

Vol 4 Issue 5 June 2014

ISSN No : 2230-7850

International Multidisciplinary
Research Journal

*Indian Streams
Research Journal*

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RNI MAHMUL/2011/38595

ISSN No.2230-7850

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board. Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

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PRIMARY EDUCATIONAL INDEX OF TRIBAL DISTRICTS: EDUCATIONAL DEVELOPMENT INDEX (EDI): AN ECONOMETRIC ANALYSIS

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Abstract:-Education system should make an individual better suited to the needs of the ever changing dynamic world. The changes in the educational system should also reduce the social gaps by enabling proper recognition to whatever extent one is able to pursue or acquire a skill. The status of education is a key indicator of socio-economic development while employment opportunities largely depend on the level of education. In this paper we examined the status of primary education in the tribal districts of Gujarat. This paper presents and analyses the four main indicators that are: a) Access b) Infrastructure c) Teacher and d) Outcome of the EDI (Educational Development Index) based on the DISE data and district education office. We prepared analysis of all parameters of above four components from first to last their normalized values, Eigen values, weights, index and rank of four states by quantitative method. Therefore, an attempt has been made to analyses and presents the status of educational development in tribal districts of Gujarat.

Keywords:Analysis of primary education of Tribal District of Gujarat through Educational Development Index (EDI)

JEL Classification: C4, C43, I21, O15.

INTRODUCTION:

One of the key ingredients of Human Development as envisaged by social scientists, reiterated by UNDP, and accepted by national, state and regional governments is education. More specifically, greater access to knowledge in its various dimensions is critical to building of human capabilities, enhancement of freedom, and empowerment of people. The Millennium Development Goals (MDG) adopted and ratified by India also speaks of universalization of primary education and promoting gender equality in education. Education is also perceived to be the primary means to overcome social discrimination (Omvedt, 1993), and the present market based global village puts up a barrier in front of those who 'cannot read or write or count, and cannot follow written instructions' (Sen 1998).

Education is a tool of improving the skills and knowledge of the people to make them capable of earning their livelihood. It is only by imparting proper education that objective of human resource development can be achieved. Education brings positive change in the attitude of the masses, increases awareness and brings sense of responsibility and makes them capable of facing oppression, humiliation and inequality (Planning Commission, 1998). According to Sharif and Ghosh (2000), level of literacy or education is directly associated with gross domestic product, indirectly with poverty, population growth and crime rate.

"In the 1980s, with literacy levels in the tribal areas 20% lower than the national average, an ideological shift in government thinking occurred. The realization of the need to mainstream tribal areas was based on the link between lacks of education under-development of tribal areas".

A.M. Tiwari,
Secretary, Tribal Development Affairs, Gujarat

Since Independence, expansion of elementary education has been the major agenda of the governments (both state &

central). India has made impressive progress in widening the coverage of elementary education. No doubt, universalization of primary level enrolment has been achieved; however, when it comes to the question of retention and success at the primary level, it presents a very dismal picture. The dropout rate at the primary level is very large and very small per cent of enrolled pass middle level. Large populace is still without schools within one kilometer of their habitation. Till the country achieves high level of enrolment with retention at least till elementary level, the fruits of education cannot be reaped by those who are really in need of this, to enable them to come out of vicious circle of poverty.

When the British rule ended in India in the year 1947 the literacy rate was just 12%. Over the years, India has changed socially, economically, and globally. After the 2011 census, literacy rate of India was found to be 74.04%. Compared to the adult literacy rate here the youth literacy rate is about 9% higher. Though this seems to be a very great accomplishment, it is still a matter of concern that still so many people in India cannot even read and write. The numbers of children who do not get education especially in the rural areas are still high.

Though the government has made a law that every child under the age of 14 should get free education, the problem of illiteracy is still at large. India ranked 134 out of 187 countries in the Human Development Index in Global Human Development Report (UN Human Development Report 2011). The absolute value of Human Development Index has increased from 0.512 in 2010 to 0.547 in 2011, an increase of 6.84 percent over the period. India Human Development Report 2011 published by Planning Commission of India reveals that Human Development Index has increased by 21 percent (from 0.387 in 1999-2000 to 0.467 in 2007-08) in the last decade. Among the top five states, Kerala topped the index, followed by Delhi, Himachal Pradesh, Goa, and Punjab. The overall improvement in the index was largely attributed to 28.5% in education index across the country. As per India Human Development Report 2011 published by Planning Commission of India, Gujarat ranked 11th among all the states of the country. The Human Development Index value has increased from 0.466 in 1999-2000 to 0.527 in 2007-08; a gain of 13 Percent over the period. In Income, Health and Education sector it has gained 15 percent, 13 percent, and 13 Percent, respectively over the period 1999-2000 to 2007-08.

Total population of Scheduled Tribes accounts for 8.6% of the total population of country. Majority of the Scheduled tribe population live in rural areas and their population is 11.3 % of the total rural population of the country. The share of the Scheduled Tribe population in urban areas is a meager 2.4%. Madhya Pradesh, Maharashtra, Orissa, Gujarat, Rajasthan, Jharkhand, Chhattisgarh, Andhra Pradesh, West Bengal, and Karnataka are the State having larger number of Scheduled Tribes. These states account for 83.2% of the total Scheduled Tribe population of the country. Assam, Meghalaya, Nagaland, Jammu & Kashmir, Tripura, Mizoram, Bihar, Manipur, Arunachal Pradesh, and Tamil Nadu, account for another 15.3% of the total Scheduled Tribe population. The share of the remaining states / Uts is negligible. Education of ST children is considered important, not only because of the Constitutional obligation but also as a crucial input for total development of tribal communities. The literacy rate among tribal is low, but also varies widely among different groups and regions. More importantly, a considerable portion of tribal children continue to be outside the school system. Across social groups and religious communities, the problem of illiteracy was much more acute among SCs, STs, and Muslims. More than half of the illiterates in the country were accounted for by SCs (25per cent), STs (12per cent), and Muslims (14per cent).

Education is the most important means by which individuals and society can improve personal endowments, build capacity levels, overcome barriers, and expand opportunities for a sustained improvement in their well-being. In the context of tribal education, finding a balance between preserving tribal cultural identity and mainstreaming for economic prosperity means building education programmes that ensures a tribal child's success in mainstream schools. The situation in Gujarat in respect of the tribal regions and tribal people is no way much different than the overall situation of the tribal regions and people in the whole country.

Literacy rate in Gujarat has seen upward trend and is 78.03% as per 2011 population census. Of that, male literacy stands at 85.75% while female literacy is at 63.31%. Gujarat's literacy rate is marginally above the national average. However, there is a high degree of intra-state variation in education levels, with the literacy rate being low in the tribal belt. Of the total population of Gujarat around 57.40% (34,694,609) people live in rural areas. The average literacy rate for rural areas was 71.71%. The literacy rate among STs is the lowest among all the social groups in the state. Since STs constitute about 17 per cent of the state's population, their low literacy rate is a matter of serious concern.

On paper there are adequate numbers of schools, at least primary schools, including Ashram Shallas in all our tribal regions. Yet, the literacy rate in most of the tribal regions is lowest in the State. Apart from this poor literacy rate and abnormally heavy drop outs, the most serious issue is the quality of education in the tribal regions. During last few decades, in particular, the Gujarat state had made a phenomenal progress, not only in the sphere of industries, but in other areas too. Educational development is the main source, which helps the state to develop in other fields, such as agriculture and infrastructure. No doubt, Gujarat is one of the high per capita income state, it ranks 18th (Census 2011) among the states of India in literacy rate. States like Kerala and Himachal Pradesh have higher literacy than Gujarat, but lower per capita income than Gujarat. The education provided in the rural schools is not comparable to the one in the urban/private schools. Absenteeism and lack of dedication on the part of teachers, non-academic work being performed by the school teachers, illiterate parents, growth of so called 'English schools' in the rural areas and non-seriousness on the part political leadership about education are some of the reasons for poor quality of education in the state run schools.

The tribal districts of Gujarat constitutes of mainly Banaskantha, Dahod, Narmada, Panchmahal, Sabarkantha and The Dang.

The average literacy rate of Banaskantha in 2011 was 65.32, if we look gender wise then male and female literacy

were 78.15 and 51.75 respectively. As per 2011 census, 86.70% (2,705,591) population lives in rural areas. Literacy rate in rural areas is 62.91% (1,415,564), gender wise male and female literacy stood at 76.37 (881,639) and 48.73 (533,925) respectively.

The average literacy rate of Dahod in 2011 was 58.82, if we look gender wise then male and female literacy were 70.01 and 47.65 respectively. As per 2011 census, 90.99% (1,935,461) population lives in rural areas. Literacy rate in rural areas is 56.36% (872,552), gender wise male and female literacy stood at 67.98 (525,140) and 44.78 (347,412) respectively

The average literacy rate of Narmada in 2011 was 72.31, if we look gender wise then male and female literacy were 81.19 and 63.09 respectively. As per 2011 census, 89.52% (528,42) population lives in rural areas. Literacy rate in rural areas is 70.46% (321,677) gender wise male and female literacy stood at 79.83 (185,566) and 60.74 (136,111) respectively.

The average literacy rate of Panchmahal in 2011 was 70.99, if we look gender wise then male and female literacy were 82.51 and 58.89 respectively. As per 2011 census, 86.00% (2,055,949) population lives in rural areas. Literacy rate in rural areas is 68.36% (1,187,834) gender wise male and female literacy stood at 80.89 (719,128) and 55.24 (468,706) respectively.

The average literacy rate of Sabarkantha in 2011 was 75.79, if we look gender wise then male and female literacy were 86.44 and 64.69 respectively. . As per 2011 census, 85.02% (2,064,869) population lives in rural areas. Literacy rate in rural areas is 74.19 (1,307,989) gender wise male and female literacy stood at 85.57 (768,505) and 62.37 (539,484) respectively.

The Dangs is a tribal district, with the Bhil, Konkana (Kunvi), Varli, Kotwalia, Kathodi and Gamit being the major tribal groups. The Bhils have historically been residing in the Dangs whereas the other tribes came to the Dangs in search of a livelihood. The average literacy rate of The Dangs in 2011 was 75.16% compared to 59.65% of 2001. As per the 2011 census, 89.19% population lives in rural areas of villages. Literacy rate in rural area is 73.42%. In total 121,597 people were literate of which males and females were 67,400 and 54,197 respectively

This article examines the tribal education and tribal development in Tribal districts of Gujarat. The promotion of tribal education needs a fresh thinking and renewed efforts in new direction. The new policy and administrative initiatives should focus on the improvement of quantity as well as quality aspects for tribal education. The tribal people in India have their own culture, and are conditioned by the eco-system. Normal development process has by passed the tribal communities. Hence the government has been implementing special schemes for their upliftment. In this paper effort has been made to analyses and compares the tribal districts of Gujarat state with regard to educational development.

REVIEW OF LITERATURE:

L.N Bhagat in his case study on Oraons and Kharia tribes of Chotanagpur makes education a central theme. He begins with a hypothesis that low literacy rate and educational status generally make the tribal unaware of developmental plans offered by government and other agencies. Christianity in Chotanagpur region has brought in higher educational scores, higher value orientation but considerably lower average annual income as compare to the Non-Christian Oraons. Their values have been shifted to more leisure having attitude. He also finds a high positive correlation between educational status and value orientation, on one hand and positive association between value orientation and economic condition on the other. His model in the presented paper envisages education as an agent bringing about change in economic conditions and inter-tribal differences in the Christian and Non-Christian Oraons and the Kharias. Justice A.P. Sinha, Judicial Commissioner in his presidential address puts forward his observation on the tribal of Chotanagpur. He noticed that the elements of superstition are to such an extent that the murders are quite often committed with the notion of witchcraft. According to him the present system of education has no meaning to the tribal youths. They very soon become dropouts who make them unemployed or misfit for any jobs. Gradually they are taken to the anti-social activities. He also blames the local or tribal leaders in this area, who are there for selfish and least interested in tribal development. While concluding he believes in all round development of the tribal because they are the integral part of our highly mosaic society. A few recent studies have given detailed accounts of the appalling living and educational conditions prevalent in ashram schools in Gujarat, Karnataka, Maharashtra and Andhra Pradesh. Poorly constructed structures, overcrowding, lack of basic provisions such as toiletries, uniforms and fans for children, alienating environments, inadequacy of number and quality of teaching staff, lack of regular inspection are some of the problems that have been highlighted (Kumar, 2004; Gare, 2000; Gogate, 1986; Furer-Haimendorf, 1989; Saldanah, 1990; Sharma & Mathur, 1992; Ananda, 1994; Sujatha, 1983). Clear vested interests from politically-influential sections among tribal groups as well as others have developed in sanctioning and management of Ashram schools leading to many malpractices and much corruption. On the whole, the schools have reached out to very small proportions. Only the relatively better off tribal groups seem to access them and there are limits to how much they can increase general access for tribals. Dean Joros (1973) in his study, presents his views on the relation between political socialization of the tribals and integration process or the effect of tribal welfare programmes on their political socialization. He reveals that by analyzing the political socialization process of tribals, a more complete evaluation of tribal welfare programmes would be ensured. This view is also explained by P.R.G. Mathur (1977).¹¹ He points out that induction into political culture and integration into the mainstream of national life are part of one and the same process and without political socialization being achieved, tribals integration into the national social life is impossible. Political socialization must precede their integration into national life. Motivation and objective underlying the tribal welfare programmes and political socialization are common. Kamat, 1985; GOI, 1990 in a position paper stated A crucial dimension of unequal provisioning is the woeful implementation of the enabling programmes meant to facilitate and support the schooling of SC and ST children. For several years after independence, many of

these programmes had a very limited implementation, and their operation suffered from severe bureaucratic apathy. Yearly reports of the Commissioner for SC/ST and of other groups set up from time to time to look into welfare of these groups and academic studies have brought the situation to light. It is undeniable that despite several shortcomings, special schemes had a key role to play in facilitating social mobility and status change for SC and ST and the creation of political leadership. However, the coverage of programmes continues to be inadequate and there is no monitoring arrangement for the actual operation of these programmes, quantifying achievement targets and determining financial outlays. Thus, the actual benefits are limited and accrue largely to the relatively more powerful and better off SC and ST groups. Poor implementation reduces them much more. Quantitative expansion usually occurs as a result of political pressures and enhanced awareness. Gross inadequacies continue to exist aggravated by the changing socio-economic context and nature of the state. Devendra Thakur (1986) made an elaborate study about the Santhals in Bihar. The study highlights their socio-economic conditions. It has been observed to what extent they were responsive to the projects and programmes undertaken during the different developmental plans. Ashram Schools: Despite the fact that the vast majority of tribal children study in government day schools, a fair-sized achievement both in terms of money and coverage is claimed for Ashram schools. The SC/ST Commissioner reports have provided some data on the functioning of the schools. The inefficiency, mismanagement, nepotism and corruption besetting the Ashram Schools are well documented by B.K. Roy Burman years ago and B.D. Sharma more recently. They have commented upon the shortcomings of the voluntary agencies who run Ashram schools, pointing out the sub-standard level of education given in these institutions, poor hostel facilities, the use of inmates as unpaid, forced labour, etc. (Roy Burman cited in Kamat, 1985; Govt. of India, 1990). Other observers have also noted evils rampant in the system. Among the Scheduled Tribes, their development is also often linked with the change in their religion to Christianity, which opened a way to educational progress. Certain studies (Kailash, 1993; Heredia, 1992) revealed that the churches played a pivotal role in socializing the Scheduled Tribes to the outside world, in addition to providing economic assistance. For example, this was the case for the Bhils tribe in Jhabua District of Madhya Pradesh. Due to the adoption of Christianity, a new class of educated and literate Bhils emerged and established a separate identity for themselves within the Bhil community (Kailash, 1993). Another study was undertaken in Talasari Taluka at the Northwestern end of Thane district on the Bombay-Ahmedabad highway by the Talasari Mission, which was expanding its network of schools in the area. The study reflects the similar trend that conversion to Christianity among the Scheduled Tribes increased the demand for education. To counter the influence of Christian missionaries particularly among ST communities, and in an effort to incorporate Scheduled Tribes within wider Hindu society, Hindu nationalist organizations also established welfare services and schools. S.N. Tripathy's (1999) book contains eleven selected contributions of eminent authors relating to various issues and problems of tribals along with policy options. The role of financial institutions and co-operatives in mitigating the tribal economic problems, the impact of development plans and poverty amelioration schemes, etc., have discussed at length. Based on secondary as well as field data collected through survey, this work portrays the evaluation and analysis of tribal problems and policy paradigms to tackle the problem of backwardness in tribal regions. Kaul's (2001) paper highlights the need for a fresh approach to study the extent and forms of discrimination against SC and ST children. In her study, she found that many Scheduled Caste children were scared to talk about the unequal treatment meted out to them, such as verbal abuse, physical punishment or avoiding touching, by some of the upper caste teachers in their schools. In only a few cases did children speak out. Some SC students from a government school, for example, complained that although prejudices and discrimination were not practiced very openly in the classroom and the peer group appeared friendly in school, attitudes changed outside the school. Children of upper castes did not invite the Kuruba or Scheduled Caste children home to play and there was no social intermingling outside the school. Sujatha 2001, in a position paper on National Focus Group on Problems of Scheduled Caste and Scheduled Tribe Children pointed out on the Curriculum. The 'cultural discontinuity' between school and home draws attention to the rigidity of school organization and the emphasis on discipline and punishment in contrast with socialization practices and the lives of children, as reasons for non-attendance. Sujatha cites the case of community schools in Andhra where there was closer interaction with parents, weekly holiday was in tune with the local weekly bazaar, and school holidays coincided with tribal festivals. The school was observed to show positive results. Geographical location continues to be a significant predictor of whether a child will attend school, how far she will continue in school and in what type of school. Schooling within easy access has been relatively poor for the SC/ST children as compared to the general population. Scheduled Caste families, usually live in spatially segregated clusters or habitations in multicaste villages. These residential patterns have important implications for physical and social access. School provision in predominantly Scheduled Caste habitations is much less as compared to general rural habitations. Upper-primary schooling (schools/sections) is available within an even smaller number of habitations. On the whole, higher caste habitations within larger villages are better provided. In multi caste village, hierarchical norms still govern social relations (Nambissan and Sedwal, 2002). "Social" accessibility is a problem exclusively of Scheduled Castes and of others even worse off like nomadic tribes. C. Mehta (Mehta, 2005) has constructed the internal efficiency indicator of primary education system in his paper 'Student Flow at Primary Level: An Analysis Based on DISE Data'. The indicator emphasized on the completion of at least two years in the primary school by a child. However, this indicator is inadequate because its inability to capture social and gender issue. Sengupta and Pal (2008) used the DISE data set to generate a host of indicators directly related with educational performance. However, their analysis was based on the state level data set. This was undoubtedly prompted by the inadequacy of comparable district level data sets for all the time periods they covered. Notwithstanding this logic, a district level analysis will shed much light on the performance of primary educational units at a more disaggregated level. Gaurang Rami (2012) in

his study “ Status of primary education in the tribal district of Gujarat: A Case Study of the Dangs District” points out about the basic necessary infrastructural facilities in primary schools in the Dang district and also the efforts made by the Gujarat government and other agencies to promote the tribal education. Due to lack of infrastructural facilities like sanitation, electrification, drinking water, fixing fan, etc enrolment is poor. Government of Gujarat decided to close down primary schools which have less than 100 students, if this is implemented than almost 60 per cent of schools will be closed. It will create a negative impact on access to education. Even though many schemes have been implemented by government to improve the literacy rate, the process of education and development does not seem to benefit the disadvantaged tribal groups much. If the problems of tribal communities are properly identified then efforts to enhance their education will achieve their objectives.

OBJECTIVES OF THE PAPER:

1. To highlights of access, infrastructural facilities, teachers and outcomes of four define states.
2. To study the efficacy of above four components
3. To examine by numerical tools educational development index from above statistics for tribal districts in Gujarat.

RESEARCH METHODOLOGY

Sources of Data: Data are collected form District Information System of Education for above define districts. We obtained four components indicators and data were drawn from the Planning Commission, DISE report for 2009-10, and concern district education office.

Evaluating of methodology, here we seize two main components which is access, Infrastructure, teachers and Outcome. And we obtain base of 21 indicators concerning to above four components. In that some of are in ratio form and others in percentage form. The effort has been made to compute Educational Development Index for primary education is exclusively based on DISE and district education office data for the year 2011-12. In place negative variable we treated all variable positive, while calculating normalized value and SPSS software for educational development index (EDI).

In view of this, each indicator considered in EDI computation is first required to be normalized value. Normalized values range between 0 and 1 and it indicates the relative position of states with reference to a selected indicator. Thus in case of each indicator, in view of its nature, the best value and the worst value are identified which are then used to transform by using the following formula:

$$NV_{ij} = \frac{1 - \left[\frac{\{Best\ X_i - Observed\ X_{ij}\}}{\{Best\ X_i - Worst\ X_i\}} \right]}{1}$$

Source: DISE Flash Statistics 2007-08, NUEPA and GoI, New Delhi, January 2009.

After examine the normalized value we use the statistical software SPSS to get component matrix, Eigen values and their weights. And later on given rank as per education index.

RESULT AND DISCUSSION

All the four components / 21 indicators and states in each group are at different level of education development for 6 tribal districts. So far as in access indicator at primary level Banaskantha district has the highest value of EDI 0.94035, infrastructure set of indicators at Primary level is concerned Sabarkantha has the highest Educational Development Index 0.954383228, in teachers set of indicators Panchmahal district stands first in EDI 0.778780732 and in outcomes set of indicators Narmada has the highest EDI 0.612074024. It may be recalled that indicators, such as average SCR, and common toilets and girls' toilets, are considered under infrastructural set of indicators. The lowest EDI observed 0.34501698 in Dahod among of all tribal districts.

Rotated component matrix, Eigen values, Weight and Index of all the primary educational indicators

ACCESS:

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):

(0.814*1.326=1.079703), 0.814 is Rotated component value and, 1.326 is Initial Eigenvalue, and 1.079703 is Eigenvalue. Like that finding Eigenvalues for all variable by multiplying 1.326.

Weights are getting by sum of all eigenvalues which we found, but here the component is only one so the weight is sum

of component one which is 2.159406.

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):

Banaskantha: $((1*1.079703) + (0.8807*1.079703))/2.159406=0.94035$
 Dahod: $((0*1.079703) + (0.7431*1.079703))/2.159406=0.37155$
 Narmada: $((0*1.079703) + (0.9357*1.079703))/2.159406=0.46785$
 Panchmahal: $((0.6666*1.079703) + (0.7706*1.079703))/2.159406=0.7186$
 Sabarkantha: $((0.2222*1.079703) + (1*1.079703))/2.159406=0.6111$
 The Dang: $((0*1.079703) + (0*1.079703))/2.159406=0$

Infrastructure

Eigenvalue of component 1

$(0.972*2.715=2.6383477)$, $(0.978*2.715=2.654473085)$, $(0.062*2.715=0.168292304)$, $(0.386*2.715=1.048677219)$

Eigenvalues of component 2

$(0.197*1.148=0.226557)$, $(0.183*1.148=0.210371)$, $(0.975*1.148=1.119389)$, $(0.887*1.148=1.018149)$

Weights are getting by sum of all Eigenvalues:

$(2.6383477+0.226557=2.864905)$, $(2.654473085+0.210371=2.864844)$, $(0.168292304+1.119389=1.287681)$,
 $(1.048677219+1.018149=2.066826)$
 Sum of all weights values is total index which is 9.084256

Index: (multiplied each state normalized value of different variables with their correspondence weight):

Banaskantha: $((0.4285*2.864905)+(0.2454*2.864844)+(0.7744*1.287681)+(1*2.066826))/9.084256=0.549814$
 Dahod: $((0*2.864905)+(0*2.864844)+(0.4892*1.287681)+(1*2.066826))/9.084256=0.296861$
 Narmada: $((0.9285*2.864905)+(0.8966*2.864844)+(0*1.287681)+(0*2.066826))/9.084256=0.575576$
 Panchmahal: $((0.7142*2.864905)+(0.6511*2.864844)+(0.5859*1.287681)+(1*2.066826))/9.084256=0.741139$
 Sabarkantha: $((1*2.864905)+(1*2.864844)+(0.8472*1.287681)+(0.8947*2.066826))/9.084256=0.954383$
 The Dang: $((0.2857*2.864905)+(0.354*2.864844)+(1*1.287681)+(1*2.066826))/9.084256=0.571006$

Teacher

Eigenvalues of component 1:

$(0.287*3.225=0.925502288)$, $(0.980*3.225=3.16044497)$, $(0.977*3.225=3.151716297)$, $(0.374*3.225=1.2.6392405)$,
 $(0.611*3.225=1.9176759)$, $(0.732*3.225=2.360042567)$

Eigenvalues of component 2:

$(0.714*1.765=1.260826473)$, $(0.110*1.765=0.19388569)$ $(0.061*1.765=0.107195566)$, $(0.916*1.765=1.617209123)$,
 $(0.680*1.765=1.200869498)$, $(0.338*1.765=0.596071792)$.

Weights: sum of component 1 and component 2

$(0.925502288+1.260826473=2.186328761)$, $(3.160444297+0.19388569=3.354329987)$,
 $(3.151716297+0.107195566=3.258911863)$, $(1.206392705+1.617209123=2.823601828)$,
 $(1.97176759+1.200869498=3.172637088)$, $(2.360042567+0.596071792=2.956114359)$
 Sum of all weights value for index is 17.75192389

Index

(Multiplied each state normalized value of different variables with their correspondence weight):

Banaskantha:

$((0*2.186328761)+(0.4615*3.354329987)+(0.2262*3.258911863)+(0.7663*3.172637088)+(0.8602*3.172637088)+(0.8666*2.956114359))/17.75192389=0.54866089$
Dahod: $((0.3925*2.186328761)+(0*3.354329987)+(0*3.258911863)+(0.5737*3.172637088)+(1*2.956114359)+(0*2.956114359))/17.75192389=0.318313188$
Narmda: $((0.3305*2.186328761)+(1*3.354329987)+(1*3.258911863)+(0.9016*3.172637088)+(0*2.956114359)+(0.9333*2.956114359))/17.75192389=0.712065043$
sabarkantha: $((1*2.186328761)+(0.923*3.354329987)+(0.8642*3.258911863)+(0.3729*3.172637088)+(0.196*2.956114359)+(0.9333*2.956114359))/17.75192389=0.705975677$
panchmahal: $((0.5*2.186328761)+(0.8461*3.354329987)+(0.7511*3.258911863)+(1*3.172637088)+(0.7115*2.956114359)+(0.8*2.956114359))/17.75192389=0.778780732$
The dnags: $((0.5785*2.186328761)+(0.2307*3.354329987)+(0.3076*3.258911863)+(0*3.172637088)+(0.0281*2.956114359)+(1*2.956114359))/17.75192389=0.342855338$

Outcomes

Eigenvalues of component 1: (0.126*3.419), (0.963*3.419), (0.989*3.419), (0.968*3.419), (0.197*3.419), (0.582*3.419), (0.391*3.419), (0.148*3.419)

Eigenvalues of component 2 : (0.980*3.348), (0.104*3.348), (0.078*3.348), (0.013*3.348), (0.956*3.348), (0.677*3.348), (0.915*3.348), (0.412*3.348)

Weights: sum of component 1 and component 2 :

$(0.431537311+3.280573428=3.712110739)$, $(3.29603309+0.347529718=3.641133027)$,
 $(3.380081942+0.260630318=3.64071226)$, $(3.310055806+0.043232769=3.353288575)$,
 $(0.673134209+0.043232769=3.353288575)$, $(1.990305091+2.265894772=4.256199863)$,
 $(1.335612707+3.062804312=4.398417019)$, $(0.507562444+1.378597048=1.886159492)$

Index

(Multiplied each state normalized value of different variables with their correspondence weight):

Banaskantha:

$((0.7592*3.712110739)+(1*3.641133027)+(0*3.64071226)+(0*3.353288575)+(0*3.875120332)+(0.65*4.256199863)+(0*4.398417019)+(0*1.886159492))/28.76314=0.3208$
Dahod: $((0.8183*3.712110739)+(0.1385*3.641133027)+(0.7931*3.64071226)+(0.5384*3.353288575)+(0.2946*3.875120332)+(0.05*4.256199863)+(0.3108*4.398417019)+(0.2877*1.886159492))/28.76314=0.39978$
Narmada: $((0*3.712110739)+(0.0841*3.641133027)+(0.862*3.64071226)+(0.7692*3.353288575)+(1*3.875120332)+(0.75*4.256199863)+(1*4.398417019)+(0.0613*1.886159492))/28.76314=0.6121$
Panchmahal: $((0.3367*3.712110739)+(0.3108*3.641133027)+(0.2701*3.64071226)+(0.4615*3.353288575)+(0.3839*3.875120332)+(1*4.256199863)+(0.4766*4.398417019)+(0.1839*1.886159492))/28.76314=0.455424$

Sabarkantha: $((0.1742*3.712110739)+(0.5919*3.641133027)+(0.2103*3.64071226)+(0.2307*3.353288575)+(0.7232*3.875120332)+(0.75*4.256199863)+(0.7616*4.398417019)+(1.886159492))/28.76314=0.54138$

The Dang: $((1*3.712110739)+(0*3.641133027)+(1*3.64071226)+(1*3.353288575)+(0.0446*3.875120332)+(0*4.256199863)+(0.3523*4.398417019)+(0.2311*1.886159492))/28.76314=0.4473$

AbsoluteData

Districts	Access		Infrastructure				
	Number of schools per 1000 child population	Ratio of primary to upper primary schools/ sections	Average student classroom ratio SCR	Schools with SCR>30	% of schools with drinking water facility	% of schools with common toilets	% of schools with girls toilet
BANASKANTHA	9	0.68	28	61.3	100	71.2	100
DAHOD	0	0.83	0	70.8	100	47.3	100
NARMADA	0	0.62	21	36.1	100	6.3	98.1
PANCHMAHALS	6	0.8	24	45.6	100	55.4	100
SABARKANTHA	2	1	20	32.1	100	77.3	99.8
THE DANGS	0	0	30	57.1	100	90.1	100

Teachers				
% of female teachers	Pupil teacher ratio	% of schools with PTR>30	% of single teacher schools where number of students>15	% of schools <3 teachers
26.8	27	51.6	0.72	14.64
36.3	33	61.6	1.19	12.16
34.8	20	17.4	0.39	29.91
38.9	22	28.4	0.15	17.28
51	21	23.4	1.68	26.43
40.8	30	48	2.59	29.41

Outcome								
% of teachers without professional qualifications	Overall gross enrollment ratio	Gross enrollment ratio- SC	Gross enrollment ratio- ST	Gender parity index in enrollment	Repetition rate	Dropout rate	% of appeared children passed	% of appeared children passed with>60% and more marks
0.4	158.7	11.3	11.1	0.84	14	3.8	88.45	56.45
1.7	162.7	1.8	80.1	0.91	10.7	6.2	91.45	59.5
0.3	107.3	1.2	86.1	0.94	2.8	3.4	98.1	57.1
0.5	130.1	3.7	34.6	0.9	9.7	2.4	93.05	58.4
0.3	119.1	6.8	29.4	0.87	5.9	3.4	95.8	67.05
0.2	175	0.272	98.1	0.97	13.5	6.4	91.85	58.9

Primary Educational Index Of Tribal Districts: Educational Development Index (EDI):An Econometric Analysis

Districts	Access		Infrastructure				
	Number of schools per 1000 child population	Ratio of primary to upper primary schools/sections	Average student classroom ratio SCR	Schools with SCR>30	% of schools with drinking water facility	% of schools with common toilets	% of schools with girls toilet
BANASKANTHA	1	0.8807	0.4285	0.2454		0.7744	1
DAHOD	0	0.7431	0	0		0.4892	1
NARMADA	0	0.9357	0.9285	0.8966		0	0
PANCHMAHALS	0.6666	0.7706	0.7142	0.6511		0.5859	1
SABARKANTHA	0.2222	1	1	1		0.8472	0.8947
THE DANGS	0	0	0.2857	0.354		1	1

Districts	Teachers				
	% of female teachers	Pupil teacher ratio	% of schools with PTR>30	% of single teacher schools where number of students>15	% of schools <3 teachers
BANASKANTHA	0	0.4615	0.2262	0.7663	0.8602
DAHOD	0.3925	0	0	0.5737	1
NARMADA	0.3305	1	1	0.9016	0
PANCHMAHALS	0.5	0.8461	0.7511	1	0.7115
SABARKANTHA	1	0.923	0.8642	0.3729	0.196
THE DANGS	0.5785	0.2307	0.3076	0	0.0281

Districts	Outcome								
	% of teachers without professional qualifications	Overall gross enrollment ratio	Gross enrollment ratio- SC	Gross enrollment ratio- ST	Gender parity index in enrollment	Repetition rate	Dropout rate	% of appeared children passed	% of appeared children passed with>60% and more marks
BANASKANTHA	0.8666	0.7592	1	0	0	0	0.65	0	0
DAHOD	0	0.8183	0.1385	0.7931	0.5384	0.2946	0.05	0.3108	0.2877
NARMADA	0.9333	0	0.0841	0.862	0.7692	1	0.75	1	0.0613
PANCHMAHALS	0.8	0.3367	0.3108	0.2701	0.4615	0.3839	1	0.4766	0.1839
SABARKANTHA	0.9333	0.1742	0.5919	0.2103	0.2307	0.7232	0.75	0.7616	1
THE DANGS	1	1	0	1	1	0.0446	0	0.3523	0.2311

Access Index

Districts	Access	
	Number of schools per 1000 child population	Ratio of primary to upper primary schools/sections
BANASKANTHA	1	0.8807
DAHOD	0	0.7431
NARMADA	0	0.9357
PANCHMAHALS	0.6666	0.7706
SABARKANTHA	0.2222	1
THE DANGS	0	0

Component Matrix ^a			
	Component	Eigen value	weights
	1	1.326	
Number of schools per 1000 child population	.814	1.0797029	1.079703
Ratio of primary to upper primary schools/sections	.814	1.0797029	1.079703
			2.159406
weights	1.079703	1.079703	2.159406

Districts	Number of schools per 1000 child population	Ratio of primary to upper primary schools/sections	Access index
BANASKANTHA	1	0.8807	0.94035
DAHOD	0	0.7431	0.37155
NARMADA	0	0.9357	0.46785
PANCHMAHALS	0.6666	0.7706	0.7186
SABARKANTHA	0.2222	1	0.6111
THE DANGS	0	0	0

Infrastructure Index

Infrastructure				
Districts	Average student classroom ratio SCR	Schools with SCR>30	% of schools with common toilets	% of schools with girls toilet
BANASKANTHA	0.4285	0.2454	0.7744	1
DAHOD	0	0	0.4892	1
NARMADA	0.9285	0.8966	0	0
PANCHMAHALS	0.7142	0.6511	0.5859	1
SABARKANTHA	1	1	0.8472	0.8947
THE DANGS	0.2857	0.354	1	1

Rotated Component Matrix^a					
	Component		Eigen values		weights
	1	2			
Average student classroom ratio SCR	.972	.197	2.6383477	0.226557	2.864905
Schools with SCR>30	.978	.183	2.654473085	0.210371	2.864844
% of schools with common toilets	.062	.975	0.168292304	1.119389	1.287681
% of schools with girls toilet	.386	.887	1.048677219	1.018149	2.066826
					9.084256

weights	2.864905	2.864844	1.287681	2.066826	9.084256
	Infrastructure				Infrastructureindex
Districts	Average student classroom ratio SCR	Schools with SCR>30	% of schools with common toilets	% of schools with girls toilet	
BANASKANTHA	0.4285	0.2454	0.7744	1	0.549814
DAHOD	0	0	0.4892	1	0.296861
NARMADA	0.9285	0.8966	0	0	0.575576
PANCHMAHALS	0.7142	0.6511	0.5859	1	0.741139
SABARKANTHA	1	1	0.8472	0.8947	0.954383
THE DANGS	0.2857	0.354	1	1	0.571006

Teachers Index

Teachers						
Districts	% of female teachers	Pupil teacher ratio	% of schools with PTR>30	% of single teacher schools where number of students>15	% of schools <3 teachers	% of teachers without professional qualifications
BANASKANTHA	0	0.4615	0.2262	0.7663	0.8602	0.8666
DAHOD	0.3925	0	0	0.5737	1	0
NARMADA	0.3305	1	1	0.9016	0	0.9333
PANCHMAHALS	0.5	0.8461	0.7511	1	0.7115	0.8
SABARKANTHA	1	0.923	0.8642	0.3729	0.196	0.9333
THE DANGS	0.5785	0.2307	0.3076	0	0.0281	1

Rotated Component Matrix ^a					
	Component		Eigen values		weights
	1	2	3.225	1.765	
% of female teachers	.287	.714	0.925502288	1.260826473	2.186328761
Pupil teacher ratio	.980	.110	3.160444297	0.19388569	3.354329987
% of schools with PTR>30	.977	.061	3.151716297	0.107195566	3.258911863
% of single teacher schools where number of students>15	.374	.916	1.206392705	1.617209123	2.823601828
% of schools <3 teachers	.611	.680	1.97176759	1.200869498	3.172637088
% of teachers without professional qualifications	.732	.338	2.360042567	0.596071792	2.956114359
					17.75192389

weights	2.186328761	3.354329987	3.258911863	2.823601828	3.172637088	2.956114359	17.75192389
Districts	% of female teachers	Pupil teacher ratio	% of schools with PTR>30	% of single teacher schools where number of students>15	% of schools <3 teachers	% of teachers without professional qualifications	Teachers index
BANASKANTHA	0	0.4615	0.2262	0.7663	0.8602	0.8666	0.54866089
DAHOD	0.3925	0	0	0.5737	1	0	0.318313188
NARMADA	0.3305	1	1	0.9016	0	0.9333	0.712065043
PANCHMAHALS	0.5	0.8461	0.7511	1	0.7115	0.8	0.778780732
SABARKANTHA	1	0.923	0.8642	0.3729	0.196	0.9333	0.705975677
THE DANGS	0.5785	0.2307	0.3076	0	0.0281	1	0.342855338

Outcomes Index

Outcomes								
District	Overall gross enrollment ratio	Gross enrollment ratio- SC	Gross enrollment ratio- ST	Gender parity index in enrollment	Repetition rate	Dropout rate	% of appeared children passed	% of appeared children passed with >60% and more marks
BANASKANTHA	0.7592	1	0	0	0	0.65	0	0
DAHOD	0.8183	0.1385	0.7931	0.5384	0.2946	0.05	0.3108	0.2877
NARMADA	0	0.0841	0.862	0.7692	1	0.75	1	0.0613
PANCHMAHALS	0.3367	0.3108	0.2701	0.4615	0.3839	1	0.4766	0.1839
SABARKANTHA	0.1742	0.5919	0.2103	0.2307	0.7232	0.75	0.7616	1
THE DANGS	1	0	1	1	0.0446	0	0.3523	0.2311

Rotated Component Matrix ^a						
	Component		Eigen values		Weight	
	1	2				
Overall gross enrollment ratio	.126	.980	0.431537311	3.280573428	3.712110739	
Gross enrollment ratio- SC	.963	.104	3.293603309	0.347529718	3.641133027	
Gross enrollment ratio- ST	.989	.078	3.380081942	0.260630318	3.64071226	
Gender parity index in enrollment	.968	.013	3.310055806	0.043232769	3.353288575	
Repetition rate	.197	.956	0.673134209	3.201986122	3.875120332	
Dropout rate	.582	.677	1.990305091	2.265894772	4.256199863	
% of appeared children passed	.391	.915	1.335612707	3.062804312	4.398417019	
% of appeared children passed with >60% and more marks	.148	.412	0.507562444	1.378597048	1.886159492	
						28.76314131

weights	3.712110739	3.641133027	3.64071226	3.353288575	3.875120332	4.256199863	4.398417019	1.886159492	28.76314131
District	Overall gross enrollment ratio	Gross enrollment ratio- SC	Gross enrollment ratio- ST	Gender parity index in enrollment	Repetition rate	Dropout rate	% of appeared children passed	% of appeared children passed with >60% and more marks	Outcome index
BANASKANTHA	0.7592	1	0	0	0	0.65	0	0	0.320754166
DAHOD	0.8183	0.1385	0.7931	0.5384	0.2946	0.05	0.3108	0.2877	0.399778071
NARMADA	0	0.0841	0.862	0.7692	1	0.75	1	0.0613	0.612074024
PANCHMAHALS	0.3367	0.3108	0.2701	0.4615	0.3839	1	0.4766	0.1839	0.455424517
SABARKANTHA	0.1742	0.5919	0.2103	0.2307	0.7232	0.75	0.7616	1	0.541377329
THE DANGS	1	0	1	1	0.0446	0	0.3523	0.2311	0.447252808

Composite Index Primary Education

Districts	access index	infrastructure index	teachers index	outcomes index		
BANASKANTHA	0.94035	0.549814	0.54866089	0.320754166		
DAHOD	0.37155	0.296861	0.318313188	0.399778071		
NARMADA	0.46785	0.575576	0.712065043	0.612074024		
PANCHMAHALS	0.7186	0.741139	0.778780732	0.455424517		
SABARKANTHA	0.6111	0.954383	0.705975677	0.541377329		
THE DANGS	0	0.571006	0.342855338	0.44725808		
Rotated Component Matrix^a						
	Component		Eigen values	weights		
	1	2	2.284	1.283		
access index	.097	.973	0.222122748	1.248880827		
infrastructure index	.817	.295	1.86589736	0.378002597		
teachers index	.818	.523	1.868894016	0.670884058		
outcomes index	.857	.422	1.958080678	0.540933383		
				8.753695668		
weights	1.471003575	2.243899957	2.539778074	2.499014061	8.753695668	
	access index	infrastructure index	teachers index	outcomes index	composite index	RANK
BANASKANTHA	0.94035	0.549814	0.54866089	0.320754166	0.549714323	4
DAHOD	0.37155	0.296861	0.318313188	0.399778071	0.34501698	6
NARMADA	0.46785	0.575576	0.712065043	0.612074024	0.607493448	3
PANCHMAHALS	0.7186	0.741139	0.778780732	0.455424517	0.666706687	2
SABARKANTHA	0.6111	0.954383	0.705975677	0.541377329	0.706718807	1
THE DANGS	0	0.571006	0.342855338	0.44725808	0.373529211	5

CONCLUSION:

The analysis of EDI of primary education of tribal districts of Gujarat clearly reveals that different six tribal districts are at dissimilar levels of primary educational development. A Sabarkantha and Panchmahal states with high EDI values are expressed well than the rest of the other four districts like Narmada, Banaskantha, The Dang and Dahod still they may not be sound placed with regard to all the four (access, infrastructure, teachers and outcomes) sets of indicators used in computation of EDI. Four other districts may need more improvement in primary level education.

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