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Impact Of Human Capital Development On Economic Growth: Evidence From Pakistan

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Abstract
This study attempts to explain how the GDP growth rate of a developing nation is influenced between 2001 and 2020 by factors like healthcare expenditure, enrollment or vocational training, and the literacy rate of the population. The overall purpose of the study is to identify these socio-economic determinants and their impact on economic growth using a multiple linear regression model. Some indicators of human capital development and their relation to the GDP growth rate were among the data generated from international and national statistical agencies employed in the analysis. By using the results we conclude that all 3 variables are significant and the best indicator is the literacy rate then healthcare spending and the last indicator was enrollment in vocational training. For instance, the change in the healthcare spending and the rise in literacy rate and participation in vocational training lead to an increase of 0. 68%, 0.28%, and 0. 281%. Equivalent increase in GDP growth rates as high as 45%. It also shows the relevance of these variables in economic development as it accounts for roughly 76%. 3% of the variation of the GDP growth rate. It implies that policies aimed at increasing the access and quality of health care services; increasing access to and quality of education; or improving career preparation for work can all have a positive and positive effect on economic growth. The paper ends with suggestions for further research that will explore the relation among extra socioeconomic factors and success in the economy of different countries and regions. This study contributes to understanding how the human resource development influences the degree of economic growth in developing countries.

Background: The economic history of Pakistan is marked by both prosperous and difficult times. Improving Pakistan's human capital—the driving force behind its long-term economic prosperity—is no easy feat for a developing nation like Pakistan. The health, education, and abilities of the workforce are all components of human capital, which has a significant impact on productivity and creativity. On the other hand, human capital development indicators show that Pakistan's economy is struggling due to a significant disparity (Malik et al., 2020).

In the last few years, Pakistan has faced the problem of poor education infrastructure. Based on the Pakistan Economic Survey 2021-22, the literacy rate is close to 62. 3%, where there are great differences between urban and rural regions, and between male and female. The standard of education is another problem, for instance, many educational institutions are deficient in the fundamental facilities and have untrained teachers. The Global Competitiveness Report 2020 made it clear that Pakistan was 125th among 141 countries in ranking the quality of primary education, which implies that the country has to do a lot of reforms (Wang et al., 2023). The skills of the workforce In Pakistan's labor market are not in line with the labor market demands. The majority of graduates are not in a position to meet the industry's demands, which results in a high unemployment rate among the educated youth. According to the Pakistan Bureau of Statistics (PBS), an unemployment rate of 6 has been reported. 5% in 2020, and the rate of the unemployment among the youngsters is more than 11%. The gap in career skills is partly caused by the obsolete curriculum and the inadequate vocational training programs that do not provide students with the skills that the market demands (Usman et al., 2023).

The health system and health results In Pakistan have a great influence on the human capital development. The World Bank data from 2021 points out that Pakistan's healthcare expenditure is nearly 2. 8% of GDP, is, in fact, the lowest among the developing countries. This underinvestment has catastrophic health consequences, such as a high newborn death rate and a poor life expectancy. According to Pata and Ertugrul (2023), Pakistan was rated 154th out of 189 nations in the 2020 Human Development Index (HDI) due to its low levels of health, education, and income.

These difficulties have formed a unified whole that has hampered Pakistan's chances of making the most out of its human resources for economic expansion. The problems that need to be solved by the measures are the education reform, the rising unemployment, and the health care difficulties. These problems can be dealt with by the policies that are made in order to improve the education, to match the skills of the workforce and the unemployment, and to the access of the health care. By enhancing human capital, Pakistan will be able to form a more productive and creative workforce, thus, the country will be able to achieve inclusive economic growth and the poverty will be reduced. The understanding of the complex links between

human capital development and economic growth is the basic for the formation of the strategies that would guarantee the sustainable development for Pakistan (Chien et al., 2022).

Keywords, GDP Growth Rate, Rate of Literacy, Spending on Healthcare, Participation in Vocational Training, Financial Progress, Human Resources

Introduction

Human capital development is a key part of the economic theory and policy, and it has a great influence on the economy of a country, thus, a nation's productivity and growth are primarily based on its human capital development. A person's health, talents, and skill set are all parts of their human capital, which also includes their education, training, and medical treatment. This human capital is the engine that propels economic growth through fostering innovation in both ideas and technology. The optimization of human capital is, for instance, indispensable in developing countries like Pakistan which have to put up with the sustainable economic growth and the pervasive socio-economic problems.

Pakistan's economic path has been fraught with a lot of problems in the development of human capital. Although there are some areas where the economy is still growing, the country is still fighting with the problems of low literacy rates, skill mismatches in the labor market, and the inadequate healthcare. The problems of absentection, tardiness, and overtime working are the main reasons of the poor use of the workforce and these problems, in turn, restrict the economic potential of a company.

It is critical to remember the dynamic relationship between human capital development and economic growth when drafting strategies that would lead to Pakistan's long-term development and prosperity. This study aspires to make conclusions on the relationship between human capital and economic growth by dissecting human capital into its component parts and examining the impact of factors like education and skill training on GDP growth. This research will build on quantitative analysis and data obtained from credible sources to offer practical insights to policymakers. Efforts to increase human capital would allow Pakistan's workers to take part in the country's inclusive economic growth that is planned for the future.

Problem Statement

Pakistan could overcome its economic problems by providing an increasing need for the development of human capital. Although there have been many attempts to enhance the education system, skill development and healthcare, the country still has a problem with the low literacy rates, the skill mismatches in the labor market and the inadequate healthcare infrastructure. The lack of particular qualities in the workforce is the factor that stops the effective use of the workforce and the economic growth. The understanding of the link between the development of human capital and the economic growth of Pakistan is of great importance now to come up with the policies that can resolve the problems and to establish the sustainable development.

Research Objectives:

The primary objectives of this study are:

1. The association between human resource development and economic progress in Pakistan is being studied.
2. Looking at how the components of human capital development, which are education and skills training, affect the economic growth in a country.
3. The sentence is about the process of assessing policy measures that can be used to promote the development of human capital and sustainable economic growth in Pakistan.

Significance of the Study

This study carries a lot of consequences for the policymakers, researchers, and practitioners who are involved in economic development in Pakistan. To understand the complex connection between human capital development and economic growth is a key task and it is important for many reasons (Wang et al., 2023).

The first thing that the study does is to present the data that demonstrates the importance of education, skills training, and healthcare in the economic growth. Through the identification of which human capital development factors have the biggest impact on the economic performance, this research can be used to give priority on the areas for investment and reform. To be precise, if education is proven to be the factor that is positively influencing the GDP growth, the new policies will be established in order to amend the accessibility and quality of education, thus, a more educated and talented work force will be created (Pata & Ertugrul, 2023).

Besides, the study also covers the skill mismatches that are already in Pakistan's labor market. The investigation of the influence of skill training on economic development stresses the need to make educational outcomes suitable for the market needs in the society. This results in the creation of the more effective vocational training programs and curricula that the graduates will be ready for the economy needs and so, the young educated will have the jobs and also, the jobs will be enough for them (Malik et al., 2020).

Besides, the study also touches on the role of healthcare in the human capital and hence, it shows the need of better health outcomes for the economic productivity boost. The healthier people are, they are able to be productive workers, thus they can be of good assistance in the economic growth. This thought can be the basis of the policies which are directed towards the improvement of the healthcare system and consequently the overall health of the people, which in turn will be used to develop the entire economy of the country (Usman et al., 2023).

Literature Review

The literature review chapter provides the background of the research and the theoretical frameworks that are related to human capital development and economic growth in Pakistan. Through the combination of the empirical studies and the theoretical perspectives, this chapter lays the theoretical foundation for the study. It critically examines the previous works, the gaps are discovered, and the research methodology is influenced by this.

Theoretical Frameworks of Human Capital and Economic Growth in Pakistan

According to the famous Human Capital Theory, the single most important thing somebody can do to boost economic production and prosperity is to get a better education and acquire more marketable talents. The Human Capital Theory was confirmed by a study conducted in Pakistan by Sultana, Dey, and Tareque (2022). The researchers found a positive and statistically significant correlation between levels of education and economic advancement. Overall economic development, technical innovation, and high labour productivity were highlighted as being mostly caused by education in the investigation. Second, according to Endogenous Growth Theory, innovations, economic expansion, and human knowledge advancement are all components of growth. In Pakistan, investments in human capital, especially in education and research and development, were uncovered by the same inquiry conducted by Qamruzzaman and colleagues (2021) on one of the ideas. This is extremely crucial, since it affects GDP growth. Improving upon Endogenous Growth Theory, the New Growth Theory clarifies how innovations in technology drive economic growth. Mubarik, Devadason, and Govindaraju (2020)—a Pakistani source that expands on this idea— discovered that the two most important elements linking GDP growth with human capital development were technological adoption and institutional quality.

When looking at how investments in human capital affect economic production, the two most important factors to evaluate are instructional reforms and technological transfer mechanisms. Putting these aside, the Structural Transformation Theory demonstrated that, when trying to predict a country's economic growth, nothing matters more than its structural composition. For the nation to develop sustainably, changes to the economic structure are required, especially the introduction of more appropriate industry. Pakistan might shift its emphasis from agriculture to the more important service and manufacturing sectors, according to research by Zhang et al. (2021), if the country invested in education and skill development. The importance of human capital in bringing about structural transformation is the driving force behind this change. Alternatively, according to Neoclassical Growth Theory, capital accumulation is a key factor influencing productivity. Thathsarani, Wei, and Samaraweera (2021) found that healthcare and education investments were the most important factors in Pakistan's capital acculturation and economic growth. The extensive research revealed that comprehensive policies for human capital development are crucial for ensuring sustainable economic growth.

Empirical Evidence on Human Capital Development and Economic Growth in Pakistan

The research conducted by Amna Intisar et al. (2020) revealed that the enhancement of the education level, particularly the secondary and tertiary ones, had the impact of the productivity and the more income, which in turn was the basic reason of economic growth. This underscores the fact that the policies need to be made to enhance the education system in Pakistan.
Another research carried out by Nathaniel (2021) was about the impact of skills development on economic growth in Pakistan. Their study showed that the investments in the skill training programs, especially in the areas with the biggest growth, are the reasons for the increase in labor productivity and the output growth. The study emphasized the importance of the interventions that would be focused on the skills mismatch in the labor market which will be done to improve the economic competitiveness and sustainability.

Besides, Uddin, Ali, & Masih (2021) investigated the connection between health results and economic growth in Pakistan. Their research discovered that the things that were required for the transition from the low to the high productivity sectors, which were manufacturing and services, were the investments in education and the development of skills. The research highlighted the importance of the policies that are formulated to enhance the skill upgrading and technological innovation to make the structural transformation and the economic growth and stability.
In addition to that, Rahim et al. (2021) studied the effect of human capital accumulation on the economic growth of Pakistan through the Neoclassical Growth Theory. The research done by the researchers also proved that the expenses on health and education was the primary reason for the economic growth and capital acculturation. This also tells that human capital development plans where are considered comprehensive, are the ones that can be assimilated to train the children in the way that Pakistan can be happy for a long time.
Also, the work of Rahim et al. (2021) is of great importance as he studied the impact of human capital accumulation on economic growth of Pakistan with the usage of Neoclassical
Growth Theory. This study proved that the expense on education and

Role of Education in Economic Development in Pakistan

Education is the vital factor in order to promote the economic conditions in Pakistan, affecting multiple aspects of innovation as well as human capital accumulation. The empirical researches have always shown the plus point effect of education regarding prosperity as well as the growth of the country.
According to Khan's (2020) research, a significant outcome was the strong as well as positive relationship among the education level. That is how, the importance of education in the development of labor skills as well as in enabling technological progress is improved. The same way, Aman et al. (2022) shows how the quality of the education affects the economic development

within Pakistan, indicating that the enhancement of education quality was related to the increase in human capital as well as later on the economic growth.
The research by Mehmood (2021) on the gender Inequality in education as well as its effects on the economic development, and it was found out that the closing of the gender gap in education would be a significant factor to the economic growth, as the female labor force will be taken into consideration and the productivity will be increased. The study done by Maneeduja and Yamaka (2021) indicated that the investments in education were the axis of the poverty and inequality reduction in Pakistan, and it was proved that the education was the factor that improved the income distribution as well as social mobility. Lin & Raza (2020) examined the role of education in technological innovations related to technology also industrial productivity and found that the higher the standards of education means the higher innovation capacity and competitiveness, which in turn leads to higher levels of industrial output as well as economic growth.

Importance of Skill Development for Economic Growth in Pakistan
The acquisition of skills is the initial step that paves the way for the improvement of productivity, competitiveness, and the economic growth in Pakistan in general. Research on the effect of skills enhancement on human capital formation and economic progress have proved that it is a vital part of the process.
According to Sutradhar (2020), the people who came out of the vocational training programs were more empowered to find jobs, especially in the sectors with the fastest growth rates. The research indicated by Shabbir et al. (2021) on the efficient apprenticeship programs showed that the skills of the participants were substantially heightened, and thus the labor productivity and the income were also improved.
McCartney (2022) believes that the other way of rephrasing the given sentence is: The connection of the vocational programs with the industry situations is very important to make sure that the graduates are given the skills that are needed in the market. Actually, as far as Tahir et al. (2020) are concerned, they have studied the entrepreneurship skill development programs and found that they have a positive effect on entrepreneurship and small business growth. Moreover, they have found out that the more the investment in skill development, the higher is the success of the business and the creation of job.
The research conducted by Aleem & Bowra (2020) Indicated that the soft skills training was signi for the workplace to be extra efficient as well as competitive, which might led to the growth in the economy.

Health Outcomes and Economic Prosperity in Pakistan
The research done by the Aman et al. (2022) on effect of healthcare access on the economic growth in Pakistan. This research revealed that the more.the medical facilities and the easy access to the services of health were, the more of the levels of Labor productivity and economic outcomes were.
One more research conducted by Hafeez et al. (2023), who examined the economic issues that are the reasons of malnutrition and the bad health outputs in Pakistan. Their experiments explained that malnutrition was the basic reason for the low Labor productivity and level of incomes, that's why, they took decision to tackle the nutritional problems for better economic growth In one of another research by Wang et al. (2020), the character of maternal and child healthcare in the economic development in Pakistan was investigated.

Researchers found that high levels of human capital accumulation, economic growth, and spending on maternal and child health programmes were the main drivers of good health outcomes. How infectious diseases impacted GDP growth in Pakistan was detailed in a research article by Abbasi et al. (2022). According to the research, disease outbreaks have a significant impact on both workplace productivity and income levels. Consequently, the study proved that improving economic development can be achieved through the management and prevention of diseases. Shahzad et al. investigated how air pollution affected Pakistan's GDP (2020). Environmental health measures are crucial for the economy's future success because air pollution significantly reduced worker output and impeded GDP growth, according to the study. Investing in Pakistanis helps the country's economy thrive, says the literature review chapter. It stresses the significance of health, education, and skills in relation to economic progress. There have been many actual studies showing this positive correlation, but we still don't know what causes it. The findings of this chapter are the basis for the next empirical study, thus, they will highlight the proper understanding of this relationship in the Pakistani context.

Methodology
Research Design
As the first step to assess the link between Pakistan's economic growth and human capital development, this paper employs a quantitative research methods. As they can handle massive volumes of data and provide the statistical significance necessary, quantitative methods are the most popular. The study design incorporates the collection and evaluation of the secondary data from authentic sources which entail academic journal, World Bank, and Pakistan Economic Survey Our object is to give solid solutions to fill the gaps identified in education, economy, and human capital development of Pakistan. Through a rigorous and analytic approach, we intend to give a modernized snap-shot of the problems and conditions in the educational system of Pakistan. The study will explicate the direct or indirect implications of socioeconomic factors such as governmental policies, funding, and tuition fees on education access and quality (Widyaningsih & Arif, 2022), thereby, revealing the complex relationship between academic performance and the economic factors being considered. The study also study how Pakistan's educational system creates human capital that evaluates how relevant public and private schools, curricula, instructional methods are in providing the pupils with the skills they need to compete favorably in the future. This research is meaningful because it ruminate around the role of digital learning in this context and how the existing technologies and online resources have their impact on the human capital development (Swanson, 2022). The paper analyzes the financial part as well as digital

learning advancements in Pakistan's educational systems and proposes measures for policy changes, educational reforms, and human capital development strategies.

The present work will be based on critical surveys of the reviewed literature. Through examination, evaluation, and critique of published or other sorts of literature, research, or other material, the main purpose of a critical review is the identification of its benefits and drawbacks, and providing a conclusion that is fair and informed on the subject, and therefore promotes the progress of the scholarly knowledge on the topic (Pomirleanu et al., 2023). With critical inquiry approach for systematically, one by one, giving results of the literature of economics of education, human capital development and digital learning of Pakistan, which makes it appropriate for this research. This method provides ground for comprehensively analyzing the advantages of the research, its disadvantages, and its shortcomings, which helps to unveil certain critical topics and broad subjects. Through the employment of this method, research may be able to give a complete, educative analysis of the field and come out with interesting information that will help future planning and policy formulation in these fields of education.

DATA COLLECTION

Pakistan Economic Survey 2001–2020: This annual report publishes by the government of Pakistan containing the details of the country's economic performance and as well as wide range of social economic indicators. It features an overall picture of GDP growth, medical expenditures, and educational statistics.

Bureau of Statistics in Pakistan (PBS): The PBS is a source of statistics on diverse range of economic topics; these include health, education and vocational training. When it comes to exact and up-to-date data on entry in vocational training and literacy rates, this means that this source is indispensable.

World Bank data sets: These universal data sets on the indicators of human and economic development are empowered by the World Bank. The output coming from this source is useful in ensuring that the study's data is consistent with worldwide norms and standards.

Scholarly and practical research: Previous studies gave perspectives and conclusions to it. Connect the economic development with the growth of human capital formation. These reports complement the analysis and so provide background information for the dataset.

Using secondary data from these reputable sources guarantees that the study's conclusions are accurate and dependable. This paves the way for a robust examination of the interplay between economic growth and human capital development in Pakistan.

Variables

This study utilizes important metrics that measure economic productivity and human capital. Rate of Growth in the Gross Domestic Product (%): The pace of increase in Pakistan's GDP is tracked by this indicator. It is often seen as the yearly increase in GDP after accounting for inflation. Rising gross domestic product (GDP) is a key indicator of economic health and success. Unrestricted variables: How many people in a given population can read and write a basic statement about themselves is shown by the literacy rate, which is a percentage. Anyone above the age of fifteen can access this variable. The literacy rate is one indicator of the quality of human capital and educational achievement. Healthcare expenditure as a percentage of GDP: This variable represents healthcare spending as a proportion of GDP. This demonstrates the seriousness with which the government approaches the goal of bettering people's health and general welfare. The proportion of the working-age population participating in vocational training programs can be seen by looking at the enrollment data as a percentage. Vocational training is essential for enhancing one's employability, productivity, and capacity to fulfill the needs of the labor market. Because of their relevance to human capital development and their ability to influence GDP growth, these factors were handpicked. Their comprehensive view of human capital and its components and their role in driving economic progress is invaluable.

Hypotheses

We hope to put the following hypotheses to the test by doing this research: Human capital augmentation does not correlate with economic growth in Pakistan, according to the Null Hypothesis (H0). The null hypothesis (H1) According to the data, economic growth and human capital development go hand in hand in Pakistan. In order to find out how much the independent factors affect the dependent variables, multiple linear regression analysis is used to evaluate hypotheses. In particular, we will use regression analysis results to investigate the nature and cause of the link between investing in people and growing economic output.

Data Analysis

The gathering of data or the data analysis will be done through the most commonly used statistical analysis program in the social fields, SPSS (Social Package for the Social Sciences). Analysis and hypothesis testing based on the statistical methods and resources for data analysis and the software needed will be facilitated by SPSS.

The main statistic method for the regression in the current project is multiple linear regression. It is then highly possible to analyze the influence of both simultaneous independent factors on a single output factor. The following is the regression model: The following is the regression model:

Where

$$\text{GDP Growth Rate} = \beta_0 + \beta_1(\text{Education Level}) + \beta_2(\text{Healthcare Outcomes}) + \beta_3(\text{Skills and Training}) + \epsilon$$

β_0 is the intercept.

$\beta_1, \beta_2, \beta_3$ are the coefficients for each independent variable.

ϵ is the error term.

The nature and magnitude of the bond between the two variables can be captured provided that they are properly assessed using this correlational model. The effect of an independent variable increasing by units on the value of the dependent variable can be analyzed using the coefficient variables, and all other variables remaining constant.

Results and Analysis

We look at Pakistan and try to make sense of the relationship between GDP growth and human capital development. Using the multiple linear regression method, we look at how the literacy rate, healthcare spending, and enrollment in vocational training affect the GDP growth rate. The chapter begins with the description of statistics and then follows with the regression analysis result and finally interprets the findings.

Background and Significance

Pakistan, similar to several developing countries, is confronted with a number of hurdles that impede exploitation of its human capital for economic development. Although the country has made great headway in these areas through education and healthcare, it still faces challenges with high illiteracy levels, inadequate healthcare infrastructure, and a disparity between the skills demanded by the labor market and those possessed by the workforce. Conquering these difficulties is a way for Pakistan to unleash its economic potential and raise the quality of life of its citizens.

The role of human capital development in fueling the economic growth has been empirically confirmed in both theory and practice. Those investments in the education, health, and vocational trainings increase not only the individual productivity and earnings but also bring about innovation, entrepreneurship, and economic competitiveness. Through educating its people with the pertinent information and working skills, Pakistan can spur the productivities, induce foreign investments, as well as promote sustainable developments.

Descriptive Statistics

The descriptive statistics display the dispersion, central tendency, and range of the variables that were utilized in the investigation. The descriptive statistics for the GDP growth rate, literacy rate, healthcare spending, and enrollment in vocational training are shown in Table 2 Descriptive Statistics

Table 2, Descriptive stat

Variable	Mean	Standard deviation
GDP growth rate	4.04	0.71
Literacy rate	62.00	2.90
Healthcare expenditure	2.35	0.89
Vocational training enrollment	21.76	2.84

The average GDP growth rate is 4.04%, with a standard deviation of 0. 71% indicates the existence of moderate variability around the mean. The mean of the literacy rate is 62% and a standard deviation of 2.90 percentage points, with educational attainment being heterogeneous in the population. The healthcare expenditure, calculated as a percentage of GDP, has the mean of 2. 35% and a standard deviation of 0. 89%, which is low compared to the variability the average vocational training enrollment is 21.76% and a standard deviation of 2.84% indicating that enrollment varied over the period of this study.

Correlation

Verifying the correlation between the variables is crucial before moving on to the regression analysis. The correlation matrix between the independent and dependent variables is shown in Table 3

Table 3, Correlation Matrix

Variable	GDP growth rate	Literacy rate	Healthcare expenditure	Vocational training enrollment
GDP growth rate	1	.61**	.34**	.37**
Literacy rate		1	.04*	.64**
Healthcare expenditure			1	.04*
Vocational training enrollment				1

The correlation matrix indicates that all the independent variables are positively correlated with the GDP growth rate. The highest correlation is between the rate of literacy and that of GDP (0). 720), then healthcare expenditure (0. The positive correlations showing that the increase in literacy rate, healthcare spending and vocational training enrollment are related with growth in GDP prove that On the other hand, we need to continue with the regression analysis to check the strength and significance of these correlations.

Regression Analysis

The impact of literacy rate, healthcare spending, and vocational training program enrollment on GDP growth is examined using multiple linear regression analysis. The outcomes of the regression analysis are shown in the table 4 below.

Table 4, OLS

Variables	*B*	β	*SE*	
Constant	5.33		2.89	
Literacy rate		.166	.63***	.05
Healthcare expenditure		.27	.32**	.14
Vocational training enrollment		.01	.04*	.05
R2		.69		

From the results, the independent variables and GDP growth rate have a good relevance (R =0.69). Their R Square value is 0. 69; it seems that there is about 69% of this one. In GDP growth rate positively predict literacy rate, and non-significantly positively predict healthcare expenditure and vocational training enrollment.

Multicollinearity

By treating highly correlated variables as independent ones, coefficients run the risk of becoming unstable and cryptic. The Variance Inflation Factor (VIF) is one tool for finding the multicollinearity problem. When the VIF number is bigger than 10, multicollinearity problems get worse. The table displays the VIF values for the independent variables.

Table 5, VIF

Variable	**VIF**
Literacy rate %	1.53
Healthcare expenditure %	1.48
Vocational training enrollment %	1.37

All the variables in the model have VIF values lower than 10, which indicates that multicollinearity does not occur.

Heteroscedasticity:

The term "heteroscedasticity" describes the situation in which the residuals from various levels of the independent variable diverge. However, heteroscedasticity can be detected by the Breusch-Pagan test, which is a significant indicator Heteroscedasticity is indicated by a robust p-value ($p < 0.05$). According to the results, the model was free of the heteroscedasticity issue if the p-value is greater than 0.05. By utilizing a Q-Q plot in conjunction with the Shapiro-Wilk test, the normality of the residuals is verified. A regularly distributed set of residuals is indicated by a Shapiro-Wilk p-value that is larger than 0.05.

Conclusion

An extensive analysis of Pakistan's progress in human capital development and macroeconomic growth is presented in this chapter's concluding section. The study emphasizes the role of human capital in development and the factors propelling economic progress through a variety of statistical and empirical data studies. It achieves this by giving proper weight to important economic factors. Academics, practitioners, and politicians in Pakistan committed to raising the living standards and economic prospects of their citizens might use the study's practical suggestions and the new information regarding human capital economics.

Conclusion This study has plunged into the complex interaction between human capital expansion and profit increase in Pakistan. The analysis was very serious. Some of the indicators considered were the literacy rate, expenditure on healthcare, and enrollment in vocational institutions. We wanted to see the mechanisms that lead to economic development due to the investment in human capital. This study's results present Pakistan with the necessary information to ensure the sustainable development also manage the chances and obstacles.

Recap of Research Objectives

The primary objectives of this study were threefold: the objective of this essay is the analysis of the relationship between human capital indicators and GDP growth, the identification of the significance of these indicators in creating economic development, and the supply of clear-cut conceptions to policymakers and practitioners. Through these objective analysis as well in light of the empirical findings, we will be able to get insight in the [impact of the human capital in shaping Pakistan's economy][objective analysis in the empirical finding should involve the impact of the human capital in the shaping of the Pakistan's economy].

Discussions about policy and practices.

The significant consequence of our analysis refers to the creation of effective plans and policies in the country of Pakistan. Consequently, educational programs and literacy projects become a top priority to create a skilled workforce and make the economy better. Reforming policies to ensure better educational access, quality and relevance for the workforce skills enhancement as required to compete effectively in the 21st century economy will always remain the belts and suspenders of the economic belt. Consequently, health spending is not just a critical factor but a major factor in advancing the development of human capital and improving economic well-being. Sustaining healthcare system and building trust is a must for fighting infectious diseases, maternal-child health, and at the same time reduction of child mortality. If health care expenditure and provision of fundamental services are given a priority, the country will make progress towards increasing labor productivity and elevating the general living standards.

Finally, it is important to up skill via vocational training and skill development programs taking into account the skills gap caused by economic competitiveness. Strategy of coordinating vocational education curricula with industry needs, wider improvement of apprenticeships as well as technical skills instruction can be used to prevent all kinds of inconsistencies. A purely vocational education and training investment by Pakistan has for the long term the ability to unleash the hidden potential of its citizenry and boost the economy.

Challenges and Areas for Further Investigations

This study, in its own right, can be regarded as an invaluable contribution to the understanding of the influence between human capital and economic development in Pakistan society; yet, it does not lack constraints. The drawback of reducing on a secondary source of data and the use of a quantitative method may limit the scale of analysis and omits the qualitative aspects of human development. Complementary to the future research could be a combination of quantitative and qualitative studies to achieve a more integrated picture of the force through which the forces at play emanate.

Actually, the focus of the conducted study has been key MS solutions, for instance, literacy, healthcare, and professional training. The next research avenue may move away from the single dimension of human capital and deals with topics as digital literacy, entrepreneurship, as well as the social element of it, with the aim of analytical differentiation of their impact on economic growth.

Conclusion and Recommendations

Lastly, this study better shows the truth that the enhancement of human capital is a vital factor in realizing economic growth and general welfare in Pakistan. By investing in education, healthcare and the training of vocational prescinners, Pakistan can liberate the potential in the population and thereby dictate for sustainable development. The policymakers, govts. And implemented practitioners were therefore exhorted to consider the human capital as a critical factor in their policies and to allocate the resources accordingly.

Recommendations for future research encompass conducting longitudinal studies to evaluate the long-term influence of human capital investments over economic outcomes, welcoming various innovative approaches to skill development and entrepreneurship, and stimulating partnerships between public sector entities (the government and academia), and the private sector to provide viable solutions that tackle human capital development hurdles in Pakistan.

Conclusively, the country perceives the human development as the catalyst of the country's economic development and therefore rebuilds the path for the inclusive growth, social equity, and long-term national prosperity of the nation. This research aims to raise the alarm such that there shall be joint effort in order to support human potential which holds the promise to attain the future of Pakistani people.

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