

Testing the Role of Economic Growth as a mediator between Social Sector Expenditure and Human Development in Karnataka

Hemantha M

Research Scholar
hemanthm38@gmail.com

S.B. Nari

Associate Professor
Department of Studies in Economics
Karnatak University, Dharwad

Abstract

The relationship between Social Sector Expenditure, Human Development, and Economic Growth in Karnataka reveals insights into Socio-economic Development dynamics. A Mediation Analysis was conducted to examine the direct and indirect effects of Public Spending of Social Sector on Human Development, with Economic Growth as a Mediator. The findings demonstrate that Social Sector Spending contributes to Human Development outcomes directly and indirectly through its impact on Economic Growth. Policymakers in Karnataka should adopt integrated policies that combine Social Sector initiatives with Economic Growth strategies to promote Human Development and maximize Economic Growth. Future research can further investigate sector-specific impacts, regional disparities, and the temporal dynamics of these relationships. This study provides a framework for Karnataka to navigate the link between Social Sector Spending, Economic Growth, and Human Development, offering a balanced and holistic pathway for sustainable development.

Keywords: *Social Sector Expenditure, Human Development Index, Per Capita Net State Domestic Product, Economic Growth, Mediation Analysis.*

Introduction

The connection between Economic Growth, Social Sector Spending, and Human Development is vital for sustainable development and socio-economic policy formulation. Economic Growth relies on public investments in Social Sectors such as healthcare, education, and social welfare. Economic Growth also impacts Human Development, which includes education, healthcare, and standards of living. The present study provides an overview of the interaction between Social Sector Expenditure, Economic Growth, and Human Development. For Understanding this intricate relationship, we must consider it within the larger context of economic development. Economic Growth is driven by several factors such as the accumulation of resources, research and development, policies, trade, and financial markets. Measuring economic activity through metrics like Gross Domestic Product, Net Domestic Product, Gross National Product, Per Capita Net State Domestic Product etc are crucial for growth. However, focusing solely on Economic Growth does not guarantee overall development. Government spending on Social Sectors like healthcare,

education, and social welfare is crucial for the well-being and quality of life of people. These public spendings have wide-ranging effects on Human Development, which goes beyond economic wealth to include education, healthcare access, and living standards. Human Development depends on the accretion of human capital, which refers to the knowledge, skills, and abilities of individuals and consequently influences a nation's Economic Growth and Development. Within the broader framework, we focus on Karnataka, an Indian state that epitomizes the association between Economic Growth, Social Sector Expenditure, and Human Development. Despite extensive research on a global and national level, the nuances of Karnataka's socio-economic context have been overlooked. In our exploration, we must understand the multifaceted nature of development and the interdependence of Economic Growth, Social Sector Spending, and Human Development. Karnataka, with its diverse economy and regional disparities, is an ideal case for understanding the complexities of development. In the following sections, we will analyse existing knowledge and provide insights into how Economic Growth affects the association between Social Sector Expenditure and Human Development in Karnataka.

Literature Review

The association between Social Sector spending, Economic Growth, and Human Development is of paramount importance in the discourse of sustainable development and socio-economic policy formulation. Social Sector Expenditure, encompassing sectors like health, education, and social welfare, directly impacts the well-being and quality of life of the population. Economic Growth, often seen as a testament to a country or region's progress, can be influenced by these expenditures and, in turn, significantly shape Human Development outcomes. Understanding this tripartite relationship is crucial for policymakers and stakeholders aiming to optimize resource allocation for holistic societal advancement. Previous studies have delved into this intricate nexus from diverse perspectives, reflecting varied socio-economic contexts and priorities. This literature review aims to capture this breadth of research, weaving insights from international, national, and regional studies to present a comprehensive view of existing knowledge on the subject. But firstly, we will briefly discuss concepts, Economic Growth, Social Sector Expenditure and Human Development.

Conceptual Framework

Economic Growth

Economic Growth refers to the increase in the production of goods and services in an economy over a certain period. It is commonly measured in terms of the increase in aggregated market value of additional goods and services produced, using estimates such as GDP, NDP, NNP, Per Capita Income, etc. Economic Growth is dependent on the accumulation of physical and human capital, research and development activity, macroeconomic and structural policies, trade openness, and well-developed financial markets.

Social Sector Expenditure

Social Sector Expenditure refers to the government's expenditure on social services, such as education, healthcare, poverty alleviation, sanitation, housing, and social welfare programs. Social Sector Expenditure is essential for Human Development as it can help to enhance basic capabilities and improve human well-being.

Human Development

Human Development Refers to the process of expanding people's freedoms and opportunities and improving their well-being. It is a multidimensional concept that includes factors such as education, healthcare, and standard of living. Human capital, which refers to the knowledge, skills, and abilities of workers, is a key determinant of Human Development and Economic Growth. The Human Development Index (HDI), a composite index devised by the United Nations Development Programme (UNDP), serves

as a gauge for Human Development. It incorporates various statistical measures, including life expectancy at birth, an education index (which utilizes the mean years of schooling and the expected years of schooling), and the gross national income per capita.

Social Sector Expenditure, Economic Growth, and Human Development: A Literature Review

The association between Economic Growth, Social Sector Expenditure, and Human Development is widely studied across different geographical contexts. The interactions between these variables are gaining momentum in the quest for achieving sustainable development. Public expenditure, especially in health and education, has significant impacts on Human Development. However, the influence of Economic Growth on this relationship can vary based on socio-political, economic, and demographic factors. In India, where regional disparities are prominent, Karnataka provides a microcosm to study this intricate relationship. Many previous research works have discussed the trade-off between Economic Growth and Social Sector Spending and their effects on Human Development indices. **Dhar (1994)** highlights that Human Development is important for growth and prosperity, and investing in nutrition, education, health, and habitat is crucial. The UNDP's Human Development Index is superior to income alone. Inadequate investment in human capital in India contributes to various challenges. India needs to prioritize Human Development. **Mincer (1996)** emphasizes the interaction of factors such as family income, urbanization, and demographic changes, as well as the demand for human capital due to capital accumulation and technological advancements. This underscores the vital importance of Human Development in maintaining Economic Development, while acknowledging potential detrimental effects on family stability in certain societal sectors. **Zhang (1996)** studies China's impressive Economic Growth since 1979, investigates how it has affected Human Development, and analyses the impact of institutional change, reform policies, and governance on this relationship, considering factors such as income distribution, poverty reduction, education, health, economic security, and environmental issues. **Gupta et.al. (1998)** discovered that Social Sector spending on education and health has increased in developed countries but decreased in developing economies, including countries under IMF-supported programs, which have seen significant increases and improved social indicators. **Anand & Sen (2000)** examined sustainable Human Development and highlights the significance of ethical universalism and intergenerational equity. Authors also explored the relationship between fairness in distribution, the advancement of sustainable practices, the most favourable rate of economic expansion, and the intrinsic value of time. **Ranis et.al. (2000)** explored the bidirectional association between Economic Growth and Human Development. Public spending on health and education is crucial in the relationship between Economic Growth and Human Development. Investment rate and income distribution also found to be playing a significant role in this relationship. **Djafar (2009)** examines the link between Economic Growth (EG), Life Expectancy at Birth (LE), and Public Expenditure (PE) on health in Asia, identifying four types of EG-LE and PE-LE relationships and highlighting the significance of quality Economic Growth and effective public expenditure in influencing Human Development, while cautioning about the presence of Human Development traps in certain Asian countries due to low Economic Growth and inadequate public expenditure on health. **Bundala (2012)** conducted survey research, analysing data from forty countries to establish a relationship between Economic Growth and Human Development, emphasizing the importance of investing in both aspects, with political policies and technology playing a role in fostering this connection. **Gopalkrishna and Rao (2012)** discover that regional disparities in Human Development in India have widened, but during the liberalization period, states tended to come together in terms of Human Development; and it emphasizes a positive connection between public spending, especially in health and education, and Human Development, with public spending having a greater impact than Economic Growth. **Grubaugh (2015)** performed a dynamic panel analysis to compare Economic Growth Models based on GDP per capita with the growth model of the United Nations' Human Development Index (HDI). The study found that

population, population growth, and initial GDP levels were key factors for HDI growth in both all countries and developing countries. This suggests that HDI offers additional perspectives on development beyond GDP. **Chikalipah & Makina (2019)** demonstrate that Economic Growth and Human Development are cointegrated, with Economic Growth having a lasting influence on Human Development, but no immediate causal connection, underscoring the restricted influence of GDP growth on inclusive development and presenting precise policy suggestions. **Reyes & Useche (2019)** examined data from 20 Latin American and Caribbean countries from 2006 to 2015. They discovered that competitiveness and Economic Growth declined after 2009. However, all countries displayed advancements in economic, human, and social development. The correlations between competitiveness, Economic Growth, and Human Development varied across the region. **Appiah et al. (2019)** conducted a study in African countries from 1990 to 2015, revealing a positive and significant impact of Human Development, as measured by the Human Development Index, on Economic Growth, alongside labour and foreign aid, emphasizing the need for increased investment in Human Development. **Qureshi (2009)** used system dynamics to study the relationship between Economic Growth, Human Development, and Public Expenditure in Pakistan. It was found that reducing public spending on Human Development has negative effects on both Human Development and economic indicators. On the other hand, increasing expenditure on Human Development has positive impacts on both Human Development and Economic Growth. This challenges the long-standing fiscal policy in Pakistan that prioritizes Economic Growth over Human Development. **Martins and Veiga (2014)** used the system-GMM estimator to analyse data from 156 countries over five-year periods from 1980 to 2010. They found that the relationship between government size and the growth rate of the Human Development (HDI) follows an inverted U-shape, especially in developed countries. They also identified nonlinear associations between public expenditure composition and HDI growth through five subcomponents. **Siregar (2019)** examines the effect of private and public investment on Economic Development and community welfare in Indonesia. Both types of investment contribute to Economic Growth and indirectly enhance community welfare. **Syam and Chandrarin (2019)** explore the effects of regional fiscal health in Indonesia on the Human Development Index, with emphasis on the mediating role of regional government performance. The study contributes significantly to understanding these relationships within the framework of New Public Management in Indonesia. **Sharma et al. (2022)** emphasizes the significance of public finance in promoting Economic Growth and Human Development in India, underscoring the mediating function of Economic Growth in the connection between public expenditure and Human Development, with 20% of variations in Human Development ascribed to public expenditure and 80% to Economic Growth. **Sharma et al. (2022)** investigates the connection between Economic Growth, Public Spending, and Human Development in India's Northeastern states. It reveals that Public Spending has a direct impact on Human Development in most states, but in Meghalaya and Sikkim, Economic Growth partially mediates this relationship. The findings emphasize the significance of strategic government spending in attaining economic efficiency and Human Development objectives.

The relationship between Economic Growth, public expenditure, and Human Development in various places has been extensively studied. However, the specific role of Economic Growth in mediating between Social Sector Expenditure and Human Development in Karnataka is not extensively explored. Previous research has focused on the direct impact of public spending on Human Development and the overall connection between Economic Growth and Human Development. The unique socio-economic and regional disparities in Karnataka, which make it an ideal case study for exploring these relationships in India, have not been given enough attention. Therefore, there is a need for a detailed investigation into the mediating influence of Economic Growth on the relationship between Social Sector Expenditure and the Human Development Index in Karnataka.

Research Methodology

The present study utilised Social Sector Expenditure, Per Capita Net State Domestic Product (indicating Economic Growth), Human Development Index data from the year 1990 to 2021 for Karnataka State based on the availability of the data. The Table 4.1. shows the three variables used, along with their computation and their data sources as well.

Table 4.1
Description of Variables and Data Sources

Variable	Computation	Data Source
Social Sector Expenditure (SSE)	Total Social Sector Expenditure (Total of Capital Expenditure and Revenue Expenditure)	Economic and Political Weekly Research Foundation Database
Economic Growth (EG)	Per Capita Net State Domestic Product (PCNSDP)	Economic and Political Weekly Research Foundation Database
Human Development (HD)	Human Development Index (HDI)	Global Data Lab

The present study examines whether Economic Growth (EG) mediates the relationship between Social Sector Expenditure (SSE) and Human Development (HD). Lag levels of 2, 1, and 2 were considered for HD, EG, and SSE respectively. This was done to assess the impact of current Social Sector Spending on Economic Growth and Human Development after two years respectively. The Akaike Information Criteria (AIC) and Schwarz Information Criteria (SIC) were used to determine the optimal lag selections. The minimum criterion was achieved at levels 2, 1, and 2 for HD, EG, and SSE, leading to the inclusion of this specific lag specification for further analysis. This study emphasizes the importance of Social Sector Spending in promoting Economic Growth, which in turn contributes to Human Development. To study this connection, the information regarding Economic Growth and Social Sector Spending was subjected to normalization using the natural logarithm transformation.

The hypotheses to be assessed are given as follows

H1: Social Sector Spending has a direct effect on Human Development.

H2: Social Sector Spending has an indirect effect on Human Development through Economic Growth.

The examination was conducted using IBM SPSS 25.0 software and the PROCESS macro model 4 developed by Preacher and Hayes (**Hagtvedt and Patrick, 2008; Hayes, 2013**). The mediation analysis examines the influence of SSE on HD through a mediator called EG. This effect has a direct effect (DE) shown in Figure 1(a) through "path c" and an indirect effect (IE) through "path a" and "path b". The indirect effect is calculated by multiplying "path a" by "path b" shown in Figure 1(b).

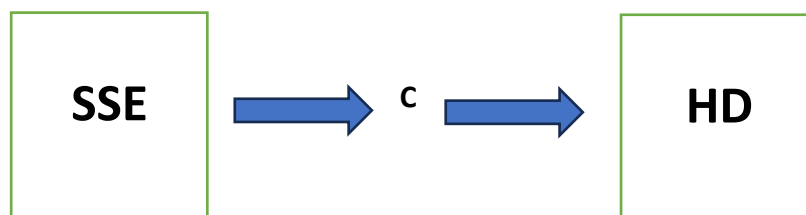


Figure 1 (a):
Effect of SSE on HD without considering mediation.

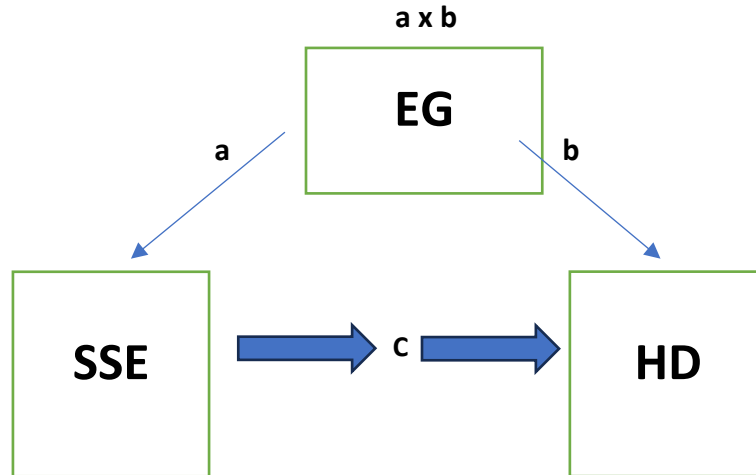


Figure 1(b): Mediation model with the selected variables (Indirect effect and Direct Effect).

The path diagram of the mediation analysis is illustrated by linear equations. The first equation displays the total effect.

$$C = c' + ab \text{ ---- (1)}$$

The total effect is calculated by equation (1), which includes the direct effect (path c') and the indirect effect (path $a * \text{path } b$). If path c' is close to zero, SSE's effect on HD is mediated by EG.

$$EG = i_M + aSSE + e_1 \text{ ---- (2)}$$

The equation above illustrates Path 'a'. This demonstrates the impact of SSE on EG, which is quantified by coefficient 'a'.

$$HD = i_Y + c'SSE + bEG + e_2 \text{ ----- (3)}$$

The equation (3) shows the direct effect of SSE on HD when EG is constant. Path c' in the equation measures this effect. Path b measures the effect of EG on HD. In the above equations, EG is Economic Growth, SSE is Social Sector Expenditure, and HD is Human Development. i_M and i_Y are constants and e_1 and e_2 are error terms respectively.

Results And Discussion

Table 5.1
Descriptive Statistics

	LNNSDP	LNSSE	HDI
Mean	11.17540	14.06013	0.565531
Median	11.13412	13.91634	0.566500
Maximum	12.03202	15.95868	0.680000
Minimum	10.38613	11.95538	0.447000
Std.Dev	0.498982	1.261555	0.080297
Skewness	0.173224	0.029465	0.061890
Kurtosis	1.809530	1.704976	1.626138
Jarque-Bera	2.049660	2.240746	2.537091
Probability	0.358858	0.326158	0.281240
Sum	357.6127	449.9242	18.09700
Sum Sq. Dev.	7.718482	49.33716	0.199878
Observations	32	32	32

Source: Authors compilation

In Table 5.1, From 1990 to 2021, Karnataka's Net State Domestic Product (in log terms) and Social Sector Expenditure (also in log terms) have displayed distributions that do not deviate significantly from normality. The HDI, an essential indicator of Human Development, also follows a distribution that is close to normal. It indicates that there aren't many extreme values or outliers in the data set for these indicators over the period. The state has experienced growth in its economic and Human Development indicators, as shown by the mean values of LNNSDP, LNSSE, and HDI. The consistency in the observations (all having 32 data points) ensures a balanced comparison across the years.

Table 5.2.
Correlation Matrix:

	LNNSDP	LNSSE	HDI
LNNSDP	1.000000	0.995359	0.989936
LNSSE	0.995359	1.000000	0.994691
HDI	0.989936	0.994691	1.000000

Source: Authors compilation

In Table 5.2, the correlation matrix provides valuable insights into the relationships between Social Sector Expenditure, Economic Growth and Human Development in Karnataka. The exceptionally high correlation coefficients indicate that Economic Growth, measured by the Net State Domestic Product, and investments in the Social Sector are integral to the enhancement of Human Development, as measured by the HDI.

Furthermore, the strong correlation between Economic Growth and Human Development underscores the importance of sustained and targeted Social Sector spending in driving Human Development outcomes. It implies that initiatives and investments in the Social Sector, such as education, healthcare, and other welfare programs, play a pivotal role in determining the overall well-being and quality of life of the residents of Karnataka.

Table 5.3
Trends and Patterns of Economic Growth, Social Sector Expenditure, and Human Development Index in Karnataka (1990-2021)

Year	Social Sector Expenditure (SSE) (in Lakh Rupees)	Annual Growth Rate of SSE (in %)	Per Capita Net State Domestic Product (PCNSDP, in Rupees)	Annual Growth Rate of PCNSDP (%)	Human Development Index (HDI) of Karnataka	Difference between HDI of Karnataka and India	HDI of India
1990	155652	-	32407	-	0.447	0.013	0.434
1991	192529	23.7%	35955	10.9%	0.450	0.013	0.437
1992	212098	10.2%	36208	0.7%	0.455	0.013	0.442
1993	243056	14.6%	38041	5.1%	0.461	0.015	0.446
1994	282235	16.1%	39296	3.3%	0.467	0.015	0.452
1995	333263	18.1%	40613	3.4%	0.474	0.016	0.458
1996	375114	12.6%	43634	7.4%	0.482	0.016	0.466
1997	427579	14.0%	45698	4.7%	0.489	0.018	0.471

1998	511242	19.6%	51199	12.0%	0.496	0.018	0.478
1999	585625	14.5%	53054	3.6%	0.505	0.019	0.486
2000	643061	9.8%	52599	-0.9%	0.512	0.021	0.491
2001	664111	3.3%	52750	0.3%	0.518	0.022	0.496
2002	662154	-0.3%	54912	4.1%	0.526	0.023	0.503
2003	739226	11.6%	55279	0.7%	0.540	0.024	0.516
2004	820879	11.0%	60144	8.8%	0.551	0.026	0.525
2005	1000409	21.9%	65544	9.0%	0.561	0.027	0.534
2006	1222934	22.2%	71522	9.1%	0.572	0.029	0.543
2007	1527135	24.9%	79591	11.3%	0.580	0.027	0.553
2008	1842815	20.7%	84319	5.9%	0.586	0.026	0.560
2009	2176954	18.1%	83440	-1.0%	0.590	0.025	0.565
2010	2472452	13.6%	91058	9.1%	0.599	0.024	0.575
2011	2786694	12.7%	90263	-0.9%	0.612	0.024	0.588
2012	3333578	19.6%	95444	5.7%	0.622	0.024	0.598
2013	3567457	7.0%	102947	7.9%	0.633	0.026	0.607
2014	4354714	22.1%	105697	2.7%	0.649	0.030	0.619
2015	5162099	18.5%	116813	10.5%	0.662	0.033	0.629
2016	6144608	19.0%	131186	12.3%	0.676	0.037	0.639
2017	6732911	9.6%	140745	7.3%	0.680	0.036	0.644
2018	7772791	15.4%	148645	5.6%	0.680	0.035	0.645
2019	7556462	-2.8%	155869	4.9%	0.679	0.034	0.645
2020	7327301	-3.0%	154123	-1.1%	0.676	0.034	0.642
2021	8526442	16.4%	168050	9.0%	0.667	0.034	0.633

Source: Authors compilation

From the period spanning 1990 to 2021, the table 5.3 provides insights into noteworthy patterns observed in Social Sector Expenditure (SSE), Per Capita Net State Domestic Product (PCNSDP) of Karnataka State and Human Development Index (HDI) for the Karnataka and India as a whole.

While Examining the Social Sector Expenditure, it is observed that there has been a consistent and overall upward trend in its values, commencing at 155,652 lakh rupees in 1990 and subsequently peaking at 8,526,442 lakh rupees in 2021. Notably, the Annual Growth Rate for SSE has exhibited significant variability throughout this period. While certain years, such as 1991 with a growth rate of 23.7%, 2007 with a growth rate of 24.9%, and 2014 with a growth rate of 22.1%, witnessed robust expansion, there were also instances of negative growth, as evidenced by declines of -2.8% and -3.0% in 2019 and 2020, respectively.

In Economic Growth measured by Per Capita Net State Domestic Product (PCNSDP), it becomes apparent that there has been a positive trajectory, with values rising from 32,407 rupees in the year 1990 to 168,050 rupees in 2021. Nevertheless, the annual growth rate for PCNSDP does indicate occasional episodes of decline, notably occurring in the years 2000, 2009, and 2020. Despite these intermittent downturns, the overall growth of PCNSDP remains discernible, with notable leaps observed in specific years, such as a growth rate of 12.0% in 1998 and a growth rate of 12.3% in 2016.

In terms of the HDI for Karnataka, a steady and consistent increase is observed over the years. The HDI value for Karnataka stood at 0.447 in 1990 and progressively rose to 0.667 by 2021. Similarly, during this same time frame, the HDI for India increased from 0.434 in 1990 to 0.633 in 2021. Interestingly, an examination of the difference between the HDI values of Karnataka and India reveals an initial gap of 0.013 in 1990. However, this disparity widened over time, reaching its peak at 0.037 in 2016, signifying Karnataka's progress surpassing the national average. Nevertheless, by 2021, this difference had slightly reduced to 0.034.

To summarize, both the Social Sector Spending and Economic Growth have experienced significant growth over the three-decade period under consideration, despite occasional declines in their respective growth rates. Additionally, the Human Development Index for Karnataka has not only exhibited consistent improvement over the years but has also consistently remained marginally higher than the national average. This comprehensive dataset effectively portrays the economic and Human Development trajectory of Karnataka over the span of three decades.

Mediation Analysis (Process Macro Model)

In this research, we examine the potential role of Economic Growth in the connection between Social Sector Spending and Human Development in Karnataka, India. The main question is whether Economic Growth, measured by PCNSDP, influences how Social Sector Spending affects Human Development, measured by HDI. This mediation analysis aims to provide insights into the association between Social Sector spending, Economic Growth, and the well-being of the population in Karnataka.

Direct and Indirect Effects of Social Sector Spending on Human Development

Table 6.1
Direct Effect of SSE on HDI

Effect	se	t	p	LLCI	ULCI
.0217	.0097	2.2232	.0348	.0017	.0417

Source: Authors compilation

In Table 6.1., the direct effect of Social Sector Expenditure (SSE) on Human Development Index (HDI) in Karnataka is estimated to be 0.0217, and this effect is statistically significant with a t-value of 2.2232 and a p-value of 0.0348. Importantly, this direct effect remains significant even when accounting for the mediator variable, Per Capita Net State Domestic Product (PCNSDP). This indicates that SSE has a significant and independent positive impact on HDI in the state, reflecting the crucial role of investments in the Social Sector in fostering Human Development.

Table 6.2
Indirect effect(s) of SSE on HDI

	Effect	BootSE	BootLLCI	BootULCI
PCNSDP	.0425	.0082	.0249	.0569

Source: Authors compilation

The Table 6.2. provides crucial insights into the indirect effect of Social Sector Expenditure (SSE) on Human Development Index (HDI) in Karnataka, mediated through Economic Growth (PCNSDP). The estimated indirect effect is 0.0425, and the corresponding bootstrap confidence interval ranges from 0.0249 to

0.0569. Notably, the interval does not include zero, indicating that the indirect effect is statistically significant at the 95% confidence level. This implies that a portion of the positive influence of SSE on HDI operates through its impact on Economic Growth, highlighting the role of Economic Growth as a mediator in the relationship. From both Table 5 & 6, the proportion of the total effect that is accounted by the Indirect Effect of Economic Growth is observed to be approximately 66.2%. These findings emphasize that the public spending made in the Social Sector not only have a direct positive effect on Human Development but also stimulate Economic Growth, which, in turn, further enhances Human Development outcomes in Karnataka. This underscores the interconnectedness of Social Sector Expenditure and Economic Growth as drivers of overall well-being and underscores the importance of balanced policy interventions that promote both aspects for the state's Human Development.

Navigating The Nexus: Concluding Insights, Policy Pathways, And Future Avenues

The research undertaken on the association between Social Sector Expenditure (SSE), Economic Growth as measured by Per Capita Net State Domestic Product (PCNSDP), and Human Development Index (HDI) in Karnataka has yielded significant insights. The findings underscore the profound influence of Social Sector investments on Economic Growth and, in turn, their collective impact on Human Development. The model revealed a robust association between Social Sector Expenditure and Economic Growth, emphasizing that higher Social Sector Expenditure leads to tangible Economic Growth - a phenomenon of immense importance for Karnataka's development landscape.

Moreover, the comprehensive model incorporating Social Sector Expenditure, Economic Growth, and Human Development Index as predictors elucidated that both Social Sector Expenditure and Economic Growth independently contribute to Human Development in the state. The direct effect of Social Sector Spending on Human Development Index remained substantial even after accounting for Economic Growth, affirming the pivotal role of targeted Social Sector investments in enhancing Human Development outcomes. Concurrently, Economic Growth exhibited a strong, positive relationship with Human Development Index, accentuating the intertwined nature of Economic Growth and Human Development.

The mediation analysis further illuminated the intricate web of connections, demonstrating that Economic Growth mediated a portion of the positive influence of Social Sector Spending on Human Development Index. These findings imply that Social Sector investments not only directly boost Human Development but also stimulate Economic Growth, thereby amplifying their impact on overall well-being.

Considering the above insights, it is evident that a holistic approach to policymaking is essential. Policymakers should consider a balanced strategy that prioritizes both Social Sector Expenditure and Economic Growth, recognizing them as complementary drivers of Human Development. Targeted investments in healthcare, education, and other critical Social Sectors should be complemented by measures aimed at fostering Economic Growth. This synergy has the potential to unlock new avenues for development and significantly improve the quality of life for the people of Karnataka.

As we embark on future avenues of research, it is imperative to delve deeper into the specific domains of Social Sector Expenditure and explore their unique contributions to Human Development. Additionally, longitudinal studies can offer insights into the long-term dynamics of this relationship. Moreover, considering the regional diversity within Karnataka, regional-level analyses can provide tailored policy recommendations. Lastly, exploring the impacts of external factors such as global economic trends and natural resource availability on this nexus can further enrich our understanding of development dynamics in Karnataka. In conclusion, this research contributes valuable perspectives to the ongoing discourse on

development, emphasizing the multifaceted interplay between Social Sector Expenditure, Economic Growth, and Human Development - a tapestry that holds the promise of a brighter future for Karnataka.

References

- Anand, S. (2018). Recasting Human Development Measure, UNDP Human Development Report 2018, Discussion Paper.
- Anand, S., & Sen, A. (1994). Sustainable Human Development: concepts and priorities. UNDP Human Development Report Office.
- Anand, S., & Sen, A. (2000). Human Development and economic sustainability. *World development*, 28(12), 2029-2049. [https://doi.org/10.1016/S0305-750X\(00\)00071-1](https://doi.org/10.1016/S0305-750X(00)00071-1).
- Appiah, M., Amoasi, R., & Frowne, D. I. (2019). Human Development and its effects on Economic Growth and development. *International Research Journal of Business Studies*, 12(2), 101-109. <https://doi.org/10.21632/irjbs.12.2.101-109>.
- Azeem Qureshi, M. (2009). Human Development, public expenditure, and Economic Growth: a system dynamics approach. *International Journal of Social Economics*, 36(1/2), 93-104. <https://doi.org/10.1108/03068290910921217>.
- Bundala, N. (2012). Economic Growth and Human Development; a link mechanism: An empirical approach. Munich Personal RePEc Archive.
- Chikalipah, S., & Makina, D. (2019). Economic Growth and Human Development: Evidence from Zambia. *Sustainable Development*, 27(6), 1023-1033.
- Dhar, R. (1994). Human Development in India in a comparative context. IIM Bangalore Research Paper, (60).
- Djafar, F. (2009). Economic Growth, public expenditure and Human Development in Asia. *Prosiding PERKEM IV*, 1, 77-88.
- Gopalakrishna, B. V., & Rao, J. (2012). Economic Growth & Human Development: The experience of Indian states. *Indian Journal of Industrial Relations*, 634-644.
- Grubaugh, S. G. (2015). Economic Growth and growth in Human Development. *Applied Econometrics and International Development*, 15(2), 5-16.
- Gupta, S., Clements, B., & Tiongson, E. (1998). Public spending on Human Development. *Finance and Development*, 35, 10-13.
- Hagtvedt, H., & Patrick, V. M. (2008). Art infusion: The influence of visual art on the perception and evaluation of consumer products. *Journal of Marketing Research*, 45(3), 379-389. <https://doi.org/10.1509/jmkr.45.3.379>.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*, New York: The Guilford Press.
- Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation, *Behaviour research and therapy, Psychological Science*, 98, 39-57.

- Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter?, *Psychological Science*, 24, 1918-1927.
- Martins, S., & Veiga, F. J. (2014). Government size, composition of public expenditure, and economic development. *International tax and public finance*, 21, 578-597.
- Mincer, J. (1996). Economic development, growth of human capital, and the dynamics of the wage structure. *Journal of Economic Growth*, 1, 29-48.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior research methods, instruments, & computers*, 36(4), 717-731.
- Ranis, G., Stewart, F., & Ramirez, A. (2000). Economic Growth and Human Development. *World development*, 28(2), 197-219.
- Reyes, G. E., & Useche, A. J. (2019). Competitiveness, Economic Growth and Human Development in Latin American and Caribbean countries 2006-2015: a performance and correlation analysis. *Competitiveness Review: An International Business Journal*, 29(2), 139-159.
- Sen, A (1999). The ends and means of development, Chapter 2 from "Development as Freedom", Oxford University Press.
- Sharma, Neelam & Srivastava, Amit & Khanna, Sakshi. (2022). Does Economic Growth Act as A Mediator Between Government Spending And Human Development? An Insight from Northeastern India. *International Journal of Development and Conflict (IJDC)* 13 (1), 1-16
- Sharma, Srivastava and Khanna, "Government Expenditure, Economic Growth and Human Development - International Review and Additional Insights," 2022 IEEE Delhi Section Conference (DELCON), New Delhi, India, 2022, pp. 1-8, <https://doi.org/10.1109/DELCON54057.2022.9753274>.
- Siregar, B. (2019). Direct and indirect effects of investment on community welfare. *Investment Management & Financial Innovations*, 16(3), 206.
- Syam, A. Y., & Chandrarin, G. (2019). Effects of Fiscal Health on Human Development Index in Indonesia: Regional Government Performance Mediating Role. *International Journal of Innovative Science and Research Technology*, 4(10), 50-59.
- Zhang, A. (1996). Economic Growth and Human Development in China. UNDP (United Nations Development Programme). Occasional paper, 28.