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# Economic Growth and Education Nexus: A Comparative Study of Two Selected Countries

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***Abstract***

**Aim:** This study explores the relationship between education and economic growth in two chosen countries. Through a comparative analysis, we aim to understand the similarities and differences in how education influences economic development in these nations.
**Methodology:** In this quantitative research study, the authors employed an Ordinary Least Squares (OLS) model to analyze the effects of investment levels on three variables: Real Gross Domestic Product (RGDP) per Capita, RGDP, and Unemployment, using secondary data.
**Results:** The study's findings provide valuable insight into the relationship between education expenditures and economic growth in Country A. As evidenced by the contemporary Real Gross Domestic Product (RGDP) per capita, the results indicate that only tertiary education spending has a significant impact on economic development. This indicates that investments in higher education are essential for economic expansion and prosperity. County B's relationship between education spending and economic development was also illuminated by the findings. The results indicate that expenditures on basic education and higher education have a substantial impact on the current Real Gross Domestic Product (RGDP) per capita, whereas expenditures on secondary education are insignificant. It is important to note, however, that there is also an autocorrelation in the output, indicating that factors other than education expenditures may also impact County B's economy.
**Conclusion:** The consistent allocation of budget to education enhances the competitiveness of their workforce and plays a crucial role in achieving human capital development. Furthermore, the analysis reveals the variability between the two nations in terms of the variables examined, namely education expenditures and GDP. This highlights the need to tailor education strategies to each country's unique circumstances, rather than adopting a one-size-fits-all approach.

***Keywords:*** Economic growth, Education, Nexus, Comparative study, Selected countries

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## INTRODUCTION

Education and economic development are inextricably linked, with education having a critical role in promoting economic development and prosperity. The link between education and economic growth has been the subject of much economic research and discussion. Understanding the dynamics and causal relationships between these two aspects is critical for policymakers and stakeholders to develop effective strategies and policies to support sustainable development.

The purpose of this research is to look at the relationship between economic growth and education in two different countries. We want to shed light on the similarities and variations in the link between education and economic growth in these countries by performing a comparative analysis. The Philippines and Malaysia, the two nations considered for this study, reflect distinct contexts within the Southeast Asian area, providing significant insights into the relationship between education and economic growth.

As it equips individuals with the knowledge, abilities and skills necessary for productive employment, entrepreneurship, and innovation, education is widely recognized as a key driver of economic growth (Asadullah & Savoia, 2018). A well-developed education system contributes to the growth of human capital, which in turn facilitates economic growth through increased productivity, competitiveness, and technological innovation. Economic growth provides the resources and opportunities to invest in education, thereby generating a positive feedback cycle.

Although the Philippines and Malaysia are geographically near, their economic and educational landscapes differ significantly. In spite of its large population and abundance of natural resources, the Philippines has struggled to translate these advantages into sustained economic growth (World Bank, 2019). On the other hand, Malaysia has experienced rapid economic growth, transitioning from an agrarian to a diversified and industrialized economy (World Bank, 2020). Understanding the factors fueling their economic development, especially the role of education, will provide policymakers and stakeholders in both nations with valuable insights.

This study sought to investigate the various dimensions of the economic growth and education nexus in the Philippines and Malaysia through a comprehensive literature review, empirical analysis, and data examination. By identifying key factors, obstacles, and success stories, we can inform policy recommendations and strategies that strengthen education's role in fostering sustainable economic growth.

Education plays a crucial role in the economic growth of a nation by increasing its human capital and the caliber of its labor force. Continual investment in education results in a more competitive and productive labor force, which contributes to economic growth, especially in developing nations. Malaysia's government has allocated a significant portion of its GDP to education expenditures, illustrating the importance of education investment to a country's economy. Malaysia's education expenditures have fluctuated between 15.44% in 2020 and 19.64% in 2018 (UNICEF, 2022).

Understanding the orientation of the correlation between education expenditures and economic growth is crucial for making informed policy decisions. The relationship between these variables can be unidirectional or bidirectional, with education spending influencing economic growth or vice versa. Numerous nations prioritize increasing education expenditures to boost economic competitiveness and enhance the character of their labor force. Education expenditures are crucial to the economic viability of a nation.

This study investigated the relationship between education investment and economic growth and development in the Philippines and Malaysia. In 1990, the Philippines had a 16-percentage-point advantage over Malaysia in terms of literacy, but by 2015-2018, the two countries' literacy rates had converged to a similar level (World Bank, 2019). Despite having a lower literacy rate than the Philippines, Malaysia, as a developed nation, has a significantly higher per capita GDP than the Philippines. This distinction is a fundamental difference between the two nations.

In addition, the Philippines' business process outsourcing industry (BPO) capitalizes on its English-speaking population to increase its GDP. As a prominent provider of BPO, the nation benefits from globalization and the rising demand for English-speaking employees. This sector has substantially contributed to the economic growth of the nation.

This comparative study between Malaysia and the Philippines aims to investigate the connection between education spending and economic growth. The study concentrates on the relationship between elementary, secondary, and tertiary education expenditures and Real GDP per capita and GDP at constant prices. By analyzing these variables, the study aims to determine whether education spending affects economic development or whether economic growth leads to an increase in education expenditure.

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Despite the fact that education investment can be costly for institutions, it is considered essential for increasing employability and human capital (Cabauatan, Manalo, and Uy, 2016; Cabauatan and Manalo, 2018). Shao and Yang (2014) emphasize further the positive relationship between education quality and demand, which contributes to the accumulation and growth of human capital.

The growth rate of Malaysia relative to its counterparts with high incomes can be attributed to the increase in human capital. In addition, Cale et al. (2016) discovered that investing in human capital increases the income per effective worker in ASEAN nations. According to Basten and Cuaresma's (2014) and Cabauatan, Manalo, and Uy's (2016; 2018) research, the causal relationship between education expenditures and economic development is bidirectional. This comprehension of the connection between education and economic growth is beneficial for national policymaking.

**Research Objective**

The research objective of this study is to conduct a comprehensive review of relevant literature, perform empirical analysis, and examine data to explore the multifaceted relationship between economic growth and education in the Philippines and Malaysia. By identifying key factors, challenges, and success stories, the study aims to provide policy recommendations and strategies that promote the role of education in fostering sustainable economic growth in both countries.

**Hypothesis**

There is a positive relationship between education expenditures and economic growth in both countries.

Higher levels of education attainment are associated with increased employment opportunities and productivity in both countries.

The quality of education, as measured by skills and knowledge acquired, positively influences the demand for education and the accumulation of human capital.

**METHOD**

In this quantitative research study, the authors utilized an Ordinary Least Squares (OLS) model to analyze the impacts of different levels of investment on three variables of secondary data of: 1. Real Gross Domestic Product (RGDP) per Capita, 2. RGDP, and 3. Unemployment. Furthermore, the study aimed to investigate the causal relationship between education expenditure and real GDP per capita in Malaysia and the Philippines. Time series data from were obtained from the World Development Indicators (WDI) of the World Bank, specifically focusing on Real GDP per capita (RGDPPC) and education expenditures (WB). Malaysia will be known as Country A and the Philippines will be known as Country B as ethical consideration.

**Ethical Considerations**

1. The secondary data used in the research are obtained from legitimate and reputable sources that comply with ethical standards and regulations. This includes using data from credible databases, government publications, academic sources, or other authorized sources.

2. Respecting the privacy and confidentiality of individuals or organizations whose data are included in the secondary data. Researchers ensured that data are de-identified or anonymized to prevent the identification of specific individuals or entities.

3. Adhering to any terms and conditions set by the data providers or data sources regarding the use and dissemination of the data. Researchers should obtain necessary permissions or licenses to use the data and comply with any restrictions on data sharing or redistribution.

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4. Providing appropriate acknowledgment and citation for the sources of secondary data used in the research. This ensures that credit is given to the original data sources and helps maintain the integrity of the research process.

5. Assessing the quality and reliability of the secondary data used, including verifying the accuracy, completeness, and validity of the data.

**Results and Discussion**

The findings of the study provide valuable insights into the relationship between education spending and economic development in Country A. The results indicate that only tertiary education spending has a significant impact on economic development, as evidenced by the current Real Gross Domestic Product (RGDP) per capita (Table 1). This suggests that investment in higher education plays a crucial role in driving economic growth and prosperity.

Additionally, when examining constant GDP values, the study reveals that higher education spending has a notable influence on Country A's economy (Table 2). This underscores the importance of allocating resources to support and enhance the quality of higher education institutions, as it contributes to overall economic performance and competitiveness.

However, it is important to consider the presence of autocorrelation in the results, indicating that the relationship between higher education spending and the economy is influenced by unknown factors. This suggests that there may be additional variables at play that affect the dynamics between education spending and economic development in Country A.

Analyzing the relationship between different levels of education expenditure and RGDP per capita in Table 3, the study reveals valuable insights. It demonstrates a bidirectional causal relationship between primary education expenditure and RGDP per capita, indicating that investments in primary education can have positive effects on economic development, and vice versa. However, no causal relationship is found between secondary education expenditure and RGDP per capita, suggesting that the impact of investment in secondary education may be more nuanced and influenced by other factors. Finally, a unidirectional causal relationship is observed between tertiary education expenditure and RGDP, indicating that investment in tertiary education contributes to economic growth, but the reverse relationship is not supported.

These findings emphasize the significance of strategic investment in education, particularly at tertiary and primary levels, to foster sustainable economic development and improve the overall well-being of Country A. They also highlight the need for policymakers to consider the specific impacts of education spending at different levels and tailor their strategies accordingly to maximize the positive outcomes on economic growth and human capital development.

**Table 1.**
**Country A- GDP per capita and education expenditure**

Dependent Variable: RGDP PER CAPITA
Sample (adjusted): 2010-2020

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | 14528.29 | 6212.491 | 2.343196 | 0.0389 |
| EXPENDITURE_ON_PRIMARY_E | -30.21754 | 175.7619 | -0.172867 | 0.8564 |
| EXPENDITURE_ON_SECONDARY | -22.52970 | 146.7830 | -0.153421 | 0.8816 |
| EXPENDITURE_ON_TERTIARY_ | -369.3554 | 97.54993 | -3.786232 | 0.0027 |

| | | | |
|---|---|---|---|
| R-squared | 0.800183 | Mean dependent var | 2602.974 |
| Adjusted R-squared | 0.750228 | S.D. dependent var | 2440.382 |
| F-statistic | 16.01821 | Akaike info criterion | 17.26282 |
| Prob(F-statistic) | 0.000172 | Schwarz criterion | 17.45595 |

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|---|---|---|---|
| Durbin-Watson stat | 1.043155 | Hannan-Quinn criter. | 17.27271 |

**Table 2.**
**Country A- GDP at constant and education expenditure**

Dependent Variable: GDP CONSTANT LCU
Sample (adjusted): 2010-2020

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | 2.66E+12 | 1.20E+12 | 2.217594 | 0.0465 |
| EXPENDITURE_ON_PRIMARY_E | -2.89E+11 | 3.39E+12 | -0.085261 | 0.9334 |
| 2EXPENDITURE_ON_SECONDARY | -8.01E+08 | 2.83E+12 | -0.028232 | 0.9778 |
| EXPENDITURE_ON_TERTIARY_ | -6.57E+12 | 1.88E+12 | -3.490599 | 0.0044 |

| | | | |
|---|---|---|---|
| R-squared | 0.776619 | Mean dependent var | 7.39E+12 |
| Adjusted R-squared | 0.720774 | S.D. dependent var | 4.45E+12 |
| F-statistic | 13.90666 | Akaike info criterion | 60.02402 |
| Prob(F-statistic) | 0.000328 | Schwarz criterion | 60.21716 |
| Durbin-Watson stat | 0.935521 | Hannan-Quinn criter. | 60.03390 |

**Table 3.**
**Causality between RGDP per capita and education expenditure in Country A**

Pairwise Granger Causality Tests
Sample: 2010-2020
Lags: 1

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| EXPENDITURE_ON_PRIMARY_E does not Granger Cause RGDP_PER_CAPITA__CURRENT_ | 13 | 3.36262 | 0.0965 |
| RGDP_PER_CAPITA__CURRENT_ does not Granger Cause EXPENDITURE_ON_PRIMARY_E | | 4.84552 | 0.0524 |
| EXPENDITURE_ON_SECONDARY does not Granger Cause RGDP_PER_CAPITA__CURRENT_ | 13 | 2.99484 | 0.1143 |
| RGDP_PER_CAPITA__CURRENT_ does not Granger Cause EXPENDITURE_ON_SECONDARY | | 0.00165 | 0.9684 |
| EXPENDITURE_ON_TERTIARY_ does not Granger Cause RGDP_PER_CAPITA__CURRENT_ | 22 | 0.70891 | 0.4102 |
| RGDP_PER_CAPITA__CURRENT_ does not Granger Cause EXPENDITURE_ON_TERTIARY_ | | 0.28612 | 0.0588 |

The findings also revealed important insights into the relationship between education spending and economic development in County B. The results indicate that spending on basic education and higher education significantly impacts the current Real Gross Domestic Product (RGDP) per capita, while expenditure on secondary education is found to be inconsequential (Table 4). However, it is worth noting that there is also an autocorrelation in the output, suggesting that factors other than education expenditures may also influence the economy of County B.

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When examining GDP at constant pricing, the study shows that both elementary and tertiary education expenditures have a substantial impact on GDP at constant value, while secondary education expenditures are found to be inconsequential (Table 5). Similarly, autocorrelation in the data suggests that variables beyond basic and tertiary education spending play a role in shaping the Philippine economy, mirroring the findings in Malaysia.

Furthermore, the study employs Granger causality analysis (Table 6) to examine the causal relationship between education expenditures and GDP in the Philippines. The results indicate that tertiary education expenditures influence the country's GDP, and vice versa, suggesting a reciprocal relationship between the two variables.

These findings highlight the significance of focusing on basic and tertiary education expenditures in driving economic development in County B. They also emphasize the need to consider additional factors beyond education spending that contribute to the overall economic dynamics of the country. For the Philippines, the findings underscore the importance of investing in tertiary education as it plays a vital role in shaping the country's GDP and economic growth.

**Table 5.**
**RGDP per capita and education expenditure in the Country B**

Dependent Variable: RGDP PER CAPITA CURRENT
Sample (adjusted): 2010-2020

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | 184389.3 | 51211.18 | 3.600568 | 0.0035 |
| EXPENDITURE_ON_PRIMARY_E | -1497.783 | 596.3792 | -2.511460 | 0.0272 |
| EXPENDITURE_ON_SECONDARY | 639.3527 | 876.3781 | 0.729539 | 0.4797 |
| EXPENDITURE_ON_TERTIARY_ | -4348.422 | 988.4688 | -4.399148 | 0.0009 |

| | | | |
|---|---|---|---|
| R-squared | 0.918330 | Mean dependent var | 43572.18 |
| Adjusted R-squared | 0.897912 | S.D. dependent var | 27743.71 |
| F-statistic | 44.97736 | Akaike info criterion | 21.22981 |
| Prob(F-statistic) | 0.000001 | Schwarz criterion | 21.42295 |
| Durbin-Watson stat | 0.472993 | Hannan-Quinn criter. | 21.23969 |

**Table 6.**
**GDP at constant and education expenditure in the Country B**

Dependent Variable: GDP CONSTANT LCU
Sample (adjusted): 2010-2020

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | 9.87E+12 | 1.94E+12 | 5.076722 | 0.0003 |
| EXPENDITURE_ON_PRIMARY_E | -7.03E+10 | 2.26E+10 | -3.105221 | 0.0091 |
| EXPENDITURE_ON_SECONDARY | 1.66E+10 | 3.33E+10 | 0.500033 | 0.6261 |
| EXPENDITURE_ON_TERTIARY_ | -1.62E+11 | 3.75E+10 | -4.328572 | 0.0010 |

| | | | |
|---|---|---|---|
| R-squared | 0.913994 | Mean dependent var | 3.65E+12 |
| Adjusted R-squared | 0.892493 | S.D. dependent var | 1.03E+12 |
| F-statistic | 42.50845 | Akaike info criterion | 56.13452 |
| Prob(F-statistic) | 0.000001 | Schwarz criterion | 56.32767 |
| Durbin-Watson stat | 0.739344 | Hannan-Quinn criter. | 56.14441 |

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**Table 7.**
**Causality between RGDP per capita and education expenditure in Country B**

Pairwise Granger Causality Tests
Sample: 2010-2020
Lags: 1

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| EXPENDITURE_ON_TERTIARY_ does not Granger Cause RGDP__CURRENT_LCU_ | 22 | 0.59573 | 0.4497 |
| RGDP__CURRENT_LCU_ does not Granger Cause EXPENDITURE_ON_TERTIARY_ | | 0.35768 | 0.5569 |
| EXPENDITURE_ON_SECONDARY does not Granger Cause RGDP__CURRENT_LCU_ | 13 | 2.70479 | 0.1312 |
| RGDP__CURRENT_LCU_ does not Granger Cause EXPENDITURE_ON_SECONDARY | | 0.00056 | 0.9814 |
| EXPENDITURE_ON_PRIMARY_E does not Granger Cause RGDP__CURRENT_LCU_ | 13 | 3.46096 | 0.0924 |
| RGDP__CURRENT_LCU_ does not Granger Cause EXPENDITURE_ON_PRIMARY_E | | 4.53697 | 0.0593 |

## Conclusions and Recommendations

This research aimed to explore the relationship between education expenditures and economic growth in two countries, Country A and Country B. The findings indicate that tertiary education spending in Country A has a significant impact on the economy, regardless of whether it is measured in current or constant prices. Similarly, in Country B, both primary and tertiary spending are found to have a significant influence on changes in the country's GDP, regardless of the price measurement. However, it is important to note that autocorrelation is observed in both outcomes, suggesting that education spending alone does not solely determine the economic performance of these countries. Other factors also contribute to the fluctuations in their Real Gross Domestic Product (RGDP).

These findings underscore the importance of education for both the economy and the people of these nations. The consistent allocation of budget to education enhances the competitiveness of their workforce and plays a crucial role in achieving human capital development.

Furthermore, the analysis reveals the variability between the two nations in terms of the variables examined, namely education expenditures and GDP. This highlights the need to tailor education strategies to each country's unique circumstances, rather than adopting a one-size-fits-all approach like the European Union. Additionally, the heterogeneity of nations in terms of their human capital investments varies significantly as each country specializes in specific commodities and services. This can be observed in the contrasting impacts of education between Country A, which is a manufacturing powerhouse, and Country B, which has a service-sector-based economy.

The presence of autocorrelation and negative coefficients in the data suggests that education spending alone is not enough to drive an increase in per capita GDP in Malaysia and the Philippines. Therefore, it is necessary to consider additional factors that contribute to economic growth. In the case of the Philippines, the research findings indicate that focusing on expenditure on secondary education is crucial, as only this type of expenditure has a positive effect on GDP per capita. As a recommendation, further analysis should be conducted to assess the impact of the K-12 system, which includes an additional two years of secondary education, on GDP per capita. It is important to note that the existing data set may be insufficient and may not accurately capture the influence of the K-12 system on secondary education expenditures. Therefore, this article suggests the inclusion of a larger sample size for future research in the Philippines to provide more accurate insights and recommendations.

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