Human Development Index Among States of India: An Empirical Study

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Abstract

The Human Progress Index (HDI) is a global assessment of human development based on life expectancy, education, literacy, and GDP per capita; numerous variables represent it. A country's HDI value affects economic growth and GDP, highlighting the importance of human resources in the Country's economic development. It assesses development to create an environment where inhabitants may live a healthy and creative existence. The HDI considers a country's achievements in healthy living, knowledge, and living standard. This article investigates the HDI in Indian states and union territories and the factors that influence inter-state comparisons in economic well-being, health, education, and the human development index. The relationships between social opportunities and HDI status in Indian states have been calculated using correlation.

Keywords
Human Resource Index, Social infrastructure development and HDI of India.

1. Introduction
The human capital theory focuses on the individual's education and health to foster economic production; it deals with acquiring skills, experience, and knowledge essential for the Country's growth (Adelakun, 2011). Formative literature on HDI suggests that education is critical to economic growth. Adam Smith et al.; Klenow and Rodriguez-Claire (1997), Hall and Jone (1997), and Easterly and Levine (2001) suggested that disparity in educational status is the primary source of inequality among a country's inhabitants. Abramovitz (1989, 1990), Romer, P. (1989, 1990), and

Nelson and Phelps (1996) (1986). In all proposed human capital theories, human capital plays a central role. Mankiw, Romer, and Weil (1992) opined that the Human Progress Index (HDI) indicates a country's human development or welfare. According to the United Nations Development Program (UNDP), a human development index is a tool for improving citizens' capacity to lead a healthy and dignified life while exercising their right to free speech and political freedom. HD ranges at different levels among nations, but it fluctuates within-country regions due to various variables. The social infrastructure, which encompasses all the minimum and essential services required to live a comfortable and healthy existence, is an important aspect that significantly shares the HD role. Hospitals, nursing homes, schools, and public transportation facilities are examples of social facilities.

Development flourishes in an environment in which individuals can thrive to their full potential and have a decent chance of leading productive and creative lives that they value. HDI (Human Development Index) (HDR, 2018) - The Human Progress Index assesses economic development and well-being considering three major economic development factors and assigns a score between 0 and 1. 1 denotes a high level of economic growth. Simultaneously, 0 is a low level. The health dimension is evaluated by life expectancy at birth; the education dimension is measured by the average number of years of schooling for persons aged 25 and up and predicted years of education.

Education is an essential component of well-being and is used to assess economic development and quality of life, which is necessary for determining whether a country is developed, developing, or undeveloped. The income measure of the HDI provides an overall economic index which is vital in determining whether a country is developed, creating, or amorphous. Income Index the HDI provides a broad measure of economic progress; it gives a rough capacity to draw comparisons on the problem of economic well-being, which is significantly more than simply utilizing GDP numbers. The Human Development Index is significant because it tells us how a country is doing. It is a more accurate indicator of a country's progress.

Gross national income (GNI) per capita calculates the level of life it employs the logarithm of income to illustrate the vital relevance of income as GNP rises. The geometric mean is used to aggregate the scores for the three HDI dimension indices into a composite index. The Human Development Index incorporates the following economic development criteria. (a) Life Expectancy Index: The UN's Human Development Index (HDI) includes life expectancy, years of schooling, and income per capita. Estimates of life expectancy are available at birth and every year after birth. Life expectancy is a statistical estimate of how long an organism is predicted to survive in a given year. Life expectancy at birth (LEB) has two definitions. Only for cohorts born several decades ago, when all of their members have died, can the mean duration of life of an actual birth cohort be calculated. From birth to death, the period LEB is the average duration of life of a hypothetical cohort exposed to the annual mortality rates. (b) Education Index: a) an average number of years spent in school. b) The number of years you should expect to spend in school. The United Nations' Human Development Index includes an education index and the GDP Index and Life Expectancy Index to assess educational attainment, GDP, and life expectancy. Life expectancy and GDP per capita before 2010, the Education Index was calculated using the adult literacy rate (weighted by two-thirds) and the combined primary, secondary, and university gross enrolment ratio (with one-third weighting). The adult literacy rate measures the capacity to read and write, whereas the GER categorizes education levels ranging from kindergarten to postgraduate degree. Since 2010, the Education Index has been calculated by combining average adult years of schooling with predicted kid years, with each getting a 50% weighting.

1.1 Objectives

This empirical article studies HDI in Indian states and union territories, inter-state comparisons in economic well-being, health, education, and the human development index. The connections between social opportunities and HDI status throughout Indian states have been computed using correlation. The results demonstrate a strong association between the three variables adopted by the UNDP to compare various development characteristics.

2. Literature Review

The guiding literature has emphasized infrastructure as a catalyst for economic growth, which may improve resource accessibility and the impact of policies (Aschauer 1990, World Bank 1994). Infrastructure is the collection of resources in the form of instruments that aid in education, medical services, community development, pay distribution, employment, and social government support. Individuals are influenced by infrastructure services from a variety of angles. People use such services to heat and light their houses, eat, manufacture goods, and communicate. Similarly,

the accessibility of infrastructure, such as transportation, necessary to transfer raw materials to factories and finished goods to business sectors increases business benefit and intensity (Jacoby, 2002).

Increasing reliance on infrastructure can contribute to economic growth by increasing profitability and providing conveniences that improve human happiness (Kessides, 1996). As a result, the government can prioritize infrastructure development. A robust strategy for infrastructure planning should involve proper financial allocation and more engagement from the private sector. Furthermore, they suggested that higher authorities and local governments collaborate to formulate and implement infrastructure development programs. Proper infrastructure may attract public and private investment in a region, resulting in economic growth (Kusharjanto and Kim, 2011).In his theory of infrastructure-led development, Agenor (2006) suggested that an area might go from a low growth equilibrium to a state of high growth equilibrium. There is productive expenditure and little unproductive expense. Another research in South Asia found that expanding infrastructure can result in considerable increases in output. According to the findings of this study, there is a long-run equilibrium link between infrastructure and production and human capital, labor force, international commerce, and gross domestic capital creation Sahoo and Dash (2012).

In both developed and developing countries, economic and social infrastructure is a foundation for growth and development (Familoni, 2006). According to Hall and Jones (1999), more robust economic growth and a higher quality of life may be accomplished by expanding social infrastructures such as education, health, and housing, which aids in the wasteful use of physical infrastructure and human resources. A comparable study conducted in China discovered that infrastructure stock, labor force, and governmental and private investment all play essential roles in the Country's economic growth. Furthermore, infrastructure development contributes much more than personal and state investment. The study also discovered a one-way causality between infrastructure development and production growth, explaining China's massive infrastructure expenditure.

Human Development Reports from the 1990s emphasize "the notion that development is always a priority and is substantially tied to society. (J. Klugman). These notions are instilled in the concept of human development developed by economist Amartya Sen, a Nobel Prize winner in Economics, which is related to the idea of his ability. Mahbub ul Haq established that this notion was used to construct the Human Development Index (HDI). Human growth," he explained, "may be described as the process of increasing people's chosen potential." Choices can be made in various areas, including political freedom and involvement in people's lives, education and freedom of speech, survival, and a decent standard of living.

Choices can be made in a variety of areas, including political freedom and involvement in people's lives, education and freedom of speech, survival and healthy existence, and living up to worthwhile ideals Mahbub ul Haq,
As a result, there is a symbiotic link between causation, human development, and economic progress. Economic growth allows for the achievement of a high degree of human development; on the one hand, an increase in the level of human development leads to more prospects for economic growth. According to RaniS, capacity growth and freedom contribute to extraordinary financial performance, and human development substantially influences development. Similarly, numerous options and capacities are advantageous at the family and government levels where money grows; growth will benefit human evolution. Bundela(2019).

Many empirical linkages in both directions have been made throughout history, from economic expansion to human development, including investment reports. In their study, Shome and Tondon(2010) studied the movement of two GDP and HDI parameters to see if there is a significant association between their trajectories (Figure 1).

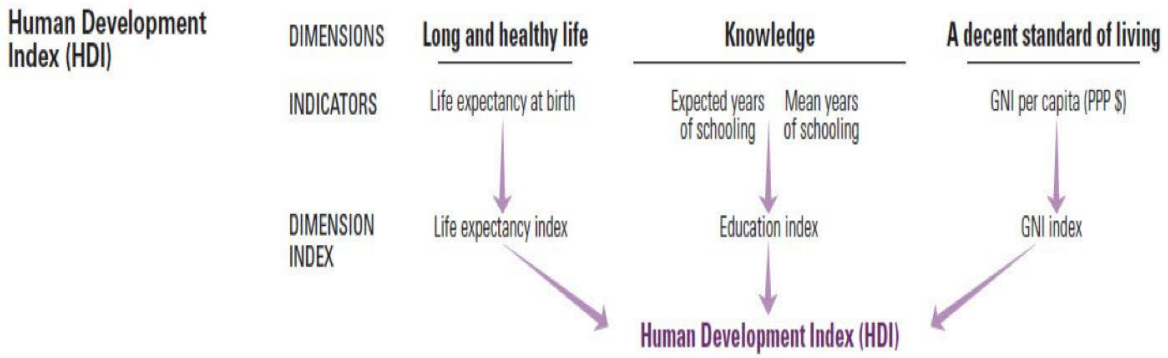

Figure 1. Human development index.Image Source: UNDP Report 2021

Calculation of HDI

The Human Development Index (HDI) is a single index that measures three fundamental aspects of human development: living a long and healthy life, accessing information, and having a reasonable standard of living.

Four essential indicators of HDI are:

(a) life expectancy at birth, (b) average years of schooling, (c) GNI per capita and (d) Expected years of schooling.

Creating indices for each of the four measures is step one.

The dimension (indices) value for each metric is calculated using the actual value for a given country, as well as the global maximum and minimum values:

Dimension index = Actual value - minimum value/maximum value-minimum value

After each component indices is determined, the HDI is calculated by combining them.

The HDI is determined as follows: The geometric mean (equally weighted) of life expectancy, education, and GNI per capita is calculated as follows:

HDI = I(Health)* I(Education)* I(Income)*

The arithmetic mean of the two education indices is used to calculate the education dimension (mean years of schooling and expected years of education). Source: UNDP 2022

HDI across the States and Union Territories of INDIA

In 2008, India's National average HDI was 0.467. Its average HDI has risen to 0.519 by 2010. The UNDP Human Development Index methodology assessed India's HDI to be 0.554 in 2012, up 18% from 2008. According to the United Nations, India's HDI in 2014 was 0.586, up 5.77 percent from 2012. The HDI for India for the year 2018 was 0.647, whereas, in the UNDP report of 2019, India is placed 131/186 countries with an HDI of 0.645(Source UNDP report of 2020).

The HDI is a composite statistic considering health, education, and per capita income. The Government of Indian think tank **Niti Aayog** in its report on the health index for 2021, ranked states based on overall health performance. Kerala was ranked as the best performer on top, while Uttar Pradesh was the worst.

While the UNDP's yearly HDI score informs us about India's progress in human development, this computation of state HDI, GDI, and GII indicates how these indices have changed over time and highlight potential gaps in HD. While per capita GSDP (green Skill Development Programme) remains a crucial indicator of economic progress, HDI, GDI, and GII(Global Innovation Index) scores provide insight into how economic prosperity is affecting people's lives on the ground. It depicts rising levels of equality or disparity among states, regions, or genders. According to 2017-18 rankings, there is no Indian state in the low-HDI category. In the overall HDI category, Bihar, Jharkhand, and Uttar Pradesh continue to lag other Indian states such as Kerala, Goa, and Himachal Pradesh. Sadequl Islam (1996) researched the link between economic growth and the rising affluence of a country. He discovered an "inverse U" link between GDP per capita and average HDI in underdeveloped nations. Ciobanu Oana-Georgiana Neamțu Daniela-Mihaela (2015) demonstrates that economic progress relies solely on a single level to generate money.

3. Data Collection & Methodology

We have included three variables to examine the HDI development across states in India: governance, health infrastructure, and education infrastructure. The following are the reasons for utilizing these variables: fair and effective governance is essential for ensuring that development is all-round; health and education are critical for developing human capacities and vital for a country's economic success. Human capability enhances society's productivity and contributes to improving the quality of life. The UNDP report and its database retrieved HDI values for India's Union territories and states. The HDI values of India's various states for 2019 denoted the HD. Historically, the number of schools per hundred thousand has represented education infrastructure. Governance is assumed as a proxy. It is believed that the coefficient of all the independent factors, namely governance, health infrastructure, and education infrastructure, will be positive, implying that greater values of the independent variables will lead to higher levels of human development. HDI, the dependent variable, is estimated using a Logit model in this study.

Y=1/1+ $e-z$

Z = β0 + β1GI + β2HI + β3EI + u; and Y reflects the HDI values of the various states in 2019. G&I denotes the values of the governance indicator; HI and EI indicate the health and education infrastructure indicators, respectively.

Z Is the regress and is calculated using $ln\ (Y1-Y\ )$ = Z.

4. Results

The following table represents the descriptive statistics and shows the essential characteristics of the variables included in the study.

Table 1. Descriptive statistics

Variable	Mean	Std Deviation	Max	Min	Coeff Var %
HDI	0.645	0.062	0.810	0.592	8.120
GI	0.434	0.231	1.222	0.046	52.280
HI	0.831	0.548	2.499	0.123	74.220
EI	5.634	2.802	14.814	2.115	25.170
Variables	**Coeff**	**R.Std Error**	**t-value**	**p-value**	**Significance**
Intercept	0.727	0.091	7.320	0.000	***
GI	-0.246	0.125	-1.160	0.010	**
HI	0.335	0.091	3.980	0.000	***
EI	-0.047	0.022	-2.310	0.030	*

Std Dev – Standard Deviation | Coeff Var – Coefficient of Variation NOTE: SD indicates Standard Deviation; CV indicates the coefficient of variation (%) Adjusted R2 = 0.69

Coeff – Coefficient | R. Std Err – Robust Standard Error

'***' – 99.9 %; '**' – 99.0 % and '*' – 95.0 % significance level

Table 1 shows that, in comparison to other variables, there is minimal variance in HDI values among states. This means that nearly all states are at around the same degree of human development. However, all the independent variables exhibit considerable variance among states, implying significant disparities across Indian states in governance, health infrastructure, and education infrastructure. Kerala is India's most developed state in terms of human development. However, it is the lowest-ranking state in terms of governance. In terms of human development, education infrastructure, and health infrastructure, Bihar is the least developed state. The results of regression analysis for explaining variations in human development index, 2019 across the Indian states.

5. Discussion

HDI of Indian states aid in quantifying the potential loss owing to inequity in access to education and health care. The study provides a brief overview of the influence of inequality on state human development results. Inter-regional

disparities are likely to add another layer of complexity to this result, but they are outside the scope of this research and can be investigated independently.

The HDI, calculated using global goalposts, categorizes ten states as medium human development states and nine as poor ones; disparities cause an average loss of 28 percent in medium human development states, whereas inequalities cause a 33 percent loss in low human development states. This implies that an examination of the impact of disparities at a disaggregated level finds that disparities in the education component are the greatest, consistent with the HDR findings. It asks for a specific emphasis on locations and socioeconomic groups that continue to suffer barriers to education.

Accordingly, healthcare disparities are also widespread: many studies have found significant healthcare access and usage variations. People's achievement in both education and health is poor, and the level of inequality is substantial. More study is needed to investigate the interconnections between inequality across domains and dimensions and investigate the causes of these inequities.

6. Conclusion

The HDI for India rose from 0.579 in 2010 to 0.645 in 2019. (UNDP Human Development Report, 2020) India's position in the Human Development Index (HDI) was 131 in 2019, up from 129 in 2018.; a two-point drop in HDI worldwide ranking in 2019 compared to 2018. In the sub-component performance of HDI, India's 'GNI per capita (2017 PPP $)' climbed from US$ 6,427 in 2018 to US$ 6,681 in 2019, while 'life expectancy at birth' increased from 69.4 years in 2018 to 69.7 years in 2019. The mean years of schooling and 'anticipated years of schooling,' on the other hand, remained unchanged in 2019 compared to 2018. India was ranked eight times higher than HDI for the Planetary Pressures Adjusted HD (PHDI) value. If a country does not exert any pressure on the earth, its PHDI and HDI are equal, but the PHDI falls below the HDI as pressure increases. PHDI levels are extremely near to HDI values in nations with HDI values of 0.7 or below. The average annual HDI growth rate from 2010 to 2019 was 1.21 percent, compared to 1.58 percent from 2000 to 2010.

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