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Assessing the Status of Elementary Education in Bundelkhand: An Empirical Study of Human Capital Perspective

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ABSTRACT

Education enhances the capabilities of the people and opens up an ocean of opportunities. It is intrinsically valuable in addition to being an effective instrument of inclusive growth. Today's is a knowledge economy and workers are knowledge workers. The explosion in information and knowledge has led to a sort of revolution. But to leverage it, a pool of good quality human capital is must. The quality of human capital can be improved by investing in skill building and for it the first stage is elementary education.

Bundelkhand, a region located in the central India and spanning over two states of Madhya Pradesh and Uttar Pradesh has continue to suffer from backwardness. It is characterized by low income level, poor infrastructure, mass migration and consequently low quality of human capital. Since the region is chiefly rural, the role of elementary education in the human capital building becomes crucial. In this context, this study examines the status of primary education in Bundelkhand.

Key Words: Human capital, Elementary Education, Inclusive growth, Spatial Variations, Z and T Scores

INTRODUCTION

Education is the key to enhancing the capabilities of the people. It is intrinsically valuable in addition to being an effective instrument of inclusive growth. The present pace of development

has excluded millions from its benefit for the simple reason that they lacked the required skill set. Today's is a knowledge economy and workers are knowledge workers. The explosion in information and knowledge has led to a sort of revolution. But to leverage it, a pool of good quality human capital is must. The quality of human capital can be improved by investing in skill building and for it the most appropriate stage is elementary education.

Bundelkhand, a region located in the central India and spanning over two states of Madhya Pradesh and Uttar Pradesh has continue to suffer from backwardness. It is characterized by low income level, poor infrastructure, mass migration and consequently low quality of human capital. Since the region is chiefly rural, the role of elementary education in the human capital building becomes crucial. In this context, this study examines the status of primary education in Bundelkhand. Primarily using the Data from District Information System for Education and other publications like District Report Cards, Selected Educational Statistics of Ministry of Human Resource Development etc districts have been ranked on the chosen indicators and also a composite picture has been presented of the primary education. Furthermore hypotheses have been formulated and tested to assess the variation between the two administrative divisions of the region.

The rest of the paper proceeds as follow: Second section presents a succinct survey of the related literature. Section 3 delineates the methodology adopted for the study followed by analysis and discussion in the next section. Last section contains conclusion.

LITERATURE REVIEW

The concept of human capital in its formal sense originated in the 1960s, as a result of the work conducted by a cohort of economists associated with the University of Chicago. For further details, please consult the works of Becker (1964) and Mincer (1966). Nevertheless, the concept that allocating resources towards education results in enduring economic and societal advantages can be traced back to the era of Adam Smith or conceivably even preceding it. The notion of human capital, which is multifaceted in nature, is commonly defined as the inherent assets possessed by individuals. As stated by the Organisation for Economic Co-operation and

Development (OECD, 1998), the term "human capital" encompasses the collective knowledge, skills, competences, and other attributes that are inherent in individuals and hold relevance to economic activity. The provided definition encompasses a wide range of investments that are intended to improve and cultivate the capabilities of a nation's human capital, extending beyond the realm of education exclusively. According to Laroche, Merette, and Ruggeri (1999), various understandings of human capital involve not only innate capabilities but also the accumulation of knowledge and skills over an individual's lifetime. The contention posits that an individual's potential, which is shaped by their initial aptitudes, constitutes a noteworthy facet of the human capital framework, as the extent to which an individual acquires various skills throughout their lifespan is partially contingent upon these aptitudes.

The significance of elementary education in fostering economic prosperity has been widely acknowledged. The existing body of scholarly literature pertaining to growth and development elucidates three distinct mechanisms through which education facilitates the accumulation of human capital and exerts an impact on the growth trajectory of a nation. First and foremost, it is imperative to acknowledge that education holds significant importance in augmenting the inherent human capital within the workforce. Consequently, this phenomenon results in an augmentation of labour productivity and enables the transition towards a state of equilibrium characterised by a higher level of output. The aforementioned concept is in accordance with the augmented neoclassical growth theories, as posited by Mankiw et al. in 1992. Moreover, it is imperative to acknowledge that education assumes a pivotal role in enhancing the economy's capacity for innovation. The aforementioned argument is substantiated by the discoveries of endogenous growth theories, as expounded upon by Lucas (1988), Romer (1990), and Aghion and Howitt (1998). These theories emphasise the importance of acquiring novel knowledge related to technologies, products, and processes, which ultimately contributes to the overall advancement of the economy. Education plays a pivotal role in the dissemination and transfer of vital knowledge necessary for comprehending and implementing innovative information and technologies generated by external entities, thereby promoting economic progress (Nelson and

Phelps, 1966; Benhabib and Spiegel, 1994).

Since achieving independence, there has been a significant expansion in the corpus of scholarly literature pertaining to primary education in India. A multitude of scholarly inquiries have been conducted to explore various aspects of primary education. These investigations have encompassed the analysis of academic performance levels (Shukla, 1994), the barriers faced in achieving universal primary education (Mohanty, 1985), the assessment of primary education quality (Grover and Singh, 2002), and the comprehensive evaluation of primary school conditions (Ghosh, 2006), among other relevant subjects.

Das and Sahu (2012) conducted a comprehensive investigation into the state of primary education in Orissa. The researchers discovered significant disparities in literacy rates and enrollment statistics between the KBK and non-KBK regions. Various disparities were identified across different demographic categories, including gender and social groups. The research findings indicate that there exist limitations on the demand for education within the KBK districts. The text highlights the importance of parental motivation in promoting higher enrollment rates in the KBK region. The proposal advocated for several governmental interventions, including the establishment of additional educational institutions in underserved areas, the recruitment of more female teachers in the fields of science and technology (ST), and the implementation of incentive programmes to encourage girls' education.

In a study conducted by Kundu (2012), the DISE dataset was employed to examine the comprehensive condition of primary education in the Murshidabad district of West Bengal. The research results revealed an inequitable allocation of primary educational resources across various blocks within the district. The findings of the study suggest that the observed discrepancy can be ascribed to a confluence of social and economic variables.

Rana and Das (2004) conducted a survey in the Dumka district of Jharkhand to examine the challenges faced in the education system. The study identified several issues, such as inadequate infrastructure, a scarcity of teachers affecting the educational quality, and the prevalence of poverty resulting in increased rates of non-enrollment, dropouts, and low attendance among

students. The importance of adopting a comprehensive strategy to enhance the condition of primary education was emphasised, which encompasses government initiatives such as the implementation of midday meal programmes and the active participation of communities in the governance of the primary education system, with the aim of guaranteeing the provision of high-quality education.

The scholarly investigation pertaining to the Bundelkhand region has been constrained, albeit witnessing a surge in research endeavours during the previous decade. In her study of the Bundelkhand region of Uttar Pradesh, Narula (2008) employed a multidimensional approach to examine various factors that influence educational development, access, and participation in elementary education. These factors include demographic features, government interventions, and the existing challenges faced in the region.

A study was conducted by Roy (2010) to examine regional disparities within the education sector. The research was centred on conducting a comparative analysis of two districts, specifically Jalpaiguri and Kolkata, located within the state of West Bengal. The research findings brought attention to the existing underdevelopment and insufficient educational coverage in the district of Jalpaiguri. In a similar manner, Kundu (2012) conducted a study utilising the DISE dataset to investigate the condition of primary education in the Murshidabad district of West Bengal. The research conducted revealed a disparity in the allocation of educational resources across the district.

Despite notable progress in various sectors following the attainment of independence, including the amelioration of gender inequalities, persistent disparities persist, particularly in the domain of primary education (Mishra & Gupta, 2013). Mishra (2014) conducted a study that aimed to examine regional disparities within the state of Jharkhand. The study specifically focused on four key indicators related to elementary education. The study's results unveiled a disconcerting situation within the elementary education system of Jharkhand, marked by notable obstacles such as low enrollment rates, inadequate attendance levels, high rates of student attrition, limited presence of qualified educators, insufficient educational resources, and inadequate infrastructure.

METHODOLOGY

Research Questions

The study is guided by the following research questions:

1. What is the role of elementary education in Building Human Capital in Bundelkhand?
2. Is there any difference between U P and M P regions of Bundelkhand with respect to availability of primary schools?
3. Is there any difference between U P and M P regions of Bundelkhand with respect to quality of elementary education measured by Teacher Institution Ratio and Teacher enrolment ratio?

Objectives of the Study

The study is aimed at achieving the following objectives:

1. To analyse the role of human capital building in Bundelkhand
2. To access the spatial variation in the coverage of elementary education in Bundelkhand
3. To suggest measures for effective management of elementary education system in Bundelkhand

Hypotheses of the Study

We set out the following hypotheses to be tested:

H1: The density of primary school among U P and M P regions of Bundelkhand are not associated.

H2: The primary school village ratio among U P and M P regions of Bundelkhand are not associated.

H3: The primary school child population ratio among U P and M P regions of Bundelkhand are not associated.

H4; The Teacher Institution Ratio among U P and M P regions of Bundelkhand are not associated.

H5: The Teacher enrolment ratio among U P and M P regions of Bundelkhand are not associated.

Data Source and Technique

This study is based on the analysis of secondary data, utilising a wide range of sources to inform the research.

- The District Information System on Education (DISE) for the year 2008-09.
- The educational statistics compiled by the Ministry of Human Resource Development encompass the Annual Status of Education Report (ASER) from multiple years, pertaining to both states.
- Several authoritative publications issued by the governments of Uttar Pradesh and Madhya Pradesh

The methodology employed in this study is empirical, employing a quantitative research design. The data processing phase of the study involved the application of quantitative methodologies that were specifically designed to align with the study's objectives. This process was facilitated by the utilisation of the statistical software SPSS. Z-scores and T-scores were employed to assess and rank districts according to different indicators of elementary education. The determination of overall rankings was achieved by employing Kendell's rank method, which involved the calculation of a composite score for each district.

In order to analyse the associations between various indicators, the coefficient of concordance was utilised. The composite score obtained offers a succinct assessment of each district in relation to the pertinent dimension. It is noteworthy to acknowledge the presence of an inverse correlation between the status of elementary education and the composite score of a district. Specifically, a higher composite score is associated with a lower quality of education within the district.

The Mann Whitney U test was employed to assess the hypotheses pertaining to the variation in the regions of Bundelkhand in Uttar Pradesh and Madhya Pradesh.

Profile of study Area

The geographical region known as Bundelkhand is situated within the latitudinal range of 23°20' to 26°20' N and the longitudinal range of 78°20' to 81°40' E. The region is geographically distinguished by its topography, which consists of undulating terrain featuring hills. It is positioned amidst the Vindhyan Plateau to the south, the Yamuna River to the north, the Ken River to the east, and the Betwa and Pahuj Rivers to the west. From an administrative standpoint, the region is geographically partitioned between the states of Uttar Pradesh and Madhya Pradesh, with the majority of the area falling within the latter. The region of Uttar Pradesh includes various districts, namely Chitrakoot, Banda, Mahoba, Jalaun, Hamirpur, Lalitpur, and Jhansi. Madhya Pradesh encompasses various districts, namely Gwalior, Datia, Panna, Chhatarpur, Sagar, Shivpuri, Tikamgarh, and Damoh. Prominent urban hubs within the region encompass Jhansi, Orai, Mahoba, Gwalior, Sagar, and Panna.

The Bundelkhand region showcases a heterogeneous topography characterised by the coexistence of prosperous areas alongside significant levels of underdevelopment. The integration of traditional elements with contemporary influences depicts a blended socio-cultural landscape. The region encounters a range of challenges including insufficient precipitation, meteorological droughts, soil erosion, agricultural deficiencies, limited educational opportunities, and pervasive poverty, all of which impede its advancement. Bundelkhand region is widely recognised for its prevalent distress and crises, with indicators of development, such as per capita income and infrastructure, consistently highlighting its enduring state of underdevelopment.

The backwardness of the region has led to the demand for the creation of a new state ‘Bundelkhand’ which comprise of districts from the states of Madhya Pradesh and Uttar Pradesh. Since both of these states themselves are not developed states of India and are governed by different political party, it remains a controversial question that which part of Bundelkhand has better development experience-U.P or M.P.

ANALYSIS AND DISCUSSION

Current Status of Elementary Education in Bundelkhand

Prior to examining the findings of the data analysis, it is pertinent to present a succinct overview of the present condition of elementary education in Bundelkhand. According to the provisional census data from 2011 (Census, 2011), the literacy rate for the region experienced a notable increase from 48.41% in 2001 to 68.34% in 2011. There exists a notable discrepancy not only in literacy rates between males and females, but also in literacy rates between urban and rural areas. Table 2 presents an overview of the literacy rates observed in different districts.

The data presented in the table provides a clear indication that Sagar district exhibits the highest literacy rate, followed by Jhansi and subsequently Hamirpur. Jhansi exhibits the highest level of male literacy, with Sagar and Datia following suit. Sagar, Jhansi, and Jalaun have demonstrated exceptional performance in terms of female literacy. It is worth noting that all districts demonstrate literacy rates that surpass 70%, thus indicating the significant progress achieved in the region. Gwalior, an area that has experienced significant development within the region, demonstrates the most modest female literacy rate, with Shivpuri and Tikamgarh following suit. Interestingly, these three districts are located within the Madhya Pradesh region of Bundelkhand. In terms of male literacy, the districts exhibiting the most limited rates are Gwalior, Tikamgarh, and Chhatarpur, which occupy the foremost, second, and third ranks, correspondingly. These districts are geographically situated within the Madhya Pradesh region. The district of Gwalior exhibits the most pronounced disparity between genders in terms of literacy rates, whereas the district of Sagar demonstrates the least significant gap.

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Table 1: Literacy Level in Bundelkhand				
Districts	Male Literacy	Female Literacy	Gap	Average Literacy
Jhansi	86.58	64.88	21.70	76.37
Hamirpur	81.27	57.19	24.08	70.16
Mahoba	77.72	54.65	23.07	66.94
Jalaun	84.89	63.88	21.01	75.16
Lalitpur	76.41	52.26	24.15	64.95
Banda	79.38	54.95	24.43	68.11
Chitrakoot	77.42	54.03	23.39	66.52
Datia	85.18	62.10	23.08	73.50
Tikamgarh	73.30	50.71	22.59	62.57
Chhatarpur	74.22	54.34	19.88	64.90
Sagar	86.27	67.71	18.56	77.52
Panna	75.63	55.55	20.08	66.08
Damoh	80.96	59.90	21.06	70.92
Shivpuri	76.20	49.50	26.70	63.70
Gwalior	70.81	41.72	29.09	57.70
Bundelkhand	79.80	56.22	22.85	68.34

Spatial Variations

In order to ascertain the extent of spatial variations in the elementary education facilities Z and T scores of all the districts have been calculated. Based on these scores the districts have been assigned ranks whose result has been presented in table number 2.

Table 2: Z and T score of Districts on Coverage Indicators						
DISTRICTS	TPS/10KM2		TPS/VILL		TPSCHPOP	
	T Score	Rank	T Score	Rank	T Score	Rank

CHHATARPUR	46.97	9	41.29	15	53.06	6
DAMOH	46.68	13	49.31	4	58.34	5
DATIA	50.06	2	45.13	10	59.11	4
GWALIOR	46.95	11	48.65	6	41.19	12
PANNA	47.26	6	49.23	5	71.49	1
SAGAR	46.91	12	43.13	12	49.73	7
SHIVPURI	47.02	8	47.82	8	61.65	2
TIKAMGARH	49.09	3	61.72	3	59.20	3
BANDA	48.19	4	72.27	1	40.14	13
CHITRAKOOT	85.96	1	70.40	2	47.28	8
HAMIRPUR	46.56	14	43.19	11	39.93	14
JALAUN	47.96	5	41.54	14	45.73	9
JHANSI	46.96	10	42.74	13	38.11	15
LALITPUR	46.36	15	45.27	9	41.80	11
MAHOBA	47.07	7	48.27	7	43.26	10

The Table Reveals The Following Facts:

- Chitrakoot, Datia and Tikamgarh are the top three districts (all are located in M.P) on the indicator of density of primary school while Damoh, Hamirpur and Lalitpur are the worst performer.
- Banda, Chitrakoot and Tikamgarh are the best performer on the TPS/Vill ratio.
- Panna, Shivpuri and Tikamgarh hold the first, second and third rank respectively on the TPS/CHPOP ratio.
- Madhya Pradesh region of Bundelkhand performs better than the Uttar Pradesh region on the Coverage indicator.

"Table 3: Ranking of Districts on T score on Efficiency Indicators						
	TIR		TER		GCER	
District	T-SCORE	RANK	T-SCORE	RANK	T-SCORE	RANK
CHHATARPUR	41.55	13	41.70	12	35.89	15
DAMOH	47.49	9	53.78	5	46.89	9
DATIA	45.04	12	53.35	6	42.98	11
GWALIOR	54.34	5	57.14	3	62.37	2
PANNA	45.46	11	71.30	1	55.62	6
SAGAR	47.84	8	50.00	9	44.05	10
SHIVPURI	37.73	14	44.76	10	51.93	7
TIKAMGARH	47.96	7	50.80	8	41.81	12
BANDA	60.61	2	40.29	13	36.16	14
CHITRAKOOT	48.51	6	44.46	11	60.29	4
HAMIRPUR	57.42	3	54.84	4	49.54	8
JALAUN	37.32	15	51.32	7	60.10	5
JHANSI	77.18	1	64.37	2	64.14	1
LALITPUR	54.55	4	39.19	14	60.30	3
MAHOBA	47.00	10	32.70	15	37.95	13"

Similarly, the ranking of the districts on the efficiency indicator has been shown in the table number 3. On the Teacher Institution Ratio indicator all the top three best performer districts are from Uttar Pradesh region. On the other two indicators, the result is mixed one. From the analysis of both the tables it is clear that there is great inter district variation on all the chosen indicators.

As previously stated, Bundelkhand is geographically distributed across the states of Uttar Pradesh and Madhya Pradesh. The two states are governed by distinct political parties and exhibit additional contrasting characteristics as well. Therefore, it is our intention to examine the

spatial disparities that exist between the two sub-regions of Bundelkhand. The Mann-Whitney U test is a non-parametric statistical test used to compare two independent groups and determine if there is The U test was utilised to examine the hypothesis, which can be broadly stated as "Both sub-regions of Bundelkhand exhibit similarity across various parameters." The purpose of this test is to evaluate the null hypothesis that two samples are derived from a common population. Despite being a non-parametric test, it is assumed that the two distributions exhibit similar shapes. Alternatively, this condition specifies that the two distinct groups are homogeneous and exhibit identical distributions.

Table 4: Test summary

Serial No.	Hypothesis	U Statistic	Z value	Accept/ Reject
1	The density of primary school among U P and M P regions of Bundelkhand are not associated.	**28**	**000**	**Accept**
2	The primary school village ratio among U P and M P regions of Bundelkhand are not associated.	**27**	**-0.116**	**Accept**
3	The primary school child population ratio among U P and M P regions of Bundelkhand are not associated.	**4**	**-2.770**	**Reject**
4	The Teacher Institution Ratio among U P and M P regions of Bundelkhand are not associated.	**13**	**-1.736**	**Accept**
5	The Teacher enrolment ratio among U P and M P regions of Bundelkhand are not associated.	**18**	**-1.157**	**Accept**

With the exception of the third null hypothesis, all remaining hypotheses have been accepted. The calculated z value for the third observation is found to be smaller than the critical value of -

1.96 at a significance level of 5%. Based on the acceptance of the first two hypotheses, it can be concluded that there is no significant difference in the density of primary schools between the sub-regions of Bundelkhand. Nevertheless, there are notable differences between the two subregions in terms of the accessibility of primary schools per one thousand children in the population. Furthermore, the two subregions also exhibit similarity in terms of TIR and TER. This suggests that the region of Bundelkhand is generally deficient in its provision of an adequate number of schools for its children. The aforementioned statement serves to highlight the evident manifestation of the government's indifferent disposition towards elementary education within the specified region.

Thus, while there might be competing claims by the governments of Uttar Pradesh and Madhya Pradesh regarding their development efforts for the Bundelkhand region, there is no much difference in the status of elementary education in both the sub regions of Bundelkhand. Thre is paucity of primary schools and infrastructure too, remains inferior. Hence, in order to raise the quality of human capital, there is urgency of stepping up the investment in elementary education and also proper implementation is must.

CONCLUSION

Human capital formation and its role in the socio economic development of nations and regions are being increasingly recognized. One of the potent tool of human capital formation is elementary education. There are ample studies to show that regions which are economically backward have poor human capital. Taking some indicators of the coverage and efficiency of the elementary education this study analysed the status of elementary education in Bundelkhand. There were wide inter districts disparities in the facilities of elementary education on the chosen indicators. The most important finding that emerged from the study was that there was no much difference between the Uttar Pradesh and Madhya Pradesh region of Bundelkhand in the status of elementary education. Hence, governments of both the states should take appropriate steps to improve the quality of elementary education in order to raise the quality of human capital of the region.

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