the probability of participation increase by 1.7 percent for the tribes while it drastically falls by 19.9 percent for the non-tribes. It indicates that households having more land for cultivation purposes are less participating in the MGNREGP and the landless poor are participating more in the programme. However, Families having off-farm employment opportunities are found to have less interest in availing employment under MGNREG programmes because of opportunity cost involved in doing so. Off-farm opportunities are negatively related to participation and it is highly significant (at the level of 5 per cent) for the tribes. The probability of participation reduces (by 34 percent for the tribes and 36.1 percent for the non-tribes) with the more availability of off-farm opportunities. It means households that are having less off-farm employment opportunities are more likely to go for MGNREGP works.

Household size is found to have positive association with participation in MGNREGP and it is highly significant for the non-tribe. As the household size increases, the probability of participation increases by 31.7 percent for the non-tribes and by a very less probability of 3.3 percent for the tribes. This means that larger the size of the household, the greater is the likelihood that these households will participate in the MGNREG programme. Interestingly, the political factor is seen as a positive predictor of participation for both the tribe and non-tribe people and it is highly significant (at 1 per cent level) for the tribal's. The close political affiliation increases the probability of participation for both the groups but more probability for the non-tribes (61.4 percent for the tribes and 81.8 percent for the non-tribes). This indicates that the people having close affiliation with the elected representatives in the village level are participating more in the programme.

The households having BPL cards are seen to be positively and significantly (at 1 per cent level) associated with participation in MGNREGP. This may be due to the fact that BPL households have less alternative opportunities rather than joining the program. The probability of participation for non-tribal BPL card holding families is higher (86 percent) and it is only 39.4 percent for the tribes. Income is found to be negatively and significantly related with the participation in MGNREGP. The increase in the annual household income reduces the probability of participation for both the groups. It indicates that higher is the family income, lower is the interest to join the work under the scheme. They keep shy of taking part with other

people in such works as they consider it below their dignity. Also their family income supports them to afford for searching better paid works. The predicted probability of participation is 71.4 percent for the tribes while it is 47.4 percent slightly lesser for the non-tribes. This means the tribal community people participation is more than the non-tribal community.

5. Concluding Remarks:

The results show that for the whole study the awareness, age, caste, years of education, household size, political affiliation and BPL card holding are positive predictors of participation in MGNREG Programme, whereas gender, per capita land holding, off-farm opportunities and annual family income are negative predictors of participation in the programme. Divergence results are shown between the tribal and non-tribal community. Awareness about the programme, years of education and per capita land holding are positive predictors of participation for the tribal's, while they have an opposite influence for the non-tribal community. Gender is a negative predictor for the tribes while it is a positive predictor for the non-tribes. Age, household size, political affiliation and BPL card holding are positive predictors while off-firm opportunities and annual family income are negative predictors for both tribes and non-tribes. The program has positive impact on the standard of living of the participants in less developed areas.

Though the results are often contrary to our expectation, it may be construed that the MGNREG program has contributed to improvement in the standard of living of the people especially in rural areas. However, it is disheartening to note that the implementation of the programme is not completely flawless. It is found that both the non-poor and local politicians have a clutch over the program. The findings also reveal that aged people participate in the program and the trend of migration has not yet been checked significantly. Female workers do not get proper representation.

For active participation of the really needy people in the programme, it is suggested to create massive awareness among the people particularly among women through different sensitised programmes in rural areas. Better targeting the program shall also help to involve the real poor rather than non-poor. Provision of work for more than 100 days, increase in the wage rate, payment through bank account and introduction of bio-metric machines may help to prevent corruption and encourage the real stakeholders to reap benefits of the program.

This study is focused on planning in rural areas, rural development and rural employment programme in general and the Mayurbhanj district of the state Odisha of India in particular. The findings of the study may be useful for the planners and administrators to make plans in rural areas with regard to rural employment and rural development programmes.

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Appendix

(a) The variables used in the logistic regression models are given below.

Li =1, Participation in MGNREGP; 0, otherwise

Awareness about any key provisions of MGNREGP =1; 0, otherwise

Sex of the head =1 if Male; 0 if Female

Age of the head of household in Years

SC =1; 0, otherwise; ST =1; 0, otherwise; OBC =1; 0, otherwise

Education in years of schooling

Per capita land holding in Acres

Off-farm opportunities =1, if occupation: artisans, trade and service, 0; otherwise

Household size = Number of family members

Political affiliation =1, if good rapport with the elected representatives of GPs; 0, otherwise

BPL =1, if BPL card holder; 0, otherwise

Annual Income in Rupees

(b) Collinearity diagnostics

Table 4. Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared	Eigen value	Conditional Index
Awareness	1.14	1.07	0.8792	0.1208	7.938	1.000
Sex	1.19	1.09	0.8421	0.1579	1.206	2.566
Age	1.46	1.21	0.6831	0.3169	1.098	2.689
SC	4.56	2.14	0.2194	0.7806	0.920	2.938
ST	5.42	2.33	0.1845	0.8155	0.716	3.329
OBC	3.47	1.86	0.2883	0.7117	0.568	3.739
Years of Education	1.42	1.19	0.7049	0.2951	0.472	4.102
Per capita land holding	1.25	1.12	0.8008	0.1992	0.410	4.400
Off-farm opportunities	1.34	1.16	0.7477	0.2523	0.274	5.380
Household size	1.26	1.12	0.7951	0.2049	0.161	7.026
Political affiliation	1.10	1.05	0.9106	0.0894	0.096	9.090
BPL card holder	1.16	1.08	0.8653	0.1347	0.071	10.551
Annual Income	1.19	1.09	0.8389	0.1611	0.052	12.388
Mean VIF	2.00			Condition Number		20.764

Note: Eigen values & Conditional Index computed from scaled raw sscp (w/ intercept) & Det(correlation matrix)=0.0526. As a rule of thumb, a tolerance of 0.1 or less (equivalently VIF of 10 or greater) is a cause for concern of multicollinearity. Here from the above result it is found that the problem of multicollinearity among the independent variables is not a serious concern. So the explanatory variables included in the model are free from multicollinearity problem.

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