International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Human Capital & Economic Growth

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Abstract

This report thoroughly reviews existing literature in the field of human capital. A rationale has been presented along with seven questions the reviewed literature aims to answer by analytically comprehending an extensive range of relevant research papers and articles categorised into multiple sections followed by the summary and research gap. Since all existing work presents a strong argument in favour of the importance of maximizing the potential of human capital through various forms of investment, this paper seeks to understand whether there is a direct relationship shared by the economic growth and the quality of human capital in the economy. A multiple regression model has been deployed for this purpose and has been applied to data collected from World Bank.

Introduction

Human capital refers to the potential of human beings to be productive, which is essentially fueled by the state of their health and the quality of education received. While the former puts them in a position to provide labour, the latter induces expertise in the labour provided. Economic growth may show signs of progress without the enhancement of human capital, as unskilled workers have the ability to garner minimal profits. However, it is safe to say that economic development is entirely reliant on the advancement of human capital.

Development essentially refers to an increase in the standard of living, welfare and general satisfaction in the economy, which is initiated by good health and sustained by the benefits of being well-educated, which boosts the level of productivity, innovation and technology.

Capital accumulation is a prerequisite for self-sustained growth, and India, being the second populous country in the world, has been dealt an excellent hand at that. However, the road to progress is not as easy as it sounds, as the majority of this population faces the hardships of poverty compelling them to give up their education and dedicate that time towards earning a livelihood. The lack of resources, sanitation and even awareness in the rural areas reflects the absence of basic healthcare provisions and practices. Regional and gender inequality along with the dearth of faith in human capital investments create a vacuum that, if filled, will certainly accelerate India's growth and development, and transform her stance in the global market.

This report extensively studies literature that explores the determinants of human capital, probing into whether health and nutrition classify as good assets for investment. Comparative advantage leveraged by firms to attract human capital is demonstrated through firm-based incentives. Fluctuations in shareholder value owing to human capital investment are examined, followed by elucidation of the relationship between income tax and human capital. With the involvement of technology in reaching human capital goals and the introduction of artificial intelligence, along with the role of human virtues as social collateral, the significance of emotional intelligence, and hospitality in a workplace is clarified.

Within the purview of India, we explore the relationship between human capital and economic growth before throwing light upon its progress in the provision of public education and reduction of gender disparity and employment opportunities for women and girls. The impact of liberalisation in 1991 is

scrutinised following the explication of the causal relationship between the inflow of foreign direct investment and human capital. The adverse effects of India's geographical location have also been reflected. For a holistic approach, India's human capital has been subjected to a comparative analysis with respect to that of China's and Pakistan's.

Social distancing norms enforced in light of the coronavirus outbreak have radically modified almost every aspect of life as we knew it, making for a captivating discussion regarding what the future holds in terms of the expansion of human capital.

1.1 Research Objective

The objective of reviewing existing literature is sevenfold.

1. To understand whether investing in the health and nutrition of individuals is equivalent to investing in human capital.
2. To study human capital in the purview of business and finance.
3. To examine what the constant evolution of technology means for the field of human capital.
4. To explore whether social and emotional features influence human capital.
5. To analyse India's progress in the domain of human capital.
6. To compare the indicators of human capital across countries.
7. To probe into the consequences of the ongoing pandemic on the development of human capital.

1.2 Research Questions

1. Does investment in the healthcare sector account for human capital investment?
2. What are the economic implications of human capital?
3. Where does the snowballing integration of technology into our lives leave the contribution of human capital?
4. Can the emotional traits or social behaviour of human capital play a role in its development?
5. In the context of human capital, what is India's progress?
6. Is there a difference between the determinants of human capital across countries?
7. How has the pandemic affected the field of human capital?

1.3 Rationale

With the escalating conjecture around the concept that considers humans a vital form of capital, it is the need of the hour to delve into the matter. The sphere of developing, managing and investing in human capital has cascading importance, as it has pivotal implications for economies internationally, utilising arguably their most efficient resource. This particular factor of production has a previously overlooked capacity to induce sustainable long term growth in countries - a common goal globally - due to the exhaustive nature of the rest of the remaining factors.

Especially for an overpopulated developing country like India, promotion of human capital may help organise and reform the supply of labour while refining its quality, reducing the unemployment rate and harnessing channelising its proficiency to the advantage of the economy.

A prevalent trend follows that unmotivated and unskilled labour is on the rise while innovative and skilled flee to developed economies, advancement of human capital can be the solution that has been long sought for. Not only can it mitigate brain drain, but also turn the tables and attractproductive human capital units, inducing brain gain.

However, the process of reaping the benefits of human capital with utmost efficiency, using it as a solution to age-old problems, can only be recognised and implemented with a strong grasp on this theory.

2. Literature Reviews

2.1 Healthcare as a Domain of Human Capital Investment

"Building Human Capital Starts With Health" (2018) spotlights Universal Health Coverage (UHC), a programme making essential health services available at minimal costs. It was launched shortly after the inauguration of the World Bank's Human Capital Project (HCP), which strives to accelerate the quantity and quality of investments in people, the units of this evolving resource, across the globe. In many rural areas, investments in health are seen as dead- end consumption expenses - a notion that the UHC is endeavouring to entirely reverse because investment in human health may just be the safest and most productive one. Statistics claim that half the world's population, even today, lacks access to any sort of source of essential healthcare, let alone one of good quality. Areas which provide healthcare, more often than not, make it too expensive for the average family, as a consequence of which they're not only pushed below the poverty line, but also force them to choose between necessities like education and nutrition. In light of these harsh realities that are not only hindering universal growth and development but also diminishing the value of the world's existing human capital, this article sheds light on the significance of health in the avenue of human capital, fuelling it in every sense of the word. For this purpose, the HCP and UHC aim at overcoming these global challenges by 2030 because people not only need to be able to receive proper health care, but they need to do so in a manner that doesn't exhaust their resources.

Bhalotra, Deolalikar, and Laxminarayan, and Nandi (2017) recognized that after curbing child mortality, the next area of focus was to harness developmental potential by investing in the child's health and nutrition during their infancy, which would eventually increase productivity and thus welfare. The paper examines the significance of good maternal health, determined by diabetes, heart disease risk, nutrition, and even stress, and prenatal interventions which further regulate later-life outcomes, like premature birth, low

birth weight, and cognitive and socioemotional skills. It proceeds to provide illustrative calculations of the benefit-cost ratios of the influence of early-life interventions, such as maternal survival, and in turn, breastfeeding and micronutrient supplementation, on the individual's present and later-life, as an attempt to evaluate the practicality of the investments in review. The key assumption in thecalculation is that in low and middle-income countries, the economic benefit has a unidirectionalrelationship with productivity, education, and health. The estimates employed are dependent upon the relationship between human capital and, firstly, the said interventions, and secondly, productivity/income. Another assumption is that the schooling rate of return is the same for the labour market and household activities. For the base case, rate of return to school and prevalenceof undernutrition, both are taken at 7.5%. As for the cost, a basic wage, or the time costs relative to wages of those with a basic schooling level, is taken at USD 1000. A prime cost, the time costimplies the opportunity cost of time of children, teachers, and even the program facilitators. The resource cost is examined in three segments: direct costs not only per child of intervention but also of one additional year of school and opportunity cost of time to provide students with an education. Discount rates (wherein the future benefits and costs flowing through decades are adjusted to the present day), survival rates, general equilibrium effects, and externalities have also been enumerated. After obtaining the estimates, we see the benefit-cost ratio to be 2.3 for the case, wherein benefits exceed costs. As for higher positive externalities (2.6) and interventionimpact on schooling (2.4), there is a negligible change, as the benefits and costs increase simultaneously. In the case of returns to schooling attainment (3.5) and lower costs (3.6), the ratio increased significantly as when benefits increase, costs reduce. Once we integrate these idealistic assumptions, the benefit-cost ratio stands tall at 6.9 through which we infer

that early- life nutritional investments definitely lay the groundwork for immense potential economic gains. It must be noted that the obtained estimates are sensitive to the discount rate. However, the fact that each ratio has exceeded one goes to show that discounted value of benefits exceeds costs, on account of which we can safely assert that the health and nutrition of birth givers and caretakers of the children can predict the trend of their productivity and earnings throughout their life.

2.2 Economic Implications of Human Capital

Kryscynski, Coff and Campbell (2019) address not only the need for firm-specific human capital but also for incentives that draw labour to a particular firm over the others. They aim to comprehensively review the competitive advantages of firm-specific incentives (FSIs) by exploring its potential gains in the face of generalised pre-existing incentives. These FSIs may be sourced from external (reputation, brand value, purpose, etc.) and internal factors (location, culture, intellectual property, human capital etc.). For most of the study, it is assumed that the resource in question, human capital, cannot be firm specific and all units of it have similar preferences and the capacity to deduce the potential level of utility from a firm's incentives. The propositions put forward are ceteris paribus: the competitive advantage of the FSI moves in the direction of firstly, utility, secondly, the utility cost ratio (also analysis whether both of these will increase if the employee has a personal inclination towards the said incentive) and thirdly, accurate perception by employees of the FSI in review, as compared to pre-existing incentives.

Fourthly, it increases with the degree to which firms are dependent on firm-specific human capital. Through these, the authors make a strong case regarding the nature of FSIs - a veiled catalyst with the tremendous capacity to revolutionize the field of human capital flow and its determinants (namely attraction, motivation and retention) once firms begin to exploit this underlying instrument to enhance their competitive advantage.

Abowd et. al (2002) appraise the degree of influence human capital has on productivity in business and shareholder value, which may be reflected in two ways: the hike in company performance owing to its human capital components, and the induction of various models, technologies and practices simply because an advancing workforce uses them. The US Census Bureau has formulated new measures of human capital by virtue of an integrated database with micro level data of the employers and employees of a workspace that has been used. This study has leverage over the others as the measure of human capital not only includes a broader measure of skill, including things that don't necessarily meet the eye, but also does not reflect the impact

of individual firm policies. In order to capture the range and extent of differences in capital accumulation, distribution and practices across multiple offices, and the unobservable components of wage variation, measures of dispersion have been employed. Results, based upon employment weighted regression, imply that in the context of estimated person effects, reflecting the likes of gender and educational affiliation, the most skilled workers have a disproportionate influence on productivity, as is the case with experience effects. A fact brought to light is that even after regulating physical assets, the seemingly unperceived aspect of human capital, the personal effect, leaves the maximum impression on the market value.

Sgontz (1982) explores the impact of income tax on investments in human capital and the credibility of certain propositions made regarding the same, the most important among which is that individual income tax favours human over physical capital. The basic model put forth for the purpose of this study assumed that wages earned by the fixed labour units are earned in two distinct periods of time: one which witnessed the lack of human capital investment, and the other which experiences its reality, causing the wage rate to increase at a diminishing rate in the latter. Mathematical variables provide a concave utility function to be

maximised for the analysis. It is observed that progressive tax has an ambiguous effect on human capital investment, even when out-of-pocket human capital cost is considered null, which cannot be inferred for proportional taxation. In the case of the latter, in the absence of out-of-pocket human capital costs, a positive correlation is seen between taxes and investment in human capital as an upward trend in office hours was triggered, provided costs are a small proportion of foregone earnings as that is the primary cost. On delving into the influence of income tax upon the labour supply, the significant trend followed is the inverse relationship between leisure and human capital investment.

Therefore, as long as the amount invested in human capital could not have been put to better use, and the opportunity cost (profits foregone from other areas of investment) is less than the profits incurred from investment in human capital, income tax does favour human capital investors.

2.3 Role of Technology and Artificial Intelligence

Kim (2018) sheds light upon how the World Bank Group endeavoured to come up with a sustainable source of livelihood for the poorest strata of society with assistance from technology. Goals were set to eradicate extreme poverty by 2030 and inequality by boosting the wages of the bottom 40%, which was pursued through three channels. The first was to bring equitable and long term economic growth, and do what the group is renowned for - growing economies. The second way was to protect individuals against natural disasters, climate changes, pandemics and of the sort, including social protection. Lastly and most importantly, Kim acknowledged that the impact of health and education on economic growth cannot be substituted with any other variable, owing to which investment in human capital is of the absolute essence. He emphasises the fact that economies would be incapable of growth and resilience cannot be fostered against unpredictable accidents without human capital, which is the most important area of investment. To encourage countries to invest in their people, the Human Capital Index was introduced, which ranked countries in accordance with the quality of human capital investments. This index reflects whether children will survive until they're of schooling age, be able to receive formal education and graduate in good health, making them a good fit for the labour market. The World Bank Group implies a sense of urgency in their appeal to private and public innovators to design a technology that may specifically be employed by the most vulnerable of the lot - an alliance or social contract of sorts between the said technologies and human capital, which display the calibre to be a game-changer especially by creating jobs in under-developed and developing countries by accommodating every unit of human capital into the global economy.

Joshi (n.d.) recognizes the possibility of replacing labour allocated to clearly defined repetitive jobs, the ones which are carried out with utmost consistency leaving no room for elements of surprise, with robotic software and artificial intelligence in the constantly evolving sphere of technology. This could prove to be a blessing for the labour force, as it rescues individuals caught in mundane work that requires none of their specialization and all of their time, which could be better used coupled with their discipline of expertise. However, just as easily, it may prove to be a curse in the wrong hands, or even if too much power is given in the bot's hands. He identifies the challenge to be collaboration between man and machine, more than the machine-induced exhaustion of man's involvement on the whole. This hybrid model shall account for a pivotal change in the history of offices bringing about several modifications particularly in the division and description of responsibilities and management of this idiosyncratic employee. He addresses the avenues that cannot be substituted with machines for a long time, and may never be - tasks that seek cognitive and emotional abilities such as problem finding and empathizing because Joshi feels that this may as well be the only thing that will distinguish man from the machine at the current rate of technological advancement.

2.4 Bringing Human Characteristics Into Play

Khadria (2007) propagates the fact that certain intangible human values may yield tangible results that can be measured by the average productivity of labour, the dearth of which is felt across India. These intangible assets have the capacity to nurture investment in the accumulation of human capital by acting as social collateral. A form of unsecured public investments, social capital constitutes trust, commitment and loyalty. Coupled with providing low-interest micro-credit to families classifying as poor, a three-tiered strategy is charted out.

The first step is to trust that a promise of repayment made shall be kept. Second, in case of failure to do so, they must compensate in kind by committing to providing an elementary education for their children. Thirdly, the child who qualifies as a human capital resource must pledge loyalty to India, wherein they contribute to its growth and development. However, a trend that's been noticed is that labourers like tea-stall owners would employ the free labour provided by their own child, rather than pay someone else. This consumes the time the child would've otherwise spent in school, which may be helped by provisions of collateral free long term credit to the supply side of the child labour market. At a time when most of India's abundant resource lies idle while the rest flee to innovative markets, harnessing the excessive amounts of human capital across the country, as suggested by the author, would create a reliant econo not only for the residents of the country but also to attract global players, reversing historic roles.

Singh (2010) strongly believes that emotional intelligence, a discipline of escalating importance, is a pivotal factor in enforcing workspace efficiency. She demonstrates this concept through the elements of self-awareness, commitment, resilience, optimism, compassion, interpersonal connectivity, personal integrity, and emotional regulation. To explore its relationship with emotional intelligence, Singh brings four specific dimensions of personal competency into play and proposes hypotheses in which emotional intelligence is significantly positively related to self success - the management of one's own emotions and boundaries, people success - effective communication in and maintenance of interpersonal relations, system success - facilitation of a united and integrated workforce, and task success - individual ability to work. She aims to understand the influence of this fairly understudied concept in the field of business organizations in India. Through a paradigm, she suggests that these dimensions (independent variables) lead to emotional intelligence (dependent variable) and this, in turn, enhances human capital. She takes another step in the same direction and delves into how these organizations may attempt to use emotional intelligence to their advantage, by eliminating any barriers that hinder their advancement. Based on stratified random sampling, a survey using the Likert Scale was circulated at a managerial level, yielding 378 responses. Section-wise, this survey probed into personal details, the eight elements of emotional intelligence, and the four dimensions of personal competencies, which displayed a Cronbach Alpha (reliability coefficient) value of 0.81 and 0.79 respectively. A high mean score was observed for emotional intelligence implying its reality. After running multiple regression analysis on the data collected, emotional intelligence was attributed to people, system, and self success, while a feeble connection was drawn with task success. Therefore, Singh puts forth a unique way of investing in and thus boosting India's white-collar human capital - which may even be employed internationally to bolster performance.

Westover (2021) sheds light on how even before the pandemic struck, businesses were looking for channels to inspire innovation which can only be sustained through one asset - human capital. However, the author strongly believes that if human capital is to continuously drive innovation, it is imperative that they're naturally inclined to the job which can be ensured by work organisations by providing an uplifting workspace to its employees that encourages them to put their best foot forward. Diversity induces not only

innovation through creativity, but also heightens the degree of collaboration, the ease of decision making and productivity of the team as a whole as it requires a critical evaluation of each perspective put forth, before taking an informed decision- highlighting not only social and cultural diversity, but also of thought. This will only be made possible by an empowered leader, one who dignifies his subordinates and pushes them to strive for better facilitated by a safe, inclusive environment. On achieving the goals of fostering diversity, equity and inclusion, the workspace qualifies as "belonging", which is the ideal atmosphere for human capital to thrive. The author acknowledges that while the fundamentals of pay equity and strategy development are essential to business growth, it shall all be futile unless human capital potential is maximised simultaneously.

2.5 An Amalgamation of India's Case Studies

Shukla (2017) empirically investigates India's interrelation between economic growth and human capital, for which she employs the tools of GDP (in current USD), per capita health expenditure (in constant 2011 international USD), secondary school enrollment (as a percentage), and gross capital formation (in current USD). After extracting the required data from World Bank and OECD national data files, she studies the Indian economy through time- series analysis from 1995-2014 and runs multiple linear regression models built on the neoclassical Solow production function, and it must be noted that the logarithmic has been taken into account for each value. For convenience purposes, she proxies the values of human capital with healthcare expenditure. She proposes a null hypothesis that there is no significant relationship between India's economic growth and human capital. The correlation between GDP and per capita expenditure on health and secondary school education was obtained to be a strong positive at 0.98 and gross capital accumulation at an even higher 0.99, reflecting the direct positive impact these three independent variables have on the dependent variable in review - India's GDP, wherein secondary school education has the maximum impact. Said variables were responsible for 99% of fluctuations in the real GDP over this period as attested by the regression analysis. The F-Statistic in ANOVA also indicated that these variables were imperative to the
growth of the Indian economy. Therefore, the null hypothesis was rejected as the importance of the advancement of human capital was elucidated to boost economic growth in India.

Bhowmick and Yadav (2019) contrive indices to numerically reflect the progress in the field of public education on a state-wise level across India, within the framework of the Sustainable Development Goals (SDG), Goal 4 in specific, which talks of quality education. To get a comprehensive idea of the extent of development in the field and estimate a single metric value, we employ the eight parameters listed in the attainment of SDG - Goal 4, constituting people per educational institute, literacy rate, gross enrollment ratio for primary, secondary and higher education, student to teacher ratio, student dropout rates and the ratio of NAAC accredited universities. The data has been collected from the National University of Education Planning and Administration (NUEPA) and District Information System for Education (DISE) among other sources. Weights are assigned to each of these parameters by the Principal Component Analysis (PCA), through which composite indices corresponding to each state are obtained. These findings reflect that in the avenue of public education, Delhi leads while Jharkhand is barely keeping up. This study has gained popularity over NITI Aayog's construction of SDG 4 indices, as it provides a holistic and robust expression. The results also attest to the fact that south India seems to be doing a far better job in comparison to the north, and that rural areas lack investment in public education, which can be attributed to factors ranging from the absence of quality training for teachers to the exemption from Teachers' Eligibility Test (TET). They further inspect the work done on account of the national education policy

over the last two decades and explain Delhi's first rank as the aftermath of the policies implemented by the state government, which clarifies a link between guidance at a political level and the development of public education. A special mention must be made of Kendriya Vidyalaya Sangathan (KVs) which is operated under the Ministry of Human Resource Development (MHRD) in Delhi but has institutes set up across the country, which schools children of transferable employees of the central government, setting a good example for the rest of the country to emulate.

Jensen (2010) scrutinizes the domino effect of an increase in female human capital investment brought about by increased female employment opportunities. This is done based on randomized intervention across India, which endowed the percentage of the female population in randomly selected rural areas with recruitment services in the Business Process Outsourcing (BPO) sector from 2003-06. The female population in question referred primarily to those at the younger end of the spectrum with a basic secondary school degree, a qualification that ruled out a vast majority. Since this was a fairly new sector, there was less awareness regarding the job accessibility and description especially beyond urban regions under which Jensen killed two birds with one stone - provided employment opportunities to women and simultaneously conducted his study. An important element of this study is that it eliminates omitted variable bias (influenced by the stipulated role of women in society), relying less on assumptions as a consequence of randomization and making a strong case. To carry out the process, 8 Delhi-based recruiters were hired with at least 2 years of experience in the field, of which a minimum of 6 months must have been spent recruiting women in particular. After selecting 20 households in each of the 80 treatment and control villages, the former would receive recurring visits by the recruiters providing them with all necessary information. On exploiting the panel data obtained, the presence of the said domino effect has been declared. Further, children and adolescents who received these recruiting services were significantly more likely to be receiving a formal education, experiencing an increase in their Body Mass Index, implying the positive benefits of job opportunities across other domains of human capital investment, such as literacy and nutrition. The lack of demand for employment must be acknowledged as a limitation observed by parents to invest in their girl child simply because they do not see potential returns. The relevance of this study is highlighted by the fact that India's service sector is rapidly growing.

Kar (2013) investigates whether development in human capital simultaneously stimulates an inflow of foreign direct investment, the effects of direct and indirect spillovers of FDI on human capital development, through a time series analysis and a state-wise cross- sectional study. The data required, consisting of important macroeconomic aggregates such as the real and nominal GDP at market price, percentage changes in annual FDI, exports, imports and inflation in the wholesale price index, was obtained from RBI's Handbook of Statistics on

Indian Economy. The data evaluating human capital development was sourced for Analysis of Budgeted Expenditure on Education and UGC Annual Reports among other credible sources. An analysis of two time periods, pre (1990-91) and post (2008-09) liberalization, was carried out using three focal tests: the Dicket-Fuller test, Granger causality test and multiple regression analysis. The human capital formation, represented by the number of educational institutions across the said selected regions in the country and the expenditure on higher education, showed a positive correlation with FDI inflow, which was also established to be sensitive to growth of GDP and net exports, and inflation. An unidirectional relationship exhibiting a passive influence of FDI in driving the development of Indian human capital has been found in the form of the change in annual student enrolment measured as a percentage, or higher government expenditure on public education. Maharashtra was calculated to have the highest cumulative inflow of

FDI, while Bihar stood last among 16 selected regions. Having said this, it must be acknowledged that the number of schools and universities didn't seem to play a deciding role in the zonal distribution of FDI inflows. In the short run, there stands a possibility of crowding out of infrastructure investment which fuels FDI inflow because of the expenditure on primary education.

Edmonds, Pavcnik, and Topalova (2010) aim to analyze whether trade liberalization has an impact on human capital, by studying the effects of India's 1991 trade reform on children's education and labour, which essentially constitute human capital investment. The paper explains that through this reform, the unforeseen cut on import tariffs to bring them within a certain ballpark caused a loss of labour protection in protected industries. To study this, the cross-industry range of the extent of decrease in tariffs coupled with the employment structure across India's districts, wherein each state and territory was further divided into districts to ease the procedure, was empirically delved into. The next step was to contrast changes in tuition and child labour in districts with high reductions in tariff protection on employment, with those with a low one. For this purpose, each household is assumed to have one adult, one child, and one decision-maker. Variables such as schooling costs, economic contribution, income when the child is and isn't in school were brought into play, for which 1987-88 (pre-reform) and 1999- 2000 (post-reform) data were retrieved from India's National Sample Survey. In rural districts where a considerable fraction of labour was employed in industries that witnessed a drastic change in output tariffs, there's relatively a negligible increase in class attendance, more so for females, and low literacy levels - which does not apply to those who would have graduated by 1991. These findings stood the test of uniformity across different approaches, deployed to ensure that the effects of other coinciding labour market reforms had been avoided. In districts that were more sensitive to the said reforms, tariff declines are directly proportional to schooling when the former is associated with a rise in poverty, the opportunity cost of schooling incurred due to child labour, and a decrease in returns to education. The recognized trends have been attributed to the endogeneity between education and poverty, which indicates that the child's increasing economic contribution decreases school attendance. Funds required for an expensive education pushes them to work leaving no time for attending school. The fact that especially girls engrossed in domestic work (not earning direct economic profits) face the most extreme changes in education clarifies how short-term adjustment mechanisms influence the literacy, education, and present and future employment prospects of the cohorts, which is imperative to grasp the concept of human capital investment.

Garg, Jagnani, and Taraz (2018) assess the degree to which the temperature influences India's human capital. Two approaches are employed for this purpose, examining the relationship between cognitive scores and agricultural productivity respectively. For the former, data is obtained from the Annual Status of Education Report (ASER) and Young Lives Survey (YLS). While ASER conducted a survey through 2006-14 in the form of math and reading tests across 4.5 million children aged 5 to 16 years, YLS only surveyed Andhra Pradesh through 2002-11. They did so in two sets: children born in 1994-95 and 2001-02. Naturally, the tests for both age groups differed and were age-appropriate. Weather data was collected for the regions

corresponding to those in the surveys. However, owing to inconsistencies in documentation, data from ERA-Interim Archive has been employed. Through the binned method, the authors interpret the ASER data and infer that test performance decreases with an increase in temperature beyond a certain level. It must be noted that the findings from both sets of data are similar, passing the test of robustness and validating the findings, even though ASER captures only the left-tail while YLS is more comprehensive. Village Dynamics in South Asia Meso data set

provided the agriculture data, constituting the district level records from 1979-14 of annual agricultural acreage, production, yields, and prices per cop. Aggregate price-weighted district level values have been computed for 6 major crops and 5 additional monsoon crops, which reflect that yields are highly sensitive to heat, particularly in its peak - the same season which sees a comparatively low test score trend. Heat-resistant crops have been introduced as an effective solution to this problem. Further, the domain of heat stress is explored, stating that even though a hot day may not cause fluctuations in human capital performance, repeated exposure to heat definitely will. To analyze whether social protection programs can eradicate this loss in efficiency, the marginal effect of an extra hot day (considered above 21◦C for the research) over the same district is estimated before and after the implementation of the National Rural Employment Guarantee Act (NREGA), the largest workfare across the globe. It was proven that NREGA dilutes the consequences of heat across all models - cognitive and agricultural. This study discovers the fact that regional climates are one of the several factors that mould its human capital.

2.6 Evidence from Other Countries:

Comparative Studies of India with its Contemporaries

Sharma (2019) aims to achieve a three-fold objective by drawing an empirically backed parallel between India and China's human capital and its involvement in their respective economies. First, she strives to understand the progress through 1970-2016 in two essential domains of human capital: health and education. To facilitate this understanding, she develops indices for each of these components using Principal Component Analysis (PCA), following which she analyses their rank with respect to South Asia. The instruments employed for computing the health index include life expectancy (LE), public health expenditure (PHE), access to health care (AHC) and out of pocket expenditure (OPE), while for the education index, we consider the front of accessibility - measured by literacy rate (LR) and several patent applications by residents (PA), and attainment - measured by the fraction of the population that exceed 25 years of age and has completed upper secondary education (EDU), and data for the same was sourced from World Bank. Second, the paper explores public health expenditure as a veiled indicator of economic growth, which is attained by conducting the Engle-Granger Causality test using the Vector Autoregression or VAR model, directly clarifying the correlation between economic growth and public expenditure in the healthcare sector. Third, an examination of the relationship between human capital and growth in both economics is established by means of an endogenous growth model with human capital determinants such as the previously calculated education and health indices as inputs. Both indices constructed for China reflect a decline which commenced in 1989 for education and 2001 for health, while both of India's reflected an upward trend from 2003 and 2005 for health and education respectively. The findings for China suggest that its indices are not decided by the previously listed indicators, an inference that contrasts with that of India and other South Asian economies, as the same indicators show a consistently positive correlation in both spheres. Further, there's a direct one- way relationship between public health expenditure and economic growth which follows that the latter boosts the former. The endogenous growth model proves that India's per capita income is considerably sensitive to only the health index, not the education index as opposed to China in whose case both have a negligible effect. This brings the stage of economic growth China's currently at to light where increased expenditure on determinants of human capital shall not cause much of a shift in per capita income, wherein India is still subject to changes.

Abbas (2000) conducts a comparative study of human capital's contribution to economic growth between the Indian and Pakistani economies. The main objectives of this research are to estimate and further analyse the impact of, firstly, human capital on the growth of five countries taken in a sample as both a

stock and flow variable, secondly, effective labour input on economic growth. It also explores whether human capital draws physical capital. Data has been retrieved from the World Bank, the UNESCO and United Nations Asia-Pacific Yearbooks, and International Labour Organization (ILO). To evaluate human capital as a factor of production, standard growth accounting methodology has been used wherein schooling enrollment rates (SERs) have been used as a proxy for human capital and gross investment rates represents physical capital. A principal assumption in this study of human capital is that the return on investment is directly proportional to its stock, which yields constant returns to scale. Regression analysis using the Ordinary Least Square (OLS) method has been obtained. Findings suggest that primary school enrolment rates influence the growth of only the Indian economy while secondary SERs influence the economic growth of both India and Pakistan. The further analysis depicts that higher SERs not only positively boost the Pakistani economy but retard India's economic growth. The next segment of this research examines whether human capital encourages the accumulation of physical capital, for which labour input is used as a substitute for human capital which is then coupled with employment to create efficient units of labour. On interpreting the results, physical capital is established to be an additional channel through which human capital is imperative for economic growth in the case of both countries in question.

Therefore, this study indicates that if physical capital is invested in the education sector, human capital will see an expansion in both countries, driving economic growth.

2.7 Human Capital in the Post Pandemic Epoch

Ahmed (2020) focuses on a particular impact of the coronavirus - temporary suspension of education services provided to millions of children globally. To create an incentive for parents to send their children to school, multiple services were launched including arrangement of midday meals and clean drinking water, mineral and vitamin supplementation, vaccinations to list a few. Since social distancing has been implemented, children not only lose out on basic health and nutritional amenities, but also their education on account of affordability of sufficient food, good healthcare, internet services and technological devices. Therefore, these disruptions cause fatal loss of human capital as the pandemic has a negatively escalating impact on arguably two of its most important determinants. With a global average of 0.56, World Bank's Human Capital Index of 2020 reflects South Asia's score of 0.48. This indicates that not even half of the region's potential capacity is being exercised, leaving so much of a scope for improvement that an efficient utilization of its human capital shall result in a GDP per capita value that exceeds double its value in the present day. On a long run simulation through the years 2020-40, COVID- 19 seems to be responsible for the abolishment of an entire percentage of the global human capital, most of whom are likely to be girls residing in low-income economies belonging to a

minority group and/or having a rural background. However, alongside the loss of education and source of income, the most dangerous consequence has been undernutrition across millions of people which in turn affects their ability to receive education and provide salaried services, tangling the world in a catch 22 situation.

McGowan (2020) postulated the onset of the global pandemic to be a catalyst in business transformations from analogue to digital workspaces - one that's proved to be more of a revolution - inciting her to believe that human capital is the most reliable leg of the economy in the domain of sustained value creation. She attributes the dawn of this realisation to her own experiences, where she encountered several individuals in different positions, who went from resenting the online mode of professional engagement to advocating for it. This drastic switch spoke volumes on the human ability to adapt, especially in these unprecedented

times as the fundamentals of work across all institutions from education to business were restructured. While there is still the element of uncertainty concerning the future, clarity prevails upon the fact that while the human race may reminisce pre-pandemic days, far too much of evolution has taken place in the domain of human capital to, in a way, degrade its way of work. Increased ease in the delivery of education and in the way of doing business has been exploited to yield maximum potential, fuelling the credibility and resilience of human capital which has time and again proved to be ever-evolving in the face of never-exhausting boundaries. Essentially, since these innovations are the brainchild of the constantly reskilling human capital, McGowan believes we're exiting the Shareholder Value Era and entering the Human Capital Era, wherein the greatest investment of all time aren't businesses but humans themselves. While, in the long run, the former valued investors or customers, the former will tend to their investors by focusing on their customers creating long term value that can seldom be lost.

2.8 Summary

By means of this highly comprehensive review, the objective of this research has been satiated as the answers that were sought after have been found. Studies suggest that an investment in the healthcare sector is arguably the most important investment, not to mention the one with the highest return, as it lays the very foundation upon which humans are able to provide services. Even the sheer acquisition of skill cannot be carried through in ill health. It has been learned that health fuels human capital, by capacitating it to excel.

Businesses, naturally, wish to use the ablest human capital that to offer, as it drives the productivity and market value of the firm. Incentives are offered to prospects, preferably those that are distinctive characteristics of each firm, so as to attract and retain the most efficient employees. Moreover, unskilled and skilled labour has already been distinguished, but upon analysing the myriad of skilled labour, an element of heterogeneity has been reflected. Each unit of human capital is influenced by their individuality as well as their experience, which shows up in the delivery of their services disproportionately. Income tax, too, is seen to be supporting the investments in human capital so as long as the opportunity cost of foregone investments is less than the profits incurred from the current investment.

In the plethora of time-saving approaches gifted to us by technology, the fear of a decline in human capital value lingers. However, fresh perspectives have surfaced through the selected studies, wherein an alliance of the two is suggested to get the best of both worlds, which can not only help curb the loss of human capital potential and its prolonged underdevelopment in rural regions but also boost the efficiency of developed human capital in urban areas.

Though a factor of production, humans cannot separate their sentiments from their being. Researchers believe that this very tool, which makes human capital unique, can be used to stimulate competence. This may be achieved by utilising social capital, accomplishing emotional intelligence, and inducing acceptance, inclusivity and warmth in workspaces to bring out the best in human capital.

India's economic growth is sensitive to the increase in human capital. Owing to high levels of income inequality, public education is crucial to development, which Delhi is tackling well. Gender disparity takes away from economic opportunities available to the female population of the country, which must change as surveys show that they have the power to contribute immensely to the GDP growth of the country as they account for idle human capital. An increase in the FDI inflow in India has also tugged on the strings of human capital development. The 1991 trade reforms compelled those who were negatively impacted to send their sons to work and keep their daughters at home to help with the domestic work, which naturally restricts the growth of human capital. Even India's geographical location hinders the augmentation of

human capital, as it has been proven that the heat tends to reduce performance elongating the list of indicators of climate change.

On gathering evidence from other countries, a contrast is observed with China and similarities with Pakistan. Since the Chinese economy's labour force is colossal, the human capital seems to be negligibly affected by education and health, which have the potential to elevate India's human capital. Pakistan, on the other hand, is seen to benefit from mass secondary school education whereas India gains from mass primary school education, both of which simultaneously requires physical capital.

The report would be incomplete without weighing the consequences of the pandemic. Children have been deprived of an education - a plague in disguise for the future of human capital. As far as today's resources are concerned, pivotal alterations have been brought about in workspaces proving to mankind, once again, that it - human capital - has been endowed with limitless aptitude, yearning to be unshackled, to conquer any sort of a hurdle in their path and redefine the glass ceiling.

2.9 Research Gap

First and foremost, it must be noted that the other factors of production, like the number of machines, and areas of investment, like bonds and assets with a fixed rate of return, can be enumerated, unlike human capital and its return on investment. Though there are a plethora of formulas and indices employed as proxies to get a precise measure of human capital, each comes with an anomaly. For example, a variety of papers have used school enrolment rates as a depiction of human capital. However, it overlooks the quality of education offered and does not account for failures and dropouts. While receiving a formal education is definitely the first step towards investing in the education of human capital, it is equally important to commit to delivering at least a decent pedagogy, which is received with engagement. Similar is the case for employment rate, as it does not reflect those who have resigned or been fired.

Furthermore, a predominant obstacle in the path of collecting data is having a testament to its authenticity, but even on deploying the said measures, the accuracy of the figures obtained is disputable. More so in the case of India which has time and again exhibited missing or unreliable data.

In the context of India, an unfortunate but relevant gap is in the provision and acceptance of healthcare, which is yet to be explored. While there is a lack of sufficient hospitals and nursing homes at an affordable cost in the rural areas, there is also the dearth of acceptance of the same, as individuals choose to vest their faith in superstitions over science. This backward mentality is also responsible for keeping a significant proportion of human capital prospects away from educational institutes, as girls and women are restricted to the four walls of their homes, tending to odd jobs. Therefore, transcending these boundaries is a sure-shot way to witness a surge in the development of Indian human capital but no study has been conducted in this sphere yet.

3. Research Hypothesis

The primary aim of delving into the concept of human capital is that India is a labour- intensive country. If human capital truly harnesses the potential to revolutionize not only the growth but also the development of any economy, India has been dealt a better hand than she knows. Being the second most populous country in the world may take the country to a greater height than it has already brought it.

This study tests the null and the alternative hypothesis that is stated below:

H_0: There is no significant relationship between human capital and economic growth in India. H_a: There is a significant relationship between human capital and economic growth in India.

4. Methodology

The Harrod-Domar model is a growth model used in development economics that states an economy's growth rate is dependent on the level of saving and the capital output ratio. The Solow Growth Model, developed by Nobel Prize-winning economist Robert Solow, was the first neoclassical growth model and was built upon the Keynesian Harrod-Domar model. The Solow model is the basis for the modern theory of economic growth.

The economic growth model used in this study is based on the neoclassical Solow production function that included a new term: productivity growth. The standard Solow model predicts that in the long run, growth is achievable only through technological progress.

According to Solow's formulation, economic growth is a function of capital accumulation, an expansion of labour force and "exogenous" factor, technological progress which makes physical capital and labour more productive, which is:

Yt = (Kt, At, Lt)

Where,

Yt = Aggregate real output K = Capital stock

A = Efficiency factor t = Time dimension L = Labour

By adding human capital (H), this model can be modified like this:

Yt = (Kt, At, Lt, Ht)

4.1 Variables

In this multiple regression model, we deploy four variables, of which one is dependent upon three independent variables.

1. **Dependent Variable**

a) Gross domestic product (GDP) in current US$

GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Data is in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates.

2. **Independent Variables**

b) Current health expenditure per capita in current US$

Total health expenditure is the sum of public and private health expenditures as a ratio to the total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include the provision of water and sanitation. Data are in international dollars expressed in current international dollars converted by purchasing power parity (PPP) conversion factor.

c) Gross secondary school enrolment percentage rate

The gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. This data is converted to a percentage before being used in this research paper. Secondary education completes the provision of basic education that began at the primary level and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers.

d) Gross capital formation in current US$

Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes

in the level of inventories. Fixed assets include land improvements, plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.
Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and work in progress. This value is taken in current international dollars.

5. Data

The chosen data must represent the relationship between the human capital harboured by India, and its' economic growth.
Economic growth is an increase in the production of economic goods and services, compared from one period of time to another. It can be measured in nominal or real (adjusted for inflation) terms. Traditionally, aggregate economic growth is measured in terms of gross domestic product (GDP), although alternative metrics are sometimes used, which is why GDP has been used to reflect the degree, or lack, of economic growth in India.
The primary determinants of the productivity and ability of human capital to yield even satisfactory results are health and education. For one to live up to their true and highest potential, they must, first, be physically fit such as to show up every day and not let illnesses get in the way of their work, and secondly, must have received a fairly formal education that equips them with the knowledge of how to maximise their potential to reach the peak of their innovative capacity.
To meet this requirement, the data employed for the purpose of this research is a) the gross domestic product (GDP) in current US$, b) the current health expenditure per capita, PPP, in current US$, c) the gross secondary school enrolment percentage rate and d) the gross capital formation in current US$. Secondary data in the form of a time-series panel has been employed, which has been collected from World Bank for the years 2000 through 2019.
The analysis begins from 2000 data owing to the lack of consistent concrete data prior to that year, and is limited to data pertaining to 2019 as it enables the reader to understand the impact of human capital on economic growth in a world that hasn't yet been struck by the COVID-19 pandemic.

Year	Gross Domestic Product (current US$)	Current Health Expenditure Per Capita (current US$)	Gross Secondary School Enrolment %	Gross Capital Formation (current US$)
2000	468394937262.37	86.04083	44.87197876	124963943791.79
2001	485441014538.64	95.7055	45.15169907	129410797553.55
2002	514937948870.08	98.70042	47.07345963	140140983431.84
2003	607699285433.87	100.8316	49.62504959	179294199593.06
2004	709148514804.66	108.558	51.37184906	255910249326.76
2005	820381595512.90	113.845	53.96905899	312366794089.48
2006	940259888792.14	118.7769	54.88293839	365735732874.40

2007	1216735441524.86	126.2429	57.27587128	510187231406.81
2008	1198895582137.51	131.0163	60.35649109	453788571686.06
2009	1341886602798.69	138.7492	59.61365128	538260718696.06
2010	1675615335600.56	141.3487	63.11619949	673937494728.09
2011	1823049927771.46	145.8799	66.2507019	721753149505.41
2012	1827637859135.70	161.845	69.01283264	700851886840.25
2013	1856722121394.53	189.618	68.75911713	631716319495.18
2014	2039127446298.55	189.4438	74.1415329	698764229553.43
2015	2103587813812.75	196.4977	73.8656311	675603621332.79
2016	2294797980509.01	204.6466	75.09179688	692402319121.17
2017	2651472946374.91	181.5291	73.47688293	821484008553.72
2018	2701111782775.03	195.565	74.37950897	866245244565.61
2019	2870504096717.77	211.0022	73.79296875	880214080289.10

Source: World Bank

6. Results & Interpretation

Correlation

	Gross Domestic Product (current US$)	*Current Health Expenditure Per Capita (current US$)*	*Gross Secondary School Enrolment %*	*Gross Capital Formation (current US$)*
Gross Domestic Product (current US$)	1			
Current Health Expenditure Per Capita (current US$)	0.95441038	1		
Gross Secondary School Enrolment %	0.963158226	0.973017093	1	
Gross Capital Formation (current US$)	0.970036028	0.910767895	0.957303522	1

The above table shows the result of correlation analysis among all the variables used in the study.

- The correlation between Gross Domestic Product and Current Health Expenditure Per Capita is 0.95.
- Gross Domestic Product and Gross Secondary School Enrolment have a higher correlation of 0.96.
- The highest correlation is between Gross Domestic Product and Gross Capital Formation at 0.97.

Evidently, the dependent variable of Gross Domestic Product has a strong, high positive correlation with all three independent variables. It is remarkable that even the lowest correlation, in this case, is a phenomenally high value for positive correlation in general.

In other words, each of the three independent variables are directly related to the gross domestic product such that as the former improves, so will the latter. If the expenditure on public health, the number of people receiving a formal secondary education, and gross capital formation increase, the gross domestic product is bound to be influenced in a similar manner and reflect an increase too.

Regression Statistics

Regression Statistics	
Multiple R	0.986350701
R Square	0.972887705
Adjusted R Square	0.967804149
Standard Error	1.41158E+11
Observations	20

The above table reflects the results of regression statistics of the variables employed for the purpose of this study.

- The value of Multiple R is 0.986 or 0.99.
- R square stands very close behind at 0.972.

The above numbers clearly indicate how well the line of regression fits the data, making the model statistically significant.

The R Square value also gives us an idea of the extent to which the independent variables influence the dependent variable. Thus, it can be inferred from the analysis that 97.2% of the variation in the dependent variable, gross domestic product, is brought into motion by the three independent variables, namely health, education and gross capital formation.

- Adjusted R Square is seen to be 0.967.

When more than one independent variable is involved in our analysis, the computation process inflates the R-squared. As the name indicates, the Adjusted R-Squared is the R-Square adjusted for this inflation when performing multiple regression.

Since a multiple regression analysis has been employed, the inference must be adjusted according to the adjusted R square value. Therefore, the accurate percentage of variation in the GDP brought about by the aforementioned independent variables is 96.7%. Only a little over 3% of the variation in GDP may be attributed to factors outside of the formed model.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	1.14401E+25	3.81335E+24	191.3793869	9.62898E-13
Residual	16	3.1881E+23	1.99256E+22		
Total	19	1.17589E+25			

The third field of examination is through an analysis of variance or ANOVA table reflected above.

- **F statistic equals 191.4.**

An F test elucidates whether a *group* of variables are jointly significant or not. The F value in regression is the result of a test where the null hypothesis is that all of the regression coefficients are equal to zero, and the model has no predictive capability.

The test decides whether added coefficients improved the model. If a significant result is obtained, then

the coefficients included in the model are said to improve the model's fit. If the null hypothesis is true, F value is expected to be close to unitary, or 1. Herein, a large F value means that the variation among groupmeans is more than one would expect to see by chance.

Since the calculated F value is roughly 191, we can assert that the null hypothesis doesn't hold, indicating that the dependent variables are important determinants of the economic growth of the Indian economy.

Regression Coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	96399961874	6.04581E+11	0.159449176	0.875310448
Current Health Expenditure Per Capita (current US$)	11567124210	3584801993	3.226712168	0.005273115
Gross Secondary School Enrolment %	-23315925131	19558383316	-1.192119244	0.250596306
Gross Capital Formation (current US$)	2.225047005	0.460095193	4.836057929	0.000182424

Finally, the numbers acquired through a multiple regression analysis are studied, with primary focus on the p-values shown in the above table.

If the p-value is below a certain threshold ($\alpha = .05$), the null hypothesis is rejected. It indicates strong evidence against the null hypothesis, as there is less than a 5% probability the null is correct (and the results are random).

- **The p-value of current health expenditure per capita is 0.005 or 0.01.**

Verbally interpreted, there's a less than even 1% chance that the current health expenditure per capita in an economy has no direct relationship with its gross domestic product, and the results are a product of random sampling error. Clearly, investment in health is integral to a healthy GDP value, as the latter mirrors the path charted by the former, and the null hypothesis is certainly rejected.

- **As for gross secondary school enrolment, the calculated p-value is 0.25.**

Presenting a contrast to the previous observation, a weak p-value is observed in while trying to understand the role played by education in influencing the GDP of an economy. This research does not make a strong argument in favour of school enrolment, and asserts that there's a 25% chance that an increase in GDP induced by an increase in school enrolment rates is not supported by a logical rationale, but instead by sheer chance.

- **The above table conveys a p-value of 0.0001 for gross capital formation.**

Once again a contrast to the previous observation (secondary school enrolment), but similar to the first one (health expenditure), an exceptional p-value is obtained by gross capital formation. This attests to how the probability is less than 1%, 0.01% to be exact, of the gross capital formation provisions have nothing to do with the produced gross domestic product, rejecting the null hypothesis once again.

7. Inferences

Ergo, as far as the health expenditure and capital formation are concerned, there's a less than 1% probability that the GDP numbers would rise or fall mirroring a rise or fall in the former by sheer random chance. Speaking of the secondary school enrolment rates, there seems to be a 25% chance that mirroring trends can be labelled coincidental. While that may be exponentially more than the probability of the other two independent variables, it's a fairly low probability to have without the current context.

As a consequence of all the applied econometrics tests pointing to the same direction, the null hypothesis is rejected and the alternative hypothesis is accepted. It has been proven that there is a significant statistical relationship between the independent and dependent variables, namely between health, education, capital formation and the gross domestic product generated by an economy, which behaves as a measure of economic growth.

8. Limitations & Scope for Further Research

The most blatant limitation of the research conducted for the purpose of formulating this paper is the fact that the world faced the onset of the COVID-19 pandemic in 2020, which radically changed life as it was known at its very root.

Since the virus began spreading like wildfire, the world shifted realities as the definition of human interactions was modified and digitised beyond the strangest dreams. Workspaces and schools shifted online, which enabled meetings to be conducts and even exams to be taken via the internet. This phenomenon has changed the stereotypical understanding of productivity, wherein some found themselves excelling in the comfort of their homes while others yearned for a professional space to bring out their efficient side.

How the pandemic has influenced productivity and innovation has not been covered by this research paper as it has barely been 2 years since the world began leading this new life, a window too small to give us a comprehensive idea of how human capital efficiency has been impacted, and how the ripple effect created by it would further show up in the economic growth. Immense scope lies in the exploration of this aspect of research.

It must also be noted that even though the source of data employed in this paper is the reputed World Bank, there is a possibility of it being inaccurate. In such an event, it may be attributed to various factors, such as genuine mistakes in data collection or even the deliberate reporting of false data by the data provider, which, in this case is India. Countries may skew their numbers in order to reflect an inflated measure of the well-being of its people and growth and development of its economy. This limitation goes hand in hand with using secondary data.

The shortcoming of inaccuracy may also be blamed on the fact that the data collected dates back to 2000. Since the data is 22 years old at present, it is safe to say that data measures and collection methods would have been revised multiple times in the course of this time period. Thus, data for different years may have been calculated differently.

References

1. Abbas, Q. (2000). *The Role of Human Capital in Economic Growth: A Comparative Study of Pakistan and India*. The Pakistan Development Review. https://www.pide.org.pk/pdf/PDR/200/Volume4/451-473.pdf
2. Abowd, J., Haltiwanger, J. H., Jarmin, R. J., Lane, J. L., Lengermann, P. L., McCue, K. M., McKinney, K. M., & Sandusky, K. S. (2002, December). *The Relation among Human Capital, Productivity and Market Value: Building Up from Micro Evidence*. Urban Institute. https://www.urban.org/research/publication/relationship-between-human-capital-productivity-and-market-value/view/full_report
3. Ahmed, M. A. (2020, September). *School health and nutrition: Invest now to build human capital, or pay more later*. Relief Web. https://reliefweb.int/report/world/school-health-and-nutrition-invest-now-

build-human-capital-or-pay-more-later
4. Bhowmick, S., & Yadav, V. (2019, September). *Human capital formation through public education: How fares India?* Observer Research Foundation. https://www.orfonline.org/research/human-capital-formation-through-public-education-how-fares-india-55555/
5. *Building human capital starts with health*. (2018, December). World Bank. https://blogs.worldbank.org/health/building-human-capital-starts-health
6. Edmonds, E., Pavcnik, N., & Topalova, P. (2007, February). *Trade Adjustment and Human Capital Investments: Evidence from Indian Tariff Reform*. National Bureau of Economic Research. https://www.nber.org/papers/w12884
7. Garg, T., Jagnani, M., & Taraz, V. (2017, March). *Temperature and Human Capital in India*.
8. Social Science Research Network. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2941049
9. Jensen, R. T. (2010, May). *Economic Opportunities and Gender Differences in Human Capital: Experimental Evidence for India*. National Bureau of Economic Research. https://www.nber.org/papers/w16021
10. Joshi, M. (n.d.). *AI and Human Capital*. Infosys. Retrieved April 2021, from https://www.infosys.com/insights/ai-automation/ai-and-human-capital.html
11. Kar, S. (2013, October). *Exploring the causal link between FDI and human capital development in India*. Springer. https://ezproxy.svkm.ac.in:2244/ehost/pdfviewer/pdfviewer?vid=1&sid=d8428ef2-cbaa-4f5f-a3ad-5faaf6d92fcf%40sessionmgr103
12. Khadria, B. (2007, March). *Social Collateral and Human Capital*. Economic and Political Weekly. https://ezproxy.svkm.ac.in:2197/system/files/pdf/2007_42/13/Social_Collateral_and_Human_Capital.pdf
13. Kim, J. Y. (2018, October). *Human Capital and Technology: Building the New Social Contract.*
14. The World Bank. https://www.worldbank.org/en/news/speech/2018/10/02/pre-annual-meetings-positioning-speech
15. Kryscynski, D., Campbell, B., & Coff, R. (2019, February). *Charting a path between firm- specific incentives and human capital-based competitive advantage*. Strategic Management Journal. https://ezproxy.svkm.ac.in:2244/ehost/detail/detail?vid=0&sid=e5543b94-bd6f-48d5-8b94-31ec470e191f%40pdc-v-sessmgr01&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=148337929&db=buh
16. McGowan, H. E. (2020, November). *The Coronavirus Ushers In The Human Capital Era*. Forbes. https://www.forbes.com/sites/heathermcgowan/2020/11/05/the-coronavirus-ushers-in-the-human-capital-era/?sh=42d760a22dda
17. Nandi, A., Deolalikar, A. B., Bhalotra, S., Laxminarayan, R., & Behrman, J. R. (2017, November). *The Human Capital and Productivity Benefits of Early Childhood Nutritional Interventions*. National Centre for Biotechnology Information. https://www.ncbi.nlm.nih.gov/books/NBK525244/
18. Sgontz, L. G. (1982, March). *Does The Income Tax Favor Human Capital?* The University of Chicago Journals. https://www.jstor.org/stable/41862423?seq=1
19. Sharma, P. (2019, January). *Role of Human Capital in Economic Growth: A Comparative Study of India and China*. Social Science Research Network. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3319224
20. Shukla, S. (2017, November). *Human Capital and Economic Growth in India*. Research Gate. https://www.researchgate.net/publication/338084619_HUMAN_CAPITAL_AND_ECONOMIC_GROWTH_IN_INDIA

21. Singh, K. (2010). *Developing Human Capital by Linking Emotional Intelligence with Personal Competencies in Indian Business Organizations*. Social Science Research Network. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2136095&download=yes
22. Westover, J. H. (2021, February). *The Importance Of Diversity, Equity, Inclusion, And Belonging In The Workplace: Maximizing the Human Capital potential of our people*. EBSCO. https://ezproxy.svkm.ac.in:2244/ehost/detail/detail?vid=0&sid=26dc8ede-bd14-4977-a49e f5887307293b%40sessionmgr102&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=148692701&db=buh
23. https://data.worldbank.org/indicator/SH.XPD.CHEX.PP.CD?locations=IN
24. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=IN
25. https://data.worldbank.org/indicator/SE.SEC.ENRR?locations=IN
26. https://data.worldbank.org/indicator/NE.GDI.TOTL.CD?locations=IN