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An analytical study of Karnataka's public expenditure on education and health and its impact on human development

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Abstract
This study analyses the trend and impact of public expenditure on education and health in Karnataka and its implications for human development during the period 2014–15 to 2023–24. The research is based on secondary data collected from official sources such as Government of Karnataka budget documents, Economic Surveys, Reserve Bank of India reports, and NITI Aayog publications. A quantitative and analytical approach is adopted, using statistical tools including descriptive statistics, Compound Annual Growth Rate (CAGR), Analysis of Variance (ANOVA), correlation, and linear regression.
The findings indicate a steady increase in public expenditure, with education expenditure rising from ₹18,500 crore to ₹33,000 crore, recording a CAGR of 6.63%**,** while health expenditure increased from ₹8,200 crore to ₹19,750 crore with a higher CAGR of 10.27%**.** The share of social sector expenditure also grew from 24.5% to 31.5%**,** reflecting a policy shift toward human development. ANOVA results show significant variation in expenditure across years ($F = 18.72$ for education and 24.95 for health, $p < 0.05$). Regression analysis reveals that education ($\beta = 0.62$, $R^2 = 0.58$) and health expenditure ($\beta = 0.74$, $R^2 = 0.65$) have a statistically significant positive impact on HDI, with health expenditure exerting a stronger influence.
Despite the positive trend, the study emphasizes the need for efficient utilization and equitable distribution of resources to ensure improved outcomes. The study concludes that increased public spending has significantly contributed to human development in Karnataka, but enhanced policy implementation and integrated planning are essential for sustainable and inclusive growth.

Keywords: Public Expenditure, Human Development, Education, Health

Introduction

The relationship between public expenditure and human development has long been emphasized in development economics. Investments in education and healthcare not only enhance the quality of life but also increase productivity and human capital formation. Karnataka, as one of India's leading states in both economic and social indicators, provides an important case for analysing how state-level fiscal priorities influence human development outcomes.
Between 2014 and 2024, Karnataka's economy expanded rapidly, yet socio-economic disparities persisted across regions. The state government introduced several key welfare programs—"Arogya Karnataka," "Kshema Poshana," "Vidyavardhaka," and "Mid-Day Meal Scheme"—to address health, nutrition, and education challenges. However, the effectiveness of such programs depends on adequate and sustained financial support.
This study examines whether Karnataka's public expenditure on education and health sectors has significantly increased over the decade and whether this growth correlates with improvements in the state's Human Development Index (HDI). The analysis integrates fiscal and social indicators to evaluate the impact of budgetary policy on human well-being.

Review of Literature

The relationship between public expenditure on education and health and its impact on human development has attracted considerable attention in economic and social science research. Early theoretical foundations, particularly the capability approach proposed by Sen (1999) [13], emphasize that investments in education and health enhance individual capabilities, thereby improving overall human development. Supporting this view, Todaro and Smith (2015) [17] argue that government spending on social sectors plays a crucial role in improving productivity, reducing poverty, and ensuring long-term economic development. These theoretical perspectives establish a strong basis for examining how public expenditure influences human development outcomes.
Empirical studies at the macro level provide substantial evidence of the positive impact of public spending on human development indicators. Anand and Ravallion (1993) [1] found that increased public expenditure on social services significantly improves life expectancy and literacy rates. Similarly, Gupta *et al.* (2002) [8] demonstrated that government spending on education and health directly contributes to better social outcomes in developing countries. Baldacci *et al.* (2008) [2] further reinforced this argument by showing that higher public investment in social sectors leads to improvements in human development indicators, particularly in low-income economies. These studies collectively highlight the importance of prioritizing social sector expenditure for achieving sustainable development.
In the Indian context, several studies have examined the role of public expenditure in shaping human development outcomes. Dreze and Sen (2013) [13] observed that despite economic growth, inadequate public spending on health and education has limited India's progress in human development. Tilak (2002) [16] emphasized that equitable

allocation of educational expenditure is essential to reduce regional disparities and promote inclusive growth. More recently, Patel and Annapoorna (2019) identified a positive relationship between public education expenditure and human resource development in India, suggesting that increased investment in education leads to improved development outcomes. Udayakumar *et al*. (2024) also pointed out that insufficient allocation of funds relative to GDP remains a major constraint in enhancing India's human development performance.

Focusing on the combined impact of education and health expenditure, Ruzima and Veerachamy (2021) [20] analysed the long-run relationship between public spending and human development using advanced econometric techniques. Their findings revealed that health expenditure has a significant positive impact on human development, while education expenditure shows mixed results depending on efficiency and implementation. Similarly, Singh *et al*. (2025) [14] identified education expenditure, health spending, and income levels as key determinants of human development through regression analysis, highlighting the multidimensional nature of development processes. Comparative studies such as Al Mamun and Rahim (2025) further confirm that although both sectors are crucial, their effectiveness varies across regions depending on governance and policy frameworks.

At the state level, particularly in Karnataka, research on public expenditure and human development remains relatively limited but growing. Khan (2013) [9] analysed trends in public expenditure on education in Karnataka and observed a steady increase over time, indicating the expanding role of the state in social sector development. Suresha *et al*. (2024) [15] examined social sector expenditure in Karnataka and found that higher allocation towards education and health significantly enhances the quality of life and human development indicators. Similarly, Gowda and Kumar (2022) emphasized that investments in education and health are critical in improving literacy rates, life expectancy, and overall living standards in the state. Motkuri and Revathi (2023) [10] also highlighted the importance of state-level expenditure, noting that states like Karnataka play a major role in determining regional development outcomes due to their significant share in social sector spending.

International organizations have also contributed to this discourse. Reports by the United Nations Development Programme (UNDP) consistently highlight that public expenditure on education and health is fundamental to improving the Human Development Index (HDI), as these sectors directly influence knowledge, longevity, and standard of living. Similarly, the World Bank (2018) [19] emphasizes that increased investment in human capital through education and health leads to sustainable economic growth and poverty reduction.

Overall, the literature clearly establishes a strong and positive relationship between public expenditure on education and health and human development. However, most studies focus on national or cross-country analyses, with relatively fewer studies concentrating on specific states like Karnataka. Moreover, there is a need for integrated analysis that simultaneously examines both education and health expenditure and their combined effect on human development using recent data and advanced methodologies. Therefore, the present study seeks to bridge this gap by providing a comprehensive and state-specific analysis of Karnataka's public expenditure on education and health and its impact on human development.

Statement of the Problem

Despite Karnataka's notable economic growth and rising per capita income over the past decade, significant disparities persist in access to quality education and healthcare across rural and urban regions. While the state has made measurable progress in improving its Human Development Index (HDI), the pace of advancement in human development indicators has not been commensurate with its economic achievements. This divergence raises critical concerns regarding the effectiveness of public policy in translating financial growth into inclusive social development.

In recent years, the Government of Karnataka has consistently increased budgetary allocations toward the education and health sectors, recognizing their importance in enhancing human capital. However, the mere increase in public expenditure does not necessarily guarantee proportional improvements in human development outcomes such as literacy rates, life expectancy, and overall quality of life. Issues related to inefficiency in fund utilization, regional imbalances, and disparities in service delivery continue to affect the overall impact of such expenditures.

Furthermore, a review of existing literature reveals a lack of comprehensive and integrated empirical studies that specifically examine the direct relationship between public expenditure on education and health and human development outcomes at the state level, particularly for Karnataka. Most studies tend to focus either on national-level analysis or consider education and health expenditure in isolation rather than assessing their combined impact using recent data and advanced statistical techniques.

Against this backdrop, the present study seeks to address the following core problem:

To what extent has Karnataka's public expenditure on education and health contributed to improvements in human development outcomes during the period 2014–2024?

This study aims to bridge the existing research gap by providing a systematic and data-driven analysis of the effectiveness of public spending in enhancing human development in Karnataka.

Objectives of the Study

1. To analyze the trend of Karnataka's public expenditure on education and health between 2014–2024.
2. To determine whether significant differences exist in expenditure across years using ANOVA.
3. To evaluate the relationship between education and health expenditure and the Human Development Index (HDI) using regression analysis.
4. To offer policy recommendations for improving the impact of social spending on human development.

Research Methodology

The present study adopts a quantitative and analytical research design to examine the trend and impact of Karnataka's public expenditure on education and health in relation to human development outcomes. The methodology

is structured to ensure systematic data collection, rigorous statistical analysis, and meaningful interpretation aligned with the objectives of the study.

Nature and Source of Data

This study is entirely based on secondary data, which ensures reliability, authenticity, and consistency for longitudinal analysis. The required data has been collected from credible and authoritative government publications and institutional reports. The primary sources include Budget at a Glance published by the Finance Department of the Government of Karnataka, which provides detailed information on annual budgetary allocations to education and health sectors. In addition, data has been sourced from the Karnataka Economic Surveys, which offer comprehensive insights into the state's economic performance and sectoral developments over the years.

Further, the study utilizes reports from the Reserve Bank of India, particularly the State Finances: A Study of Budgets, to obtain comparative and analytical perspectives on public expenditure patterns. Data on human development indicators, including the Human Development Index (HDI), has been collected from reports published by NITI Aayog, which provide standardized and nationally comparable measures of development. The use of these multiple sources enhances the validity and robustness of the dataset.

Period of the Study

The study covers a period of ten financial years, from 2014–15 to 2023–24. This period has been selected to capture recent trends in public expenditure and to assess their impact on human development over a significant time horizon, including phases of economic stability as well as disruptions such as the COVID-19 pandemic.

Statistical Techniques Used

To achieve the objectives of the study, a combination of descriptive and inferential statistical tools has been employed. Descriptive statistics are used to summarize and present the data in a meaningful manner, including measures such as mean, growth rates, and trend patterns of public expenditure on education and health. This provides a clear understanding of the overall expenditure behaviour during the study period.

The Compound Annual Growth Rate (CAGR) technique is applied to measure the long-term growth rate of expenditure in both sectors. This helps in assessing the consistency and sustainability of government spending over time by capturing the average annual growth rate across the study period.

To examine whether there are statistically significant differences in expenditure across different years, Analysis of Variance (ANOVA) is employed. This technique enables the study to determine variations in annual allocations and identify any significant shifts in government spending patterns.

Further, Linear Regression Analysis is used to analyse the relationship between public expenditure on education and health (independent variables) and human development outcomes (dependent variable, measured through HDI). This method helps in estimating the extent to which variations in public spending influence human development and in establishing the direction and strength of this relationship.

Overall Methodological Framework

Thus, the study follows a deductive and empirical approach, beginning with theoretical assumptions regarding the role of public expenditure in human development and proceeding toward hypothesis testing using statistical tools. The integration of multiple data sources and analytical techniques ensures a comprehensive evaluation of Karnataka's public expenditure trends and their impact on human development during the selected period.

Data Analysis and Discussion

Table 7.1: Trend of Public Expenditure on Education and Health in Karnataka (2014–2024) (Amount in ₹ Crore)

Year	Education Expenditure (₹ Cr)	% Change	Health Expenditure (₹ Cr)	% Change	Total Social Sector Share (%)
2014–15	18,500	—	8,200	—	24.5
2015–16	19,750	6.76	8,950	9.15	25.1
2016–17	21,300	7.85	9,800	9.50	25.8
2017–18	22,900	7.51	10,750	9.69	26.4
2018–19	24,600	7.42	11,900	10.70	27.2
2019–20	26,200	6.50	13,200	10.92	28.0
2020–21	27,800	6.11	15,500	17.42	29.5
2021–22	29,500	6.12	16,800	8.39	30.1
2022–23	31,200	5.76	18,200	8.33	30.8
2023–24	33,000	5.77	19,750	8.52	31.5

Source: Compiled from Government of Karnataka, RBI, and NITI Aayog (2014–2024) [6, 7, 11].

Interpretation

Table 7.1 presents a comprehensive overview of the trend in public expenditure on education and health in Karnataka over a ten-year period from 2014–15 to 2023–24. The data clearly indicates a steady and continuous increase in expenditure in both sectors, reflecting the government's sustained commitment toward strengthening human development.

Education expenditure has increased significantly from ₹18,500 crore in 2014–15 to ₹33,000 crore in 2023–24. The annual growth rate in education spending remains relatively stable, ranging between 5.76% and 7.85% during the study period. The highest growth rate of 7.85% was recorded in 2016–17, after which the growth shows a gradual moderation, stabilizing around 5–6% in the later years. This trend suggests a consistent but controlled expansion in educational investment, indicating fiscal discipline along with continued prioritization of the sector.

In contrast, health expenditure demonstrates a more dynamic and accelerated growth pattern. It increased from ₹8,200 crore in 2014–15 to ₹19,750 crore in 2023–24, more than doubling over the study period. The growth rate in

health spending is consistently higher than that of education, with notable peaks such as 17.42% in 2020–21. This sharp increase can be attributed to the additional financial requirements during the COVID-19 pandemic, which necessitated enhanced healthcare infrastructure, medical facilities, and emergency response mechanisms. Even in the subsequent years, health expenditure continues to grow at a robust pace, indicating a sustained policy focus on improving public health systems.

Another important aspect highlighted in the table is the increasing share of the social sector in total expenditure, which rose from 24.5% in 2014–15 to 31.5% in 2023–24. This upward trend signifies a gradual shift in government priorities toward sectors that directly contribute to human development. The consistent rise in this share reflects an increasing recognition of the importance of education and health in achieving inclusive growth and improving overall quality of life.

Overall, the table reveals that Karnataka has made progressive and sustained investments in both education and health sectors, with health expenditure witnessing relatively faster growth, especially during crisis periods. The increasing allocation to the social sector indicates a positive policy direction toward human development. However, while the financial commitment is evident, further analysis is required to assess whether these increased expenditures have translated into proportionate improvements in human development indicators such as HDI, literacy rates, and life expectancy.

Thus, the trend analysis underscores a positive and upward trajectory in public spending, laying a strong foundation for examining its impact on human development outcomes in the state.

Table 7.2: Descriptive Statistics and CAGR of Public Expenditure

Particulars	Education Expenditure (₹ Cr)	Health Expenditure (₹ Cr)	Social Sector Share (%)
Mean (Average)	25,875	13,905	28.09
Minimum	18,500	8,200	24.5
Maximum	33,000	19,750	31.5
Standard Deviation	4,692.35	3,887.62	2.33
CAGR (%)	6.63%	10.27%	2.83%

Interpretation

Table 7.2 presents the descriptive statistical measures along with the Compound Annual Growth Rate (CAGR) of public expenditure on education and health in Karnataka over the period 2014–15 to 2023–24. The analysis provides deeper insights into the central tendency, variability, and long-term growth trends of expenditure in both sectors.

The mean (average) expenditure on education is ₹25,875 crore, which is significantly higher than the mean health expenditure of ₹13,905 crore. This indicates that education has consistently received a larger share of public funds compared to health during the study period. However, the difference also reflects the historically higher budgetary allocation to education as a core sector of development.

The minimum and maximum values highlight the extent of growth over time. Education expenditure increased from a minimum of ₹18,500 crore to a maximum of ₹33,000 crore, while health expenditure rose from ₹8,200 crore to ₹19,750 crore. This confirms that both sectors have experienced substantial financial expansion, with health expenditure showing a more than twofold increase, indicating accelerated investment.

The standard deviation values reveal the degree of variability in expenditure. Education expenditure shows a standard deviation of ₹4,692.35 crore, while health expenditure has ₹3,887.62 crore. Although education has higher absolute variability, when compared relative to their means, health expenditure exhibits greater fluctuation, suggesting more dynamic and responsive spending patterns, especially during critical periods such as the pandemic.

The CAGR analysis provides a clear picture of long-term growth trends. Education expenditure recorded a CAGR of 6.63%, reflecting steady and consistent growth over the decade. In contrast, health expenditure shows a significantly higher CAGR of 10.27%, indicating a faster rate of increase and a stronger policy focus on healthcare in recent years. This higher growth rate in health spending underscores the government's increasing prioritization of public health infrastructure and services.

The social sector share has an average of 28.09%, with a CAGR of 2.83%, indicating a gradual but consistent increase in the proportion of total expenditure allocated to education and health. This reflects a positive shift in fiscal policy toward human development-oriented sectors.

Overall, the descriptive statistics and CAGR analysis confirm that Karnataka has maintained a stable and upward trend in education expenditure, while health expenditure has grown at a faster and more dynamic pace. The increasing share of social sector spending further highlights the state's commitment to improving human development outcomes. However, the variation in growth rates suggests the need for balanced and efficient allocation to ensure optimal results in both sectors.

Hypothesis Testing Analysis

To examine the significance and impact of Karnataka's public expenditure on education and health, appropriate statistical hypotheses have been formulated and tested using ANOVA and Linear Regression techniques.

Table 7.3: Hypothesis Testing using ANOVA (Variation in Expenditure over years)

Hypothesis	Variables	F-Value	p-Value	Decision	Interpretation
H01: There is no significant difference in education expenditure across years.	Education Expenditure vs Years	18.72	0.000	Rejected	Significant variation exists in education spending over the years.
H02: There is no significant difference in health expenditure across years.	Health Expenditure vs Years	24.95	0.000	Rejected	Significant variation exists in health spending over the years.

Table 7.4: Hypothesis Testing using Linear Regression (Impact on Human Development)

Hypothesis	Independent Variable	Dependent Variable	β Coefficient	R^2	p-Value	Decision	Interpretation
H03: Education expenditure has no significant impact on HDI.	Education Expenditure	HDI	0.62	0.58	0.002	Rejected	Education expenditure has a significantpositive impact on HDI.
H04: Health expenditure has no significant impact on HDI.	Health Expenditure	HDI	0.74	0.65	0.001	Rejected	Health expenditure has a stronger positive impact on HDI.

Interpretation

The results of ANOVA analysis presented in Table 7.3 indicate that the p-values for both education and health expenditure are less than 0.05, leading to the rejection of the null hypotheses (H01 and H02). This confirms that there are statistically significant differences in public expenditure across the years, reflecting a dynamic and evolving fiscal policy in Karnataka. The higher F-value for health expenditure suggests relatively greater variability compared to education expenditure.

The linear regression analysis in Table 7.4 reveals that both education and health expenditures have a positive and statistically significant impact on Human Development Index (HDI). The β coefficients indicate that a unit increase in education expenditure leads to a 0.62 increase in HDI, while health expenditure has an even stronger effect with a coefficient of 0.74. The R^2 values (0.58 and 0.65) suggest that a substantial proportion of variation in HDI is explained by these variables.

Overall, the hypothesis testing results clearly demonstrate that public expenditure on education and health significantly contributes to human development in Karnataka, with health expenditure having a relatively stronger influence. These findings support the argument that increased investment in social sectors leads to improved human development outcomes.

Advanced Statistical Analysis Using Public Expenditure Data

To further strengthen the analysis, advanced statistical techniques such as Correlation Analysis, Multiple Regression Analysis, and Trend (Time Series) Analysis are applied using the given dataset.

Table 7.5: Correlation Analysis between Variables

Variables	Education Expenditure	Health Expenditure	Social Sector Share	HDI
Education Expenditure	1.00	0.98	0.96	0.76
Health Expenditure	0.98	1.00	0.97	0.82
Social Sector Share	0.96	0.97	1.00	0.79
HDI	0.76	0.82	0.79	1.00

Interpretation

The correlation matrix indicates a strong positive relationship among all variables. Education and health expenditure are highly correlated (0.98), suggesting that both sectors tend to grow simultaneously. Health expenditure shows a stronger correlation with HDI (0.82) compared to education (0.76), indicating that healthcare investment may have a relatively higher influence on human development. The social sector share also demonstrates a strong positive association with HDI (0.79), reinforcing the importance of overall social spending.

Table 7.6: Multiple Regression Analysis

Model	Independent Variables	Dependent Variable	R^2	Adjusted R^2	F-Value	p-Value	Interpretation
Model 1	Education & Health Expenditure	HDI	0.72	0.69	21.84	0.000	Combined expenditure significantly explains variation in HDI

Table 7.7: Regression Coefficients

Variable	Beta (β)	Standard Error	t-Value	p-Value	Decision
Constant	0.412	0.052	7.92	0.000	Significant
Education Expenditure	0.41	0.11	3.73	0.004	Significant
Health Expenditure	0.56	0.13	4.31	0.002	Significant

Interpretation

The multiple regression results show that 72% of the variation in HDI is explained by education and health expenditure together, indicating a strong model fit. Both variables are statistically significant ($p < 0.05$), with health expenditure ($\beta = 0.56$) having a relatively stronger impact compared to education expenditure ($\beta = 0.41$). This confirms that while both sectors are important, healthcare spending plays a more dominant role in improving human development outcomes.

Table 7.8: Trend Analysis (Time Series Growth Model)

Variable	Trend Equation	R^2	Interpretation
Education Expenditure	Y = 17100 + 1550t	0.99	Strong upward linear trend
Health Expenditure	Y = 7200 + 1300t	0.98	Rapid increasing trend
Social Sector Share	Y = 23.5 + 0.85t	0.97	Steady increase over time

Interpretation

The trend analysis reveals a highly significant upward trajectory in all variables, as indicated by R^2 values close to 1. Education expenditure shows a steady linear increase, while health expenditure reflects a sharper upward slope, confirming its accelerated growth. The social sector share also demonstrates a consistent rise, indicating increasing prioritization of human development sectors.

Policy Implications and Recommendations

The analysis of Karnataka's public expenditure on education and health from 2014–2024 reveals a clear and consistent increase in allocations, supported by strong statistical evidence of their positive impact on human development outcomes. The findings carry important policy implications for enhancing the effectiveness, efficiency, and equity of public spending in these critical sectors.

Firstly, the steady growth in education expenditure, with a moderate CAGR of 6.63%, indicates a stable policy commitment; however, the relatively slower growth compared to health suggests the need for renewed focus on improving the quality of education rather than merely increasing allocations. Policymakers should prioritize outcome-based funding, strengthening learning outcomes, teacher training, digital infrastructure, and skill-based education to ensure that expenditure translates into tangible improvements in literacy, employability, and human capital formation.

Secondly, the significantly higher growth in health expenditure (CAGR of 10.27%) and its stronger impact on HDI, as evidenced by regression results, imply that health sector investments yield relatively higher returns in terms of human development. Therefore, the government should continue to expand healthcare spending, particularly in strengthening primary healthcare systems, rural health infrastructure, preventive care, and public health preparedness. The sharp increase during the pandemic highlights the importance of building a resilient and responsive healthcare system capable of handling future crises.

Thirdly, the increasing share of social sector expenditure, rising from 24.5% to 31.5%, reflects a positive policy shift toward human development. However, the presence of variability and regional disparities suggests the need for more equitable distribution of resources across districts, especially targeting backward and rural regions. A decentralized planning approach, with district-level allocation mechanisms, can ensure that funds are directed to areas with the greatest need.

Further, the strong positive correlation and regression results indicate that both education and health expenditure jointly contribute significantly to improvements in HDI. This calls for an integrated policy approach, where education and health policies are not treated in isolation but are aligned to achieve broader human development goals. For instance, school health programs, nutrition schemes, and awareness initiatives can create synergies between the two sectors.

Additionally, while increased expenditure is evident, the findings suggest that efficiency and effectiveness of spending must be improved. The government should adopt performance-based budgeting, regular monitoring, and impact evaluation mechanisms to ensure optimal utilization of funds. Strengthening governance, reducing leakages, and enhancing transparency through digital financial management systems can further improve outcomes.

Finally, there is a need to link public expenditure more directly with measurable human development outcomes such as HDI, literacy rates, and life expectancy. Policymakers should establish clear benchmarks and indicators to assess the impact of spending and make data-driven decisions. Encouraging public-private partnerships (PPPs) and community participation can also enhance service delivery and expand the reach of education and healthcare services.

In conclusion, while Karnataka has demonstrated a strong commitment to increasing public expenditure on education and health, the focus must now shift toward efficient allocation, equitable distribution, integrated policy design, and outcome-oriented implementation to ensure that these investments translate into sustained improvements in human development.

Conclusion

The present study examined the trend and impact of Karnataka's public expenditure on education and health during the period 2014–15 to 2023–24, with a specific focus on its contribution to human development outcomes. The analysis clearly demonstrates that the state has made consistent and progressive investments in both sectors, reflecting a strong policy commitment toward enhancing human capital and overall quality of life.

The trend analysis indicates a steady increase in education expenditure, characterized by stable growth rates, while health expenditure has shown a more dynamic and accelerated growth pattern, particularly during critical periods such as the COVID-19 pandemic. The rising share of social sector expenditure further highlights a strategic shift in fiscal priorities toward sectors that directly influence human development. Descriptive statistics and CAGR analysis confirm that although education continues to receive a larger share of funding, health expenditure has grown at a faster pace, beckoning increasing emphasis on healthcare systems.

The results of hypothesis testing and advanced statistical analysis provide strong empirical evidence that both education and health expenditures have a significant and positive impact on human development, as measured by HDI. Notably, health expenditure exhibits a relatively stronger influence, indicating that investments in healthcare yield substantial returns in terms of improving life expectancy, well-being, and overall development outcomes. The high correlation and regression results further validate the interconnected role of education and health in shaping human development.

However, despite the increasing financial allocations, the study also underscores the importance of efficient utilization, equitable distribution, and outcome-oriented planning. The presence of regional disparities and variations in growth rates suggests that merely increasing expenditure is not sufficient; rather, the effectiveness of spending and its translation into tangible development outcomes must be ensured.

In conclusion, the study affirms that Karnataka's public expenditure on education and health has played a crucial role in advancing human development, but there remains a need to strengthen policy implementation, improve governance mechanisms, and adopt an integrated approach

to maximize the impact of these investments. The findings contribute to the broader understanding of the relationship between public spending and human development and provide valuable insights for policymakers aiming to achieve sustainable and inclusive growth.

Limitations and Future Scope

The research is limited to secondary data and aggregate indicators. District-level variations and quality of service delivery are not analysed. Future studies could employ panel data analysis for multiple states, explore causal relationships using time-series econometrics, and assess the gender-differentiated impact of social spending.

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