Available online at www.jpsscientificpublications.com
Volume – 1; Issue - 2; Year – 2015; Page: 107– 114

Indo – Asian Journal of Multidisciplinary Research (IAJMR)
ISSN: 2454-1370

EMPIRICAL ANALYSIS OF REGIONAL INCONSISTENCY IN PRIMARY EDUCATION (Case study on Kheda, Banaskantha, Bharuch, Panchmahal in Gujarat)

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Abstract

Education is a fundamental human requirements and key factor of human development. In this paper we obtained four districts for educational indicators performance in primary education out of them two are tribal districts of Gujarat. Gujarat is the chore model for economic development but not performing better in social development. Many parameters are affecting to inverse impact on social development. While discussing about human development, education and health are basic two components to measure the value of life achievement. The present study examines the regional disparities through performance of primary educational indicators by Principal Component Analysis and Pearson Correlation analysis. Through this study we found here tribal regions are in better position in primary education compare to non-tribal regions. The present paper examines various magnitudes of regional disparities and their measurement.

Key words: Districts disparities in primary education, Human Development, Econometric & Pearson analysis and Rank of the districts through performance of primary educational parameters.

1.Introduction

Education is not only the subject matter but it is concerning to society and Government. It reveals the better society in developing process of any country. The Right of Children to Free and Compulsory Education Act, which was passed by the Indian parliament on 4 August 2009, describes the modalities of the provision of free and compulsory education for children between 6 and 14 in India under Article 21A of the Indian Constitution India became one of 135 countries to make education a fundamental right of every child when the act came into force on 1 April 2010. The United Nations Development Programmes (UNDP's) latest "Inequality-adjusted Human Development Report 2011" suggests that inequalities in Gujarat would not have been so high in case educational and health facilities were disturbed more equitably. Even while estimating that Gujarat ranks No 7 in human development index (HDI) in a group of 19 major states, using a completely new approach devised by the top UN agency, adjusting HDI in the context inequality, the report says, Gujarat ranks No 9 in education and No 10 in health. As for income, the state ranks No. 5. "Education for All" means what it says. The international community has committed itself, in the Dakar Framework for Action, to having all eligible children attending fee-free primary schooling by 2015. Primary education is the base of education and we cannot critic, it always endow with positive impact on human being. It is for

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Received: 05.03.2015; *Revised*: 27.03.2015;
Accepted: 02.04.2015.

eternity beneficial for the community and the country. An educated adult population is vital for strong economic development. It also lays the foundations for greater overall economic productivity, and the full use of new technologies for development. Because primary education is the initial phase of education system. Easterly and Levine (2002) said in their study today's rapidly growing economies depend on the creation, acquisition, distribution, and use of knowledge and this requires an educated and skilled population. In addition, there is growing evidence that perhaps half or even more of aggregate economic growth is driven by increases in factor productivity rather than by factor accumulation in either capital or labor.

Many researchers have worked on this issue**.** Number of factors drives this regional disparity in terms of education quality, performance and completion. First, the impact of the conflict on education infrastructure, resources and systems is significant. Universal primary education assumes that all children irrespective of the caste, creed or location would complete primary education of comparable quality within the stipulated time frame. Therefore, all children should have equal opportunities to participate and succeed in primary education. Atal Bihari Das & Dukhbandhu Sahoo discussed in their paper regional disparities in education in Odisha with special reference to KBK and non-KBK districts. They analysisd regional disparities by econometric process and their findings are demand side constraints of education in KBK districts. Hence, their findings in the paper suggested that in order to enhance enrolment in the KBK region parental motivation isvery significant. Further, they said government has to take special measures like opening of more schools inremote areas, appointment of more female and ST teachers, provision of special incentive scheme forgirls etc Hasan and Mehta's study (2006) of college education focuses on disparities across social castes, but ignores gender disparity in education. Anwar Shah and Heng-Fu Zou explored the causes of the regional inequality of the educational investment measured by the enrolment rate at various school levels. They finds that the return to education, the governmental support and the financial constraint play an important role in generating differences in educational investment across regions by empirical analysis. Ghosh (2006) has studied the overall condition of primary schools in Kolkata of West Bengal. He suggests encouraging the unrecognized private schools by providing easy means of loans and other development initiatives without harming the interest of govt. aided schools. The main objectives of the present research includes,

- To indentify the various types of disparities in education through performing indicators.
- To examine technique and measurement of performance of educational indicators of define districts.
- To interpret the econometric facts with Pearson correlation analysis.

2. Coverage of the Study

The paper is an endeavor to evaluate the regional inconsistency of primary education facilities. For above study we selected four districts out of them two are tribal districts and two are non tribal districts.

3. Methodology

After processing the raw data (DISE-2009-10), five educational quality parameters *viz*., Gross Enrolment Ratio (GER), Net Enrollment Ratio (NER), Dropout Rate, Retention Rate and Number of Primary Schools have been generated to obtain respective WFS (INDEX) representing the variation of primary education at the study area. To discover the dimensionality of the data set we followed principal component analysis for this study. PCA methodology covers descriptive statistics, total variance, component matrix and weight factor score. In this study, rank has been given through transform the data in SPSS. At the last present study will be concluding by Pearson Correlation analysis so we can obtain the correlation of each other's educational indicators.

4. Result and Discussion

India is a role model for culture and its own civilization across the countries in the world. And it is trying to achieve MDG (Millennium development Goal) with available resources. Education is one of the key factors which is most significant for human development. Gujarat is a most developed state in India and it is chore shape for other states also. Concerning the development of primary information a study has made to illustrate the spatial disparity of primary educational facilities in different districts based on the parameters like Gross Enrolment Ratio (GER), Net Enrollment Ratio (NER), Dropout Rate, Retention Rate and No. of Primary Schools. The achievement of any education structure depends upon the faultless arrangement of Gross Enrollment Ratio and Net Enrollment Ratio Table - 1 shows the parameter of the study area. Higher value of WFS (INDEX) shows the highest availability of those variables.

Gross Enrollment Ratio (GER) is the key parameters of any success school. Analysis reflects the spatial variation of the above mentioned parameter regarding its Z-Score values within the four districts of Gujarat. Banaskantha 1.31664 and Panchmahal 0.23299 districts are in the top position of GER while Kheda - 0.69896 and Bharuch -0.85067 are in the 3rd and 4th position. Concerning to weight factor score Banaskantha and Panchmahal are tribal districts though also having higher GER at the other side Kheda and Bharuch are urban districts they are lacking behind in GER. Discussing about NER again Banaskantha 0.85865 and Panchmahal 0.85865 in top position while Kheda -0.69912 and Bharuch -1.01818 is ranking behind. This demonstrates an enormous disparity of the forward discussed parameter of tribal and non tribal districts performance. Here Banaskantha and Panchmahal (Tribal Districts) having GER and NER positive Z-Score that means, it converts in 1st and 2nd rank in primary educational level. At the same time as. Kheda and Bharuch having negative Z score and performing less compare to above two districts so they stands on 3rd and 4th rank. Dropout Rate is another measurement of quality of education. Banaskantha 1.00206 and Panchmahal 0.69687 have higher rate of dropout rate compare to Kheda -0.66635 and Bharuch -1.03258. There is no significance growth of GER and NER in Kheda and Bharuch so obviously dropout rate also would be higher. This shows non tribal districts are not performing better in Gujarat education system compare to tribal districts. Noteworthy is that urban districts should perform better but here we found educational parameters are performing opposite to tribal districts. Here, we found positive Z-score stands first so again Banaskantha and Panchmahal having positive Z-score and Kheda and Bharuch having negative Z-score so they stands in bottom.

Retention is a measure of academic progress of a group of students from one tenure or year to the next. Retention rate is expressed as a percentage of the students who return each term or year. It's important for analysis the patterns of development through an academic program or student's academic career. Economically, retention is one key factor impacting the monetary welfare of an association. Retention Rate is also one of the key indicators of successive education system. Here we found that for a second time Banaskantha -1.2161 and Panchmahal -0.41934 having very less Z-score while Kheda 0.88062and Bharuch 0.75482 has higher Z-score. So, here we found inverse image in retention rate of Banaskantha and Panchmahal districts. Primary schools are always providing solid foundation to the children. Primary education is the first stage of compulsory education so automatically its needs health infrastructure and for that Government has established many primary education schools in across the state. Analyzing of available statistics another time Panchmahal 0.89138 and Banaskantha 0.57545 having high Z-score (number of primary schools) while Kheda - 0.10155 and Bharuch -1.36528 having less Z-score (number of primary schools). So, again her Banaskantha and Panchmahal districts stands first and other two districts are in bottom. So, overall analysis revealed that, Banaskantha - Panchmahal districts having more positive Z-score so they

stands in first and second rank and Kheda - Bharuch having more negative Z-score so they are in bottom rank. According to PCA analysis, their Weight Factor Score (INDEX) and Rank has given to all four the districts and we found that Z-Score and Index are very similar in this study.

Rotated Component Matrix& Eigen values of Education

Eigenvalues is obtained by putting normalized value in PCA, and then we get initial Eigenvalues. For getting Eigenvalues we followed below formula (Multiplied each Rotated component values with Initial Eigenvalue):

(0.953*4.594=4.376312), 0.953 is Rotated component value and, 4.594 is Initial Eigenvalue, and 4.376312 are Eigenvalue. Like that finding Eigenvalues for all variable by multiplying 4.594.

(0.986*4.594=4.530497), (0.999*4.594=4.590259), (0.963*4.594=4.426194), (0.887*4.594=4.075147). All these values are component 1 values.

Weights are getting by sum of all Eigenvalues: Here, Eigenvalues are considered as weights because there is only one component.

Index is used as weight factor score for ranking region on the basis of highest INDEX concluding best performing region. For getting INDEX we followed below formula, (multiplied each state normalized value of different variables with their correspondence weight):

((1*4.376312) + (1*4.530497) + (1*4.590259) + (0*4.426194) + (0.86*4.075147)) /21.99841 = 0.77286)

((0.07*4.376312) + (0.17*4.530497) + (0.18*4.590259) + (1*4.426194) + (0.56*4.075147)) /21.99841

= 0.39144)

((0.50*4.376312) + (1*4.530497) + (0.85*4.590259) + (0.38*4.426194) + (1*4.075147)) /21.99841

= 0.744484)

((0*4.376312) + (0*4.530497) + (0*4.590259) + (0.94*4.426194) + (0*4.075147)) /21.99841 = 0.189133)

As, Index shown Banaskantha is comes on the 1st rank, Panchmahal on the 2nd rank, Kheda on the 3rd rank, and Bharuch on the 4th rank.

Pearson Correlation Analysis

Pearson's correlation coefficient (r) is a measure of the strength of the association between the two variables. When Pearson's r is close to 1 that means that there is a strong relationship between your two variables. This means that changes in one variable are strongly correlated with changes in the second variable. We instigated that GER 0.942 and NER 0.992 having very strong relationship with Dropout Rate by analyzing Pearson correlation analysis which is near to 1.

At the same time as GER and NER 0.895, and GER and No. of primary schools 0.733, NER and No. of primary schools 0.907, Dropout Rate and No. of primary schools 0.892 having positive relation that means that as one variable increases in value, the second variable also increase in value. Similarly, as one variable decreases in value, the second variable also decreases in value. And some other variable like GER and Retention Rate -0.985, NER and Retention Rate -0.929, Dropout Rate and Retention Rate -0.959 Retention Rate and No. of primary school -0.731 are showing negative relationship that means one variable increases in value, the second variable decreases in value.

Absolute Data

Districts	GER	NER	Dropout Rate	Retention Rate	No. of Primary Schools
Banas Kantha	157.9	100	4.52	69.3	1029
Kheda	110.9	90.3	2.18	90.9	762
Panch Mahals	132.5	100	4.1	77.4	1154
Bharuch	107.5	88.3	1.68	89.7	255

Source; DISE-2009-10

Normalized Value

Districts	GER	NER	Dropout rate	Retention rate	No. of primary schools
Banas Kantha	1.00	1.00	1.00	0.00	0.86
Kheda	0.07	0.17	0.18	1.00	0.56
Panch Mahals	0.50	1.00	0.85	0.38	1.00
Bharuch	0.00	0.00	0.00	0.94	0.00

Descriptive Statistics

	Mean	Std. Deviation	Analysis N	Missing N
GER	.3925	.46140	4	0
NER	.5425	.53281	4	0
Dropout rate	.5075	.49149	4	0
Retention rate	.5800	.47693	4	0
No. of primary schools	.6050	.44313	4	0

The above simply shows the means, standard deviations and sample size for each variable. It appears that the average score for all the tests is very similar and all have a similar spread. Next is the observed correlation matrix, which we have already commented on

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	4.594	91.871	91.871	4.594	91.871	91.871
2	.360	7.209	99.080			
3	.046	.920	100.000			
4	-2.007E-17	-4.013E-16	100.000			
5	-1.368E-16	-2.735E-15	100.000			
Extraction Method: Principal Component Analysis.						

Component Matrix

	Component	**Eigenvalue**	**WEIGHTS**
	1	4.594	
GER	.953	4.376312	4.376312
NER	.986	4.530497	4.530497
Dropout rate	.999	4.590259	4.590259
Retention rate	.963	4.426194	4.426194
No. of primary schools	.887	4.075147	4.075147
			21.998409

WEIGTHS	4.376312	4.530497	4.590259	4.426194	4.075147	21.99841	
	GER	**NER**	**Dropout Rate**	**Retention Rate**	**No. of primary schools**	**INDEX**	**RANK**
Banas Kantha	1.00	1.00	1.00	0.00	0.86	0.77286	1
Kheda	0.07	0.17	0.18	1.00	0.56	0.39144	3
Panch Mahals	0.50	1.00	0.85	0.38	1.00	0.74448	2
Bharuch	0.00	0.00	0.00	0.94	0.00	0.18913	4

Z-Score value

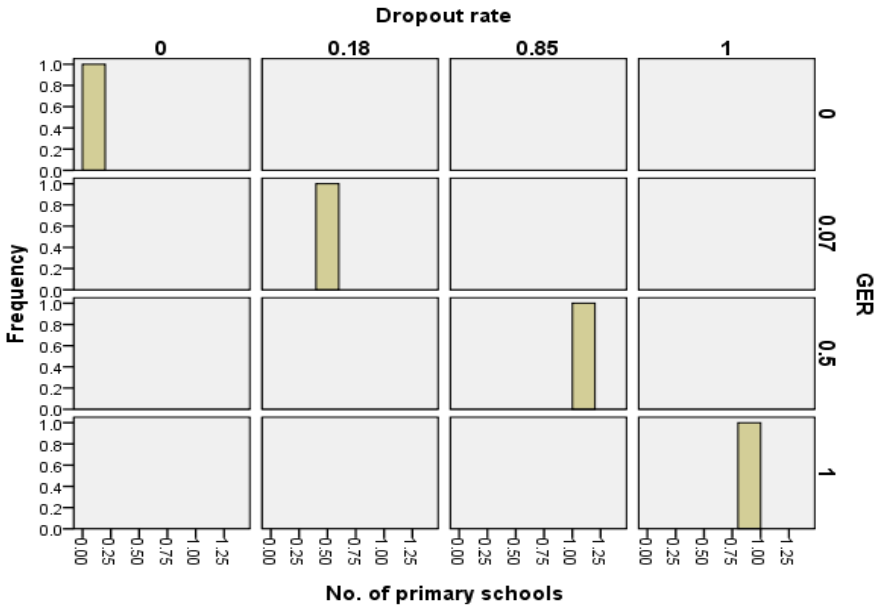
	GER	**NER**	**Dropout rate**	**Retention rate**	**No. of primary schools**
BanasKantha	1.31664	0.85865	1.00206	-1.2161	0.57545
Kheda	-0.69896	-0.69912	-0.66635	0.88062	-0.10155
Panchmahals	0.23299	0.85865	0.69687	-0.41934	0.89138
Bharuch	-0.85067	-1.01818	-1.03258	0.75482	-1.36528

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Banas Kantha	5	.00	1.00	.7720	.43580
Kheda	5	.07	1.00	.3960	.38591
Panchmahals	5	.38	1.00	.7460	.28910
Bharuch	5	.00	.94	.1880	.42038

Pearson Correlations

		GER	NER	Dropout Rate	Retention Rate	No. of primary schools
GER	Pearson Correlation	1				
NER	Pearson Correlation	.895	1			
Dropout rate	Pearson Correlation	.942	.992	1		
Retention rate	Pearson Correlation	-.985	-.929	-.959	1	
No. of primary schools	Pearson Correlation	.733	.907	.892	-.731	1



Conclusion

Education is only one of the factors which is providing better society in the world. To assessing the above statistics we found tribal districts (Banaskantha and Panchmahal) are performing better than non-tribal (Kheda and Bharuch) districts. That means state Govt. has to put more concentration on urban and non tribal area for primary education. Govt. has to construct some strapping programmes or schemes for primary education. For the reason that education is only the determinants which demonstrate a status of the society.

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