Multivariate Analysis of Socio-Economic Regional Disparity in India

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Abstract

This research work deals with the study of regional disparities of Indian states and union territories (UTs) focusing on the Socio-Economic variables. The Socio-Economic indicator includes the regional disparities in Population, Agricultural, and Industrial Development. The variables used are population below Poverty Line, the number of industries, total productive capital, and total persons employed, gross value output, net irrigated area, net sown area, and production of food grains. The data used is taken from the RBI website of the year 2011 which includes 28 states and 7 union territories (UTs) of India. Using these data, state-wise regional disparities are calculated by using the composite index method.
Key Word- Regional Disparity, Socio-Economic variables, Development

Introduction

The word disparity means "a great difference". Therefore, Regional Disparity may be defined as the difference between different regions whether it is a city, state, or a country. "Regional disparity is defined as the imbalance in spatial structures in same or completely different regions or an area. (Kutscherauer et al., 2010). Every region has its characteristics and the growth of the region depends on the characteristic features of that region.

Therefore, the uneven distribution of resources and services depends on the area. Such as health care, medical facilities, education, employment, poverty, etc of an area depending on its spatial distribution. In general, regional disparities can be described as the failure of some regions in effort development possible of the initial resource natural endowments and resource advantage about another region, Comprising factors other than the natural. (Rawal, 2018)

Some factors are responsible for regional disparities among regions which creates an imbalance. These factors can be population, economy, health care, employment, social factors, agriculture, industrial activities, or physiography. The unequal distribution of resources is a supreme feature of many developing or underdeveloped countries that increases with an increase in economic growth and development.

Since independence, India has been struggling with regional inequality in socioeconomic aspects. The concern for these disparities has been discussed in the five-year plan of India. Apart from regional disparities at the state level, disparities at the district level are also well known in most of the states and districts of India.

Database

The study is completely based on the secondary source of data. The data is collected from the official websites of the Government of India. These websites include the Reserve Bank of India's Handbook of statistics on Indian states and Database on Indian Economy-Reserve Bank of India (DBIE-RBI). Data collected includes all the states and union territories (UTs) of India as of 2011.

Methodology

The composite index method is used to calculate the socio-economic regional disparities of India. The composite index is a method that is calculated by combining different variables. Therefore, various variables are combined and the final value is calculated by the composite index method.

To calculate the composite index, firstly mean, deviation, and the standard deviation is calculated. After that standardized value is calculated as it is essential to standardize the values to make them comparable. The formula used to calculate the standardized value is:

$$z = \frac{x - \mu}{\sigma}$$

Where μ= mean;   σ= standard deviation

Then these values are summed up to get the gross value. And then, a composite index is obtained by dividing the gross value of the number of variables.

Thus, these composite index values are used to determine regional disparities of all the states and union territories of India, and also the level of development is defined by categorizing the calculated values as low, medium, and high.

Discussion

The important indicators included in this research paper for calculating regional disparities in a different part of the country are due to differences in the agricultural activities, development of industries in different states, and the population living below the poverty line in different states and union territories. All these variables can be used to find the socio-economic conditions of any area. Below is a table discussing each of the variables used in this study.

Variables	Discussion
Population below poverty line	According to WHO, the population below the poverty line is defined as the percentage of the population living on less than $1.90 a day. About 28% of the population in India still lies below the poverty line. Table-1 classifies the state-wise data of the population below the poverty line in India. Uttar Pradesh has the highest number of populations living below the poverty line while Andaman and Nicobar Island have the least population below the poverty line.
Number of factories	Ministry of statistics and programme implementation released the data of the Annual Survey of Industries (ASI) in which the number of factories in 2018-19 grew by 2%. There are more than 680000 factories in India. In table-1 the data of the number of factories is given in which Tamil Nadu has the maximum number of factories while Andaman and Nicobar Island have the minimum number of factories in India.
Productive Capital	Productive capital is described as the physical capital of the means of production and the labor power in the production process. The state-wise data of the productive capital in India is given in Table-1. Uttar Pradesh has the highest productive capital while Andaman and Nicobar Island have the least productive capital.
Number of Employees	The number of persons who work under any employer is defined as the number of employees. In 2020, there are about 500 million workers in India. In table-2 the state-wise data of the number of employees in India. Maharashtra has the highest number of employees while Andaman and Nicobar Island have the lowest number of employees in India.
Value of	Gross value of output is defined as the sum of the total sales of goods and services and the value of changes in the inventories.

Gross Output	Table-2 classifies the state-wise data of the value of gross output in India. Maharashtra has the highest value of gross output while Andaman and Nicobar Island have the lowest value of gross output.
Net sown Area	Net sown area is defined as the area where the crops are sown. According to the Ministry of Agriculture & Farmers Welfare India has 140130 thousand hectares of area. Table-3 classifies the state-wise data of the net sown area in India. Rajasthan has the maximum number of net sown areas while Puducherry has the minimum number of net sown areas.
Net irrigated Area	Net irrigated area is described as the net irrigated area in a year by a particular crop. According to the Ministry of Agriculture & Farmers Welfare India has 68385 thousand hectares of area. The state-wise data of the Net Irrigated Area is given in Table-3. Uttar Pradesh has the maximum number of net irrigated areas while Puducherry has the minimum number of net irrigated areas.
Production of foodgrains	India's foodgrains production is 308.65 million tonnes in the crop year 2020-21. In table-3 the state-wise data of the Production of foodgrains in India is given in which West Bengal has the maximum Production of foodgrains while Puducherry has the minimum Production of foodgrains in India.

States/Union Territories	POPULATION BELOW POVERTY LINE (in Thousands)	NUMBER OF FACTORIES	PRODUCTIVE CAPITAL (□ Lakh)
Andaman & Nicobar Islands	4	18	605
Andhra Pradesh	7878	27708	30648153
Arunachal Pradesh	491	-	-
Assam	10127	3019	1990077
Bihar	35815	3231	731114
Chandigarh	235	308	184052
Chhattisgarh	10411	2472	8918800
Dadra & Nagar Haveli	143	1480	3179570
Daman & Diu	26	1950	1707703
Delhi	1696	3849	1648153
Goa	75	586	1214530
Gujarat	10223	22220	39012293
Haryana	2883	6142	8420445
Himachal Pradesh	559	2489	5064907
Jammu and Kashmir	1327	861	744822
Jharkhand	12433	2556	7935560
Karnataka	12976	11460	18312738
Kerala	2395	7031	2369597
Madhya Pradesh	23406	4286	6780270
Maharashtra	19792	28215	34789727
Manipur	1022	102	11074
Meghalaya	361	100	394509
Nagaland	376	86	21605
Odisha	13853	2678	17071149
Puducherry	124	832	572713

Punjab	**2318**	**12593**	**5698435**
Rajasthan	**10292**	**8444**	**8025724**
Sikkim	**51**	**61**	**157892**
Tamil Nadu	**8263**	**36996**	**21108304**
Tripura	**524**	**446**	**49701**
Uttar Pradesh	**59819**	**14090**	**11924379**
Uttarakhand	**1160**	**2843**	**7192433**
West Bengal	**18498**	**8402**	**9327339**
Highest Value		**Lowest Value**	
Table-1			

States/Union Territories	NUMBER OF EMPLOYEES	VALUE OF GROSS OUTPUT(☐ Lakh)
Andaman & Nicobar Islands	**75**	**17966**
Andhra Pradesh	**241555**	**39093376**
Arunachal Pradesh	**-**	**-**
Assam	**27982**	**5292766**
Bihar	**15022**	**6016746**
Chandigarh	**5106**	**750210**
Chhattisgarh	**46803**	**9301415**
Dadra & Nagar Haveli	**23786**	**8900765**
Daman & Diu	**21457**	**4218140**
Delhi	**38959**	**4527272**
Goa	**21261**	**4210182**
Gujarat	**319373**	**99841317**
Haryana	**144778**	**24395636**
Himachal Pradesh	**46969**	**8079659**
Jammu and Kashmir	**10557**	**2242919**
Jharkhand	**60840**	**10305316**
Karnataka	**198155**	**33767314**
Kerala	**55559**	**11158670**
Madhya Pradesh	**80628**	**15658407**
Maharashtra	**554790**	**100537793**
Manipur	**659**	**36324**
Meghalaya	**2179**	**325326**
Nagaland	**311**	**57932**
Odisha	**60678**	**11541915**
Puducherry	**10262**	**2048180**
Punjab	**109435**	**16293150**
Rajasthan	**94287**	**19045480**
Sikkim	**1757**	**556220**
Tamil Nadu	**336075**	**60963540**
Tripura	**2335**	**122682**
Uttar Pradesh	**189893**	**33265470**
Uttarakhand	**68489**	**14474752**

West Bengal	117335	23320091
Highest Value	**Lowest value**	

Table-2

| States/Union Territories	NET SOWN AREA (in Thousand Hectares)	NET IRRIGATED AREA (in Thousand Hectares)	PRODUCTION OF FOODGRAINS (in Thousand Tonnes)
Andaman & Nicobar Islands	-	-	-
Andhra Pradesh	11186	5034	20315.0
Arunachal Pradesh	213	56	333.7
Assam	2811	162	4876.5
Bihar	5259	3030	9221.9
Chandigarh	-	-	-
Chhattisgarh	4697	1356	7055.2
Dadra & Nagar Haveli	-	-	-
Daman & Diu	-	-	-
Delhi	22	22	153.288
Goa	131	36	123.1
Gujarat	10302	4233	8341.6
Haryana	3518	2887	16629.5
Himachal Pradesh	543	110	1421.1
Jammu and Kashmir	732	321	1521.6
Jharkhand	1085	125	1876.6
Karnataka	10523	3490	13877.3
Kerala	2072	415	527.1
Madhya Pradesh	15119	7140	14952.1
Maharashtra	17406	3256	15420.4
Manipur	348	73	592.7
Meghalaya	284	63	239.0
Nagaland	362	83	568.3
Odisha	4682	1284	7619.3
Puducherry	19	15	53.4
Punjab	4158	4070	27866.3
Rajasthan	18349	6661	18832.2
Sikkim	77	15	110.3
Tamil Nadu	4954	2912	7594.9
Tripura	255	69	712.4
Uttar Pradesh	16593	13440	47247.5
Uttarakhand	723	336	1815.5
West Bengal	4981	2955	14466.9
Highest Value	**Lowest value**		

Table-3

Conclusion

By combining all the variables, the final output has been extracted using the composite index method. These composite index values have been categorized as low, medium, and high. The range are categorized as (0.200-0.830) - low, (0.830-1.460) - medium and (1.460-2.090) - high. Table-4 represents the final output in which a low level of development is represented by a light shade, a medium level of development is represented by medium shade and a high level of development is represented by dark shade.

States/Union Territories	Composite Index Value
Andaman & Nicobar Islands	0.701
Andhra Pradesh	1.262
Arunachal Pradesh	0.686
Assam	0.394
Bihar	0.624
Chandigarh	0.684
Chhattisgarh	0.210
Dadra & Nagar Haveli	0.574
Daman & Diu	0.612
Delhi	0.549
Goa	0.630
Gujarat	1.487
Haryana	0.328
Himachal Pradesh	0.481
Jammu and Kashmir	0.598
Jharkhand	0.374
Karnataka	0.714
Kerala	0.387
Madhya Pradesh	0.760
Maharashtra	2.052
Manipur	0.671
Meghalaya	0.676
Nagaland	0.678
Odisha	0.316
Puducherry	0.660
Punjab	0.529
Rajasthan	0.711
Sikkim	0.690
Tamil Nadu	1.093
Tripura	0.670
Uttar Pradesh	2.086
Uttarakhand	0.373
West Bengal	0.349
Table-4	

Three states named Gujarat, Maharashtra, and Uttar Pradesh are categorized as having a high level of development. Andhra Pradesh and Tamil Nadu lie in the medium level of development and leftover all the states and union territories fall under low level of development. Individually Uttar Pradesh (2.086) has the highest value of composite index while the least value has been set by Chhattisgarh (0.210). Therefore, the following Map of India represents the demarcation of composite index values in which the map is categorized by the level of development. Here also light shade represents a low level of development, medium shade represents a medium level of development and dark shade represents a high level of development.

Demarcation of Regional Dispartiy of India using Composite Index Method
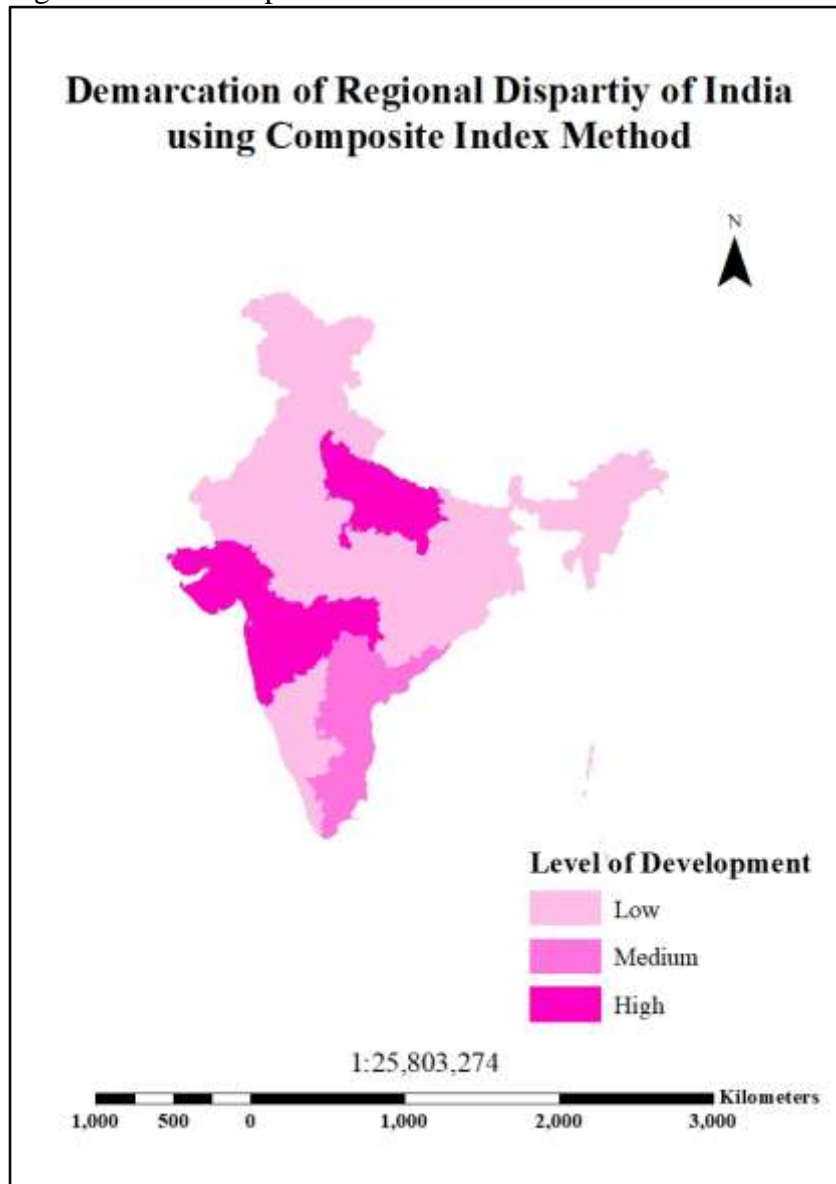
Map – 1

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