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Expenditure on Human Capital and Economic Growth: Evidences form Nepal

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Abstract

Human capital expenditure is critical to utilizing and profiting from all of the country's resources. Economists have acknowledged that human capital improvement and usage are critical to a nation's economic prosperity. The research article investigates the relationship between human capital spending and Nepal's economic growth. The study analyzed data from 1985 to 2022 to investigate experimentally the relationship between Nepal's human capital spending and GDP. The study uses a variety of macroeconomic indicators, such as GDP as a measure of economic growth, capital expenditure on education, recurrent expenditure on education, health expenditure, higher education enrollment, and school enrollment. LNRGDP serves as both the explanatory variable and the dependent variable in the study's use of regression analysis. The Unit Root Test, OLS Estimation, Unit Root Residual and Error Correction Approach, and Econometric Analysis are all included. The results of the regression show that higher enrollment has a positive effect while capital expenditure on education has a negative impact on GDP. Spending on ongoing education, health, and school enrollment has no statistically significant effect on GDP. A long-term, positive correlation between the investment in human capital and economic growth is found by the cointegration test. According to the findings, funding higher education is essential for fostering Nepal's economy. In addition, the study highlights the significance of policymakers carefully considering resource allocation for education and human capital development in order to ensure the nation's sustainable growth

Keywords: *Capital expenditure, Capital formation, Economic growth, Higher education enrollment.*

Introduction

Human capital development encompasses all facets of socioeconomic development, including education, health, labour, and employment. Change in this area is primarily being driven by health and education, which is closely related to human capital. It created the foundation for economic growth and development. The workforce of a country must be knowledgeable, competent, productive, and healthy for resources to be used as effectively as possible for growth and development. No country has ever experienced long-term economic growth in the absence of a sizable investment in human capital. Given their capacity for learning, adapting, innovation, and creation, human resources stand apart from other production factors. Human capital development is crucial for achieving sustainable economic growth and development, as numerous studies have shown. Even classical economists understood the importance of investing in human capital and connected it to higher economic growth, such as Smith (1776).

Economic development and expenditure on human capital both have ties to one another on various bases. To promote economic growth, the government must increase spending in sectors like health and education. Sing (1999) describe that human capital is the knowledge and skills that people acquire through their education, training, skill-building, medical care, and spiritual practises like meditation. Human capital is typically referred as a person's abilities that increase their productivity and efficiency, such as their education, skill development, physical and mental health, and other aspects (Todaro, 2002).

Economists have noted that any country's use and development of its human capital has a positive impact on economic growth. Productivity growth is the main driver of per capita output in all nations, whether they are emerging or developed, and market economies or centrally controlled. Romer (1986) defined the concept of spillover effects by stating that investments in new information, research, and development in Human Capital Formation (HCF) result in further social return externalities than private return. In and endogenous growth model argued that human capital as one of the major factors of economic growth and accumulation of human capital is possible through the expansion of education (Lucas, 1967) .Solow (1956) defined long-term development by introducing technology in the Solow model and it defined as Solow residual. The amount of residuals, as defined by Solow and other growth theorists exogenously, established the link between economic expansion and education, in which an increase in total output and production is the outcome of knowledge advancement (Somankovic et al., 2100).

Spending on education contributes significantly to economic growth by fostering the development of human capital, which is related to physical capital and social capital (Dickens, Sawhill, & Tebbs, 2006). Through the procedure of announcing the budget, the government's fiscal policy affects the economy's long-term growth rate.

Public spending on education has long been a concern for the government and concerned authorities because it plays a crucial role in the overall socioeconomic development. Skills and

human resource development are key concerns for policymakers and experts involved in economic development at the national and regional level as the global economy shifts toward more knowledge-based sectors, such as the manufacture of information, communication and technology (ICT) (Johnson ,2011). Efforts have been made to solve this and related concerns since the 1960s, when the human capital idea was first articulated. Furthermore, it has been emphasized that the quality and quantity of human resources, rather than natural resources and benefactions or the stock of physical capital, are more directly responsible for inequalities in the level of socio-economic progress among countries (Dauda, 2010).

Romer (1990) argues that the economic integration that has been made possible by globalization today might still be advantageous for a population that is very large and a population that is less developed. A large stock of human capital will lead to faster economic growth. Romer moreover claims that knowledge is a non-rival good, which entails that if one person already knows how to add and another learns how to add, they can both add simultaneously. Contrarily, a calculator is a competitive product. It cannot be used concurrently by two people.

The two key sectors for accelerating the improvement of the country's capital stock are education and health. These industries contribute to increasing the effectiveness and productivity of human capital. Another important strategy for uplifting the poor and disenfranchised groups outside of society's mainstream in emerging nations is government investment in the social sector.In order to create a healthy and competitive labor force, it is essential to invest in social justice, health, and education (Becker 1962, & Gautam 2015).

The constitution of Nepal guarantees access to universal health care and education for all as the fundamental rights (Constitution of Nepal, 2015).Thus, to promote growth, leading countries' economic policies should first, encourage investment in new research, as opposed to encouraging investment in physical capital accumulation. Or, if this is not possible, at least governments should subsidize the accumulation of total human capital.

Income, education, and accessibility to high-quality, affordable healthcare are some factors that affect human capital levels. Human capital development can be improved by contributing to social, health, and educational initiatives. The increase in government spending on social services, health care, and education has been facilitated by an increase in the gross domestic product.

Although Nepal has made substantial investments in its human capital, there is little conclusive proof of how these investments have affected economic growth. Although there is a growing body of research on the connection between human capital and economic growth, it is still unclear how human capital expenditure and economic growth specifically relate to one another in the Nepalese context. Additionally, there aren't many studies that look at the ideal level of human capital investment needed for Nepal's economy to grow sustainably. Therefore, the problem statement is to ascertain the impact of human capital expenditure on economic

growth in Nepal and to determine the ideal level of investment in human capital that can maximize economic growth while ensuring sustainability.

Our nation's overall economic development has benefited in numerous ways by investing in human capital, which has a positive impact on economic growth. This study will be very helpful to policymakers because it offers crucial data for formulating efficient policies, rules, and regulations to support the growth of the economy and the development of human resources.

This study's main goal was to investigate how investments in human capital affected Nepal's economic growth of Nepal, Therefore, this study aims to examine the long and short run relationship between human capital expenditure on the economic growth of Nepal .

Hypothesis of the study

Ho: There is no significant relationship between the expenditure on human capital formation and economic growth.

H_1: There is a significant relationship between the expenditure on human capital formation and economic growth.

Review of Literature

There remains no agreement on a top-tier or all-encompassing Human capital formation theory, despite the fact that several schools of thought have been employed to explain this phenomenon. As per Uzawa (1965) and Lucas (1988) contributions, the representative person decides how much of his free time is used to create physical output and how much is allocated to the development of human capital. Rebelo (1991) enhanced this class of models by asserting so both physical capital and human capital join the production process of human capital. However, neither one of these models permits the use of public funds for the development of human capital. Endogenous growth model introduced human capital into model of growth as developed by Lucas(1988) consider accumulation of human capital as the instrument of growth. Romer (1986) well-thought-out human capital stock in the process innovation and adaption of new technology.

Oketch (2006) examined the factors that influence the development of human capital and economic expansion in African nations. The primary goals of the study are to identify the drivers of GDP investment in human capital as a percentage of GDP and the sources of economic growth in African nations. It employed the OLS and 2SLS methods for estimate. According to the study's findings, substantial investments in human and physical capital will be the main drivers of labor productivity development in African countries during the medium future. The idea that investment in physical capital, which makes a large contribution to per capita growth, is determined by the development of human resources is also supported.

Johnson (2011) has used a conceptual analytical framework that uses the theoretical and ordinary least square (OLS) to analyze the relationship between human capital development and economic growth in Nigeria. The GDP is used as a proxy for economic growth, total

government spending on education and health is used as a proxy for human capital, and the enrolment pattern of tertiary, secondary, and primary schools is used as a proxy for human capital. Economic growth and the development of human capital are strongly positively correlated, according to the report.

Ali, Chaudhry & Farooq (2012) examined the role of human capital formation in economic growth in Pakistan by using the secondary data for the period of 1972 to11. The methodology used by the paper is to test correlation and simple OLS. The study's findings suggested a long-term connection between economic growth, educational attainment, CPI inflation, investment growth, headcount ratio, and fixed capital formation. The education enrolment index (EEI) significantly and favorably affects economic expansion.

Adhikary (2015) has conducted research by The study uses data from the years 1985 to 2012 to evaluate the connections between foreign direct investment (FDI), trade openness, capital formation, human capital, and economic growth rate in Nepal. The study demonstrates that over the long term, the variables have an equilibrium relationship between the variables. Additionally, the growth rate of Nepal's GDP per capita is dynamically positively impacted by trade openness and FDI. While capital formation exhibits a negative link with rates of growth, human capital does not appear to be a significant factor of economic growth.

Fatima et al. (2020) conducted research on the relationship between GDP growth and trade openness and examining the importance of the development of human capital. Finding the empirical effects of trade openness on GDP growth is the paper's main goal. The empirical analysis is based on balanced panel data with a four-year average from 80 nations between 1980 and 2014. The paper employed the Fixed Effect Method and the Generalized Method of Moments to estimate the data (GMM). An intriguing indirect association between trade openness and GDP growth was discovered by the study. The study also discovered a positive relationship between trade effects and human capital accumulation (HCA), showing that the more HCA there is, the more positive an influence trade openness has on GDP growth.

In addition Gautam, (2022) claimed that for humans to become more productive and earn more money, they need access to high-quality health care, education, and training. In developing countries like Nepal, government spending on social, health, and educational sectors is rising quickly. Growing public spending was instrumental in achieving the Millennium Development Goals and will be crucial in achieving the Sustainable Development Goals by 2030.

Thus, Education and health are therefore the main elements of human capital in Nepal's current economic system, and they have been identified as the main factors influencing economic growth.

Methodology

According to the current body of research, a comprehensive analysis of the connection between Nepal's human capital and economic growth is necessary. A macro method was used in the study, which primarily used secondary data. The 1985–2022 period is covered by the annual time series data used for the analysis. Information obtained from Nepal Rastra Bank and the Ministry of Finance. Recurrent expenditure on education (REE), capital expenditure on education (CEE), health sector expenditure (HE), and higher education enrollment (technical Program), Number of schools are independent variables while economic growth is the study's dependent variable. Students enrolled in Tribhuvan University's technical programs in engineering, medicine, agriculture, forestry, and science and technology are included in the data on higher education enrollment.

Model specification

This study looks into the relationship between human capital spending and economic growth. Human resources, capital formation, and technical improvement are all variables that drive economic development. The government's human capital expenditures are examined in relation to education expenditure, health expenditure, higher education enrolment, and the number of schools in this study. The researcher have under taken economic variables such as RGDP, REE, CEE, HE, HEE and NSHCH. Therefore, the fundamental econometric model of this study is specified in order to determine the effect of human capital expenditure on economic growth in Nepal. The function model is based on the Keynesian framework of government expenditure.

RGDP = f (CEE, REE, HE, HEE, NSCH) ……. (1)

Where RGDP is Real Gross Domestic Product, CEE is Capital Expenditure on Education, RRE is Recurrent Expenditure on Education, HE Expenditure on Health sector, HEE is Higher Education Enrolment and NSCH is Number of Schools.

Due to the unit differences among the variables and, to avoid the problem of the model specification, the data has been converted into logarithmic form.

.Ln RGDP = a + β_1 Ln CEE + β_2 Ln REE + β_3 Ln HE + β4Ln HEE + β_5Ln NSCHS + …….. (2)

Where, μ is random error term.

Techniques and tolls of data analysis

The time series data were analyzed using quantitative and econometric methods in the study. Data acquisition analysis starts with a test of the series' unit root to determine whether or not the data are stationary. Augmented Dicky Fuller unit root test, OLS estimation, estimation of Residual(error) Engel – Granger two step producer is employed to the relationship of the variables under study.

Results and Discussion

Unit root test

It is crucial to use time series data in the research. Time series data normally are on non-stationary and non- stationary data are impulsive and cannot be projected. The result that is attained form non-stationary data may be spurious. Thus if the data are non-stationary, then it should be transformed into stationary data .This paper underling Augmented Dickey- Fuller (ADF) unit root test to check the stationary.

Table: 1.1 Augmented Dickey Fuller Test

			At Level				
		LNRGDP	**LNCEE**	**LNREE**	**LNHE**	**LNHEE**	**LNNSCH**
With Constant & Trend	t-Statistic	-3.4985	-2.2854	-2.5880	-3.3583	-3.1599	-0.7491
	Prob.	*0.0514*	*0.4331*	*0.2874*	*0.0701*	*0.1053*	*0.9629*
			At First difference				
		d(LNRGDP)	d(LNCEE)	d(LNREE)	d(LNHE)	d(LNHEE)	d(LNNSCH)
With Constant & Trend	t-Statistic	-4.2996	-7.0513	-5.9082	-5.4714	-7.4391	-6.1077
	Prob.	*0.0074*	*0.0000*	*0.0001*	*0.0003*	*0.0000*	*0.0000*

For the table 1.1 it can be seen that the all the variables under study are stationary at First differences with constant and trade that is all variables are become stationary at I(1). So according to the rule of thumb the study processed Ordinary least square (OLS), estimation of error (Residual), check the unit root for the residual (error).

Table 1.2: Estimation of Ordinary Least Square Model

Dependent Variable: LNRGDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LNCEE	-0.045191	0.009172	-4.927194	0.0000
LNREE	0.032496	0.017491	1.857872	0.0704
LNHE	0.008228	0.016578	0.496329	0.6223
LNHEE	0.116353	0.053282	2.183733	0.0348
LNNSCH	0.458068	0.075627	6.056949	0.0000
C	1.987640	0.259524	7.658797	0.0000
R-squared	0.988998	Mean dependent var		6.796586
Adjusted R-squared	0.987657	S.D. dependent var		0.598915
S.E. of regression	0.066540	Akaike info criterion		-2.463287
Sum squared resid	0.181530	Schwarz criterion		-2.227098
Log likelihood	63.88725	Hannan-Quinn criter.		-2.374408
F-statistic	737.1408	Durbin-Watson stat		0.757236
Prob(F-statistic)	0.000000			

Table 1.2 shows long run relation relationship among the variables. The coefficients are interpreted as long run elasticities. The capital expenditure on education (CEE) significant but coefficient is negative indicates that one unit change in CEE reduce 0.451 unit on GDP of Nepal. The number of school (NSCH) is positively significant at 1 percent level and higher education enrollment (HEE) is positively significant at 5 percent level. In long run the number of school has seen strongly support of GDP of Nepal. . If the value of DW statistic is less than R^2 by rule of thumb it is considered as spurious problem, however from the table 2.1 the unit root test of the residual is negative and the probability coefficient is significant at 5 percent level support the regression result as rule of thumb.

Table 2.1: Result of the unit root test for the residual (error)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-0.403747	0.120505	-3.350476	0.0017
C	-0.000973	0.007361	-0.132178	0.8954

The above result shows that the coefficient of t-statistic and probability value , RESID01 accepted on significant in 5% level ,which implies that the variables under estimation are stationary at first difference I(1) and error term RESID01 (-I) is stationary at level . Which implies that the variables have been cointegrated. There exist long rung relationship and OLS result in Table 1.2 is not spurious.

Once there is long run relationship the study proceed to short run model with the lag of Error correction term (ECT) as a independent variable.

Table 3.1: Short run relation with lag of Error Correction term.

.Dependent Variable: D(LNRGDP)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.045522	0.005568	8.175840	0.0000
D(LNCEE)	-0.004543	0.004761	-0.954088	0.3459
D(LNREE)	-0.016577	0.005014	-3.306204	0.0020
D(LNHE)	0.008182	0.006173	1.325363	0.1928
D(LNHEE)	-0.025128	0.015459	-1.625477	0.1121
D(LNNSCH)	-0.013473	0.065395	-0.206030	0.8378
ECT(-1)	-0.178532	0.051775	-3.448219	0.0014
R-squared	0.409515	Mean dependent var		0.041762
Adjusted R-squared	0.318671	S.D. dependent var		0.024637
S.E. of regression	0.020336	Akaike info criterion		-4.813580
Sum squared resid	0.016129	Schwarz criterion		-4.535309
Log likelihood	117.7123	Hannan-Quinn criter.		-4.709338
F-statistic	4.507904	Durbin-Watson stat		2.315817
Prob(F-statistic)	0.001469			

Table 3.1.shows only recurrent expenditure on education (LNREE) has seen the significant determinant of gross domestic product (GDP) of Nepal. The Capital expenditure on education (CEE), health expenditure (HE), higher education enrollment and number of schools (NSCH) have seen insignificant in short run hence, except recurrent expenditure on education there is no impact of others independent variables on GDP of Nepal. The coefficient of lagged ECT (-1) has expected negative sign and its coefficient 0.1785 shows the speed of adjustment toward equilibrium that is speed is 17.85 percent per year time.

Conclusion

This study has included major four macroeconomic variables to estimate their long run and short run impact on inflation in Nepalese economy applying cointegration Error Correction two step test methodology. In both long run and short run, the real GDP has remained insignificant. The real GDP is considered as an important determinant of inflation, however, in underdeveloped countries like in Nepal due to some structural problems such as lack of sufficient development of physical infrastructures, communication system, and control over market etc. the increase in production cannot reflect on price level. The effect of remittance has seen negative on inflation in long run and short run. If the earning from remittance is used in productive sector that can increase the production of goods and services which results in the reduction in price level. In this perspective, the result seen in the context of remittance seems to be relevant. In both long run and short run the Indian inflation has seen a strong determinant of Nepalese inflation. Due to the pegged exchange rate regime, largest share of import from India and open boarder we are importing direct inflation from India. The impact of CPI of India found in this study is more or less consistent with the results of the studies conducted by IMF and WB in different times. The supply of money is also major influencing factor of inflation, however, in this study it is significant only in long and it is insignificant in short run

The study used a dataset spanning from 1985 to 2022 to assess the potential impact of government spending on human capital on economic growth in Nepal. The study specifically looked at the short- and long-term effects of human capital spending on economic growth, with a focus on health and education spending as essential human capital elements that support both economic growth and human welfare. The time series data were analysed using quantitative and econometric methods, starting with a test of the series' unit root to determine stationary. Then, an Augmented Dicky Fuller unit root test, OLS estimation, and estimation of Residual (error) were used to estimate the relationship between the variables.

n contrast to other independent variables, LNREE and LNHE, which had positive but insignificant relationships with RGDP, the study found that higher education enrollment (LNHEE) and the number of schools (LNNSCH) had a significant positive relationship with RGDP.

This study emphasizes the importance of spending more on human capital in quantity rather than quality to support economic growth in Nepal. Given the vital function that human capital plays in economic growth, government spending on human capital should be given top priority in order to ensure inclusive and sustainable national development. An ideal amount of human capital investment to promote sustainability and boost economic growth of Nepal.

References

Adhikary, B. K. (2015). Dynamic effects of FDI, trade openness, capital formation and human capital on the economic growth rate ien the least developed economies: evidence from Nepal. *International Journal of Trade, Economics and Finance*, *6*(1).

Ali, S., Sharif Chaudhry, I., & Farooq, F. (2012). Human Capital Formation and Economic Growth in Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, *32*(1).The primary objective of the paper

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of political economy*, *70*(5, Part 2), 9-49.

Dickens, W. T., Sawhill, I. V., & Tebbs, J. (2006). *The effects of investing in early education on economic growth* .Brookings Institution.

Dauda, R. O. (2010). Role of human capital in economic development: an empirical study of Nigerian case. Oxford: Oxford Business and Economics Conference Program.

Fatima, S., Chen, B., Ramzan, M., & Abbas, Q. (2020). The nexus between trade openness and GDP growth: Analyzing the role of human capital accumulation. *Sage Open*, *10*(4), 2158244020967377.

Gautam, N. (2014). Analyzing the Sustainable Development Indicators of Nepal Using System Dynamics Approach. *Unpublished, A thesis submitted to the committee of the Graduate School of International and Area Studies Hankuk University of Foreign Studies in partial fulfillment of the requirements for the degree of MA International Development Studies. https://dlc. dlib. indiana. edu/dlc/ha n dle/10535/9823*.

Gautam, N. (2022). The Impact of of Government's Human Capital Expenditure on Economic Growth of Nepal: An ARDL Approach. *Quest Journal of Management and Social Sciences*, *4*(1), 30-41.

Johnson, A.O. (2011). Human Capital Development and Economic Growth in Nigeria. *European Journal of Business and Management*, *3*(9), 29-38.

Lucas R 1988. On the mechanics of economic development. *Journal of Monetary Economics*, 22: 30-42.

Oketch, M. O. (2006). Determinants of human capital formation and economic growth of African countries. *Economics of Education Review*, *25*(5), 554-564.

Rebelo S 1991. Long-run policy analysis and long-run growth. *Journal of Political Economy,* 99(3): 500-521.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, *94*(5), 1002–1037.

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, *98*(5), 71–102.

Secretariat, C. A., & Durbar, S. (2015). *Constitution of Nepal 2015*.*Constituent Assembly Secretariat.*

Singh, K. (1999). *Rural development: Principles, policies and management*. Sage.

Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. The Glasgow.

Todaro, M. P., & Smith, S. C. (2020). *Economic development*. Pearson.

Osmankovic, J., Jahic, H., & Sehic, E. (2011). Education in economic theory. *Economic Review: Journal of Economics and Business*, *9*(1), 63-78.

Uzawa H 1965. Optimum technical change in an aggregative model of economic growth. *International Economic Review,* 6(1): 18-31.