

THE IMPACT OF INVESTMENT IN HUMAN CAPITAL ON INDUSTRIAL DEVELOPMENT: AN EMPIRICAL ANALYSIS OF PAKISTAN

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ABSTRACT

Continued industrial progress, primarily in Asia, has resulted in reasonable economic growth and a change in poverty over the past 10 years. Economic growth cannot be accelerated by stronger infrastructure, liberalized markets, or improved telecommunications unless there is a sufficient amount of investment in human capital. The primary goal of the study is to examine how human capital investments affect Pakistan's economic development between 2013 and 2023. As measures of investment in human capital, the study takes into account government spending on health, education, and the increase in the enrollment rate in vocational institutes. According to estimates, investing in health care and enrolling in vocational training has a good effect on Pakistan's industrial development. The empirical results are in line with previous research on the same topic for other economies. Policymaking is required in Pakistan in order to steer educational growth in the proper path for industrial development.

Keywords: Investment, Human Capital, Industrial Value, Pakistan.

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INTRODUCTION

The industrial sector has been found to be the most crucial for the growth of economic activity inside an economy. The World Bank estimates that the industrial sector accounted for 27.51 percent of global GDP. It has been demonstrated historically that nations with robust industrial sectors have had faster economic growth and have quickly met their developmental objectives [1]. In recent decades, poverty has decreased and growth has accelerated due to the development of industries in emerging economies such as China, Korea, Taiwan, and Indonesia [2]. The industrial transformation from developed countries to agrarian economies is making structural changes in the

macroeconomy [3]. At the same time, in order to accomplish desired economic development through industry, industrial development necessitates the use of contemporary technologies, investments in human capital, and creative progressive techniques. As a result, it is essential to research and examine the significant elements that are directly associated with the industrial sector [4]. The idea that investing in human capital is necessary for effective economic growth is not new in theory, and classical economists have explained the significance of doing so. An economy needs to invest a reasonable amount in human capital in order to continue growing. The economies are



successfully built themselves as economic Asian tiger are the ones who has invested in human capital. Investment in human capital is the main root cause of development of Asian economies [5].

In addition to limiting economic growth and lowering labor force participation, poor health conditions also contribute to a number of other economic issues, such as the country's declining employment, poverty, and living standards. The human capital index evaluates whether a nation is investing in or deploying its human capital and assigns varying ranks to economies based on the amount of money invested in human capital per capita. Pakistan is placed 114th out of 124 countries, the lowest in Asia, according to the HC index [6].

The literature attests to the connection between industrial progress and human capital investment. Researchers have previously looked into the relationship between industrial productivity and human capital investment [7-10].

Some other studies have investigated relation of human capital and economic growth, unemployment, and poverty in developed and developing economies. All these studies have focused on the major industrial issues and the problems of investment in human capital. It is difficult to locate a thorough study that looked at the relationship between industrial development and human capital investment in Pakistan using a time series analysis. As a result, the current study makes a substantial addition to the body of knowledge regarding the value of human capital for industrial development in Pakistan. Thus, the vacuum in the literature has been filled by the current study. The paper also offers insightful policy recommendations supported by statistical evidence to increase industrial production through human capital investments.

With an expected 230 million people in 2022, Pakistan is ranked as the sixth most populated country in the world and the

second largest in South Asia. Pakistan's industrial sector is not in a suitable state. Only 34 of the 921 industries that made up the subcontinent prior to independence were in Pakistan, accounting for just 3.69 percent of the total industrial share. In the 1980s, labor productivity was 4.2 percent per year; by the 1990s, it had dropped to 1.8 percent, and in 2015, it had fallen to 1.3 percent. Nonetheless, the trend of labor productivity is improving in nearby nations.

The primary cause of productivity declines is a reduction in investment, which is followed by a poor state of education, particularly with regard to equipping workers with new skills and adapting to technology. Pakistan's workforce is either illiterate or has less than ten years of education, making it extremely difficult to get on the path to industrial prosperity. With no clear objectives for the future, Pakistan's industrial value added is showing an unevenly dropping trend.

The World Bank data set indicates that Pakistan's industrial growth over the past ten years has similarly been on the decline. The industrial sector did not take use of local or export products' competitive advantages and instead depended on low-tech resources. Human capital refers to education, skills, health, talent, and physical capacity that is essential to use technology and land to yield production of miscellaneous goods and services that is ultimately consumed by humans [11]. The investment in human capital means that an economy spends on its education, skills, health, and training to enhance future earnings and productivity. The government of Pakistan is currently spending 1.9% of its GDP on the education sector [12].

METHODOLOGY

Literature gap and contribution of study

The relationship between economic development and industrial growth is extensively researched. Numerous studies have examined the challenges facing the health and education sectors, while

numerous others have discovered a strong correlation between industry and economic expansion in Pakistan. However, since the relationship between human capital and industrial expansion has not yet been examined, there is a gap in the literature. Furthermore, improved industrial growth is a direct result of improved human capital. Pakistan lacks the dimension of labor specialization, and this study helps to explain how health and education affect worker productivity, which in turn drives economic and industrial growth

Data, Theoretical Framework, and Methodology

Solow's model is designed for established economies, developing nations also commonly employ it to test growth and development-related hypotheses. It results in the convergence of several economies with comparable labor force, economic growth, and saving depreciations to the same degree of development [13].

The Harrod-Domar model for estimating productivity and growth was expanded upon by Solow, who also assumed declining returns to scale and allowed for flexibility in labor and capital substitution. It is important to distinguish technological advancement from the increase in capital intensity. Neoclassical ideas presume that capital has declining returns. This model uses the Solow to measure technical advancement. productivity of residual or total factors. Depending on the stage of development of each economy, the literature has also proposed various theoretical connections between industrial development and human capital investment. In small economies, there may be a negative correlation between total education spending and industrial development due to the trade between industrial investment and education spending. However, increasing spending on undefined education instead of investing in specialized talents may not have a substantial impact on industry.

Since it is the net production of a sector from a certain industry after adding up all

of the output and subtracting all of the inputs and raw materials, industrial value added is clearly defined. The literature indicates that industrial productivity and human capital investment are positively correlated [14]. The total amount of money spent on education by the federal, state, and local governments is referred to as this. The percentage of GDP (WDI) that these expenses represent is used. There is a positive correlation between output growth and education sector investment. Other research, particularly in poorer nations, has found a negative correlation between total education spending and industrial development [15]. Nevertheless, some empirical research has found that overall educational spending may not significantly affect industrial development since it may not particularly address the need for qualified workers in the industrial sector. The World Development Indicators state that the overall amount spent on health care is the sum of all medical costs, whether they are private or public. While family planning, emergency medical treatment, and nutrition-related activities are among the many and varied health services covered by health expenditures, the availability of clean and sanitary water and other sanitation-related services are not.

This research has used time series data of 10 years i.e. 2013 to 2023. The source of data collection is World Development Indicator as the data is secondary and time series which is easily available on the World Bank website. Moreover economic surveys of Pakistan are also consulted for data purposes.

RESULTS AND DISCUSSION

This study examined the detrimental effects of education on industrial growth; however, only macro-level factors of education were chosen as a proxy; the types of education, quality of education, and years of schooling are all examples of educational drivers that are not included in the study domain. With the addition of terms of trade as a control variable, the

model that is being presented explains 75% of the variance (R-square) in industrial growth that can be attributed to independent variables. Additional variables may be introduced as mediating factors that have a positive or negative effect on industrial growth and human capital. According to the long-term estimations, the enrollment rate in technical institutes (EVG) is a large and positive determinant of industrial growth, and health expenditures (EXH) are favorably and considerably contributing to INDV. All three independent variables have a significant and favorable effect on the dependent variable, according to the long-term results. It was discovered that, at the 10% level of significance, health spending had a positive impact on industrial development, with a probability of 0.0771. It shows that an increase of one percentage point in government spending on health will, on average, result in a 2.09 percentage point rise in industrial growth. Enrollment in vocational training institutions, which is a measure of skill development, is also important and has a favorable impact on industrial growth. Industrial growth will typically improve by 0.03 percentage points for every percentage point increase in EVG. The study also used TOT, a measure that has a strong and favorable correlation with INDV. The literature justifies EXE's significance and deleterious impact. Because of the overzealous government involvement in education, the private sector lacks motivation [16-19]. Furthermore, the private sector reacts to government investment and intervention in the education sector by reducing school returns and growth activities. Countries with a larger government stake in the education sector receive positive returns; in contrast, nations with a smaller government role in the education sector see a negative correlation between growth and government spending on education. There is a perplexing relationship between education and development as a result of

private schools reducing their efforts in reaction to excessive government spending. As a result, the literature somehow removes the negative and important link between industrial growth and education. This indicates that health, education, vocational training enrollment rates, and terms of trade account for 75% of the variation in industrial growth. The ECM term is formed after the Wald test confirms the configuration, and its stationarity is examined using the unit root test in order to comprehend the convergence/divergence phenomenon. The outcomes of short-term ECM models demonstrate that ECM(-1) is negative, and the substantial coefficient of ECM validates the convergence process, indicating that there is cointegration over the long term and relationship convergence over the short term. The regression's indicator, such as the DEVG, is positive and significant. At 70%, R square is significant (F test equals 0.0005). It was observed that the parameters are constant, and the outcome demonstrates that even minor adjustments can cause all the mean to alter. The variations, however, fall anywhere in between the ranges. Prior research on the topic has examined the effects of skill development on industrial sectors and human capital investment on industrial development for various nations at varying levels of development [20]. Investments in education and industrial growth may be negatively correlated in less developed nations and in developing nations. Nonetheless, the study's overall findings are in line with predictions. According to the study's findings, investment plays a crucial role in determining human capital and has a big impact on Pakistan's industrial development. Since Pakistan's industries are primarily agro-based, it is imperative that people have the necessary technical skills and talent to support the manufacturing sector. Long-term industrial development is positively and considerably impacted by both the health

sector's spending and the rate of participation in vocational training. Moreover results suggest that terms of trade (TOT) is a significant and positive determinant of INDV. The outcomes of this study are also supported by previous research, and the validity of the findings is confirmed by all accepted diagnostics. The results of this study are consistent with those of previous studies conducted on the topic in various comparable economies. Thus, the study came to the conclusion that investing in human capital can promote industrial development in Pakistan, and that traditional elements also play a significant role in determining industrial development. Strong policymaking is required, particularly with regard to Pakistan, to ensure that educational development proceeds in the proper directions, that the workforce possesses a certain set of skills, and that investments in human capital are appropriately targeted at specific industries that could contribute to future high industrial sector growth. The study provides reasonable base for future research, in future the author way forward to conduct more research on the same hypothesis by including more sample from regional countries particularly in South Asia. The further research can also be expended into multiple sectors of the economy to test the impact of investment in human capital and skill development [21-23].

Studying industrial growth factors is essential for economic growth. Since health and education are crucial to the development of human capital, the government must give these areas top priority when allocating its funds. Free or inexpensive vocational training can increase enrollments because unskilled and semi-skilled workers do not contribute to the formal production process. Since

health spending has a beneficial effect on industrial growth, the national goal must include equal access to basic health services and benefits for all. Vocational training institutions help people develop their skills and close gaps between academia and industry; stronger ties between academia and industry, especially between vocational training institutions, are needed [24, 25].

CONCLUSION

Compared to rich economies, low-income economies have more room for quick growth by integrating technology and equipping people with skills. By combining population and technical capabilities, Pakistan's economy can catch up. The Solow growth model has been empirically studied, and various models have been developed over time to illustrate the reasons why poorer economies are expanding more quickly than wealthier ones. Along with population expansion, technology is a major factor. The convergence in OECD economies was brought about by capital depreciation, population increase, and technological advancements. Numerous research have developed this strategy to invest in improving human capital in order to promote economic growth in low-income economies. Another way to address the issue of slow growth is through population control.

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