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Research Article

Stepwise Regression Analysis of Profile Characteristics of the Respondents towards the Women Empowerment

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ABSTRACT

Stepwise regression is an automatic computational procedure that attempts to find the "best" multiple regression model using only statistically significant predictors from a larger set of potential predictive variables. The regression model describes the relationship between a dependent (outcome) variable (Y) and two or more independent (predictor or explanatory) variables (X_i), using a model where Y=B0+B1X1+B2X2+…+ BkXK +eY =B0+B1X1+B2X2+…+ BkXK+e. Computer programs are used to find the B_j weight for each X_j variable so as to minimize the sum of the squared error (e) for cases used to generate the model. The unique contribution of each X_j variable can be tested with a t test and associated p value, using the null hypothesis that $B_j = 0$ in the population. By using this stepwise regression analysis, the researcher could identify the most influencing independent variables .Thus this study selects 17 variables using judges opinion. Out of 17 independent variables studied, the coefficient of correlation of seven variables were positively significant at 1.00 per cent level of probability. These variables were innovativeness, economic motivation, progressiveness, scientific orientation, self confidence, self responsibility and trainings undergone. Apart from that, the variables such as mother's education, respondent's education, occupation and mental activity had shown significant relationship at 5.00 per cent level of probability. Therefore it could be concluded that the above mentioned 11 variables alone had significant relationship with the extension empowerment. The other six variables had no significant relationship. The study was conducted at Coimbatore District of Tamil Nadu state. The profile characteristics and empowerment were studied from 337 women using well structured Interview schedule.

Keywords: *Stepwise regression analysis, Innovativeness, Progressiveness, Economic motivation*

INTRODUCTION

Reforms are needed on several fronts from education and training to land ownership. Women's income have a greater impact on household food security and on improving child health and nutrition. The developmental professionals and the policy makers also divert their attention towards the empowerment of women. But the feminists lacking yardstick to measure their empowerment critically.

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It was felt necessary to conduct an empirical research on the involvement of women in the empowerment activities so as to tone up the existing systems of developmental schemes on women's upliftment. Sivarevathi (1996) studied the prime motivating factors responsible for women participation, she found economic (economic necessity and to get programme benefits) and social factors (continue forefather's occupation and for attaining a social status) were the important motivating factors. Gaining additional knowledge was also one of the important motives for the farm women to participate in development programmes. According to Nair and White (1987), extension participation is a process of enabling or empowering rural people to manage their own development. Further, they reported that "people must be able to educate themselves through developing thinking, acting and problem solving abilities. Participation will give individuals a sense of power which will increase their control over the environment and enable them to shape their own destiny", participation in its most developed form is "self management". Ganesan (1989) studied the level of participation in agricultural developmental schemes. The farmer beneficiaries were distributed in low to medium (62.40%) level of participation whereas the farm leaders were distributed in medium to high (80.00%). Hence it was planned to undertake an indepth study on identification of critical variables which were closely associated towards the empowerment of women. With this concept the following objective was planned.

Specific objective

To analyse the relationship between profile variables of women and their empowerment using stepwise regression analysis.

MATERIALS AND METHODS

The research study was undertaken at Coimbatore District of Tamil Nadu state. which was selected based on the no.of women oriented agricultural activities and allied activities. There were about 337 women were involved in this study by employing proportionate random sampling procedure from five blocks. Well structured interview schedule was used to collect the information on profile characteristics and empowerment. In stepwise regression analysis there were two methods *viz*., step down and step up. In this study, step up method was followed. In this process 17 independent variables were used. Totally seven steps were carried out, whereas the results of the seventh step was as that of sixth step so it was stopped at sixth step. In the step up method of stepwise regression one independent variable was introduced in each step. The variables which were having higher significant value will be included the others will be eliminated.

RESULTS AND DISCUSSION

The stepwise details carried out in the analysis is presented as follows:

Table 1: Step-wise regression analysis of profile characteristics of the respondents towards the women empowerment

S.No.	Variables	Regression co-efficient	Std. error	't' value
Step I				
1.	Risk orientation	0.697 $R^2 = 0.341$	0.108	41.552
Step II				
1.	**Risk orientation**	0.505	0.120	17.650
2.	Self confidence	0.240 $R^2 = 0.368$	0.069	11.970

Step III				
1.	**Risk orientation**	0.560	0.183	9.417
2.	Self confidence	0.346	0.128	7.699
3.	Innovativeness	0.222	0.l069	10.470
		R^2 = 0.389		
Step IV				
1.	**Innovativeness**	0.604	0.181	11.189
2.	Risk orientation	0.276	0.129	4.595
3.	Self confidence	0.213	0.068	9.845
4.	Trainings undergone	0.070	0.022	10.450
		R^2 = 0.400		
Step V				
1.	**Age**	0./049	0.025	3.964
2.	Innovativeness	0.599	0.180	11.093
3.	Risk orientation	0.287	0.128	5.009
4.	Self confidence	0.191	0.068	7.758
5.	Trainings undergone	0.076	0.022	12.042
		R^2 = 0.418		
Step VI				
1.	**Age**	0.074	0.027	7.531
2.	Respondents' education	0.205	0.089	5.302
3.	Innovativeness	0.649	0.180	9.309
4.	Risk orientation	0.205	0.132	2.409
5.	Self confidence	0.159	0.069	5.219
6.	Trainings undergone	0.081	0.022	13.649
		R^2 = 0.421		
Step VII				
1.	**Age**	0.074	0.027	2.744**
2.	Respondents' education	0.205	0.089	2.303*
3.	Innovativeness	0.649	0.480	4.051**
4.	Risk orientation	0.205	0.132	2.992*
5.	Self confidence	0.159	0.069	2.285*
6.	Trainings undergone	0.081	0.022	4.694**

$\hat{Y}$ (Women empowerment) = – 0.07956 + 0.074** X_1 (Age) + 0.205** X_4 (Respondents' education) + 0.649** X_9 (Innovativeness) + 0.205** X_{10} (Risk orientation) + 0.159** X_{15} (Self confidence) + 0.081** X_{17} (Trainings undergone)

Step I

In this step risk orientation alone included. The R^2 value was 0.341.

Step II

In this step, the dependent variable *viz.*, Self confidence was included additionally. So the R^2 value was 0.368. The R^2 value was increased by 0.027 units due to the inclusion of self confidence.

Step III

In the step III, the dependent variable 'Innovativeness' was included based on the higher significant value. The R^2 value was 0.389. The R^2 value increased by 0.021 units due to the inclusion of innovativeness.

Step IV

In this step IV, the dependent variable 'Trainings undergone' was additionally added

along with the existing variable. The R^2 value was 0.400. Due to the inclusion of the variable trainings undergone there was increase in the R^2 value by 0.011 units.

Step V

In this step V, the independent variable 'Age' was included (other variables got less significance than age). The R^2 value was 0.418. There was 0.018 unit was increased in the R^2 value due to the inclusion of the variable age.

Step VI

In the step VI, the independent variable 'Respondents' education' was included along with the already existing five variables. The R^2 value was 0.421. This is due to the inclusion of sixth variable respondents' education. Hence the R^2 value was increased by 0.003 units.

Step VII

In the step VII, the R^2 value was 0.421 there was no increase in the R^2 value. Since the other 11 variables had no higher significant value. So the step up regression analysis was stopped at this stage.

It could be inferred from the Table 1 that there were 11 independent variables have got eliminated from 17 independent variables. The six variables *viz*., age, respondents' education, innovativeness, risk orientation, self confidence and trainings undergone were derived as most influencing variables towards women empowerment. All these six variables put together have contributed to the tune of 42.10 per cent variation in the changes in overall empowerment. As already indicated, the contribution of all the seventeen variables for the change in overall empowerment was 54.90 per cent. From this it could be implied that the 11 eliminated variables put together were responsible for only 12.80 per cent of variation. Hence their elimination is substantiated.

From the above finding the following inferences could be drawn.

- The extension personnel can concentrate on middle aged women while contemplating their involvement in various extension programmes. Since the empirical data of the study denoted that nearly half of the women (46.00%) fell in the middle aged category. This finding was corroborated with the findings of Verma (1986) that more than half of the women beneficiaries of IRDP participated in training.
- The farm women may be encouraged to take part in various distance education programmes in order to increase their education level because the study by Misra and Charnjeen Singh (1998) revealed that 25.00 per cent of the representatives had no formal schooling while 28.00 per cent had studied only upto primary school. Graduates account for 10.70 per cent of the representatives while professionals constitute 0.71 per cent.
- Though trainings are periodically and systematically organized through TANWA and TNWDP the extension personnel should also concentrate on confidence building. As focused by Nair and White (1987), extension participation is a process of enabling or empowering rural people to manage their own development. Further, they reported that "people must be able to educate themselves through developing thinking, acting and problem solving abilities. Participation will give individuals a sense of power which will increase their control over the environment and enable them to shape their own destiny", participation in its most developed form is "self management".
- Saravanakumar (2000) reported that farm women in general had high level of innovativeness. About seventy per cent of the participants had high level of innovativeness and 19.72 per cent had low level of innovativeness. Further, Palmurugan (2002) study revealed that majority (87.80%) of the farm women had medium level of innovativeness, followed by 10.80 and 1.40 per cent of farm women who had low and high levels of innovativeness respectively. Hence, the extension personnel should effectively use the cross media approach to create awareness about innovations within a short

period of time among all the farm women. Such an attempt will induce more and more farm women to be innovative in their activities.

CONCLUSION

Neela (1994) reported that participation in extension activities, by its nature varies in degrees, modes and kinds. The process of participation tends to be unique on every occasion and the kind and degree of participation also tends to differ. Different participative methods were evolved in response to different situations and the product of participation changes from time to time and from location to location. Hence Identifying critical variables which influence more on empowerment would pave way for disseminating right technology or any welfare programmes to right people in right way. Ultimately it would reap the fruitful results.

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