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Causes of migration pattern among different gradients of Tiruchirapalli District

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Abstract
Migration is the process in which, a member of household moves for work or employment and retains contact with the household at origin. To understand the causes of migration and effectively manage it, the effects of the push and pull elements must be investigated. With this background, the study has been carried out to determine the factors of migration in the different gradients of the study area. A multistage stratified random sampling technique was adopted in this study. The factor analysis has been used in the study and the results revealed that the KMO and Bartlett's test was significant (0.611) and the analysis extracted seven factors. The push factors were more responsible for the migration than the pull factors. Among the various push and pull factors, lower wages at origin and large family size were the highly influential factors for the migration.

Keywords: Migration, push factor, pull factor, factor analysis

1. Introduction
Migration is defined as a movement of people from one geographical location to another, either on a temporary or permanent basis (Ekong 2003) [3]. According to Census of India (2011) [2], Migration classifiedas a person a migrant if either (a) 'his/her place of birth was different from the place of enumeration' or (b) 'his/her place of last continuous residence was different from the place of enumeration'. In this study, migration has been defined as the process, in which, a member of household moves for work or employment and retains contact with the household at origin. The 'Push Factors' and 'Pull Factors' were the basic economic factors which motivate migration. Migration to new places is drawn by pull forces, whilst push factors encourage people to leave their places of origin and settle elsewhere.

Significant changes have occurred in the land use, agriculture, and employment patterns of rural areas due to large-scale migrations from rural to urban areas. Furthermore, in situations when "push" and "pull" forces are present at the same time, wage discrimination and differences in socioeconomic circumstances also spur migration. The impact of the push and pull factors have to be studied to understand the reasons of migration and to manage the migration properly. With this background, this study has been carried out to empirically determine the causes and key correlates of migration in the different gradients of the study area.

2. Design of the Study
2.1 Methodology: A multistage stratified random sampling technique was adopted in this study. The nine taluks of Tiruchirapalli district have been classified as three gradients namely, Rural, Peri-urban and Urban, based on the proportion of urban population in the respective taluks (Census 2011) [2] and also by referring geographical map of Tiruchirapalli district. One taluk has been randomly selected from each of the gradients, six villages have been randomly selected from each of the selected gradients and migrant respondents have been randomly selected from each of these villages. The sample migrant population in the different gradients consisted of 42 in the Rural, 55 in the Peri-urban and 63 in the Urban Gradients. The primary data has been collected from the sample respondents of Rural, Peri-urban and Urban gradients using structured interview schedule. The data collected from the respondents pertained to the year 2020-2021.

2.2 Tools of Analysis
Factor Analysis: Factor Analysis was used to identify the causes for migration of the sample respondents. The main goal of factor analysis is to find a method to reduce the amount of information lost while creating a smaller collection of new, composite dimensions (factors) from a variety of original variables.

One can test the data's eligibility for factor analysis using the following criterion: (i) The presence of enough correlations to support factor analysis can be determined visually by examining the correlation data matrix. (ii) The anti-image correlation matrix displays the partial correlation between the variables' negative values. These numbers have to be tiny for genuine factors to be present in the data. (iii) The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) is an additional metric used to assess the suitability of factor analysis and the degree of intercorrelation between the variables. The index ranges from 0 to 1 and small values of KMO measure indicate that a factor analysis of variables may not be a good idea, since correlation between pairs of variables cannot be explained by the other variables. A high value between 0.5 and 1.0 indicates that factor analysis is appropriate technique to be used.

To obtain factor solutions two basic models, *viz.,* common factor and principal component analysis are to be used. Common Factor Analysis is used to identify underlying factors or dimensions of causes of migration. It is a statistical method that converts an initial set of variables into a significantly smaller set of uncorrelated variables, which together contain the majority of the original set of variables' information, by a linear transformation.

The linear combinations of variables are used to account for variation of each dimension in a multivariate space. The variance of factors is called Eigen Values, Characteristic Roots or Latent Root.

Communality is the amount of variance, an original variable shares with others. Factor loadings are the correlation between the original variable and the factor. Squared factor loadings indicate the percentage of the variance in an original variable explained by a factor.

For rotation, Orthogonal or Oblique method can be applied. In orthogonal rotation method, the axes are maintained at 90 degree, so that the resulting factors are uncorrelated. Within orthogonal method, either Varimax or Quatrimax method can be employed. Varimax method simplifies the columns in a matrix, whereas Quatrimax method stresses on simplifying the rows. In this study, Varimax method of rotation was used in order to have more clarity in factor solution. The Varimax criteria maximizes the sum of the variance of the square loadings within each column of the loading matrix.

3. Results and Discussion
The migration exodus is attributed to a number of push and pull factors and hence migration itself is the outcome of the relative strength of these factors. Factor analysis has been attempted in this study and varimax rotation was calculated to extract the most influencing push and pull factors of migration. The results of KMO measures of sampling adequacy and the Bartlett's test of sphericity, which determines the factorability of the correlation matrix of the causes for migration is presented in Table 1.

Table 1: Result of KMO and Bartlett's Test of Migrants

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.611
Bartlett's Test of Sphericity	Approx. Chi-Square	374.549
	Df	325
	Sig.	0.030

The results of the KMO and Bartlett's test in Table 1 would show that there was a higher KMO measure (0.611) and a significant Bartlett's test result (0.000) and therefore the factor analysis has been rightly employed. The results on the causes for migration are presented in Table 2.

It could be seen from Table 2 that the factor analysis extracted seven factors which together accounted for 55.17 per cent of total variance. The percentage of variance for the factors I to VII were 5.40, 5.17, 5.09, 5.05, 4.91, 4.56 and 4.55, respectively. The percentage of total variance is used as an index to determine how well a particular factor solution accounts for what all the variables together represent. Communalities shows the amount of variance in a variable that is accounted by the seven factors taken together.

Table 2: Causes for migration in the sample households

Factors	Extracted factors	Variables	Factor loadings	Communalities
I.	Push Factors –Economic	Decline in the per capita land availability	0.764	0.553
		Lower wages at origin	0.843	0.726
		Poor economic conditions of the family	0.699	0.509
		Non availability of alternatives sources of income	0.712	0.586
		Low agricultural income at origin	0.569	0.644
II.	Push Factors- Non-Economic	Poor infrastructure	0.762	0.591
		Large family size	0.803	0.662
III.	Push Factors- Social	Social status	0.541	0.732
		Family obligations	0.402	0.572
IV.	Push Factors- Environmental	Natural calamities	0.711	0.630
		Crop failure	0.381	0.496
V	Pull Factors – Economic	Higher wages at destination	0.724	0.515
		Nearness to industries	0.632	0.629
		Availability of job at destination	0.702	0.573
VI	Pull Factors –Non-Economic	Skill development	0.665	0.619
		Urban comforts	0.671	0.573
		Cultural Changes	0.890	0.689
VII	Pull Factors-Social	Good business environment	0.694	0.544
		Attraction to social fabric	0.743	0.630

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

Table 3: Rotated Correlation Matrix

Factors	I	II	III	IV	V	VI	VII
Eigen Values	1.40	1.35	1.32	1.31	1.29	1.27	1.18
Percent of Variance	5.40	5.17	5.09	5.05	4.91	4.56	4.55
Cumulative Percent of Variance	5.41	10.58	20.85	36.04	41.01	45.92	55.17

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalisation

The factor loadings represent the correlation between an original variable and its factor. Positive sign of factor loadings indicated that the variables were positively correlated with its factor. The factors and the loadings were categorized, *viz.*, Push Factors-Economic, Push Factors-Non-Economic, Push Factors-Social, Push Factors-Environmental, Pull Factors-Economic, Pull Factors-Non-Economic, Pull Factors-Social.

Factor I: The Push Factors-Economic was the main factor, which accounted for 5.40 per cent of variance in the total variable set, in which five variables, *viz.,* decline in the per capita land availability, lower wages at origin, poor economic conditions of the family, non-availability of alternative sources of income and low agricultural income at origin were positively loaded with an Eigen value of 1.40.

Factor II: The Push Factors-Non-Economic was accounted for 5.17 per cent in the total variable set, in which two variables set namely, poor infrastructure and large family size have been loaded with the Eigen values of 1.35 per cent.

Factor III: The Push Factors-Social accounted for 5.09 per cent of variance in the total variable set, with an Eigen value of 1.32. The two variables namely social status and family obligations were loaded in this factor.

Factor IV: The Push Factors-Environmental accounted for 5.05 per cent of variance in the total variable set of natural calamities and crop failure, which had an Eigen value of 1.31.

Factor V: The Pull Factors-Economic accounted for 4.91 per cent of variance in the total variable set, with three variables, namely, higher wages at destination, nearness to industries, availability of job at destination were loaded and obtained an Eigen value of 1.29.

Factor VI: The Pull Factors-Non-Economic, *viz.,* skill development, urban comforts and fulfilment of self-aspirations represented 4.56 per cent of variance in the total variable set with an Eigen value of 1.27.

Factor VII: The Pull Factors-Social accounted for 4.55 per cent of variance and loaded with two set of variables i.e., good business environment and attraction to urban social fabric which had an Eigen value of 1.18.

It is concluded that the push factors were more responsible for the migration than the pull factors. Among the various push and pull factors, lower wages at origin and large family size were the highly influential factors for the migration. The results are in accordance with Regmi (2014) [7].

4. Conclusion
Factor analysis has been attempted in this study and varimax rotation was calculated to extract the most influencing push and pull factors of migration and concluded that the push factors were more responsible for the migration than the pull factors. The factor analysis extracted seven factors which together accounted for 55.17 per cent of total variance. The

factors and the loadings were categorized, *viz.*, Push Factors-Economic, Push Factors-Non-Economic, Push Factors-Social, Push Factors-Environmental, Pull Factors-Economic, Pull Factors-Non-Economic, Pull Factors-Social. Among the various push and pull factors, lower wages at origin and large family size were the highly influential factors for the migration. Hence, it is suggested that, the agricultural wage rates may be increased appropriately on regular basis to reduce the wage difference between rural and urban activities.

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