Dyal Singh Journal of Humanities and Social Science (DSJHSS)
Vol. 2, No. 1, 2024, pp. 15-25
ISSN (P): 3006-6522
ISSN (E): 3006-6530

Unlocking the Economic Potential of India: The role of Human Capital

Usman Saleem Yousaf[1]

Arifa Saeed[2]

Farhan Ali[3]

Waqar Ali Ather Bukhari[4]

Abstract

Human capital is driving the economic growth, as it enhances the labor's productivity. This leads to increase the efficiency and competitiveness of the country. Hence, investment on education creates more capable human capital, which is crucial for sustainable economic growth. Hence, this study tries to explore the pivot role of human capital by addresses the crucial question that does human capital positively influence economic growth? Hence, this study is used secondary dataset from 1980 to 2023. The study analyze the objective by using autoregressive distributed lag (ARDL) and Granger causality test following the augmented Dicky-Fuller (ADF) and Bounds tests. The finding reveals that the key indicators of human capital including domestic health expenditure, school enrollment and life expectancy has significant impact on economic growth of Indian's economy on both in the short, as well as, in long-run. Furthermore, significantly one-sided Granger causalities are found from life expectancy to health expenditure, health expenditure to economic growth, economic growth to life expectancy, school enrollment to economic growth, health expenditure to gross capital formation, gross capital formation to life expectancy, and finally school enrollment to gross capital formation. No two-tailed causality is found. Lastly, based on the findings, the study suggested that policymakers should understand the importance of health expenditure by allocating budget, access to education by improving infrastructure, and enhancing life expectancy by proving health care facilities. These measures are essential to stimulate long-term economic growth.

Keywords: Human Capital, Economic Growth, Life Expectancy, Capital Formation, India

[1] Department of Economics, GC University, Lahore (usmang.qazi@gmail.com)
[2] Assistant Prof., Department of Economics and Finance, Greenwich University, Karachi (arfasaeed@gmail.com)
[3] Department of Economics, GC University, Lahore (farhan.ali@gcu.edu.pk)
[4] Department of Economics, Division of Management and Administrative Science, University of Education, Lahore

ISSN (P): 3006-6522
ISSN (E): 3006-6530

1. Introduction

The knowledge, skills, and other intangible assets that people possess and which add to their productivity and economic potential are referred to as investment in men. Human capital (HC) is important and has the potential to have a big impact on India's economic progress. Why is it important to invest in HC and how does it affect India's economic growth? It increases productivity by empowering people to carry out tasks in a more effective and efficient manner. The ability to innovate and adopt technological changes has enhanced the skill of the labor; resultantly it will increase the productivity of worker. Similarly, educated and skilled workforce is essential to exchange knowledge and ideas. Investments in education and training may lead to the adoption of new techniques, which can boost efficiency and effectiveness in an economic system. The educated and skilled individuals are likely to participate in governance and they can contribute in the sustainable economic growth. Therefore, the investment in HC can encourage the entrepreneurs to establish the new businesses and contribute the economy, because skilled labor force are more likely to identify the ideas, leading to the innovation and economic expansion.

Due to globalization, countries having highly educated and skilled workforce are considered as better in a positioned to compete the global marketplace. Investments in HC enable India to attract foreign direct investment, increase productivity, improve supply chain and export high-value goods. Hence, investment in HC is crucial for recognizing these benefits and motivating sustainable economic growth in India. Investment on HC can be done by different form including investing in education, on the job training, ensuring that labor should attain skills and knowledge. This is essential to construct an active workforce in the economy and contribute to economic growth.

Investment on human capital can also be achieved by providing vocational training and skills development programs to individuals with the specific competencies, as required by industries. This vocational training and skill development program can reduce the skills mismatches and, undoubtedly, increasing labor market efficiency. In the same way, quality of health is also important for labor to increases efficiency of the labor. Henceforward, quality healthcare services will improve the health and well-being of the labor force and, resultantly, efficiency of the human capital will improve in the long run. Similarly, research and development activities foster innovation and driving competitiveness of human capital. Lastly, it is worth noted that, HC is a critical determinant of sustainable economic growth in India. Therefore, investment in it is vital for unraveling the country's potential. By prioritizing education, skills development, healthcare and innovation, developing country like India can enhance its HC stock and achieved the sustainable and inclusive economic development. Numerous elements, including physical capital, HC, natural resources, technological advancement, social and political considerations, and technological development, influence a nation's economic growth.

This essay finds the contribution of HC to India's economic development. India's GDP ranks third when looking at PPP and ranks seventh when looking at the current exchange rate. In 2014, India had a per capita income of $1,600, placing it 145th in the world. Bank of the Federal Reserve India's multifaceted economy includes handicrafts, modern agriculture, traditional village farming, a wide range of modern industries, and a multitude of services. Services make up 45.4% of India's GDP, followed by agriculture (17%) and industry (30%). As compared to the other economies, India's GDP is expanding at the fourth-fastest rate in the world right now, at 7.6%.

This essay examines the several elements that have contributed to Indi's quickest rate of growth, with a particular emphasis on HC. India is the world's second most populous country, yet by 2030, there won't be any people living there. India's is growing at a faster rate in the world, but according to the CIA World Fact Book, 21.9% of its people live in poverty. In this regard HC is one of the key elements in a nation's development.

India is fortunate to have this resource, but it could be wasted if rules are not in place to make the most of it. This study aims to recommend to policymakers how India might reap benefits from optimizing its human resources. A greater standard of life and long-term sustainable economic growth can both be attained with the aid of those programs. Due to these necessary actions, country can be rid of poverty. Undoubtedly, India has the biggest economy in the south Asian region, in terms of GDP. The exploration of human capital and its impact on economic growth continues to unveil novel insights. This may reshape our thought to

ISSN (P): 3006-6522
ISSN (E): 3006-6530

understand the importance between human potential and economic prosperity. As this study investigates and highlight the importance of education, skills and innovation on the multifaceted dynamics of economic growth. Novel methodology and interdisciplinary approach provide the fresh analysis that revealing that how investments in education and training not only bolster productivity but also foster innovation and adaptability within economies. Moreover, novel findings emphasize the critical role of HC in navigating contemporary challenges such as technological disruptions and demographic shifts. This evolving discourse underscores the necessity of prioritizing human development initiatives to unlock sustainable economic growth and foster inclusive prosperity in an ever-changing global landscape.

1. Literature Review

The role of human capital (HC) and economic growth is the subject matter of numerous researchers (Nelson R. 1966). They have argued that "the more technologically progressive the economy is, the greater the rate of return to education is according to their model". Researchers also proposed that the more dynamic the technology, the more HC society should develop concerning tangible capital. According to Mincer's (1981) aggregate function paradigm, both the cause and the effect of economic growth are the expansion of HC. He made the case that the creation and source of new information are HC activities. He also maintained that regardless of its original local concentration, HC leads to global economic prosperity. It is also maintained that while HC has a beneficial impact on tangible investments, fertility is negatively impacted (Barro, 1992). This study examines secondary school attendance during the study period to assess the value of education in developing HC. Some evidence points to the importance of education in building HC, suggesting that it is advantageous to fund the education of a particular subset of people in the hopes that they will eventually produce enough externalities to propel society as a whole toward equality and prosperity (Galor, 1997). Based on aggregate cross-country data, the study suggests that HC should be included in growth rate in growth accounting regressions because it is a factor of production Benhabib (1994). Nevertheless, their results fell short of expectations. However, they also presented two more theories that clarify the role of HC in economic growth: first, as a means of drawing in physical capital, and second, as a factor influencing the size of a nation's surplus. Many researchers also tries to investigate the numerious factors that influence the human capital and economic growth including environmental factors, FDI, monetary and fiscal policy (Yousaf et al. 2022; Guoru, F 2023; Yousaf et al. 2024). Additionally, few researchers also suggested the important role of of HC on China's quick economic expansion (Yan, 2003). They found that average school enrollment increased over time and this suggests that China's human capital grew very swiftly and played a significant role in the nation's economic development.

Nonetheless, compared to the pro-reform era, the pace of increase of HC decreased during the 1978–1999 reform period, and its contribution to GDP growth was lower. However, Ozcan and Kalemli (2000) argued against the positive impact of HC on economic growth. They have looked at how decreasing mortality affects the motivation to spend money on schooling. Higher life expectancy, according to their analysis, increases the ideal number of years of education because the investment will pay off over time. Gyimah Brempong (2004) also tries to investigate the relationship between HC and the economic growth using the data-set of OECD and Sub-Saharan African countries. The study expanded the Solow growth model and found that the investment on HC had significantly increased the growth rate. Additionally, Hanushek (2013) claimed for the contribution of HC to developing nations' economic expansion. This finding focuses attention on the quality of education, where developing nations have had far less success catching up to developed nations. The long-term economic performance of developing nations will be hard to improve if school quality doesn't improve. He clarified that emerging nations should think about improving both fundamental and advanced talents to attain long-term economic growth. In 2002, Agiomirgianakis et al. analyzed the effect of HC on economic growth using the data of 93 nations. The panel regression result indicates that investment on HC in the shape of education is not a key determinant of economic growth. Nonetheless, the result reveals that education also tries to increase the economic growth in long-run. Similarly, Van Leeuwen & Foldvari (2008) also tries to investigate the relationship of HC and economic growth by using the industrialized and developing countries. The results also coincide with the existing literature and supported that accumulation of HC positively affects economic growth in developing countries like India. But as a nation approaches the technological frontier, as Japan has done, its technology

Dyal Singh Journal of Humanities and Social Science (DSJHSS)
Vol. 2, No. 1, 2024, pp. 15-25
ISSN (P): 3006-6522
ISSN (E): 3006-6530

becomes more self-developed, and a large portion of its HC is used to push the boundaries of technology (Shukla, 2017). Synthesizing the above literature, we hypothesize that:

H_1: *"Human capital positively impact the Economic Growth"*

Accordingly, the conceptual framework is presented in figure 1

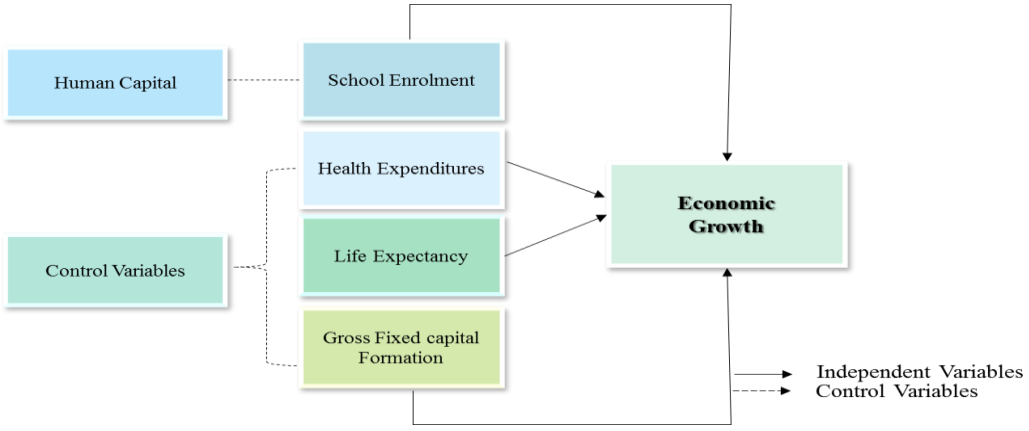

Figure 1: Conceptual Framework

2. Data and Methodology

This section of the paper explains the variables that were used in the study, as well as the sources for the data and the techniques used to describe it. This section also covers the study's model. It is vital to choose the study's variables in a way that best reflects the connection between HC and India's economic expansion. This study includes GDP, gross capital formation, per capita health spending, and secondary school enrollment.

This study is based on time series data, all of which are secondary data that were gathered from World Bank national accounts data spanning 43 years, from 1980 to 2022. The multiple regression analytical method will be utilized to estimate the secondary data employed in the investigation. GDP is used as the dependent variable, while human capital as independent variable, and the remaining variables are control variables. The intercept term is represented by β0, the elasticity of the explanatory variables is indicated by β1, β2, β3, and β4, and the stochastic error term is indicated by et in equation (1). We have the following simple econometric model.

$$ln\ GDP_t = \beta_0 + \beta_1\ ln\ HLT_t + \beta_2\ ln\ SCH_t + \beta_3\ ln\ GCF_t + \beta_4\ ln\ LEXP_t + e_t \quad (1)$$

The short-run estimates are derived from equation (2). The important coefficient in the short-run results is "error correction term", which should be negative and significant. This implies if any shock that create the divergence, can converge again to the equilibrium. The study used the GDP as proxy of economic growth as suggested by the numerous researchers (Fuka et al. 2021; Matousek et al. 2021). The World development indicator (WDI 2022) is main source to collect data for empirical evidence. The variables in the studies are economic growth as GDP; health expenditure (% of GDP) as health expenditures; Life expectancy are used as total years of life expected at birth; investment is proxy as gross capital formation (% of GDP); and school enrolment is used as the proxy of School enrollment.

Table 1

Variables, description, and data sources

Variables & Description	Sources	Notation
GDP (constant 2015 US$) (%)	WDI	GDP *(ln)*
Domestic general government health expenditure (% of GDP)	WDI	HLT *(ln)*
School enrollment, primary (gross), gender parity index (GPI) (%)	WDI	SCH *(ln)*
Life expectancy at birth, total (years) (%)	WDI	LEXP *(ln)*
Gross fixed capital formation (% of GDP)	WDI	GCF *(ln)*

Dyal Singh Journal of Humanities and Social Science (DSJHSS)
Vol. 2, No. 1, 2024, pp. 15-25
ISSN (P): 3006-6522
ISSN (E): 3006-6530

The table 2 provides a statistical summary of human capital and economic growth, including health expenditure, life expectancy and gross capital formation. The statistical summary shows that health expenditure and school enrollment as percentages of GDP have generally declined. However, table 2 indicates that economic growth has remained stable. Life expectancy has shown low variability but it also indicating steady improvements. Gross capital formation (GCF) has also been relatively stable. The summary statistics suggesting that all variables are approximately normally distributed and the data is suitable for further analysis.

Table 2

Statistical Summary

	HLT	GDP	SCH	LEXP	GCF
Mean	-0.007	27.50	-0.130	4.138	3.384
Median	-0.033	27.50	-0.141	4.140	3.400
Maximum	0.357	28.70	0.048	4.260	3.740
Minimum	-0.340	26.30	-0.403	3.980	2.970
Std. Dev.	0.197	0.742	0.156	0.083	0.187
Jarque-Bera	2.099	2.883	4.254	2.314	0.774
Probability	0.350	0.237	0.119	0.315	0.679

Note: HLT is health expenditure, GDP is economic growth, SCH is school enrollment, LEXP is life expectancy and GCF is gross capital formation.

We are employing the following equations in order to empirically estimate the results.

$$(\ln GDP)_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{i2} \ln GDP_{t-1} + \sum_{i=0}^{n} \beta_{i2} \ln HLT_{t-i} + \sum_{i=0}^{n} \gamma_{i2} \ln SCH_{t-i} + \sum_{i=0}^{n} \varepsilon_{i2} \ln EXP_{t-i} + \sum_{i=0}^{n} \omega_{i2} \ln GCF_{t-i} \quad (2)$$

$$(\Delta \ln GDP)_t = \alpha_1 + \ln GDP_{t-1} + \ln HLT_{t-1} + \ln SCH_{t-1} + \ln EXP_{t-1} + \ln GCF_{t-1} + ECT_{t-1} + \cup_{it} \quad (3)$$

The parameters in equation (2) symbolize the short–run indicators and the parameters mentioned in equation (3) indicate the long-term relationship along with the error correction term.

2.1. Methodological Flowchart

In this study, we are employing the econometric methodologies that are illustrated in figure 2 to achieve the fundamental objectives of the study. The details are illustrated in the subsequent sections.

Figure 2: Methodological Flowchart

2.1.1. Augmented Dicky Fuller test

The Augmented Dickey-Fuller (ADF) test is test which is used to test the stationary of the variables. Stationarity is essential diagnostic for cointegration because if stationarity is not present then data can yield spurious regression results. Hence, before using the reliable model, the study confirms that variables such as health expenditure, school enrollment, life expectancy and economic growth are stationary at first difference. Therefore, the study applies ADF test which will enhance the reliability and accuracy of the

ISSN (P): 3006-6522
ISSN (E): 3006-6530

other econometric models like Autoregressive Distributed Lag (ARDL) and Granger Causality tests. In order to improve the overall interpretability and comprehensiveness of the results, we converted our model to a natural logarithmic, so that coefficient of the variable can be interpreted. It is preferable to use ARDL cointegration technique if the data shows the mixed order of integration i.e. I(0) and I(1) to achieve long and short run results (Shrestha & Bhatta 2018).

Table 3

Test of Unit Root

Variables	ADF Test Statistics			
	Constant		Constant and Trend	
	Level	First Difference	Level	First Difference
GDP *(ln)*	3.83	7.08*	-4.32	-----
HLT *(ln)*	-1.30	-3.22**	1.27	-5.55*
SCH *(ln)*	-1.57	-5.32*	0.22	-5.66*
LEXP *(ln)*	-1.68	3.30**	6.45*	-----
GCF *(ln)*	-1.54	-10.07*	-1.46	-10.00**

*Note: GDP is economic growth, HLT is health expenditure, SCH is school enrollment, LEXP is life expectancy and GCF is gross capital formation. *, **, *** shows significance level at 1%, 5% and 10 %.*

2.1.2. Autoregressive distributed lag (ARDL) model

Pesaran and Shin (2001) developed a model to determine a long-term correlation between the components of the indicators. The ARDL, on the other hand, offers a different method of preventing fabricated results brought about by missing variables by including the lag of dependent variable as the independent variable. As such, it is seen as the solution to erroneous approximations (Ghouse et al. 2018). But because ARDL does not require integration order I, it also benefits the dependent variable (1). Finally, by selecting the Akaike automated lag choice criteria, the parsimonious ARDL model (1, 2, 2, 2, 2) is selected.

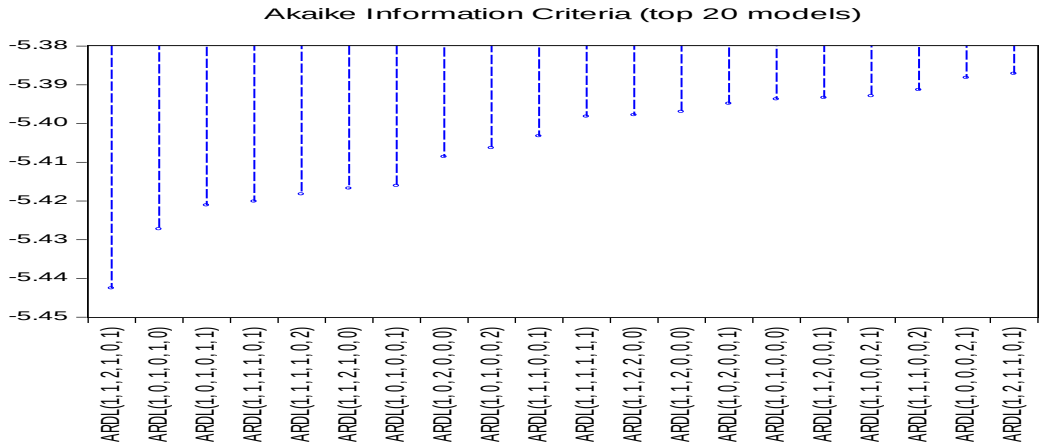

Figure 3: Akaike Information Criteria

Table 4

ARDL model estimates

	Short-run estimates	Long-run estimates
	Coefficient	Coefficient
GDP *(lag)*	0.495***	-----
HLT *(ln)*	0.204**	0.41**
SCH *(ln)*	0.608**	1.23***
EXP *(ln)*	3.321***	6.71**
GCF *(ln)*	0.018*	0.02*

ISSN (P): 3006-6522
ISSN (E): 3006-6530

Error Correction	-0.495**	
Adj. R2		0.45
Serial LM		0.365
Prob F (2,17)		0.519
BP Godfrey F-stat		0.884
Prob F (13,27)		0.578
JB-Normality (p-value)		0.424
Ramsey Reset		0.194

*Note: GDP is economic growth, HLT is health expenditure, SCH is school enrollment, LEXP is life expectancy and GCF is gross capital formation. *, **, *** shows significance level at 1%, 5% and 10 %.*

Economic growth is significantly impacted by health care spending. Research has indicated that nations with greater government spending on healthcare typically have faster rates of economic growth. Celik and associates (2023). Health expenditure contributes to the development of HC, labour productivity, and growth. The impact of school expenditure on economic growth varies across different studies. In the case of Nigeria, According to one study, government spending on education increased economic growth, albeit little (Eze, 2023). Government spending on education had a negligible impact on economic growth, according to a different Ghanaian research Nwude (2023). Economic growth has been positively impacted by life expectancy. Numerous researchers have discovered a strong correlation between economic growth and life expectancy. In nations with a faster rate of aging, life expectancy has a stronger beneficial effect on economic growth Setiawan et al. (2023).

2.1.3. Bounds Test

The bound test is a test which is used to attest the existence of a cointegration between among the variables of the model, as recommended by Pesaran et al. (2001): F-statistics to test the alternative hypothesis (H1: ≠ 0, i.e., there is an enduring association) and null hypothesis (H0: = 0, i.e., no cointegration; see Eq. (4)). A statistically significant F-statistic over the specified critical upper bound indicates cointegration and, therefore, the rejection or acceptance of H0 and H1. When cointegration is confirmed, a negative and large ECM indicates that the model is approaching long-run equilibrium.

Table 5:

Bounds test estimates.

Test statistic	Value	Significant Level	I (0)	I (1)
F-statistic	7.64	10%	1.98	3.01
K	5	5%	2.24	3.38
		1%	3.06	4.45

2.1.4. Granger Causality Test

Three things can happen in the model when cointegration is discovered: There are three possible outcomes: one variable can influence the other, the other influence the first or both variables can influence each other jointly. Testing pairwise Granger causality, a well-liked method in time series data, is the process of forecasting the values of the variables used among themselves in order to accomplish this purpose. Still, only because there is a correlation between the two variables does not imply that the Granger cause is equally evident. Granger (1969) introduced the Granger causality test, an analytical method for investigating such causal relationships. Results on Granger causality are shown in Table (7). There is both bidirectional and unidirectional causality between the variables.

Table 6

Granger Causality Estimates

Null Hypothesis	F-Statistic	Prob.
lnEXP doesn't "Granger Cause" lnHLT	5.723***	0.007
lnHLT doesn't Granger Cause lnEXP	2.310	0.101
lnGDP doesn't Granger Cause lnHLT	2.017	0.148
lnHLT doesn't Granger Cause lnGDP	6.811***	0.003

ISSN (P): 3006-6522
ISSN (E): 3006-6530

lnEXP doesn't Granger Cause lnGDP	2.106	0.137
lnGDP doesn't Granger Cause lnEXP	4.476**	0.018
lnSCH doesn't Granger Cause lnGDP	4.464**	0.019
lnGDP doesn't Granger Cause lnSCH	0.764	0.473
lnHLT doesn't Granger Cause lnGCF	3.950**	0.028
lnGCF doesn't Granger Cause lnHLT	1.643	0.208
lnEXP doesn't Granger Cause lnGCF	0.169	0.845
lnGCF doesn't Granger Cause lnEXP	2.694*	0.081
lnSCH doesn't Granger Cause lnGCF	2.487*	0.097
lnGCF doesn't Granger Cause lnSCH	0.946	0.398

*Note: GDP is economic growth, HLT is health expenditure, SCH is school enrollment, LEXP is life expectancy and GCF is gross capital formation. *, **, *** shows significance level at 1%, 5% and 10 %.*

3. Estimated Results and Discussion

The study begins its analysis by reporting some summary statistics. Unit root testing is thought to be necessary in order to exclude erroneous results before analyzing time-series data.

The results of the empirical analysis show that none of the variables are of I(2); instead, they are a combination of I(0) and I(1). In this situation, using traditional regression may yield inaccurate and ineffective findings. As a result, we employ the ARDL technique, which works better even with small sample sizes and yields reliable results. Life expectancy, health spending, and years of education used as stand-ins for HC when calculating the impact of gross capital formation and economic growth. The value of the F-statistic (7.69) in Table (5) is also significant. It confirms that our variables' cointegration is valid at all significance levels, with a value above the upper bound (Pesaran's tabulated value). All of the primary results of our investigation are shown as ARDL short and long run in Table (4). Long-term analysis reveals that the estimated coefficient, which represents the effect of health spending on growth, is positive and significant. It demonstrates that a 1% increase in health spending results in more effective and superior healthcare services being offered to the general public, which would positively affect economic growth and cause it to rise by 0.41 percent. In a similar vein, research on the relationship between school spending and economic growth indicates that improved educational facilities raise GDP. The GDP will rise by 1.22 percent for every 1% increase in education spending, according to the results. Recent research indicates that life expectancy has a favorable effect on economic growth as well. Specifically, a 1% rise in life expectancy increases economic growth by 6.76 percent. Gross capital formation serves as a stand-in for investment, which has a somewhat favorable effect on economic growth.

The requirement for a negative and considerable error correction term (ECT) suggests that our model converges to equilibrium at a rate of 49% per year. The goodness of fit is indicated by the adjusted R2, which displays 45% of the variance in EC are coming for the independent and control variables. The F-statistic validates the model's significance. After using the other dignostics like LM test, it is also confirmed that serial correlation are not present in the data-set.

ISSN (P): 3006-6522
ISSN (E): 3006-6530

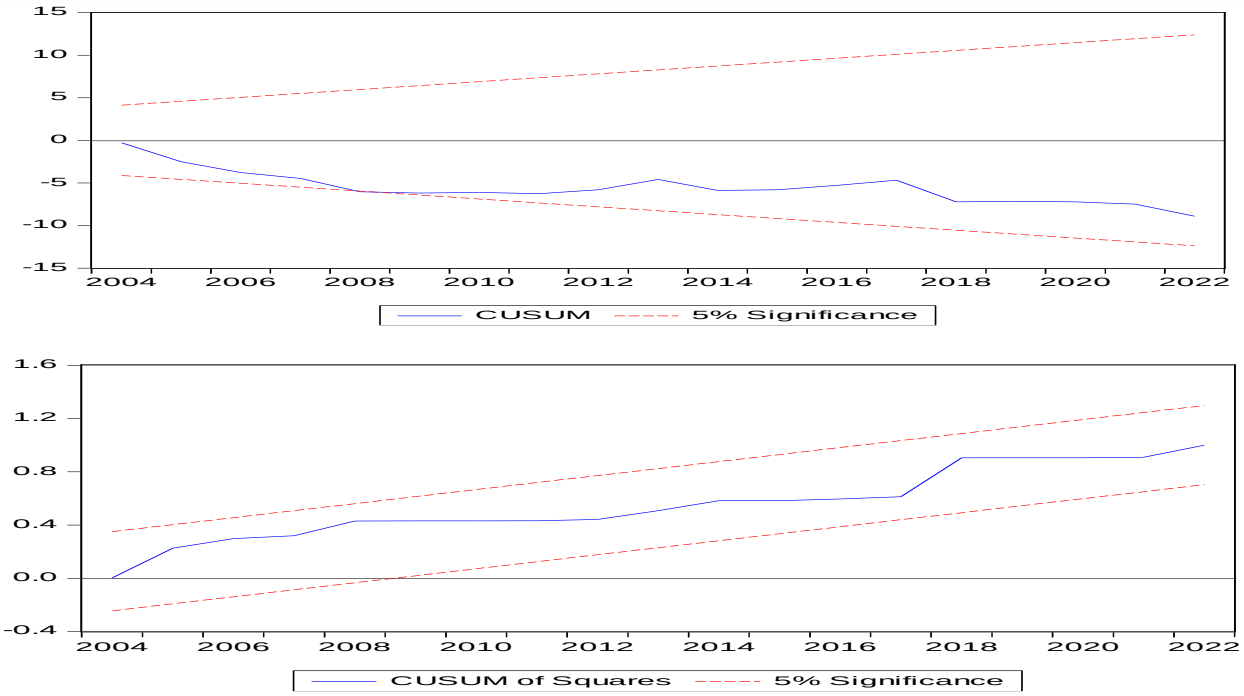

Figure 4: CUSUM'S Test of Stability

For the stability of the model, the CUSUM test is shown and verified at the 5% level of significance in Fig. 4. The model's stability and dependability, the blue line should be in-between of the red dotted lines, which are also confirmed in our study.

4. Conclusion and Policy Implications

India, with its rapidly growing population and economy, faces significant challenges in sustaining its economic growth. The country's large and diverse population requires substantial investments in human capital to maintain and enhance productivity levels. Over the past few decades, there has been a growing recognition of the importance of human capital in driving economic growth. Key components of human capital such as health spending, education, and life expectancy directly influence labor productivity and, consequently, economic performance. Despite these recognitions, India's investment in health and education has been relatively low compared to other emerging economies.

This study aims to highlight the critical role of human capital in economic growth and tries to provide the evidence to enhance the investments on human capital for economic growth of the nation. For the analysis purpose, we have use the annual data over the period of 43 years. Furthermore, we utilized the autoregressive distributed lag (ARDL) technique, which provide the efficient and reliable results in long-run, as well as, in short-run. The findings of the study indicate that human capital has significantly boosted the economic growth, particular for the Indian's economy. The ARDL model also revealed that high spending in health sector and education sector were all connected with enhancement of economic growth. Likewise, based on these findings, the study also proposes the several policy recommendations. These recommendations will enhance the investments in health and education sectors, which are necessary to raising the sustainable economic growth.

Firstly, undoubtedly, increasing health expenditure is vital because, healthier populations are more productive. Correspondingly, investing in health sector infrastructure can significantly boost economic performance. To achieve this objective, the ministry of health and family welfare can cooperate with state and state should allocate a higher percentage on health expenditure. Similarly, these investments should be direct towards improving health infrastructure and escalating access to medical facilities. By doing so, the government can reduce sickness and improve overall health of the country, which, in turn, will support economic growth.

ISSN (P): 3006-6522
ISSN (E): 3006-6530

In addition, improving enrollment ratio in educational institute is also very important. Education is a foundation of efficient human capital. Although its long-term process, but school enrollment ratio can directly contribute to skilled workforce. Hence, the ministry of education should know the importance of education and focus on accessible and affordable education. This can be achieved by providing more schools, particularly in rural areas. Furthermore, government should also provide financial incentives like scholarships and subsidies to needy students. Henceforward, it is the responsibility of every government to take essential measures to improve school infrastructure, ensuring the availability of qualified teachers and enhance the quality. Public awareness campaigns are also the responsibility of government that provide the knowledge about importance of education and encourage parents to send their children to school, especially girls. Similarly, during promoting education, the government should also ensure that all children have the equal opportunity to gain skills and knowledge. Later on, these children will be part of human capital and necessarily contributing to the economic growth.

Lastly, efforts to enhance the life expectancy should be the priority of every government. Longer the life expectancy is the indication of healthier population. Hence, this healthier population will contribute to the economic stability and sustainable growth. The government should implement the numerous programs that target major health issues and, also, promote healthier lifestyles. Moreover, investment in the field of medical research and development can also lead to development in health sector that further improve life expectancy of human capital. The ministry of health and family welfare should lead these efforts. The government should work closely with non-governmental organizations (NGOs) to maximize the impact.

Conclusively, India's economy and legislators should realize that sustainable economic growth cannot be achieved without significant investments in human capital. Therefore, prioritizing the health expenditure, improving educational enrollment and increasing life expectancy through targeted programs, India can build a more productive and competitive workforce. These policy measures should be implemented collectively by ministries, state governments and local authorities. It is also ensuring that resources should effectively utilize and all citizens are benefited from these investments. By doing so, India can achieve sustainable economic growth and improve the overall well-being of its population.

REFERENCES

Agiomirgianakis, G., Asteriou, D., & Monastiriotis, V. (2002). Human capital and economic growth revisited: A dynamic panel data study. *International advances in economic research*, *8*(3), 177-187.

Barro, R. J. (1998). Human capital and growth in cross-country regressions. *Harvard University*, 1-56.

Barro, R. J., Mankiw, N. G., & Sala-i-Martin, X. (1992). *Capital mobility in neoclassical models of growth* (No. w4206). National Bureau of Economic Research.

Benhabib, J., & Spiegel, M. M. (1994). The role of human capital in economic development evidence from aggregate cross-country data. *Journal of Monetary economics*, *34*(2), 143-173.

Galor, O., & Tsiddon, D. (1997). The distribution of human capital and economic growth. *Journal of Economic Growth*, *2*(1), 93-124.

Celik, E. U., Omay, T., & Tengilimoglu, D. (2023). Convergence of economic growth and health expenditures in OECD countries: evidence from non-linear unit root tests. *Frontiers in Public Health*, *11*, 1125968.

Eze, C. G. (2023). Impact of human capital investment on economic growth in Nigeria: Econometric approach of Autoregressive Distributive Lag Model (ARDL). *World Journal of Advanced Research and Reviews*, *18*(2), 1096-1110.

Fuka, J., Baťa, R., & Šrámková, L. (2023). Effective management of waste processing as a tool for improving public services and economy in municipality. *International Journal of Environmental Science and Technology*, *20*(2), 1315-1328.

Gyimah-Brempong, K., & Wilson, M. (2004). Health human capital and economic growth in Sub-Saharan African and OECD countries. *The quarterly review of economics and finance*, *44*(2), 296-320.

Ghouse, S., Babu, S., Nai, K., Hooper, P. A., & Jeffers, J. R. (2018). The influence of laser parameters, scanning strategies and material on the fatigue strength of a stochastic porous structure. *Additive Manufacturing*, *22*, 290-301.

ISSN (P): 3006-6522
ISSN (E): 3006-6530

Guoru, F., Hanif, M. H., & Yousaf, U. S. (2023). Inquiring the impact of rural–urban migration, construction sector, and agriculture irrigated land on environmental degradation: insights from urbanized Asian countries. *Environmental Science and Pollution Research*, *30*(57), 120707-120721.

Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: journal of the Econometric Society*, 424-438.

Hanushek, E. A. (2013). Economic growth in developing countries: The role of human capital. *Economics of education review*, *37*, 204-212.

Kalemli-Ozcan, S., Ryder, H. E., & Weil, D. N. (2000). Mortality decline, human capital investment, and economic growth. *Journal of development economics*, *62*(1), 1-23.

Kalemli-Ozcan, S., Ryder, H. E., & Weil, D. N. (2000). Mortality decline, human capital investment, and economic growth. *Journal of development economics*, *62*(1), 1-23.

Mincer, J., & Jovanovic, B. (1981). Labor mobility and wages. In *Studies in labor markets* (pp. 21-64). University of Chicago Press.

Matousek, R., & Tzeremes, N. G. (2021). The asymmetric impact of human capital on economic growth. *Empirical Economics*, *60*(3), 1309-1334.

Nelson, R. R., & Phelps, E. S. (1966). Investment in humans, technological diffusion, and economic growth. *The American economic review*, *56*(1/2), 69-75.

Nwude, C., Nwaeze, C., & Nwude, C. A. (2023). Government expenditure and economic growth: evidence from the critical sectors in an emerging economy. *Qeios*.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Shukla, S. (2017). Innovation and economic growth: A case of India. *Humanities & Social Sciences Reviews*, *5*(2), 64-70.

Setiawan, A. B., Yusuf, M., Yudistira, D., & Nugroho, A. D. (2023). Determining Economic Growth And Life Expectancy Linkages In Indonesia: A Simultanous Equation Model. *Jurnal Pendidikan Ekonomi Dan Bisnis (JPEB)*, *11*(01), 12-25.

Shrestha, M. B., & Bhatta, G. R. (2018). Selecting appropriate methodological framework for time series data analysis. *The Journal of Finance and Data Science*, *4*(2), 71-89.

Van Leeuwen, B., & Foldvari, P. (2008). Human capital and economic growth in Asia 1890–2000: A time-series analysis. *Asian Economic Journal*, *22*(3), 225-240.

Yousaf, U. S., Ali, F., Aziz, B., & Sarwar, S. (2022). What causes environmental degradation in Pakistan? Embossing the role of fossil fuel energy consumption in the view of ecological footprint. *Environmental Science and Pollution Research*, 1-11.

Yousaf, U. S., Ali, F., Syed, S. H., Aziz, B., & Sarwar, S. (2022). Exploring environment sensitivity to fiscal and monetary policies in China: using ecological footprints as a contemporary proxy. *Environmental Science and Pollution Research*, *29*(24), 36412-36425.

Yousaf, U. S., Ali, F., Aziz, B., Hussain, S., & Sawar, S. (2024). Assessing the impact of renewable energy and financial development on environment quality in Asian emerging economies (AEEs). *Environment, Development and Sustainability*, 1-25.

Yan, W., & Yudong, Y. (2003). Sources of China's economic growth 1952–1999: incorporating human capital accumulation. *China economic review*, *14*(1), 32-52.