IOSR Journal Of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 16, Issue 6 Ser. 1 (Nov. – Dec. 2025), PP 28-39
www.Iosrjournals.Org

"Human Development And Economic Growth In India"

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Abstract
The current dissertation examines the connection between Economic Growth and Human Development in India since the year 1990 up to the year 2024. It concentrates on two important variables namely the Human Development Index (HDI) indicator of human welfare and Gross Domestic Product (GDP) per capita that serves to indicate economic performance. The research questions the answer to are whether the remarkable economic growth since the liberalization reforms in India resulted in similar gains in human well-being.
The study is based on quantitative research and examinations of secondary time-series data of the United Nations Development Programme (UNDP) and the World Bank. The analysis of the relationship between the two variables is done using statistical models such as Pearson Correlation and Simple Linear Regression. The findings indicate that there is a very high positive relationship between the GDP per capita and HDI (r = 0.9534). This observation implies that there has been simultaneous economic growth and development of people over this period. Regression analysis shows that the R 2 value is 0.908998279, and this implies that almost 91 percent of the variation in HDI is attributable to variation in GDP per capita.
The results go to prove the hypothesis that economic growth profoundly and positively impacts human development in India. F-statistic (329.6305041) and extremely low p-value (9.62047E-19) prove the statistical significance of the model at the level of 1%. The study also mentions, though, that the economic growth does not entirely explain human progress. The other determinants of the influence of growth on human welfare are income inequality, regional disparities, social inclusion and governance quality.
Overall, the discussion indicates that the economic growth of India following reforms has been significant in enhancing the outcome of human development. Policies aimed at inclusive growth, human capital investment, and regional balanced development should be used to sustain this progress. The research highlights that it is not the magnitude of economic growth but the ability to make the lives of the people rich and empowered through development.

Keywords: *Economic Growth, Human Development, GDP per capita, HDI, India, Correlation, Regression, UNDP, World Bank.*

Date of Submission: 01-11-2025 Date of Acceptance: 10-11-2025

I. Introduction

Background of the Study

The development of the nation is no longer gauged by the size of their economy but the level of life that the citizens are enjoying. Over the past few decades, the discussion on development has transcended the growth of income to include human well-being, fairness and empowerment. The quantifiable growth of an economy is economic growth in terms of increase in the Gross Domestic Product (GDP) per capita. Human development, on the other hand, is the improvement of human life, based on health and education and standards of living, represented by the Human Development Index (HDI). The correlation between the two spheres is the focus of contemporary economic thought. Neither can economic growth exist without human development and human development can exist without economic growth.

A good example of this problem can be seen in India. The Indian economy has experienced a tremendous reform in terms of liberalization, globalization, and technological advancement, that began in the early 1990s. Economic reforms of 1991 have provided accessibility to the global trade and investment, which re-established the position of India within the global economy. India has transformed itself into one of the fastest-growing economies globally through continuous changes in policies, infrastructural development and growth and a

booming services sector. But the main question is: Has such an impressive economic growth resulted in true human development?

Since 1990, the GDP per capita in India has grown enormously yet human development indicators have not progressed at an equal pace. Major progress has been achieved within the country in terms of literacy, life expectancy and poverty reduction, but, problems such as income inequality, gender imbalance, and disparities in terms of regions are not completely resolved yet. Growth without similar human development is an issue which shows that it is necessary to consider whether the Indian economic growth has benefited the wider human welfare objectives.

Conceptual Framework: The Connection between Economic Growth and Human Development.

Human development and economic growth are interdependent. The increased GDP per capita gives the funds that can be used to invest in education, health, and social sectors. Simultaneously, a skilled, educated, and healthy population is the basis of a sustainable economic growth. This reciprocal causation implies that none of the two factors can flourish independently.

The human Development Index (HDI), which is developed by the United Nations Development Programme (UNDP) in 1990, is a general measure to the concept of development. It is a composite measure of human progress as it is a combination of life expectancy, education, and per capita income. GDP per capita is a measure of the production capabilities of the country and the standards of living. The interaction of these two factors demonstrates the influence of economic policies on the welfare of people and how human abilities promote and accelerate the development of the economy.

This is a particularly significant relationship in India. Although HDI has changed dramatically over the years, since it was 0.431 in 1990, by 2023, it has risen to 0.644 (UNDP), it has not increased evenly among states or groups. Although such regions as Kerala, Tamil Nadu, and Delhi are always on the top of the human development rating, some other states lag behind, and the divide between the affluent and the poor is observed. Researching the statistical correlation between the GDP per capita and the HDI can provide the essential evidence as to whether the development model adopted by India can be considered inclusive and sustainable.

Historical Background and Development.

The period of 1990-2024 is the dynamic period of socio-economic history of India. The 1991 reforms terminated the so-called License Raj that started the era of liberalization and privatization. This shift led to the influx of foreign investment, development of service industry and development of new industries. It resulted in a significant improvement in the GDP per capita in India that increased between 1990 and 2024 and exceeded 2,700 dollars (World Bank, 2024).

Simultaneously, the government introduced several programs that were designed to enhance human development, including the Sarva Shiksha Abhiyan of universal education, the National Rural Health Mission of healthcare, and the Mahatma Gandhi National Rural Employment Guarantee Act of job security. The effective implementation of these initiatives was reflected in the introduction of the Human Development Index by UNDP this decade, which gives the world standard to evaluate the effectiveness of these undertakings. These efforts notwithstanding, the development of people through these efforts tended to take a back seat to economic growth, bringing up the question as to the extent to which India is an inclusive development story.

Importance of the Study

The study is very topical in the modern economic environment. With the examination of the long-term correlation of GDP per capita and HDI in India between 1990 and 2024, the study will unearth the knowledge of whether economic growth has truly brought any positive change in the quality of life of the citizens. This analysis is significant to the policymakers, economists and development strategists who desire to bridge the gap between growth and welfare.

Proper comprehension of this association also points out the aspects of the policy that need greater focus, be it in the field of the health of the people, education, income distribution, or regional development. In case economic growth has a positive relationship that is strongly positively associated with human development, it would be in support of the fact that welfare can be attained by macroeconomic growth. Conversely, a poor or unstable relationship would necessitate targeted human-centric policy to help in making sure that the fruits of growth befall every segment of the society.

Scope and Objectives

This paper will examine the Indian development process during thirty-four years (19902024), using two variables, Human Development Index (HDI) and GDP per capita (constant US dollars) on an annual basis. The research employs quantitative research tools with the Pearson correlation and simple linear regression analysis

techniques as the main tools of statistically evaluating the direction, strength, and significance of the relationship between the following variables.

The study has gathered data based on the World Bank, UNDP human development reports and the reserve bank of India (RBI) to ensure credibility and reliability. The study will not only seek to quantify the relationship between human development and economic growth but will also have an interest in interpreting the policy implications presented by such relationship.

Summary

To conclude, this dissertation delves into the paradox of the development of India, in the sense of how a country that has emerged as one of the world leaders still has to provide some basic human needs. It enquires on whether economic growth has resulted in human progress and whether human development, on its part, has justified the growth. The study would help the general field of knowledge in development economics and the current quest of inclusive, just, and sustainable growth through empirical analysis, well-supported reasoning.

II. Variables

HUMAN Development Index (HDI).

Dependent Variable

The Human Development Index (HDI) is an aggregate measure, developed by the United Nations Development Programme (UNDP) to gauge the general effectiveness of a nation in three primary forms of human development, namely a long and healthy life, access to knowledge, and a decent standard of living. The life expectancy at birth, average and expected years of schooling, and Gross National Income (GNI) per capita are the areas respectively.

HDI incorporates qualitative features of development as compared to strictly economic indicators. It is a measure of the health, ability and empowerment of individuals. HDI provides a global perspective of development because it integrates social and economic outcomes into a single measure, which made it possible to make comparisons between nations and between nations over time.

In the case of India, HDI is an expression of social and economic developments in the country since the liberalization. Since 1990, there have been increases in education, healthcare and standards of living, and the index has risen by 0.431 to 0.644 in 2023 (UNDP, 2024). Nevertheless, the disparity between regions and social classes still exists, which draws attention to the unequal nature of the human development history of India.

In this dissertation, HDI is considered a dependent variable since it presents the end product of an economic policy, quality of governance, and investment in human capital in a country. It is aimed at knowing the impact of the economic growth, in terms of GDP per capita, in HDI improvements over the years.

GROSS DOMESTIC PRODUCT (GDP) per Capita.

Independent Variable

Gross Domestic Product (GDP) per capita is the total output in the economy of a nation divided by the population and is stated in the constant U.S. dollars. It is the average level of income or capability of production per individual and it is one of the key measures of the economic growth and prosperity.

In the case of India, GDP per capita is one of the primary indices of development since the 1991 economic reforms. Liberalization policies increased the industrial growth, technological development, and globalization, as a result of which the level of income increased dramatically, reaching approximately 367 dollars in 1990 to more than 2,700 dollars in 2024 (World Bank, 2024).

Nevertheless, economic growth is not sufficient, as human welfare is not ensured unless it is accompanied by equitable allocations and accessibility to education, health services and the social services. The disparity in incomes distribution and opportunities among the Indian states implies that even though the GDP growth has been impressive, the good has not always fallen on all people.

GDP per capita is an independent variable in this study, which is an economic capacity of the nation to promote human development. Correlation and regression analysis will be done to evaluate the relationship between GDP per capita and HDI to ascertain whether the increase of income levels has resulted in any significant and sustained changes in human wellbeing.

Theoretical relationship among the variables.

The association between the growth in the economy and the development of man is circular and enabling in nature. The development of the economy enhances the funds that can be used as a form of public expenditures towards health, education, and social security. Human development in turn enhances productivity, innovation and economic participation leading to a positive growth and well-being cycle.

This relationship can however be undermined without equitable policies resulting in unsustainable growth. Thus, the analysis of HDI-GDP relationship is crucial in order to evaluate the fact whether the economic development of India has actually led to the positive changes in the human welfare.

III. Hypothesis

Knowledge of the Concept Hypothesis.

In studies, a hypothesis is the foundation of empirical study. The statement is a predictive testable statement that is used to predict two or more variables. In economics and developmental research, a hypothesis is used to establish whether the alteration in one of the factors, the independent variable, leads to or is correlated to the alteration of another factor, the dependent variable.

The hypothesis relates theory and data. It makes abstract knowledge an empirical statement which can be statistically confirmed. It will enable the researcher to objectively verify whether theoretical expectations are being supported in reality thereby increasing the scientific power of the research.

The hypothesis in this dissertation is that economic growth, in terms of the GDP per capita, has played a significant role in the development of human beings as reflected by the Human Development Index (HDI) in India between the years 1990 and 2024.

Null Hypothesis (H_0):

Humans Development Index (HDI) and Gross Domestic Product (GDP) per capita in India have no statistically significant relationship between 1990 and 2024.

This is a null hypothesis that concludes that India changes in the GDP per capita have not significantly influenced the human development outcomes. It implies that economic growth is not necessarily a cause of an increase in the quality of life, health, and education of people.

Alternate Hypothesis (H_1):

The relationship that exists between the Human Development Index (HDI) and Gross Domestic Product (GDP) per capita in India between the year 1990 and 2024 is statistically significant.

This second hypothesis assumes that GDP per capita has a positive influence on Human Development Index. It is an indication of the belief that with the expanding economy in India and the rise in income, citizens have a greater access to education, healthcare and improved living standards thereby leading to an improved human development outcome.

Justification to the Hypotheses

These hypotheses are developed on the basis of interrelatedness of economic and human development. The economic growth generates the financial and institutional capacity of investment in human capital. Simultaneously, health, education, and skill enhancement make productivity and innovation more productive and contributes to growth.

The statistical testing of these hypotheses will be able to show whether the remarkable economic growth of India since 1990 has been accompanied with the comparable rise in human well-being or whether economic prosperity has surpassed human development.

IV. Review Of Literature

Janak Raj, Vrinda Gupta and Aakanksha Shrawan (2023). Is there a convergence of Economic Growth and Human Development in India: A State Convergence?

https://csep.org/wp-content/uploads/2023/12/Interlinkages-Between-EconomicGrowth-and-Human-Development-in-India.pdf

This working paper examines the correlation between the economic growth and the human development at the state level in the Indian states with the question whether there is a convergence between the growth and human development patterns. The authors are building state-specific indicators (such as state HDI series and NSDP) and applying distributional and econometric approaches to the study of convergence and co-movement among the states. They discover heterogeneous paths: some high-growth states are characterized by high gains in human development and many lagging states are characterized by poor translations of growth into social outcomes. The paper identifies the contribution of the priorities of state policies, government expenditure on health and education and institutional capability to determine whether the GDP growth will lead to human development or not. The results highlight the fact that even the national level of growth fails to guarantee even distributions of human development in every region, and it implies the necessity to have state-specific social investments and coordination of policies. csep.org.

S. Chawla (2022). Human Development Index of States in India (JGU/working paper).
https://pure.jgu.edu.in/4709/1/Human%20Development%20Index%20Among%20States%20of%20India.pdf

This empirical research evaluates the differences in inter-state in the HDI components (health, education, and income) and their relationship with state economic performance. The paper provides the use of panel measurements across the years and revealed that education and health indices provide a significant portion of the HDI variations whereas the income (per-capita NSDP) factor impacts the ranking but not the social aspects. The analysis records the deep-rooted spatial inequalities: states with the same ratio of per-capita income may exhibit divergent results of human development based on state provisioning and governance. It poses that sectoral policy, particularly investments in primary health and base education is essential in the transformation of income gains into human development gains. This supports the policy message that growth benefits and targeted social spending redistribution can play a crucial role in balanced human development in India. PURE

India: Social Sector Development and Economic Growth (2020). Journal of Economic development S. Faisal / associated writers.
https://ideas.repec.org/a/jed/journl/v45y2020i4p49-68.html

The focal point of this paper is on the impact of social-sector development (health, education, nutrition) on long-run economic growth between the years 1990-91 and 2017-18 across the Indian states. Through panel regressions and robustness checks, the authors discover that the increased expenditure in the public and the improvement in social sectors are positively related to future growth showing the existence of two-way relationships between human development and growth. Its findings indicated that investment in human capital stimulates productivity and generates more inclusive growth opportunities, but the extent varies across states as a factor of complementary infrastructure and labor market factors. The authors draw a conclusion that social-sector policies are not only the aims of welfare but also the levers of strategic growth, which is significant in making sure that states can maintain growth, as well as enhance human development indicators. IDEAS/RePEc

Faisal et al. (2023) examined the data in the context of Human Development, Income Inequality and Economic Growth (SAARC countries, which also includes India) using panel data analysis.
https://pdfs.semanticscholar.org/a532/c50fb528c8d56d0ea386b6e3208fcb229527.pdf

This paper will apply panel-data methods to the South Asian countries to determine the association between HDI, income inequality (Gini), and economic growth. The empirical models demonstrate that the gains in HDI elements (education, life expectancy) have a positive impact on growth and higher inequality diminishes human development gains and growth results. The authors also point out policy complementarities: the benefits of development spending on growth are multiplied by the reduction of inequality as well as enhancement of basic social services. Despite being regional, the India specific coefficients reflect that India growth process is vulnerable to disparity and inclusive social policies can enhance the nexus between growth and development. Therefore, the article presents cross-country data that supplements the state-level Indian studies. Semantic Scholar

A. Khodabakhshi (2011). GDP and Human Development Relationship: A review and implications to India. (SSRN / comparative study)
https://ssrn.com/abstract=1867887

In this review, the authors look at empirical studies on the relationship between GDP per capita and human development indicators in search of an argument that though income is needed, it is inadequate as a measure of human development. The article combines the results of various country research studies in demonstrating that education and health investments, institutional quality, and redistributive policies define the presence of a growth-to-human development gains. In the case of India, the review identifies instances where the growth in GDP failed to correlate consistently to higher social indicators - indicating bottlenecks such as unequal access, lack of good governance and regional imbalances. The author suggests the combination of policies that combine the promotion of growth with direct investment in the human potential to act so that the development is carried out on a broad basis. This theoretical synthesis assists in putting the empirical literature on India into perspective concerning India having a mixed record of growth and social progress. SSRN

United Nations Development Programme (2020). Human Development Report -The Next Frontier (HDR 2020).
https://hdr.undp.org/system/files/documents/hdr2020.pdf

The conceptual and methodological rationale of the use of composite indices (HDI) to measure well-being beyond GDP is provided by the UNDP Human Development Report. The 2020 report focuses on the multidimensional strategies, i.e., education, health, living standards; it also applies to the reversible nature of the development improvements based on the impact of structural inequalities and crises (e.g. pandemics). In the case of India, the HDR framework reveals the necessity to focus not only on the aggregate growth but also on

distributional outcomes, gender equality, and social services resilience. In the case of India, the lessons taught by the HDR are that national development approaches should be combined with social policies to achieve sustainable human development benefits. Human Development Reports

V. Methodology

The Research Methodology

It refers to the systematic and scientific process employed to explore and analyse the relationship between Human Development Index (HDI) and Gross Domestic Product (GDP) per capita in India during the period 1990–2024. The main objective is to identify whether economic growth has significantly influenced human development and to evaluate the strength and direction of this relationship.

The study uses a quantitative approach, focusing on measurable data and statistical testing. The analysis is based entirely on secondary data collected from authentic and verified sources such as the United Nations Development Programme (UNDP) and the World Bank World Development Indicators.

The design of the study is correlational and explanatory, aiming to measure how closely related HDI and GDP per capita are, and how changes in income levels contribute to human development in India.

Sample Size:
34 Observations
TIME PERIOD:
1990 to 2024

Statistical Tools Used:
Correlation Analysis

Correlation is used to measure the degree and direction of the linear relationship between HDI and GDP per capita.

The Pearson's correlation coefficient (r) ranges from -1 to +1, where:
- +1 indicates a perfect positive relationship
- -1 indicates a perfect negative relationship
- 0 indicates no linear relationship

The test helps identify whether both variables move together over time and in what direction.

Simple Linear Regression Analysis

Simple regression analysis is used to study how changes in GDP per capita (independent variable) influence HDI (dependent variable).

The regression model is represented as:
$HDI_t = \alpha + \beta(GDPpc_t) + \varepsilon_t$
where,
α = Intercept
β = Regression Coefficient
ε_t = Error Term
Regression helps measure the extent to which variations in GDP per capita explain changes in HDI.

Data Sources:

Data Set	Primary Source	Supporting Sources
Human Development Index (HDI)	UNDP Human Development Reports (hdr.undp.org)	UNDP India Country Reports
GDP per Capita (US$)	World Bank World Development Indicators (data.worldbank.org)	Reserve Bank of India – Handbook of Statistics (rbi.org.in)

All data sources are official, credible, and publicly accessible, ensuring transparency, consistency, and replicability of the research results.

Data Analysis Process:
Data Collection:
Annual HDI and GDP per capita data from 1990 to 2024 were collected from UNDP and World Bank databases.

Data Cleaning:

GDP per capita values were converted to constant US dollars for comparability. Missing values were verified using RBI and UNDP archives.

Statistical Analysis:

- Pearson's Correlation Coefficient was calculated to measure the strength of association between HDI and GDP per capita.
- Simple Linear Regression was performed to test the impact of economic growth on human development.
- Significance was checked using *p-values*, R^2, and *t-statistics*.

Summary:

This methodological framework provides a quantitative base for analysing the relationship between human development and economic growth in India. By applying correlation and regression techniques to long-term, authentic secondary data, the study ensures empirical accuracy and analytical clarity.

VI. Research Questions And Objectives

Research Questions

The goal of this dissertation is to explore the long-term relationship between economic growth and human development in India. It specifically looks at whether rising income levels, as shown by GDP per capita, have led to better human development outcomes measured by the Human Development Index (HDI).

The research addresses the following questions:

1. Is there a significant statistical relationship between the Human Development Index (HDI) and Gross Domestic Product (GDP) per capita in India from 1990 to 2024?
2. How much does economic growth (GDP per capita) affect changes in human development (HDI) over time?
3. Has India's rapid economic growth since liberalization brought proportional improvements in human development indicators like health, education, and living standards?
4. Does this relationship suggest inclusive and sustainable growth or show disparities between income growth and human progress?

These research questions aim to assess both the quantitative relationship between the variables and the qualitative implications of India's development model.

Research Objectives

Based on the questions above, the main and secondary objectives of this dissertation are:

Primary Objective:

- To analyze the relationship between economic growth and human development in India by looking at the correlation and regression between GDP per capita and HDI from 1990 to 2024.

Secondary Objectives:

1. To find the direction and strength of the relationship between GDP per capita (economic growth) and HDI (human development).
2. To check whether improvements in income levels have led to sustained progress in education, health, and living standards.
3. To examine the consistency of this relationship during India's post-liberalization period and determine if economic growth has been inclusive.
4. To provide evidence for the broader discussion on whether India's growth path has effectively translated into human welfare and an expansion of capabilities.
5. To suggest policy implications based on the statistical findings, focusing on how India can strengthen the link between economic success and human development.

Rationale for the Research Objectives

The rationale for these objectives comes from the ongoing discussion about India's development paradox—a country achieving impressive GDP growth while still facing issues with human well-being, inequality, and access to essential services. By examining this relationship quantitatively over 34 years, the study aims to clarify whether India's economic progress has truly improved the lives of its citizens.

VII. Data Set

Year	HDI	GDP per capita (US $)
1990	0.434	367
1991	0.438	377
1992	0.445	388
1993	0.451	403
1994	0.457	425
1995	0.464	451
1996	0.471	478
1997	0.478	495
1998	0.483	466
1999	0.489	460
2000	0.496	443
2001	0.503	452
2002	0.509	464
2003	0.516	547
2004	0.523	627
2005	0.531	714
2006	0.54	820
2007	0.549	945
2008	0.558	998
2009	0.556	1082
2010	0.574	1341
2011	0.582	1453
2012	0.59	1444
2013	0.597	1455
2014	0.604	1578
2015	0.611	1607
2016	0.617	1746
2017	0.624	1979
2018	0.633	2104
2019	0.642	2099
2020	0.642	1926
2021	0.644	2256
2022	0.647	2389
2023	0.65	2610
2024	0.654	2745

Table 1.1
Source: **World Bank**
Source: **UNDP & HDI**

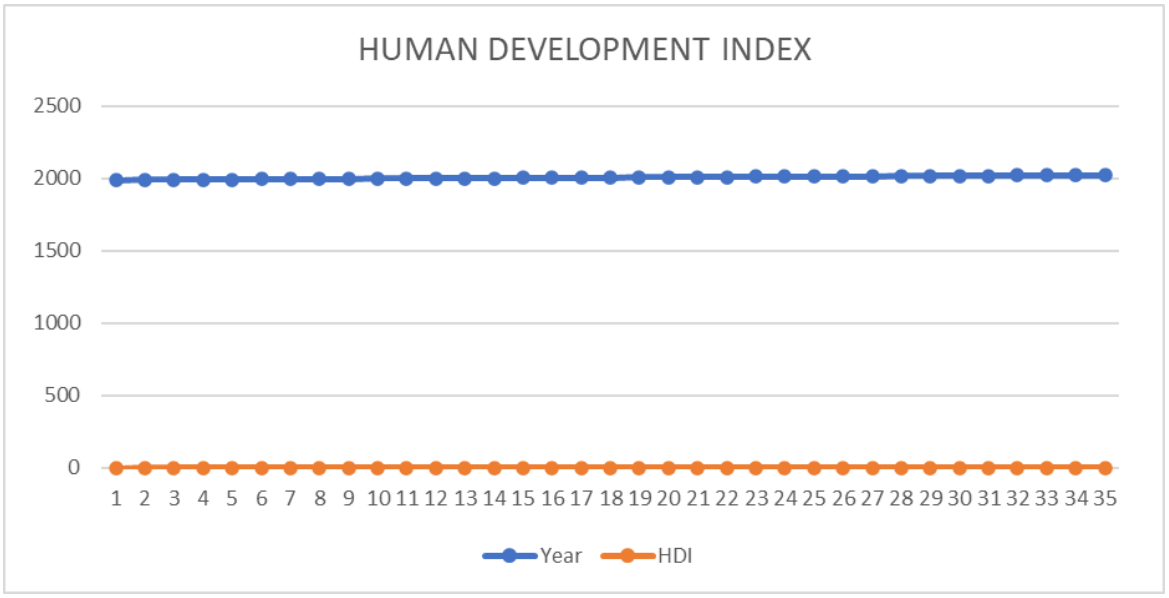

Figure 1.1
Source: UNDP & HDI

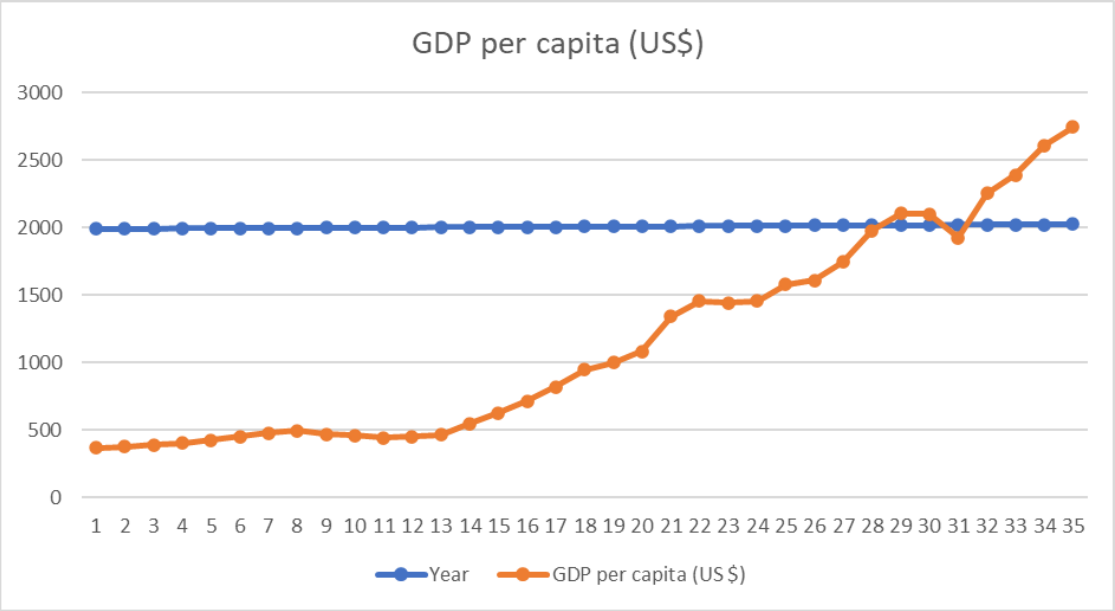

Figure 1.2
Source: World Bank

VIII. Correlation Table And Analysis

Correlation Table

Variables	HDI (Dependent Variable)	GDP per capita (Independent Variable)
HDI (Human Development Index)	1	**0.9534**
GDP per capita (US $)	**0.9534**	1

Table 1.2
Source: Computed using Microsoft Excel based on data from UNDP and World Bank (1990–2024)

Correlation Analysis

To examine the relationship between human development and economic growth in India, Pearson's correlation coefficient (r) was calculated between the Human Development Index (HDI) and Gross Domestic Product (GDP) per capita over a 34-year period from 1990 to 2024.

The resulting correlation coefficient value of r = 0.9534 indicates an extremely strong positive relationship between the two variables. This means that as India's GDP per capita has increased over time, its HDI has also risen correspondingly. This suggests a close and consistent link between economic growth and improvements in human well-being.

A correlation coefficient greater than 0.9 reflects a very high degree of linear association, indicating that changes in income levels have historically moved in the same direction as human development outcomes. This supports the idea that economic growth provides the financial and structural foundation for investment in education, healthcare, and social infrastructure. All of these contribute to a higher HDI.

Interpretation of Results

The high positive correlation shows that economic growth in India has closely matched improvements in human development, especially since the post-liberalization reforms of 1991.

We can understand this relationship in the following ways:
1. Resource Effect: A growing GDP per capita increases public and private spending capacity on social welfare, infrastructure, and skill improvement.
2. Capability Enhancement: Higher income often leads to better access to nutrition, education, and healthcare, which directly affects HDI components.
3. Feedback Loop: As human development improves, productivity, innovation, and employability increase; this further strengthens economic growth.

However, despite the strong correlation, it is important to note that correlation does not mean causation. While GDP per capita and HDI have moved together, other factors such as inequality, governance, and regional disparities may influence this relationship.

Summary

The correlation analysis provides solid statistical evidence of a very strong positive link (r = 0.9534) between GDP per capita and HDI in India from 1990 to 2024.

This suggests that India's economic growth has been accompanied by consistent improvements in human welfare indicators, although the depth and inclusiveness of this progress need further assessment through regression analysis, which is found in the next section.

IX. Regression Table

SUMMARY OUTPUT

Regression Statistics		
Multiple R	0.953414	Correlation Coefficient
R Square	0.9089983	
Adjusted R Squa	0.9062407	
Standard Error	230.34251	
Observations	35	

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	17489426	17489426	329.6305	9.6205E-19
Residual	33	1750903.1	53057.67		
Total	34	19240330			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-4313.316	303.24155	-14.224027	1.239E-15	-4930.26555	-3696.3664	-4930.2656	-3696.3664
X Variable 1	9952.0914	548.15157	18.155729	9.62E-19	8836.86868	11067.314	8836.8687	11067.314

Table 1.3
Source: Data Analysis-MS Excel

Regression Analysis Interpretation:

The regression analysis looks at how India's GDP per capita affects its Human Development Index (HDI) from 1990 to 2024.

The Multiple R value of 0.953414012 shows a very strong positive correlation between the two variables. This confirms a clear linear relationship, which is consistent with the earlier correlation analysis. It indicates that as India's GDP per capita has increased, its HDI has also improved. This suggests that economic growth has led to better living standards, education, and health outcomes.

The R Square value of 0.908998279 means that about 90.9% of the change in HDI is explained by changes in GDP per capita. The Adjusted R Square of 0.906240651 considers the sample size, which further supports the model's reliability. The Standard Error value of 230.3425054 indicates that the observed data points closely fit the predicted regression line, showing a strong model fit.

The ANOVA Table Interpretation

The ANOVA table shows an F-statistic value of 329.6305041 and a Significance F value of 9.62047E-19. Both indicate a very high level of statistical significance ($p < 0.001$).

This confirms that the independent variable, GDP per capita, significantly impacts the dependent variable, HDI. Thus, the regression model reliably explains the connection between economic growth and human development in India.

Therefore, the Null Hypothesis (H_0), which states that there is no significant relationship between GDP per capita and HDI, is rejected. The Alternate Hypothesis (H_1) is accepted.

Coefficients Interpretation

The estimated regression equation is:

HDI = -4313.315988 + 9952.091426(GDP per capita)

This means that for each one-unit increase in GDP per capita (in constant U.S. dollars), the HDI value is expected to rise by about 9952.09 units, assuming other factors stay the same.

The t-statistic value of 18.15572924 for GDP per capita and its p-value of 9.62047E-19 show that the coefficient is highly significant. The 95% confidence interval (8836.868678 to 11067.31417) does not include zero, confirming the reliability of the estimate.

The intercept value of -4313.315988 represents the theoretical HDI value when GDP per capita is zero. While this has no practical economic meaning, it helps position the regression line correctly on the axis. Its p-value (1.23942E-15) also shows statistical significance at the 1% level.

Interpretation And Discussion

The results indicate that GDP per capita strongly and positively affects HDI in India. The findings confirm that higher economic growth has led to consistent improvements in human development indicators like health, education, and living standards.

The R^2 value (0.909) shows that India's long-term human development mainly relies on its economic growth. However, the remaining 9.1% of unexplained variation suggests that other factors, such as governance, inequality, gender gaps, and public policy effectiveness, also impact development outcomes.

Thus, even though economic growth has been the main driver of human development, fairly distributing growth benefits is vital for inclusive progress.

Conclusion

The regression analysis provides strong evidence of a significant positive relationship between GDP per capita and HDI in India from 1990 to 2024.

With an R^2 of 0.908998279 and p-values well below 0.05, the study concludes that economic growth has played a major role in India's human development progress.

Therefore, the Alternate Hypothesis (H_1) is accepted. This confirms that rising income levels have directly contributed to improvements in India's overall welfare and human development, as shown by increasing HDI values over the past three decades.

X. Conclusion

The present study examined the long-term relationship between the Human Development Index (HDI) and Gross Domestic Product (GDP) per capita in India from 1990 to 2024. Using quantitative tools like Pearson's Correlation and Simple Linear Regression, the research investigated whether India's impressive economic growth since liberalization has led to noticeable improvements in human welfare.

The findings show a very strong positive correlation ($r = 0.9534$) between HDI and GDP per capita. This indicates that the two variables have closely tracked each other over time. The regression results also confirm that about 90.9% of the changes in HDI can be attributed to fluctuations in GDP per capita ($R^2 = 0.908998279$). The F-statistic (329.6305041) and very low p-value (9.62047E-19) show that the model is statistically significant at the 1% level.

These results suggest economic growth has played a key role in improving human development in India. Periods of rapid income growth have aligned with notable improvements in literacy rates, life expectancy, healthcare access, and overall living standards. The evidence supports the Alternate Hypothesis (H_1), which claims that GDP per capita has a significant positive effect on HDI.

However, the analysis also points out that the relationship, while strong, is not completely deterministic. About 9% of the variation in HDI remains unexplained by GDP growth alone, indicating the influence of non-economic factors such as inequality, governance quality, gender disparity, regional imbalances, and the effectiveness of social policies. Therefore, while economic growth lays the groundwork for human progress, its benefits must be fairly distributed and effectively directed to reach all parts of society.

Overall, the study concludes that India's economic achievements have greatly contributed to its journey in human development. However, reaching truly inclusive and sustainable development requires focused policy efforts on equity, education, healthcare, and social empowerment.

Policy Implications

The results of this research provide vital insights for policymakers, development planners, and economic strategists looking to align India's growth with its welfare goals.

1. Strengthen Human Capital Investment:

Sustained improvements in HDI need increased public spending on education, health, and skill development. Economic growth should be used strategically to enhance the quality and accessibility of these services, especially in underdeveloped areas.

2. Ensure Inclusive Growth:

Although GDP growth has been strong, its benefits have not been shared equally. Policies aimed at reducing income inequality—such as progressive taxation, rural employment programs, and social safety nets—can help ensure that economic benefits reach marginalized communities.

3. Promote Regional Balance:

Significant variations in HDI among Indian states show unequal access to development opportunities. Targeted efforts in underperforming states, particularly in health infrastructure and literacy programs, are necessary for balanced human development.

4. Enhance Governance and Policy Efficiency:

Effective execution of welfare programs and transparent governance are crucial for turning economic resources into visible human outcomes. Strengthening local governance institutions can boost accountability and responsiveness to community needs.

5. Integrate Human Development into Economic Planning:

Policymakers should view human development not just as a result but also as a key driver of growth. Incorporating HDI targets into national and state economic planning can lead to sustainable and fair progress.

6. Encourage Gender and Social Equity:

Advancing gender equality in education, employment, and political participation will enhance the developmental impact of economic growth, resulting in broader improvements in HDI.

Final Remark

The findings of this dissertation reinforce that economic growth and human development support each other as aspects of progress. India's experience from 1990 to 2024 illustrates that rising income levels have facilitated social progress, but the challenge is ensuring that prosperity creates opportunities for everyone.

As India moves forward in becoming one of the largest economies in the world, balancing economic growth with human well-being will be crucial for the sustainability and inclusiveness of its development model.

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