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Spatial Patterns of Development in Bundelkhand Region of Madhya Pradesh

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Abstract

The spatial variation in the levels of social and economic development is a universally observable fact. Undoubtedly, the Madhya Pradesh is not an exception from this phenomenon. The study region i.e. Bundelkhand region has characterized with very low agricultural productivity, least industrial development, dying traditional cottage industries, unemployment, high population ratio under poverty line, poor health and unavailability of basic infrastructural amenities. Migration to other areas doesn't always solve the problem of everybody, when the population living below poverty line is very large. That is why there are reports that a large number of poor people are silently dying out of hunger in Bundelkhand. The main challenge is undoubtedly to increase the living standard and welfare of local people. This study point-out the dimensions of development and typology of backwardness through the application of qualitative and quantitative methods. The study area under this research is the Bundelkhand region of Madhya Pradesh, which consists of six districts of northern Madhya Pradesh, namely Datia, Tikamgarh, Chattarpur, Damoh, Sagar and Panna. The present study attempts to study and analyse the spatial pattern of regional development at the district level in the region. Twenty four variables have been selected for the analysis and these variables have been further divided in 4 groups i.e. demographic, agricultural, infrastructural and economic. In the present study principal component method has been adopted to measure the spatial variations in the level of development among the different units of Bundelkhand region. These units have been categorized into 4 categories of level of development using the composite index values. The weights used in this case are the elements of the Eigen vector corresponding to the highest Eigen vector of the correlation matrix (R) are of the selected variables. Eigen vector has been used here as it gives relative importance to each variable, which is very important for the identification of level of development. The main objective of the present study is to identify level of development in Bundelkhand region in Madhya Pradesh and formulate an appropriate plan for integrated rural development.

Keywords: Spatial Pattern, Bundelkhand Region, Regional Development, Regional Planning, PCM, Composite Index,

Introduction

Development is a multi-dimensional phenomenon and an inter-regional spatial variation in the level of development to some extent exists practically in every country. A Socio-economic change hardly exists uniformly in any spatial unit and region under study is not an exception. This emerging spatial phenomenon has been attracting a great deal of interest among the geographers along with the researchers working in allied fields. Madhya Pradesh is suffering from regional disparities for a long time; some of the regions of the state are very backward and even the habitat of the poorest people of the country. The challenge raised by micro-level intra regional disparities and their inverse impacts. The pace of socio-economic development among the districts of Bundelkhand has not been uniform. Wide variations in development have been notice at the inter and intra levels in the districts.

The Problem

Spatial Variation in development pattern in an area is generally an outcome of numerous factors such as variations in natural and physical endowments, differences in social and attitudinal parameters, institutional structures and, to some extent, discriminatory policies of the State. Widespread disparities in the levels of social and economic development between the different regions of the study area. Why there is an enormous gap between differentially developed districts? Why is such a

gap increasing? And why is development concentrated only in a few centers/areas?

The Study Area

The Bundelkhand region lies at the heart of India located below the Indo-Gangetic plain to the north with the undulating Vindhyan mountain range spread across the northwest to the south. The study area under this research is the Bundelkhand region of Madhya Pradesh, which consists of six districts of northern Madhya Pradesh, namely Datia, Tikamgarh, Chattarpur, Damoh, Sagar and Panna. It covers an area of 70800 km² and is located between 23˚20' and 26˚20' N latitude and 78˚20' and 81˚40'E longitude.The area is rocky and characterized by a high percentage of barren and uncultivable land.

Selection of the Study Area

The Bundelkhand is at extreme backwardness, which is largely the result of peculiar physical feature of the area, a traditional society and a static economy in the years preceding. There is widespread spatial variation in the levels of social and economic development between the different regions of the Study Area. The study area has remained much below the economic level attained in the rest of state.

Objectives of the Study

1. To analyses the patterns of development in the study regions.
2. To classify the districts into backward, low developed, medium developed and relatively high developed.
3. To point out inter-district (between the districts) spatial pattern of development in the study region.
4. To make identification of the relatively backward areas and prepare rational planning.

Hypothesis

1. Spatial Variations are an outcome of numerous factors such as variations in natural and physical endowments, differences in social and attitudinal parameters, institutional structures and, to some extent, discriminatory policies of the State.
2. Physical environment affects the level of development at micro-level.
3. Appropriate location of socio- economic activities over a physical space determines balanced development of a region.

Justification of the Study

1. The analysis of spatial patterns of development at district level is relevant because we can identify an enormous gap between differentially developed districts.
2. This study Point-out the in-depth causes which are responsible for the uneven development.
3. It helps to analysis dimensions of development and typology of backwardness
4. Propose a future plan for the Balanced regional development and a relevant strategy to minimize spatial variation in the level of development at micro-level.

Review of Literature

The study of patterns of regional development is now a key issue of multidisciplinary sciences. Over the period of time numbers of methods have been used in geography to measure the spatial patterns in the level of development in different regional units. Significant contribution has been made Mitra, A. (1961), 35 indicators have been used by him to highlight the regional disparities adopting the ranking method. The same method also has been used by Dasgupta (1971), Mandal, S.K. (1971), Pal, M. N. (1975), Sharma, K.L. (1975), Mishra, R.P. (1978), Mahesh Chand & Puri, V.K. (1983). Mishra, R. N. & Sharma, P.K. (2016) have used multiple factor analysis and the method of principal component analysis to study spatial variation in level of development. The Principal Component Method of factor analysis was developed by H. Horelling (1933). The weights used in this case are the elements of the Eigen vector corresponding to the highest Eigen vector of the correlation matrix (R) are of the selected variables. Eigen vector has been used in the present study to give relative importance to each variable, which is very important for the identification of level of development. Smailes (1944) Guttman (1969) Lundvall (1992) Kim (1999) Kenneth (2005) Venables (2005) and Tomaney (2006) also made significant contribution in this field.

Methodology & Data Base

The present study is mainly based on secondary data obtained from Census of India (2011) and Statistical handbooks of Madhya Pradesh. Other required data's per the objectives to have been collected from various government offices i.e. Directorate of Economic and Statistics, Departments of Agriculture, Revenue Board and Department of Industry and Department of Environment.

In order to make the study comprehensive and more analytical both empirical and statistical methodologies have been adopted for the different aspects of the study. Geographers have used various methods for the analysis of spatial variation in the level of development. On the basis of Principal Component Analysis the districts will be classify into four categories i.e. backward, low developed, medium developed and relatively high developed.

The indicators are:
1. Demographic Indicators
2. Economic Indicators
3. Agricultural Indicators and
4. Infrastructural Indicators

Twenty four variables have been selected for the analysis and these variables have been further divided in 4 groups i.e. demographic, agricultural, infrastructural and economic. In the present study principal component method has been adopted to measure the spatial variations in the level of development among the different units of Bundelkhand region. These units have been categorized into 4 categories of level of development using the composite index values.

An attempt has been made in the measures of different level of development to construct a composite index by combining and grouping different indicators into four sectors, so that the composite indicator could be used to differentiate spatial units like districts for level of development. The study summarizes 24 indices identified for each of the four

Innovation The Research Concept

sectors which reflect the development characteristics   (Table 1)

Table1. Development Indicators

Development Indicators: Demographic & Educational Sector

S. No.	District	Population Growth (2001-2011)	% of Urban population (2011)	No. of Primary schools to 10000 population	Literacy Rate (2011)	% of school going children to total children	% of college students to total student
1	Panna	18.6	7.0	4.11	66.1	80.01	8.62
2	Tikamgarh	20.1	33.9	5.17	62.6	81.30	17.29
3	Damoh	16.6	28.3	3.86	70.9	80.42	14.72
4	Sagar	17.6	27.2	12.84	77.5	85.33	19.32
5	Chhatarpur	19.5	19.7	7.55	64.9	80.26	16.75
6	Datia	18.4	13.3	9.71	73.5	78.12	11.46
	X˜	18.46	21.56	7.20	69.25	80.90	14.69
	S.D. (σ)	1.15	9.24	3.24	5.19	2.19	3.64

Development Indicators: Agricultural Sector

S. No.	District	% of net irrigated area of net cropped area	% of double cropped area to total cultivated area (2011)	Agricultural output (Ton)/ 10000 Population (2011)	No. of Livestock per 100000 population	Total milk production in Kgs./1000 population (2011)	Land Revenue per head of population (2011)
1	Panna	22.55	7.0	184.8	7015	317	4.83
2	Tikamgarh	24.48	13.9	284.6	6218	429	6.07
3	Damoh	20.35	18.3	215.5	5867	344	5.98
4	Sagar	10.06	17.2	260.9	6541	534	5.81
5	Chhatarpur	17.24	19.7	241.7	6023	432	6.89
6	Datia	22.22	13.3	417.9	6869	374	4.10
	X˜	19.48	14.9	267.56	6422.16	405	5.61
	S.D. (σ)	4.76	4.20	74.34	423.17	71.14	0.91

Development Indicators: Economic Sector

S. No.	District	% of main workers to total workers 2011	% of non-agriculture workers/total workers (2011)	Number of Banks/ 100000 population (2011)	Deposits of banks per person (2011)	Credit of banks per person (2011)	Number of Registered Vehicles/ 10000 population
1	Panna	64.0	54.0	8.11	2387	1040	298.5
2	Tikamgarh	71.8	65.8	9.17	3289	2918	792.1
3	Damoh	67.9	56.5	6.86	1919	1497	470.2
4	Sagar	77.4	62.4	10.84	3874	4067	683.5
5	Chhatarpur	73.7	68.3	7.55	4765	3249	1456.1
6	Datia	77.0	70.8	10.71	4487	2465	774.4
	X˜	71.96	62.96	8.87	3453.5	2539.33	745.80
	S.D. (σ)	4.79	6.06	1.51	1039.56	1026.38	362.26

Development Indicators: Infrastructural Sector

S.No.	District	% of villagers having electric facility	Length of roads/ 10000 Sq.Km. (2011)	Number of Education centres/ 100 Sq.km. (2011)	Number of beds in hospital & dispensary/ 100000 population (2011)	Cooperative societies/ 100000 population (2011)	Postal Services per 100 sq.km.
1	Panna	88.9	846.3	12	67	4	3
2	Tikamgarh	77.0	1402.2	23	73	7	4
3	Damoh	80.0	1118.7	15	55	3	2
4	Sagar	94.8	1655.1	32	81	8	9
5	Chhatarpur	91.0	1560.8	26	73	6	8
6	Datia	72.5	1717.3	27	69	5	4
	X˜	84.03	1383.39	22.5	69.66	5.5	5
	S.D. (σ)	8.03	309.75	6.94	7.8	2.91	2.58

Source: Secondary Data from Concern M.P. Govt. Offices, Annual Reports & Handbooks

These 24 indices are firstly subtracted from their mean and then divided by their standard deviation separately for each district and thus we get standardized values for each district. These values of indices are grouped under each of the 4 sectors and are worked together under each sector to aggregate

26

Innovation The Research Concept

them into one. The sum of standardized values of each sector is then divided by the number of variables that have been chosen into each sector and composite index has been worked out (Table 2).

An attempt has been made in the measures of different level of development to construct a composite index by combining and grouping different indicators into four sectors, so that the composite indicator could be used to differentiate spatial units like districts for level of development. The study summarizes 24 indices identified for each of the four sectors which reflect the development characteristics

Table 2 . Value of composite index for various development sectors

S. No.	Districts	Demographic & Educational Sector	Agriculture Sector	Economic Sector	Infrastructural Sector
1	Panna	0.19	-0.64	-0.49	-0.09
2	Tikamgarh	1.07	-0.72	0.54	0.19
3	Damoh	0.45	-0.38	-0.33	-0.61
4	Sagar	0.49	1.35	-0.12	-0.40
5	Chhatarpur	0.19	1.30	-0.07	-0.52
6	Datia	0.56	1.54	1.20	-0.57

Source: Computed by the Author

These 24 indices are firstly subtracted from their mean and then divided by their standard deviation separately for each district and thus we get standardized values for each district. These values of indices are grouped under each of the 4 sectors and are worked together under each sector to aggregate them into one. The sum of standardized values of each sector is then divided by the number of variables that have been chosen into each sector and composite index has been worked out On the basis of composite index four zones of development for each sector have been worked out. These zones have been grouped and analysed under the four sectors - demographic, agricultural, economic and infrastructural sector and are discussed

In the present study First Principal Component method has been used as it happens to be the linear combination of variants having the maximum sum of squares of the correlation coefficients with the variable. In the present study First Principal Component method has been used as it happens to be the linear combination of variants having the maximum sum of squares of the correlation coefficients with the variable. The first principle component is a linear combination (weighted sum) of the standard scores of the given

variables. The weights used in this case are the elements of the eigen vector corresponding to the highest eigen value of correlation matrix R of the selected 24 variables. Thus this method is found more convenient and reliable to measure the extent of regional disparities in each sector in comparison to the other methods discussed above as this method gives importance to each variable.

In this method firstly mean and standard deviation of each variable on the basis of 6 districts of the study region are evaluated and then a correlation matrix (R) is worked out on the basis of above 24 variables, the analysis is shown in the table.

For each column, sum of correlation is obtained. The vector of column sums is referee to as :-$Ua_1 = \Sigma a_1 + a_2 + a_3 + \ldots + a_k$

Where a_1, a_2, a_3 and a_k are value of coefficient of each variable.

After the above step normalization factor NF1 is obtained by the square root of the sum of squares of all the column sums of Ua_1 i.e.

$NF_1 = \sqrt{[(\Sigma \text{column 1})^2 + (\Sigma \text{column 2})^2 + \ldots \ldots (\Sigma \text{column n})^2}$

Normalized vector Va_1 is obtained by using the formula : $Va_1 = Ua_1/NF_1$

Table 3. Correlation Matrix (R)

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}
X_1	1.00	0.03	0.05	0.38	0.04	0.55	0.21	0.60	-0.50	-0.01	0.59	-0.28
X_2	-0.02	0.32	-0.16	0.0	0.15	0.26	0.49	0.02	0.53	-0.06	0.36	0.44
X_3	-0.01	0.25	1.00	0.07	0.29	0.30	0.08	0.67	0.23	0.77	-0.28	0.35
X_4	0.30	0.26	-0.01	1.00	0.06	-0.28	-0.23	0.27	-0.74	0.35	-0.29	-0.86
X_5	-0.16	-0.05	0.38	0.31	1.00	-0.01	-0.28	-0.38	-0.33	-0.71	0.49	-0.36
X_6	-0.11	0.12	0.07	0.03	0.16	1.00	-0.17	-0.18	-0.44	0.02	-0.46	-0.42
X_7	-0.15	1.00	0.41	0.15	0.56	-0.17	1.00	-0.17	0.04	0.60	-0.14	0.17
X_8	-0.18	0.02	-0.33	0.39	-0.25	-0.18	-0.17	1.00	-0.13	-0.28	0.11	-0.05
X_9	-0.02	-0.04	0.01	0.09	0.50	-0.44	0.04	-0.13	1.00	0.21	0.38	0.39
X_{10}	-0.26	0.09	0.23	0.22	0.72	0.02	0.60	-0.28	0.21	1.00	-0.34	-0.06
X_{11}	0.15	0.57	-0.02	0.05	0.03	-0.46	0.14	0.11	0.38	-0.34	1.00	0.11
X_{12}	0.15	0.44	-0.09	0.01	0.07	-0.42	0.17	-0.05	0.39	-0.06	0.11	1.00
X_{13}	-0.07	0.89	-0.23	-0.08	-0.15	0.08	-0.09	0.02	0.02	-0.09	-0.20	0.10
X_{14}	0.15	0.13	0.35	-0.57	0.13	0.07	0.09	-0.15	0.63	0.32	-0.22	0.21
X_{15}	-0.23	0.07	0.18	0.41	-0.33	0.01	0.07	-0.02	-0.09	0.23	0.16	0.65
X_{16}	-0.08	0.32	-0.14	0.39	0.09	0.22	0.15	0.01	-0.67	0.05	-0.24	0.31

X_{17}	-0.15	-0.15	-0.26	0.50	0.72	0.03	-0.25	0.02	0.65	0.07	-0.26	-0.37
X_{18}	0.08	0.21	0.44	0.20	0.56	-0.41	0.21	-0.14	0.61	0.40	0.29	0.32
X_{19}	0.09	0.15	0.33	0.02	-0.07	-0.57	-0.11	0.14	0.35	0.03	0.58	-0.19
X_{20}	0.02	-0.04	0.21	0.31	-0.35	-0.47	-0.31	0.72	0.03	-0.13	0.29	-0.28
X_{21}	0.02	0.38	-0.12	0.05	0.12	-0.06	0.24	-0.12	-0.23	0.28	-0.26	0.26
X_{22}	-0.09	0.03	0.15	0.40	0.25	-0.42	-0.33	0.72	0.09	-0.17	0.22	-0.22
X_{23}	-0.20	0.56	-0.34	-0.06	0.50	0.19	0.45	-0.39	-0.09	0.52	-0.06	-0.06
X_{24}	-0.07	0.63	-0.15	-0.03	0.10	0.16	0.17	0.01	0.06	-0.02	0.14	0.13
Ua_1	3.23	1.80	3.90	4.37	3.85	4.98	2.77	1.20	2.50	2.07	6.88	3.34

Correlation Matrix

	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}	X_{21}	X_{22}	X_{23}	X_{24}
X_1	0.15	-0.16	-0.26	0.06	-0.15	0.07	-0.01	-0.11	-0.02	0.15	-0.18	0.03
X_2	0.12	0.00	0.26	-0.28	0.89	0.29	-0.28	0.44	0.25	-0.05	0.32	0.05
X_3	0.17	0.15	-0.33	-0.23	-0.11	0.30	-0.38	0.21	0.24	0.45	-0.31	0.38
X_4	-0.03	0.26	0.40	0.27	-0.02	0.08	-0.33	0.20	0.05	-0.06	0.31	0.04
X_5	0.10	0.49	0.25	-0.74	-0.07	0.67	-0.71	0.56	0.12	0.50	-0.35	0.55
X_6	0.16	0.02	-0.42	0.35	-0.57	0.23	0.49	-0.41	-0.06	0.19	-0.47	0.21
X_7	-0.02	0.53	-0.17	-0.29	0.03	0.77	-0.36	0.40	0.28	0.52	-0.13	0.60
X_8	0.01	-0.06	0.72	-0.86	0.14	-0.28	0.02	-0.14	-0.12	-0.39	0.72-	-0.50
X_9	0.06	0.36	0.09	-0.67	0.35	0.35	-0.65	0.61	-0.23	-0.09	0.03	-0.01
X_{10}	-0.13	0.44	-0.22	0.31	-0.19	0.65	-0.37	0.32	0.26		-0.28	0.59
X_{11}	-0.28	-0.22	0.16	-0.24	-0.26	0.29	0.58	0.29	-0.26	0.22	-0.06	0.14
X_{12}	0.10	0.35	0.18	-0.14	-0.26	0.44	0.33	0.21	-0.12	0.15	-0.34	-0.15
X_{13}	1.00	0.61	0.69	0.11	0.55	-0.17	-0.13	0.07	0.22	-0.47	0.07	-0.31
X_{14}	0.61	1.00	0.54	-0.43	0.02	-0.08	0.13	-0.25	-0.26	0.08	-0.03	0.61
X_{15}	0.69	0.54	1.00	-0.45	-0.43	0.22	0.41	0.93	-0.02	-0.23	-0.01	-0.10
X_{16}	-0.27	-0.43	-0.45	1.00	0.81	-0.66	0.17	0.07	-0.02	0.15	0.06	0.29
X_{17}	-0.22	-0.44	-0.43	0.81	1.00	-0.76	-0.14	-0.04	-0.14	0.33	-0.47	0.10
X_{18}	0.40	0.69	0.53	-0.66	-0.76	1.00	0.44	0.18	-0.02	0.22	0.07	0.04
X_{19}	0.08	-0.46	0.33	-0.47	0.61	0.02	1.00	0.57	0.15	0.41	-0.22	0.02
X_{20}	-0.03	0.02	0.05	0.10	0.11	-0.08	-0.10	1.00	0.06	0.93	-0.47	0.05
X_{21}	-0.14	-0.17	0.29	-0.23	0.55	0.13	0.04	0.40	1.00	-0.02	0.07	-0.10
X_{22}	-0.04	0.15	0.17	-0.01	-0.17	-0.25	0.16	0.69	-0.22	1.00	-0.31	-0.46
X_{23}	-0.14	-0.03	0.07	-0.10	-0.13	-0.26	-0.15	0.53	-0.44	-0.27	1.00	0.33
X_{24}	0.33	0.16	0.18	0.57	-0.17	0.15	-0.25	-0.03	-0.15	-0.25	0.44	1.00
Ua_1	1.62	4.08	0.65	2.59	2.32	3.14	1.89	0.11	4.79	5.10	4.58	1.11

Source: Computed by the Author

The elements of normalized column sums (Va_1) are then multiplied by their respective coefficient in various rows of the correlation matrix one by one sorting with the first row and ending with the last row of the matrix and the sum of these products put at the end of the row. The resultant vector is referred to as Ua_2 (Table 4) and with the help of Ua2 normalizing factor NF_2 (i.e. 1.99) is calculated.

Table 4. Extraction of First Principal Component

Variable	Va_1	Multiplication	Normalized Factor of Ua_2 or $\sqrt{1.99073}$	First Principal component (F_1)	Eigen Vector (W)
X_1	0.033	X	1.411	0.046	0.647
X_2	0.071	X	1.411	0.100	1.391
X_3	0.112	X	1.411	0.158	2.194
X_4	0.045	X	1.411	0.063	0.881
X_5	0.052	X	1.411	0.073	1.019
X_6	0.107	X	1.411	0.151	2.097
X_7	0.140	X	1.411	0.197	2.743
X_8	0.018	X	1.411	0.025	0.352
X_9	0.050	X	1.411	0.070	0.973
X_{10}	0.069	X	1.411	0.097	1.352
X_{11}	0.058	X	1.411	0.081	1.136
X_{12}	0.190	X	1.411	0.026	3.723
X_{13}	0.092	X	1.411	0.129	1.802
X_{14}	0.120	X	1.411	0.169	2.351
X_{15}	0.087	X	1.411	0.122	1.705
X_{16}	0.012	X	1.411	0.177	2.470
X_{17}	0.106	X	1.411	0.149	2.077

X_{18}	0.137	X	1.411	0.193	2.684
X_{19}	0.089	X	1.411	0.125	1.744
X_{20}	0.132	X	1.411	0.186	2.587
X_{21}	0.064	X	1.411	0.090	1.254
X_{22}	0.052	X	1.411	0.073	1.019
X_{23}	0.076	X	1.411	0.107	1.488
X_{24}	0.003	X	1.411	0.004	0.058
Eigen Value				0.625	

Source: Computed by the Author

First Principle Component is extracted when various elements of vector Va_1 are multiplied by square root of NF_2 and the products thus constitute the elements of First Principle component F_1. With the help of First Principle Component Eigen value is calculated which the sum of square of factor loading is relating to a factor. Eigen Vector W corresponding to Eigen value 0.6258 for each variable is calculated. With the help of Eigen vector relative importance of each variable can be known and more the value of Eigen vector more is the importance of that function. The last stage composite index value for each district is worked out by taking total score of standardized value of each variable multiplied by their eigen vector

Table 5. Final Composite Index Value

S.No.	Districts	Standard Value
1	Panna	- 0.83
2	Tikamgarh	+0.55
3	Damoh	-0.27
4	Sagar	+0.75
5	Chhatarpur	+0.14
6	Datia	-0.51

Source: Computed by the Author

Result and Findings

On the basis of composite index, 6 districts of Bundelkhand have been divided into 4 categories of level of development shown in the table. Higher value of composite index show higher level of development and vice versa. It may, therefore, be concluded from the above analysis that in *Bundelkhand region of Madhya Pradesh* the general level of development is poor. Out of the total 6 districts, 3 districts fall under less developed or backward region. Only two districts are comparatively highly developed. This situation therefore demands process to be undertaken giving special attention and allocation of funds for development of lagging areas.

Table 6. Level of Development

S. No.	C. I. Value	Level of Development	Name of the district
1	Above + 0.30	High Developed	Sagar, Tikamgarh
2	0.0 to 0.30	Medium Developed	Chhatarpur
3	-0.30 to 0.0	Low Developed	Damoh
4	Less than -0.30	Backward Regions	Panna, Datia

Source: Computed by the Author

High Developed Regions

The districts having composite index value more than 0.30 have been assigned with high developed zone. This zone includes Sagar and Tikamgarh districts of the region. Sagar is at the top position with a composite index value of 0.75 in terms of level of development. The Sagar district has rich agricultural potential and infrastructural status. The district has also average condition in urban population and non SC-ST population. Tikamgarh district has better condition in number of livestock and has average condition in transportation system and education.

Medium Developed Regions

This zone constitutes composite index value between 0 to +0.3 and the districts include in this category Chhatarpur. Chhatarpur has rich agricultural potential but have average conditions in total urban population and literacy rate.

Low Developed Regions

This zone includes Damoh district with a composite index between -0.3 to 0.0. This district stands at poor position in terms of economic and infrastructural development, sex ratio, literacy rate (both male & female) etc. so it stands in this less developed category.

Backward Region

These areas are very low level of development. The district having a composite index value less than -0.3 fall in the category of backward region and the district falling in the category are Panna and Datia, these districts are lacking in infrastructural facilities like transportation, education and medical. These districts are less developed in demographic characteristics and infrastructural facilities.

This research helps to analysis dimensions of development and typology of backwardness and also useful to formulate a future Plan for the balanced regional development and a relevant strategy to minimize spatial variation in the level of development at micro-level.

Conclusion

This study identified the patterns of development and inter-district disparities in the Bundelkhand region of Madhya Pradesh. The main challenge of regional economic development is undoubtedly to increase the living standard and welfare of local people. Usually the state of development of regions and sub-regions within one country significantly differs. In Bundelkhand, the Sagar and Tekamgarh districts are emerging, and the Panna and Datia districts are lagging behind. This research helps to analysis dimensions of development and typology of backwardness and also useful to formulate a future Plan for the balanced regional development and a relevant strategy to minimize spatial variation in the level of development at micro-level. The district wise village level planning needs to address these issues on a priority basis.

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