

STATISTICAL ANALYSIS OF REGIONAL DISPARITIES IN SOCIO-ECONOMIC DEVELOPMENT OF MAHARASHTRA: RECENT SCENARIO

DR.DATTATRAYA VITTHALRAO PARHAD

Abstract: Present study is made to analyze the regional disparities in the Development of Maharashtra. The study analyzed the data for 38 socio-economic indicators for the year 2008-2009 using Principal Component analysis method. In the study, the districts of Maharashtra are ranked on the basis of level of development and Classified as Developed, Developing and Low developed Districts. Vidarbha, Marathwada and Rest of Maharashtra are considered as the Regions in Maharashtra . The study found that most of the developed districts are from Rest of Maharashtra and Low developed Districts are from Vidarbha and Marathwada.

Keywords: Principal Component Analysis, Regional Disparity, Development, Ranking, Correlation Analysis

Introduction: The term "regional disparity" express the scope of difference of intensity manifestation of economic under investigation observed within regions of given country. Many regional conflicts are an outcome of disparities in the development of a particular region compared to the remaining parts of the country or the state of which that particular region is a part

The state of Maharashtra was formed under the Bombay Re-organization Act of 1960 by merging the contiguous Marathi-speaking areas of then Bombay state . central province & Berar and Hyderabad state.

The reorganization of the states based on language, a major aspect of national consolidation and integration, came to the fore almost immediately after independence. The case for linguistic states as administrative units was very strong.

After independence, in 1953, the Government of India appointed a state reorganization commission. The Commission appointed by the Government of India for the reorganization of states submitted its report in December 1955. The commission recommended a bilingual state for Bombay comprising the Marathi speaking areas of then Bombay and Hyderabad and another separate state for Gujarati speaking areas of then Bombay, Saurashtra and Kutch.

*Assistant Professor in Mathematics Rizvi College of Arts, Science and Commerce Bandra (W) Mumbai 400050

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In view of the step taken by the government, eminent social and political leaders of the Marathi- speaking regions made an agreement on the formation of a new state, which is known as the Nagpur agreement.

The main features of Nagpur agreement (Nagpur Pact 1953) are development expenditure in the three regions shall be equitable and in proportion to the population, Efforts will be made to ensure that admissions to technical and professional Institutions, The High Court for the State will be situated in Mumbai with a Division Bench in Nagpur, Treating village as a unit and using the latest Census, districts will be so re-organized as to ensure that the entire contiguous Marathi speaking regions are included in the State. Regional imbalance is a always been a point of unrest in these regions, mainly in Vidarbha and Marathwada. Before independence these regions were under different administrative setup as Vidarbha was being the part of Central Province and Marathwada was falling under Nizam state of Hyderabad. Due to Re-organization of the states in 1960, these regions were taken together to form the Maharashtra state. According to the Geographical Status and climate, these regions were having their separate identities and also having slightly different cultural base. of MMR, etc.

In spite of all these agencies working for infrastructural development, there are some issues of unbalanced development in all above sectors including Agriculture, industry, Infrastructure and overall socio-economic development and The Government of Maharashtra had taken this issue by appointing a Fact Finding Committee in 1984 and Indicators and backlog Committee in 1991.

The FFC submitted its report in April 1984. The Committee in its report, showed the backlog of Rs. 3186.78 crores for 9 development sectors namely road, irrigation, village electrification, general education, technical education, health services, water supply, land development, soil conservation & veterinary services. The share of backlog was 23.6% for Marathwada, 39.1% for Vidarbha and 37.3% for Rest of Maharashtra. The Fact Finding Committee had identified backlog of Rs. 3186.78 Crores.

The Committee has submitted its report on 11th July 1997 to the Governor of Maharashtra. Government has accepted the report of the committee in principle in March. After taking into account of the development that took place till March, 1994 in the same 9 sectors (Irrigation, Roads, General Education, Technical Educational, Energy, Water Supply, Animal Husbandry & Health) which were indicated by the Dr. Dandekar Committee, the Committee worked out fresh backlog of Rs. 15355.77 Crores under these sectors.

Maharashtra state is made up of 35 districts, which are grouped into six divisions.

1)Amravati Division: Akola, Amravati, Buldhana, Washim and Yavatmal
 2)Aurangabad Division (Marathwada): Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani, 3) Konkan Division: Mumbai City, Mumbai Suburban, Raigad, Ratnagiri, Sindhudurg and Thane4) Nashik Division: Ahmednagar, Dhule, Jalgaon, Nandurbar and Nashik 5) Nagpur Division: Bhandara, Chandrapur, Gadchiroli, Gondiya, Nagpur and Wardha,6) Pune Division: Kolhapur, Pune, Sangli, Satara and Solapur.

RESEARCH METHODOLOGY: Principal component analysis reduces the dimensionality of a set of data while trying to preserve the structure. Principal components can be used to reduce the number of variables in statistical analyses.

Consider a multivariate data matrix

$$V = [V_{ij}]$$

$$i = 1, 2, 3, \dots, n$$

$$j = 1, 2, 3, \dots, k$$

Where V_i denote the cases and V_j denote the variables (or indicators)

Let the matrix V be normalized using formula

$$U_{ij} = (V_{ij} - V_j) / \sigma_j$$

Where V_j is Mean of V_{ij} and σ_j is Standard deviation of V_{ij}

Let

$$Z = [z_{ij}] \quad \text{-----(ii)}$$

where $i = 1, 2, 3, \dots, k$
and $j = 1, 2, 3, \dots, k$

be correlation matrix of U and it is a symmetric matrix of order k .

Consider equation

$$ZW = \lambda W$$

where λ is called eigen value of Z and w is w called eigenvector or latent vector of Z .

λ is the root of equation

$$\begin{vmatrix} Z - \lambda I \end{vmatrix} = 0 \quad \text{..... (ii)}$$

Equation (ii) is an equation of degree k in terms of λ and will have k roots

$\lambda_1, \lambda_2, \lambda_3, \dots, \lambda_k$ be the roots of (i) and w_1, w_2, \dots, w_k be the corresponding eigenvectors.

Let

$$W = [w_{ij}]$$

$$i = 1, 2, 3, \dots, k$$

$$j = 1, 2, 3, \dots, k \quad \text{... (iii)}$$

be the matrix of eigenvectors such that

$$\lambda_1 \geq \lambda_2 > \lambda_3 \dots > \lambda_k$$

This matrix is also called the matrix of factor loadings.

Let

$\lambda_1, \lambda_2, \lambda_3, \dots, \lambda_m$ be the values greater than or equals to 1.

Consider a matrix

$$M = [m_{ij}] \quad i = 1, 2, 3, \dots, k$$

$j = 1, 2, 3, \dots, k$ be the matrix of first k eigen vectors.

Then first principal Component Score P_{ij} is calculated by the formula

$$p_{ij} = \frac{\sum m_{ij} \cdot y_i^T}{\sigma_j}$$

where m_j = factor loading of first component on j the variable.

U_j^T = normalized value of j the variable

σ_j = S.D. of j^{th} variable. (this value is 1 for normalized data)

P_{ij} is called first principal component score.

Since these scores carry negative signs, for further analysis to form **Composite principal scores**, a constant, which equals to the maximum magnitude number in the same data, is added in all the respective principal component score.

The composite principal component score (CS) is calculated by the formulas.

$$CS = \frac{\sum_{i=1}^m p_i \lambda_i}{\sum_{i=1}^m \lambda_i}$$

This value is finally divided by maximum of CS, to obtain the values between 0 & 1.

Conclusions: The study indicates that the disparity in the development of the different districts of the Maharashtra state exists. The classification indicates that, most of the developed districts are from Western Maharashtra and Low developed districts are Vidarbha and Marathwada. The study also revealed that, last three districts in the ranking are in Tribal area, the development for these districts is very poor and needs special attention in the development program planned by the government in future

Table No.1 Ranking and the Classification of the districts for over-all Development

DEVELOPED	
PRINCIPAL COMPONENT SCORES	DISTRICT

1.0000	Pune
0.7845	Kolhapur
0.7565	Nagpur
0.7513	Raigad
0.7159	Sindhudurg
0.7075	Thane
DEVELOPING	
0.6778	Satara
0.6599	Sangli
0.6525	Aurangabad
0.6468	Nashik
0.6425	Ratnagiri
0.5617	Osmanabad
0.5552	Bhandara
0.5295	Ahmednagar
0.5085	Solapur
0.5042	Jalgaon
0.5025	Chandrapur
0.4613	Gondiya
0.4583	Wardha
0.4562	Akola
0.4174	Jalna
0.4017	Buldhana
0.3809	Amaravati
0.3771	Dhule
0.3760	Parbhani
0.3615	Hingoli
0.3439	Beed
0.3307	Nanded
LOW DEVELOPED	
0.3158	Latur
0.3150	Washim
0.2769	Nandurbar
0.2259	Yeotmal
0.1057	Gadchiroli

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Dr.Dattatraya Vitthalrao Parhad

Assistant Professor in Mathematics Rizvi College of Arts, Science and
Commerce, Bandra (W) Mumbai 400050

Address of Correspondence

Dr.D.V.Parhad505, Diamond Palace Sector 8 AiroliNavi Mumbai 400708

Mobile 9657725810 : Email ID dvparhad@yahoo.co.in.