Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 6, July, 2021: 7840-7857

Research Article

A comparative Study of Human Development Index and its Various Components for BRICS Countries

Dr. Yogesh Vansiya[1], Dr. Shweta Sharma[2]

Abstract

Economic growth and economic development terms were considered interchangeably. There were no separate studies in development economics. Income used to be single yardstick for determining economic development of nations till 1991.Gradually after 1991 some welfare economist started a shift in paradigm. They emphasized the importance of social and other factors in the field of economic development. Prof. Amartya Sen and late Dr. Mahebub-ul-Haq transformed the concept of human development in 1991. They contributed in Human Developed Report published in 1991. After that Human Development Index has gained the recognition in the area of economic development.

There are countries such as China, Hongkong, Japan, Korea *etc.* have joined the link between economic developments as well as human development and strengthened it. Both economic and non-economic factors are equally important in measuring economic development. There are number of non-economic indicators to measure human development i.e. Human Development Index (HDI), Gender Development Index (GDI), Gender Empowerment Measure (GEM), Multi-Dimensional Poverty Index (MDPI), Human Consumption Index (HCI), Human Rights Index (HRI) and Technology Achievement Index (TAI) etc. these indicators are focused on increasing human capabilities and opportunities for better economic quality.

The present paper deals with human development and its various issues in BRICS Countries. Researcher has divided this paper into three sections. In the first section Researcher has explained the research method parts. In the second section, status of human development index has been analyzed as per the latest methodology for BRICS countries. And in last section main conclusion and suggestions have been discussed.

According to HDR 2015, Three BRIC countries (Brazil, China, and the Russian Federation) are placed in high human development category and two countries India and South Africa) have been placed in medium development category. The present study is intended to find out the reasons for the differences in the level of human development among the five large economies of the world.

[1]Assistant Professor, Department of Economics,Veer Narmad South Gujarat University, Surat
Udhna Magdalla Road, Surat – 395007, Gujarat-INDIA,Email: yogesh.economics@gmail.com, Phone: (M) 9712071017
[2]Asst. Professor, Department of Economics,Dr.APJ Abdul Kalam Govt College, Silvassa
Email:nitesh25shweta@gmail.com

Key words: Human Development, HDI, health Index, Education Index, Life expectancy at birth, GDP per capita, BRICS
JEL Classification No. : O15, I25, I15

A Comparative Study of Human Development Index and Its Various Components for BRICS Countries

Section- I

1.1 Introduction

In the new era of economic development, the measurement of human development has been modified to various numbers of indicators. UNDP provided the platform to study the various issues related to the human development in 1991, after that a long chain of different indicators has been initiated by different institutes and economists. Initially very few indicators were included in the measurement of human development such as expected life expectancy, death rates, health, education, literacy, unemployment and poverty. As now many new dimensions have been recognized in the measurement of human development.

Goldman Sachs used the acronym BRIC in 2001. It was used to represent the future leaders of the world economic leaders. The four countries are Brazil, Russia, India and China. South Africa joined the group in 2011, and its name became BRICS. These countries share the large number of world population. According to World Bank BRICS comprises of 41.2% of the world's population and it also has the large share (29.6%) of earth. These countries also possesses large portion of natural resources on the earth. According to IMF (2011) The GDP share of BRICS in the world economy has gone up to significant number. In the year 2000 the BRICS countries reported 17.1 % of the world GDP. In 2010 it went up to 25.7%. The contribution of China and India was 13.6%and 5.5% respectively. The Domestic output of BRICS in 2016 went over US$ 16 trillion, and the group recorded a significant increase in its economies from 2007.

Present study analyses the significance of the BRICS as a powerful group in the global economy. An increased input of factors, and enormous scales of population and resources are the main power booster in the economies. Brazil and Russia have huge reserves of mineral resources; China has a benefit of cheap labor and resources at low prices. India has also cheap labour.

1.2 Research Issues

Human development Pattern has been found very dissimilar among the BRICS countries. Some counties are in very high human development group, some are in High Human Development group and some are in Medium Human Development group. The main concern of the study is to find out the reasons for the unequal development among the BRICS. Further main variables of human development such as expected life expectancy, death rates, health, education, literacy, unemployment and poverty is being examined. This study is keen to find out the triggers for the high development patterns in VHHD and HHD countries among the BRICS. This study also try to examine the impact of poverty, unemployment; income inequality etc on the Human development in the BRICS nations.

1.3 Objective of the Study

The present paper deals with an important issue on human development. The objectives of the study are as follows:

1. The main objective of the study is to analyze the HDI trends particularly for BRICS countries during the period 1990-2019 and to know the HDI growth rate of BRICS countries during the period 1990-2019
2. To evaluate country wise performance of human development indicators among BRICS Countries.
3. To examine the differences in the values of different human development indices given by UNDP.
4. To find out the status of health and knowledge among the BRICS Countries.

1.4 Literature background for the study

UNDP presented Human development index (HDI) in 1990 in its Human development Report (HDR). Before 2010 UNDP used different methods to calculated HDI value. After 2010 UNDP applied improved statistical method to calculate HDI.Since 1990 the Human Development Index includes three different dimensions to measure health, education and income. The main variables to measure three dimensions are life expectancy at birth, mean years of schooling, combined gross enrolment ratio and GNP per capita. The indicators changed in the 2010 HDR. Now four indicators are used for the three dimensions: life expectancy at birth (long and healthy life); mean years of schooling of population of ages 25 and over (knowledge), expected years of schooling for children (knowledge); and Gross National Income (GNI) per capita adjusted by purchasing power parity (PPP) (standard of living). As per new methods, UNDP ranked countries' HDI in following four categories.

(1) Very high human development Category: The HDI value is 0.900 and more.

(2) High human development Category: The HDI value lies in range of 0.800-0.899

(3) Medium human development Category: in this category the HDI value lies from 0.500to 0.799.

(4) Low human development Category: The value of HDI is below 0.500.

In new method on education index there is some change is there as well as the minimum and maximum value taken by UNDP it is also change in new method and for this reason now UNDP get more accuracy result of HDI value.

Klugman, Rodriguez and Choi (2011)[2] discussed the latest method to calculate HDI in their studies. Since 1999 HDR used Arithmetic mean to aggregate the dimensional indices to form HDI but after 2010 HDR used Geometric mean. UNDP also changed the maximum and minimum value[3].The measurement of HDI has progressed over time and contributed to the policy discourse[4]. Over a period of time the measurement of HDI is changed and Klugman, Rodriguez and Choi studied in details of this issue.

[2]Klugman, J., Rodríguez, F., Choi, H.-J.: The HDI 2010: new controversies, old critiques. J. Econ. Inequality 9(2), 249–288 (2011)

[3]Minimum and maximum values are provided by the HDRto convert different values into 0 to 1 scale. The minimum values for life expecatncy is 20 years, at 0 years mean years for schooling and expected years of schooling and at $100 for per capita gross national income (GNI).

[4]Anand and Sen1993,1995,1997

In the previous research, "Human Development Index and its Various Components: A Study of Selected Countries in the World" the researcher analysed HDI by using time series data. It is found that Growth of HDI between 1980 to 1990, 1990 to 2000, 2000 to 2010 and 2010 to 2012 is to be very fast in Germany as compared to others VHHD country. In MHD country China has witnessed the fastest growth of the HDI throughout the 1980 to 2012. MHD country average is growing faster than other countries average HDI value. 2013 HDR data shows that in health index values are found batter then HDI and Non-income HDI values of VHHD, HHD, MHD and LHD countries average value. If Income Index is compared with overall HDI value, it is found that HDI value is higher than income index value. But Bhutan has different result as Bhutan's income index value is 0.585 where HDI value is 0.538. It is found in case of Asian countries that Nepal, Bangladesh and Pakistan are in low human development category. It indicates that these countries have made good effort in education, health as well as economic development"[5].

Goel, S. L., & Kumar, R. (2005) defined "Development is the process of growth in the direction of modernity, especially toward nation-building and socio-economic progress. The aim of the development should be to enrich the quality of life of all."[6]Meaning of the term 'Human Development' differs among people having different contexts, background and standard of living. For a poor man, it may be increased earnings for buying enough food, clothing and shelter but for a rich man it could abstract into satisfaction in life. The Human Development Report 1995 (HDR95) of the United Nations Development Programme (UNDP) explains human development as a medium to enlarge people's choices.[7] It "must enable all individuals to enlarge their human capabilities to the fullest and to put those capabilities to the best use in all fields - economic, social, cultural and political"[8] Thus it is formation of capabilities on one hand and the use of those capabilities for well-being on the other.

1.5 Methodology and Data Sources

Present study is based on the secondary data, which has been obtained from the various reports published by UNDP till 2020. Data regarding the BRICS countries have been obtained from the other reports and reliable publications. The obtained data has been filtered and tabulated according to the need of the study. Different statistical tools have been applied to fulfill the objectives and hypotheses of the study.

Present study deals with the significant issue of human development. This study has been divided into three sections. The first section contains the introduction, literature review, objectives, hypothesis and research methodology of the study. Status of human development of BRICS countries has been evaluated in the second section moreover main objectives of the study has been analyzed in the second section. Conclusion of the study has been discussed in the third section of the paper

Section - II

2.1 Human Development Index and BRICS Countries

[5]Yogesh N. Vansiya (2015), "Human Development Index and its Various Components : A Study of Selected Countries in the World" book entitle of "Research Issues in Applied Economics", Mc Graw Hill Education, New Delhi, Edited by Dr.Kakali Majmudar and dr. Pabitra Kumar Jena, pp.368-385.

[6]Goel, S. L., & Kumar, R. (2005). *Administration and Management of NGOs.* New Delhi, India: Deep & Deep Publications Pvt. Ltd.

[7]United Nations Development Programme. (1995). *Human Development Report.* UNDP. p. 11

[8]Human Development Report, 2004,p. 13

Human development has become very important aspect of the Economy. There are unequal trend of human development is observed among the BRICS nations. Data from the recent human development report (2020) has been analyzed in this section. Following table shows the level of human development among the BRICS countries. HDR 2020 shows the discrepancies in the position of the human development among BRICS.

Table 1. Human Development Index and its components of BRICS Countries

HDI rank	Country	Human development index (HDI)	SDG3	SDG4.3	SDG4.6	SDG8.5	GNI per capita rank minus HDI rank	
			Life expectancy at birth	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita		HDI rank
		(index value)	(years)	(years)	(years)	(2017 PPP $)		
2019		**2019**	**2019**	**2019**	**2019**	**2019**	**2019**	**2018**
52	Russian Federation	0.824	72.6	15.0	12.2	26,157	2	49
84	Brazil	0.765	75.9	15.4	8.0	14,263	1	84
85	China	0.761	76.9	14.0	8.1	16,057	-11	87
114	South Africa	0.709	64.1	13.8	10.2	12,129	-24	115
131	India	0.645	69.7	12.2	6.5	6,681	-5	130
Very high human development		0.898	79.6	16.3	12.2	44,556	—	
High human development		0.753	75.3	14.0	8.4	14,255	—	
Medium human development		0.631	69.3	11.5	6.3	6,153	—	
Low human development		0.513	61.4	9.4	4.9	2,745	—	
	South Asia	0.641	69.9	11.7	6.5	6,532	—	
	World	0.737	72.8	12.7	8.5	16,734	—	

Sources: HDR 2020

The above table shows the Russian Federation has the highest human development index rank (52) and value (.824) among the BRICS and considered as Very High Human Developed country. Brazil is in the second position with HDI rank (84) and value (.765). China has got the HDI rank 85 value .761. South Africa has got the 114 position in HDI rank and its HDI value is .709. India is least performing country with 131 HDI rank and its value .645 and it falls in medium human developed category.

Following table shows the average annual HDI growth from 1990 to 2019. It shows the negative growth for Russian Federation from 1990 to 2000. Then it increased but at decreasing rates for the consecutive time periods. The annual growth of HDI for Brazil showed a declining trend during the given time period. South Africa did not improve much, China's growth rate was very high in the first two decades and declined in the third time period and again jumped during 2010 to 2018. India's annual HDI growth rate showed improvement in all the time periods, but still it has to reach far to catch up with other BRICS countries.

Table 2.Average annual Human Development Index (HDI) growth from 1990-2019 (in %)

Change in HDI	**Country**	**1990-2000**	**2000-2010**	**2010-2018**	**1990-2018**
1	Russian Federation	-0.18	0.79	0.60	0.39
-2	Brazil	1.11	0.59	0.57	0.83
12	China	1.66	1.74	0.57	0.77
-2	South Africa	0.06	0.52	0.73	0.42
1	India	1.43	1.57	1.21	1.42
Very high human development		0.55	0.52	0.35	0.48
High human development		1.04	1.15	0.73	0.98
Medium human development		1.29	1.50	1.12	1.31
Low human development		1.00	2.08	1.03	1.38
	South Asia	1.38	1.47	1.12	1.33
	World	0.69	0.82	0.59	0.71

Sources: HDR 2020

2.2 Recent Trends of Human Development Index and its components of BRICS Countries

This section describes the trends in human development index from 1990 to 2019 and its various components with reference to BRICS countries. It also presents the country profile of the different indicators of the human development over the time. The selected countries have been categorized in four groups; Very high human development (VHHD), high human development (HHD), medium human development (MHD), and low human development (LHD). The analysis shows the developments in HDI values and related indicators of the BRICS country as well as its compare with VHHD, HHD, MHD and LHD country average. Following table shows the trends in the Human development index from 1990 to 2019.

Table 3. Human Development Index Trends from 1990-2019

		Human development index Value (HDI)								**Change in HDI rank**
HDI rank	**Country**	**1990**	**2000**	**2010**	**2014**	**2015**	**2017**	**2018**	**2019**	**2014-2019** [a]
52	Russian Federation	0.735	0.722	0.781	0.807	0.809	0.820	0.823	0.824	1

84	Brazil	0.613	0.685	0.727	0.756	0.756	0.761	0.762	0.765	-2
85	China	0.499	0.588	0.699	0.731	0.739	0.750	0.755	0.761	12
114	South Africa	0.627	0.631	0.664	0.693	0.701	0.705	0.707	0.709	-2
131	India	0.429	0.495	0.579	0.616	0.624	0.640	0.642	0.645	1
Very high human development		0.782	0.826	0.870	0.885	0.889	0.894	0.896	0.898	—
High human development		0.567	0.629	0.705	0.730	0.735	0.744	0.748	0.753	—
Medium human development		0.433	0.492	0.571	0.601	0.609	0.624	0.627	0.631	—
Low human development		0.345	0.381	0.468	0.497	0.500	0.507	0.509	0.513	—
	South Asia	0.437	0.501	0.580	0.612	0.620	0.635	0.637	0.641	—
	World	0.601	0.644	0.6990	0.720	0.724	0.732	0.734	0.737	—
Sources : HDR 2020										

The above table depicts the performance of the five countries during four decades. The Russian federation shows fall in the HDI value in year 2000 but then there have been continuous rise in the HDI value and it is considered as a very high human developed country in 2019 HDR[9].According to the HDR 2019 Brazil's HDI value is 0.765 in 2019. It is in the category of HHD. The HDI rank of the country is 84 out of 189 countries. The HDI value of Brazil increased from 0.613 to 0.765 between 1990 and 2019. There is a growth of 24.8 percent in HDI value from 1990 to 2019.China is a HHD country with HDI value 0.761 for 2019. The rank of China is 85 out of 189 countries and territories. China's HDI value increased from 0.501 to 0.761between 1990 and 2019. There is an increase of 52.5 %. South Africa is also in HHD group with HDI value 0.709 for 2019. The position of the country is114. South Africa's HDI value increased from 0.627 to 0.709between 1990 and 2018, with the increase of 13.1 %.India is the lowest human development country among the BRICS its HDI value is 0.645 for 2019. The HDI rank of India is 131 and it fall in the MHD category., India's HDI value increased from 0.429 to 0.645 between 1990 and 2018, there is an increase of 50.3 % in the value for the given time period. The change in the position of the countries' HDI rank is also shown in the above table. Brazil and South Africa are countries which show decline in the rank from 2013 to 2019.

2.3 Country wise Performance of the Human Development Index

This section contains the country wise performance of the BRICS countries from 1990 to 2019 and discusses the changes over the period of time.

2.3.1 Human Development Progress of Brazil:

[9]Human Development Report 2020The Next Frontier: Human Development and the Anthropocene Briefing note for countries on the 2020 Human Development Report

The HDI value for Brazil improved from 0.613 to 0.765from 1990 to 2019 and showed an increase of 24.8 %. Following table presents the development scenario of different indicators of human development for Brazil from 1990 to 2019. Gross National Income per capita increased by 39.1 % between 1990 and 2019. There is an increase of 9.5 years in indicator of Life expectancy at birth, mean years of schooling also got increased by 4.2 years and an increment of 3.2 years in expected years of schooling from 1990 to 2019. It is also found that though there has been decrease in the GNI per capita in 2016 but other indicators helped to increase the value of the HDI.

Table: 4 Performance of Brazil's HDI Indicators from 1990 to 2019

Years	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017PPP$)	HDI value
1990	66.3	12.2	3.8	10,251	0.613
1995	68.3	13.3	4.6	11,084	0.651
2000	70.1	14.3	5.6	11,276	0.685
2005	71.9	13.8	6.3	12,208	0.700
2010	73.6	14.0	6.9	14,409	0.727
2015	75.0	15.3	7.6	14,775	0.756
2016	75.2	15.4	7.7	14,139	0.758
2017	75.5	15.4	7.8	14,248	0.761
2018	75.7	15.4	7.8	14,182	0.762
2019	75.9	15.4	8.0	14,263	0.765

Sources: Human Development Report 2020

2.3.2 Human Development Progress of Russian Federation

Russian Federation's HDI value increased from 0.734 to 0.824 from 1990 to 2019 and there is an improvement of 12.1 %. Following table describes the changes in human development indicators in Russian Federation from 1990 to 2019. Life expectancy at birth improved by 4.5 years, mean years of schooling improved by 3.0 years and expected years of schooling showed an improvement of 2.2 years. Gross National Income per capita increased by about 21.6 % for the same time period**.** Very rapid growth in the given parameters has contributed in very high human development in the country.

Table 5: Performance of Brazil's HDI Indicators from 1990 to 2019

Years	Life Expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP$)	HDI value
1990	68.0	12.8	9.2	21,514	0.735
1995	66.0	11.8	10.0	13,247	0.702
2000	65.1	12.5	11.3	14,229	0.722
2005	65.8	13.8	11.4	19,601	0.753
2010	68.7	14.0	11.5	23,256	0.781
2015	71.5	15.4	11.8	24,847	0.809

2016	71.8	15.5	11.8	24,874	0.815
2017	72.1	15.5	12.0	25,311	0.820
2018	72.4	15.5	12.0	25,962	0.823
2019	72.6	15.0	12.2	26,157	0.824

Sources: Human Development Report 2020

2.3.3 Human Development Progress of China

China's HDI value showed an increase of 52.5% from1990 to 2019 and the HDI value increased from 0.499 to 0.761. Following table describes the changes in human development indicators for China from 1990 to 2019. Life expectancy at birth for the country increased by 7.8 years, mean years of schooling increased by 3.2 years and expected years of schooling increased by 5.2 years for the same time period. Gross National Income per capita increased very high about 993.4% China showed tremendous improvement in the HDI indicators.

Table: 6 Human Development Indicators for China

Years	Life Expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP$)	HDI value
1990	69.1	8.8	4.8	1,469	0.499
1995	69.9	9.1	5.7	2,361	0.545
2000	71.4	9.6	6.5	3,417	0.588
2005	73.0	11.0	6.9	5,299	0.640
2010	74.4	12.9	7.3	8,847	0.699
2015	75.9	13.8	7.7	12,644	0.739
2016	76.2	13.9	7.8	13,434	0.746
2017	76.5	13.9	7.8	14,333	0.750
2018	76.7	13.9	7.9	15,187	0.755
2019	76.9	14.0	8.1	16,057	0.761

Sources: Human Development Report 2020

2.3.4 Human Development Progress of South Africa

The progress in human development indicators is very low in South Africa, as its HDI value increased by 13.1 % and the HDI value increased from 0.625 to 0.709 from 1990 to 2019.Following table describes the changes in human development indicators for South Africa from 1990 to 2019. South Africa's life expectancy at birth increased very less (0.8 years), which is the lowest among BRICS. Mean years of schooling showed an increase of 3.8 years and expected years of schooling got improved by 2.4 years. GNI per capita for South Africa is increased by 21.6 % for the given time period.

Table: 7 Human Development Indicators for South Africa

Years	Life Expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP$)	HDI value
1990	63.3	11.4	6.5	9,975	0.627
1995	61.6	13.0	8.2	9,387	0.653
2000	56.0	13.0	8.8	9,881	0.631
2005	53.4	12.9 0	8.9	11,233	0.622
2010	57.7	12.8	10.2	12,195	0.664
2015	62.6	13.8	10.1	12,528	0.701
2016	63.2	13.7	10.2	12,357	0.703
2017	63.5	13.7	10.2	12,322	0.705
2018	63.9	13.7	10.2	12,232	0.707
2019	64.1	13.8	10.2	12,129	0.709

Sources: Human Development Report 2020

2.3.5 Human Development Progress of India

India showed high increase in human development (50.3%) from 1990 to 2019. It is the second highest increase after China among BRICS nations for the analyzed time period. The value of HDI increased from 0.429 to 0.645. Following table describes the changes in human development indicators for India from 1990 to 2018. Life expectancy at birth showed an increase of 11.8 years, mean years of schooling and expected years of schooling also showed an increase of 3.5 years and 4.5 years. There is an increase of 273.9 % in GNI per capita of India from 1990 to 2019.

Table: 8 Human Development Indicators for India

Years	Life Expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP$)	HDI value
1990	57.9	7.6	3.0	1,787	0.429
1995	60.3	8.2	3.5	2,078	0.461
2000	62.5	8.3	4.4	2,548	0.495
2005	64.5	9.7	4.8	3,217	0.536
2010	66.7	10.8	5.4	4,182	0.579
2015	68.6	12.0	6.2	5,391	0.624
2016	68.9	12.3	6.4	5,722	0.630
2017	69.2	12.3	6.5	6,119	0.640
2018	69.4	12.3	6.5	6,427	0.642
2019	69.7	12.2	6.5	6,681	0.645

Sources: Human Development Report 2020

2.4 Inequality Adjusted Human Development Index for BRICS Nations

Present section comprises of the inequality adjusted human development index for BRICS. To measure IHDI, HDI value adjusted for inequalities in the all three dimensions. The IHDI is used for measuring inequalities in dimensions by "discounting" particular dimension's mean value according to its level of inequality. If there is no inequality, The IHDI value becomes equal to the HDI value. But it falls below the HDI value as inequality rises. Following table shows the different indicators to assess inequality among BRICS nations. Russian federation shows the less inequality among the BRICS. The Percentage variation between the IHDI and the HDI value is explained by Overall loss. It is highest for South Africa (34%) which is more than the loss for low development nations (31.4%). Brazil (-20) shows the highest Difference from HDI rank 2019.

Coefficient of human inequality measures the average inequality in the three basic dimensions of human development. This is highest for South Africa, followed by India. Inequality in life expectancy is calculated by Atkinson inequality index. It uses the data from life tables and estimates inequality in distribution of expected length of life. Highest inequality in life expectancy is observed for India (2015-20). To measure Inequality-adjusted life expectancy index, life expectancy index value is adjusted for inequality in distribution of expected length of life. Russian federation has the better index value than others.

Inequality in distribution of years of schooling is used to measure Inequality in education; the value of the inequality is very high for India (38.7) in 2019. To calculate Inequality adjusted education index, HDI education index value is adjusted for variation in distribution of years of schooling and India has the lowest value for the adjusted index.

Inequality in income is the next indicators to measure inequality. Inequality in income is calculated from the data from household surveys and measured by using the Atkinson inequality index. Highest income inequality is found in South Africa, followed by Brazil. To obtain Inequality-adjusted income index, HDI income index value is adjusted for inequality in income distribution based on data from household surveys. Again South Africa has the lowest index value.

Gini coefficient measures variation of the distribution of income among individuals in a country from a perfectly equal distribution. A value of 0 represents absolute equality and value of 100 absolute shows perfect inequality. South Africa has the highest inequality among the BRICS nations.

Table: 9 Inequality Adjusted Human Development Index for BRICS Nations (2019)

Country	HDI	IHDI value **2019**	Overall loss (%)**2019**	Difference from HDI rank **2019**	Human inequality coefficient (%)2019	Inequality in life expectancy 2015–2020c	Inequality adjusted life expectancy index 2019	inequality in education 2019d	Inequality adjusted education index2019	Inequality in income a 2019d	Inequality adjusted income index 2019	Gini coefficient 2010-2018
Russian Federation	0.824	0.740	10.2	2	10.0	7.1	0.751	4.2	0.789	18.8	0.683	**37.5**
Brazil	0.765	0.570	25.5	**-20**	24.4	10.9	0.766	21.2	0.547	41.0	0.442	**53.9**
China	0.761	0.639	16.0	2	15.7	7.9	0.549	11.7	0.580	27.4	0.557	**38.5**
South Africa	0.709	0.468	34.0	–18	31.2	19.2	0.549	17.3	0.599	57.0	0.312	**63.0**
India	0.645	0.475	26.4	–1	25.7	19.7	0.613	38.7	0.340	18.8	0.515	**37.8**
Very high human development	0.898	0.800	10.9		10.7	5.2	0.869	6.4	0.804	20.4	0.733	
High human development	0.753	0.618	17.9		17.6	10.1	0.765	14.5	0.572	28.0	0.539	
Medium human development	0.631	0.465	26.3		25.9	20.8	0.601	37.1	0.334	19.7	0.499	
Low human development	0.513	0.352	31.4		31.3	30.8	0.441	37.9	0.263	25.1	0.375	
South Asia	0.641	0.475	25.9		25.4	20.2	0.613	37.5	0.339	18.5	0.515	
World	0.737	0.587	20.4		20.2	14.7	0.692	22.1	0.497	23.8	0.589	

Sources: HDR 2020

2.5 Gender Development Index

The GDI has been developed to gauge gender gaps in human development achievements by calculating differences between women and men in three basic dimensions of human development. It is a measurement of gender gap of the female Human Development Index as a percentage of the male Human Development Index. It is calculated for 167 countries. Countries are classified into five groups, which are based on the absolute deviation from gender equality in HDI values. Group one countries show high equality in HDI achievements between women and men and its absolute deviation is less than 2.5 %. Group two represents medium-high equality in HDI achievements between women and men with absolute deviation between 2.5 % and 5 %. Group three consists countries with medium equality in HDI achievements between women and men and its absolute deviation varies from 5 % and 7.5 %. Group four includes countries with medium-low equality in HDI achievements between women and men and its absolute deviation lies from 7.5 % to 10 %. Group Five has countries, which have low equality in HDI achievements between women and men and its absolute deviation from gender parity is greater than 10 %. Following table discusses the values of the BRICS nations on the three dimension of the GDI as given in the HDR 2020. Where three countries are in the first group of high equality and china also shows the medium high equality. India is in the fifth group showing high inequalities among the BRICS.

Table 10: Gender Development Index for BRICS Nations (2019)
Sources: HDR 2020

Countries	**GDI**	**GROUP**	**HDI**		**Life Expectancy**		**Expected year of schooling**		**Mean year of schooling**		**Estimated gross national income per capita**	
			M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Russian Federation	1.007	1	0.823	0.817	77.8	67.1	15.3	14.8	11.9	12.1	19,694	33,640
Brazil	0.993	1	0.760	0.765	79.6	72.2	15.8	15.1	8.2	7.7	10,535	18,120
China	0.957	2	0.744	0.777	79.2	74.8	14.0	14.0	7.7	8.4	12,633	19,308
South Africa	0.986	1	0.702	0.712	67.7	60.7	14.2	13.4	10.0	10.3	9,248	15,095
India	0.820	5	0.573	0.699	71.0	68.5	12.6	11.7	5.4	8.7	2,331	10,702
Very high human development	0.981	—	0.886	0.903	82.4	76.8	16.6	16.0	12.0	12.2	33,668	55,720
High human development	0.961	—	0.736	0.766	78.0	72.8	14.1	13.9	8.2	8.7	10,529	17,912
Medium human development	0.835	—	0.567	0.679	70.8	67.9	11.7	11.4	5.3	8.1	2,530	9,598
Low human development	0.861	—	0.474	0.551	63.0	59.9	8.7	10.1	3.9	6.0	2,043	3,446
South Asia	0.824	—	0.570	0.692	71.3	68.7	11.9	11.5	5.5	8.4	2,393	10,416
World	0.943	—	0.714	0.757	75.0	70.6	12.7	12.7	8.1	9.2	12,063	21,323

2.6 Gender Inequality Index

Gender disparity is one of the main issues related to human development. Females are discriminated and mistreated in the society. To capture this inequality Gender Inequality Index is prepared by UNDP. It gauges the gender disparities in three dimensions of HDI.The first dimension is reproductive health, measured by adolescent birth rates(Number of births to women ages 15–19 per 1,000 women ages 15–19)and maternal mortality ratio (Number of deaths due to pregnancy-related causes per 100,000 live births). Second dimension is empowerment, which is measured by proportion of parliamentary seats occupied by women and proportion of adult females and males aged 25 years and older with at least some secondary education. And third dimension is economic status, measured as labour market participation and measured by labour force participation rate of female and male populations aged 15 years and older. The greater value of the GII represents higher disparities and it causes the loss to HDI. It provides the guidance for policy interventions to reduce the gender gap.

Following table provides a picture of gender disparity (2019) among BRICS nations in all three dimensions on the basis of HDR 2020. Highest gender disparity is seen in India among BRICS nations and lowest found for China. Maternal mortality ratio is highest in India, followed by South Africa. Adolescent birth rate is calculated from 2015-20, which is highest for South Africa. Share of seats in parliament, Population with at least some secondary education and Labour force participation rate is lowest for India.

Table: 11 Gender Inequality Index for BRICS Nations (2019)

Countries	**GII 2019**	**Value 2019**	**Maternal mortality ratio 2017**	**Adolescent birth rate 2015-20**	**Share of seats in parliament 2019**	**Population with at least some secondary education 2015-19**		**Labour force participation rate 2015-19**	
						F	**M**	**F**	**M**
Russian Federation	0.225	50	17	20.7	16.5	96.3	95.7	54.8	70.2
Brazil	0.408	95	60	59.1	15.0	61.6	58.3	54.2	74.1
China	0.168	39	29	7.6	24.9	76.0	83.3	60.5	75.3
South Africa	0.406	93	119	67.9	45.3	75.0	78.2	49.6	62.7
India	0.488	123	133	13.2	13.5	27.7 l	47.0 l	20.5	76.1
Very high human development	0.173	—	14	17.2	28.3	86.5	88.6	52.3	69.1
High human development	0.340	—	62	33.6	24.5	69.8	75.1	54.2	75.4
Medium human development	0.501	—	161	34.6	20.4	30.1	46.3	28.3	77.1

Low human development	0.592	—	572	102.8	22.2	17.2	30.1	57.7	72.3
South Asia	0.505	—	149	26.0	17.5	31.3	48.4	23.2	77.0
World	0.436	—	204	43.3	24.6	61.0	68.3	47.2	74.2

Sources: HDR 2020

2.7 Health and Human Development status among BRICS Countries

Health is always considered the most important determinants of human development. Good health is the first priority of the human well-being. Different health related variables are analyzed in this section. In the present time of covid 19 pandemic, the importance of health expenditure has increased a lot. Any country can increase its human capital's productivity by investing in education and healthcare. Health expenditure measures the ultimate consumption of health care goods and services. Current health expenditure includes personal health care such as medicinal care, rehabilitative care, long-term care, subsidiary services and medical goods. It also includes collective services such as prevention and public health services as well as health administration. Annual per capita health expenditure differs widely among the BRICS countries.

Following table shows the current health expenditure of the BRICS nation. India is lagging behind from other countries. India's total healthcare expenditure, at 3.54% of GDP in 2018, which is very lower than that of other BRICS countries. Brazil spends the most (9.51%), followed by South Africa (8.25%), Russia (5.32%), China (5.35%) in the same year.

Table: 12 Current Health Expenditure of BRICS Countries (% of GDP)

Year	Russian Federation	Brazil	China	South Africa	India
2010	4.97	7.95	4.21	7.42	3.27
2011	4.79	7.79	4.33	7.50	3.25
2012	4.94	7.74	4.55	7.75	3.33
2013	5.08	7.98	4.71	7.72	3.75
2014	5.18	8.40	4.77	7.93	3.62
2015	5.30	8.87	4.89	8.20	3.60
2016	5.27	9.21	4.98	8.10	3.51
2017	5.34	9.47	5.15	8.11	3.54
2018	5.32	9.51	5.35	8.25	3.54

Source: World Bank (2020a). World Development Indicators database. Washington, DC. http://data.worldbank.org. Accessed 22 July 2020.

2.8 Knowledge and Human Development

To analyse the education performance of the BRICS, The Global Knowledge Index has been initiated in 2017. It measures the knowledge performance of the nations in seven dimensions. These seven areas are pre-university education, technical and vocational education and training, higher education, research, development and innovation, information and communications technology, economy and the general enabling environment. It established the knowledge economy. It provides scientific linkage between development and knowledge. It covers 138 countries and 199 indicators.

The following table shows the GKI 2020 values and ranks for BRICS in 2020. Brazil, India and South Africa have shown moderate performance in terms of its knowledge infrastructure. Brazil got 68th rank out of 138 countries and its position is 12th out of the 36 countries with high human development. India is ranked 75th in the GKI 2020 and 2nd out of the 24 countries with medium human development. South Africa ranks 71st out of 138 countries in the GKI 2020 and 14th out of the 36 countries with high human development

China and Russian Federation is a strong performer in terms of its knowledge infrastructure. China is ranked 31st out of 138 countries in the Global Knowledge Index 2020 and 1st out of the 36 countries with high human development. Russia ranks 45th out of 138 countries in the GKI 2020 and 43rd out of the 56 countries with very high human development.

Table: 13 Global Knowledge Index and other indicators of BRICS

		Brazil	China	India	Russian federation	South Africa
Global Knowledge Index	Value	45.6	57.4	44.4	50.6	45.1
	Rank	68	31	75	45	71
Pre-university education	Value	54.2	76.9	49.9	72.9	52.2
	Rank	92	4	105	19	98
Technical and vocational education training	Value	49.6	65.2	55.7	48.9	47.4
	Rank	65	14	38	71	83
Higher education	Value	43.1	38.9	38.9	45.8	42.3
	Rank	51	71	79	40	58
Research development and innovation	Value	25.6	44.4	27.3	27	25
	Rank	49	22	44	45	52
Information and communication technology	Value	56.2	61.4	52.1	63.5	55.6
	Rank	66	49	76	45	68
Economy	Value	35.9	57.7	40.6	40.9	41.5
	Rank	93	17	75	70	68
General enabling environment	Value	57.1	57.6	47.5	57.7	55.3
	Rank	83	81	113	78	86

***Data Sources: GKI* 2020**

Section III

Conclusion

The main objective of Economic development is to enhance the quality of life of the individuals. Human Development Index (HDI), inequality adjusted human development index, gender development index, gender inequality index etc are formulated to measure the different criteria of the human development. This study is focused to analyse the trends in the different aspects of human development. The study found that BRICS countries have realized significant growth in above mentioned indices. Significant positive changes have been made in BRICS countries from

1990 to 2019. Current health expenditure and Global knowledge Index has also shown the improvement in the countries performance.

References

1) Ahluwalia M. S. "Inequality, Poverty and Development", Journal of Development Economics, Vol. 3, Sept. 1976, pp. 307-42.

2) Anand, S. and Sen, A.K. 'Human Development Index: Methodology and Measurement', Human Development Report Office Occasional Paper 12, 1993, UNDP, New York.
3) Anand, S. and Sen, A.K. 'Gender Inequality in Human Development: Theories and Measurement', Human Development Report Office Occasional Paper 19, 1995 UNDP. New York.
4) Anand, S. and Sen, A.K. (1997) 'Concepts of Human Development and Poverty: A Multidimensional Perspective', Human Development Papers, 1997, United Nations Publications, New York.
5) Dutta, B., Panda, M., and Wadhwa, W. 'Human Development in India', in S.Subramanian (ed.) Measurement of Inequality and Poverty, 1997, Oxford University Press, New Delhi.
6) Goel, S. L., & Kumar, R. *Administration and Management of NGOs.* New Delhi, India: Deep & Deep Publications Pvt. Ltd 2005.

7) Haq, Mahabubul, "Human Development in a Changing World" Occasional Papers, Human Development Report Office, New York, 1992.
8) http://en.wikipedia.org/wiki/Human_Development_Index
9) Klugman, J., Rodríguez, F., Choi, H.-J.: The HDI 2010: new controversies, old critiques. J. Econ.Inequality 9(2), 249–288, 2011.
10) Krishna Anirudh, Kapila Mahesh, Pathak Sharad, Porwal Mahendr, Singh Kiranpal, Singh Virpal , "Falling in to poverty in villages of Andhra Pradesh" EPW, Vol.39, No.29,pp.3249-56,2004.

11) N.Guruveera Kumar, P.Kondaiah, Prof. D.Krishnamoorthy, "Human Development Index: A Special Focus on Brics Countries", 2014,Journal of International Academic Research For Multidisciplinary
12) Schultz, T.W., "Investment in Human Capital", *American Economic Review*, Vol.51, 1961, pp.1-17.
13) Srijit Mishra, Hippu Salk Kristle Nathan, "Measuring Human Development Index: The old, the new and the elegant", WP-2013-020,2013 Indira Gandhi Institute of Development Research, Mumbai, October. (http://www.igidr.ac.in/pdf/publication/WP-2013-020.pdf).
14) United Nations Development Programme (UNDP): Various Human Development Report (1990 to 2020), Oxford University Press, New York.
15) World Bank (2020a). World Development Indicators database. Washington, DC. http://data.worldbank.org. Accessed 22 July 2020.

16) United Nations Development Programme (UNDP): Global Knowledge Index