

Logical Convergence Model of Agriculture Lands & Multiple Regression Model Approach for Migration Of Agriculture Man Power From Kimsar Area

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Abstract:- Migration of agriculture man power for earning their livelihood is a major problem in the hilly areas. Agriculture is not a profitable enterprise, and in fact, has not been profitable for many years in the study area. Agriculture is not improved because soils are poor for agriculture due to water problem and yields are low. One of the major problems in the Kimsar area is wild animals of Rajaji National Park. The introduction to this paper highlights two challenges to analyze the effect of migration on agriculture of some villages around boundary areas of Rajaji National Park, Uttarakhand. First, it highlights the logical convergence of agriculture lands after the out migration from the Kimsar area. Second is to analyze the socio-economic status of Kimsar area & natural resources to local communities for their household livelihoods. To find out the effect of migration on different agricultural activities, the present investigation was carried out in the selected villages of Kimsar Area, Uttarakhand. The non-migrant farmers were selected at randomly and personally interviewed with the help of structured interviewed schedule.

The study shows the household poverty status and livelihood dependence on ecosystem goods and services, often sourced from forest areas. The multiple regression model approach is used to show the effect of migration on socio economic status and agriculture status of the Kimsar area.

Keywords:- Migration, agriculture, logical converges, multiple regression model.

I. INTRODUCTION

Over the past several years, there are some agricultural changes in the hilly areas of Uttarakhand, primarily due to massive out-migration towards urban areas. This paper is an attempt to contribute to a better understanding of the role of migration has played in the Kimsar Area which epitomizes the power of change associated with out-migration. As per the hypothesis, our findings suggest that migration exerts a strong downward pressure on agricultural labor. Migration is an inseparable social phenomenon of human being's life. It is a physical movement of human beings from one area to another for a short or long term, within or outside of state borders. There are various reasons behind migration. After a long analysis of reasons that make people migrate, sociologists came up with the "push-pull" model. This model differentiates between push factors that usually happen in a sending country and force people to leave their home, and pull factors that take place in a receiving country and attract people to new locations. Migration affects the size, structure and distribution of the population. It leads to demographic, economic, social and agricultural changes of the affected place. It can be very rapid in its effects, transferring millions of persons in a matter of months and altering significantly the distribution of people and their activities.

Objectives

- To analyze the impact of migration on agriculture of the study area.
- To show the logical converges of agriculture land to park area.
- To show the impact of Migration on Agriculture, Education, Health status & Income-source (a multiple regression model approach is used).

Study Area & Methodology

The study area falls in Yamkeshwar Developmental Block of the Pauri Garhwal District of the Uttarakhand State. The Kimsar Area villages are located in close proximity of the Chilla Range of Rajaji National Park. The area consists of highly undulating mountainous landscape are now isolated from other revenue lands by a 16 Km stretch of protected forest of RNP. Kimsar Area is a cluster of more than 25 villages distributed in about 15 km². The remote and in accessible villages where regular visit cannot be feasible mainly due to location on highly steeped and rough terrain, 8 villages are selected for extensive survey and monitoring, to know the status of currently available human and natural resources in the area as

well as to assess the major problem of the area caused due to creation of RNP. After selection of villages 85 households were investigated and data was collected through questionnaire.

To show the dependency of various variables on the migration a multiple regression model & bar diagrams are used with the help of SPSS software. To show the actual logic behind the changing status of agriculture lands in Kimsar area some pictorial views are used.

II. LOGICAL CONVERGE MODEL OF AGRICULTURE LAND IN KIMSAR AREA DUE TO MIGRATION

Kimsar area is a very beautiful green area with fully natural resources. The main sources of income in this area are agriculture & animal husbandry. The agriculture lands of this area are divided into three categories according to distance and stepped hilly area. First category is agriculture lands nearer to village which is shown by inner most circle in the diagram. Second category is the lands which are in the middle areas between the lands nearer to villages and lands nearer to the park boundaries. Second category is shown by the difference area of inner most circle and middle circle. The third category is the lands nearer to the park boundary. Thus the lands are distributed over these three categories in this area. The people having their agriculture land in the third category have more problems in comparison second & first categories due to wild animals of the park. Wild animals regularly kill domestic animals and also destroy the crops in the field. In the past time all the people work together that is why they were able to save their crops from the wild animals. But day by day this scenario had been changed people were avoiding to do work hard and facing wild animals. So the person belongs to third category left first to farming, this action caused problems for other who wanted to do work in their fields. Thus it became very harder because of lack of men power. On one hand people are migrating and on the other hand wild animal population increases. This changing pattern in human population and the wild animal population in the area converges to the agriculture lands from stage (A) to stage (B) and then (B) to (C). The area remains same shown in the figure.1 by dotted circle, but the logically area is changing with respect to scope of the animals and agriculture lands with respect to time. Agriculture lands are going to become barren due to Lantana shrub in the study area as farmer migrated.

In this approach let at the time-‘t’ the scope distance for the animals was ‘d’ in which they are harmful for third category farmers (shown by figure 1. A). As time increases ‘t’ to ‘t+Δt’ then logically the scope distance for animals also increases ‘d’ to ‘d+Δd’ due to migration of agriculture men (shown by figure 1. B.), thus now the wild animals are also harming the second category farmers. When the time increases-‘t+Δt’ to ‘t+Δt+Δt’ the scope distance for animals increases again from ‘d+Δd’ to ‘d+Δd+Δd’ (as shown in the figure 1.C). Thus the migration of agriculture man is directly proportional to the logical scope distance of the animals which increases the area for wild animals. Symbolically we can write

$$M(\text{Migration}) \propto d(\text{logical scope distance})$$

Agriculture lands converges stage A to B and then stage B to C

as $t \rightarrow (t + \Delta t)$ then $(d \rightarrow d + \Delta d)$

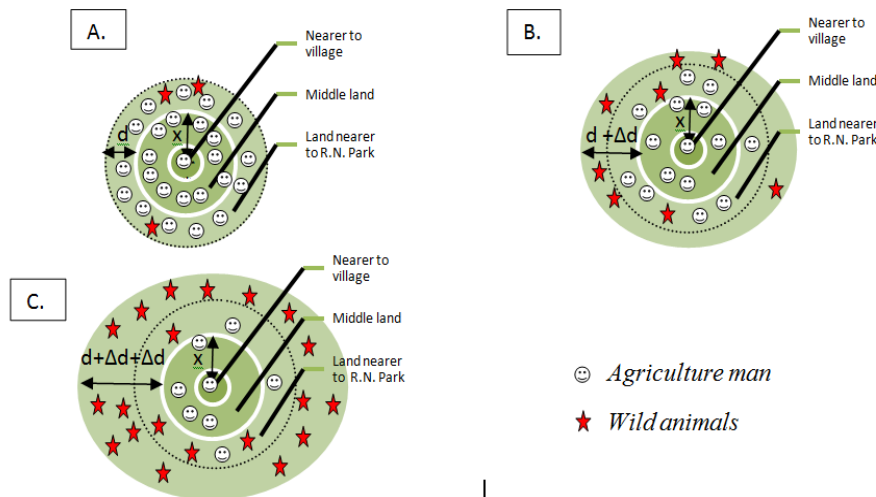


Figure 1 : Logical converge model of Agriculture lands in Kimsar Area

III. Major Migration Factors & Local People Dependency on Natural Resources

- Socio-economic Conditions & lack of educational facilities in hills.

- Local people were completely ignorant about the ground reality of rules and regulations of national park areas. Animal husbandry: There are restrictions on grazing in the national park and only limited animals are maintained.
- Lack of physical infrastructure, such as, connecting roads, communication, media, housing and safe potable water in the region seems to be major factor for backwardness of the region.
- Majority of fresh fodders are collected from the nearby forests which constitutes 80 percent of total fodder requirement of the people and remaining 20 percent of fresh fodder meets from the planted fodder trees. Animal husbandry and agriculture is an integral part of economy of this region. Cattle are the main source of manure and without manure crop production cannot be possible in such a poor and coarse textured soil available in the region.
- Leopards take away their cattle from the cattle shed that become common features in the area. Several causalities of human loss by these carnivores of RNP were also reported in the area. Age old conventional traditional agricultural practices have been followed till now.

Multiple Regression Model: To show the behavior of one variable to another the regression approach is very useful tool. In this study Migration is our dependent variable and Agriculture, Health status, Education & Income source are the independent variables. The data source for the model is the data collected from the field survey and 85 households were interviewed in the Kimsar area. This gives the following regression equation-

$$\text{Migration} = A_1 + A_2 \text{ Education} + A_3 \text{ H_status} + A_4 \text{ I_source} + A_5 \text{ Agriculture}$$

Where Migration is dependent variable, Education, Health status, Income source & Agriculture are independent variables. A_1, A_2, A_3, A_4, A_5 are constants.

Table 1. Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .618 ^a | .381 | .350 | .66623 |

a. Predictors: (Constant), Agriculture, Health_status, Education, income_source

Table 2. Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .092 | .395 | | .233 | .817 |
| Education | .390 | .079 | .474 | 4.973 | .000 |
| Health status | .310 | .142 | .196 | 2.186 | .032 |
| Income source | .159 | .076 | .206 | 2.099 | .039 |
| Agriculture | -.431 | .192 | -.226 | -2.243 | .028 |

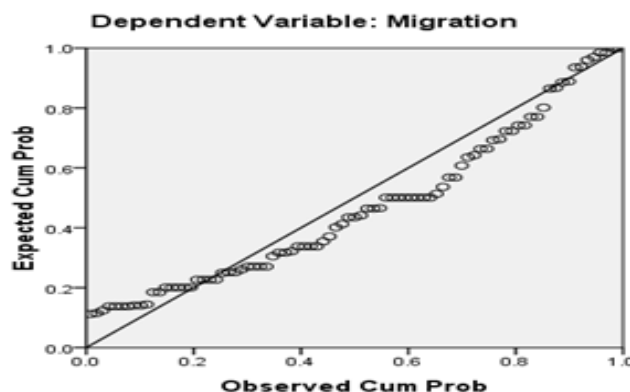
a. Dependent Variable: Migration

Table 3. Residuals Statistics^a

| | Minimum | Maximum | Mean | Std. Deviation | N |
|----------------------|---------|---------|--------|----------------|----|
| Predicted Value | .4073 | 3.1791 | 1.1765 | .51054 | 85 |
| Residual | -.80879 | 2.52262 | .00000 | .65017 | 85 |
| Std. Predicted Value | -1.507 | 3.923 | .000 | 1.000 | 85 |
| Std. Residual | -1.214 | 3.786 | .000 | .976 | 85 |

a. Dependent Variable: Migration

Normal P-P Plot of Regression Standardized Residual



CONCLUSIONS & DISCUSSION

Interpretation for the fitted model:

From the Table No.1, R Square value in this model is 0.381 which shows 38% proportion of variance in the dependent variable (Migration) accounted for by the set of independent variables that are Education, Health status, Income source & Agriculture. The adjusted R Square is 0.35 that takes into account these things and gives more accurate information about the fitness of the model. $R = 0.618$ represents the correlation between the observed values and the predicted values.

From the Table No.2, it gives the regression coefficients and their significance. By using these coefficients we can construct the OLS equation for Migration which shows that Education, Health status & Income source have the positive relationship while agriculture shows a negative relationship.

$$\text{Migration} = 0.092 + 0.390 \text{ Education} + 0.310(H_status) + 0.159(I_source) - 0.431(Agri.)$$

$$Z_{\text{Migration}} = 0.474 Z_{\text{Education}} + 0.196 Z_{H_status} + 0.206 Z_{I_source} - 0.226 Z_{\text{Agriculture}}$$

p-value for beta coefficients of Education is 0.00, Health status is 0.032, Income source is 0.039 and for Agriculture is 0.28. All these values are significant at 5% level of significance. Thus we cannot accept the null hypothesis. In other words we can claim that Migration is positively related to Education, Health status, Income source & Agriculture. Table 3 shows the residual statistics for the dependent variable Migration.

Migration becomes the only option for the forest dependent population due to difficult life with limited livelihood resources. But neither all people are able to migrate from here nor the migrated people get the good means of livelihood in the other places. As all the planning is done on the basis of data available, it can be concluded that the schemes for the region are being made taking into account the less population density in the state. Hence the success and effect of these schemes becomes difficult to achieve.

Identification of ways better to promote “stay at home” development that will provide women with employment opportunities, education, health care and other services in their home communities.

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