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Analysis of the Influence of Human Resource Quality on Economic Growth in Central Sulawesi Province in 2014-2023

Ririn Diah Wardani[1*], Chairil Anwar[2], M. Anwar Nasruddin[3], Novita Sari[4]

[1,2,3]Department of Economics and Development Studies, Tadulako University, Indonesia

*e-mail: ririndiahwardani@gmail.com[1]

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ABSTRACT

Economic growth is an important indicator in measuring the success of a region's development. Achieving optimal economic growth requires high-quality Human Resources (HR), because the effective utilization of HR can increase productivity and ultimately drive economic growth. This study aims to analyze the influence of HR quality on economic growth in Central Sulawesi Province in 2014-2023. HR quality is proxied through Mean Years of Schooling (MYS) as an education indicator, Life Expectancy (LE) as a health indicator, and Adjusted Per Capita Expenditure (APE) as an indicator of a decent standard of living, while economic growth is proxied through the value of Gross Regional Domestic Product at Constant Prices. The analytical method used is panel data regression on 13 regencies/cities over ten years (130 observations) with the aid of EViews 12 SV software. The results of the Chow test and Hausman test indicate the Fixed Effect Model (FEM) as the best model. The findings show that, partially, MYS has a positive and significant effect on economic growth (coefficient 3.083947; probability 0.0286), LE has a negative and insignificant effect (coefficient -0.697529; probability 0.8582), and APE has a positive but insignificant effect (coefficient 0.620501; probability 0.5187). Simultaneously, MYS, LE, and APE have a positive and significant effect on economic growth with an F-statistic of 54.82876 (probability 0.000000) and are able to explain 87.83 percent of the variation in economic growth. These findings affirm that investment in education is the main lever of economic growth in Central Sulawesi Province.

Keywords: *Adjusted per capita expenditure, Economic growth, Human resource quality, Life expectancy, Mean years of schooling*

INTRODUCTION

Growth is a country's primary economic performance, and the growth expected is quality growth. A country's economic growth reflects the success of its economic development, so that all countries, both developed and developing, strive to increase their economic growth, including Indonesia. The success of development is measured by the attainment of the level of economic growth and the capacity to transform the economy, namely shifting the economic structure from the primary sector toward the secondary and tertiary sectors (Lonni, 2013). Achieving such economic growth requires high-quality Human Resources (HR), because the effective utilization of HR affects productivity, which in turn increases economic growth.

HR is the capacity of individuals to carry out their role as social beings capable of adapting, transforming, managing themselves, and optimizing their potential in order to achieve welfare within a balanced and sustainable order. To achieve national goals and to have an impact on economic growth, high-quality HR is greatly needed to support productivity and economic activity (Hasiani, 2015). HR quality is commonly measured through three dimensions of human development, namely education, health, and a decent standard of living, each reflected in the indicators of Mean Years of Schooling (MYS), Life Expectancy (LE), and Adjusted Per Capita Expenditure (APE).

Central Sulawesi Province is located in the central part of Sulawesi Island, with a land area of 61,841.29 square kilometers and a sea area of 193,923.75 square kilometers, comprising 12 regencies and 1 city. During 2014-2023 the population tended to increase, from 2,831.28

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thousand people in 2014 to 3,086.75 thousand people in 2023 (BPS Sulawesi Tengah, 2023). The province's economy is dominated by the manufacturing industry sector, which contributes 40.37 percent; agriculture, forestry, and fisheries 15.77 percent; mining and quarrying 15.30 percent; construction 8.31 percent; and wholesale and retail trade 5.82 percent, so that these five business fields account for 85.57 percent of the regional economy (LPPD, 2023).

The province's employment structure exhibits a pattern different from its production structure. Based on the National Labor Force Survey of August 2023, the main field of work of Central Sulawesi's population is agriculture, forestry, and fisheries, which absorbs 40.58 percent of workers, followed by wholesale and retail trade at 14.75 percent and manufacturing at 8.72 percent. The gap between the dominance of manufacturing in the production structure and the dominance of agriculture in the labor-absorption structure indicates that the benefits of industry-based growth have not yet fully reached the workforce broadly, so that HR quality becomes the key to enabling workers to move into higher value-added sectors.

The rate of economic growth in Central Sulawesi during 2014-2023 shows fluctuations that are interesting to analyze. In 2014 the growth rate reached 5.07 percent, surged to 15.50 percent in 2015, declined to 7.10 percent in 2017, then rose sharply to 20.56 percent in 2018, driven mainly by the expansion of the nickel manufacturing industry in Morowali Regency. The Covid-19 pandemic depressed growth to negative 4.86 percent in 2020, before it recovered to 11.68 percent in 2021 and 15.22 percent in 2022, then declined to 11.91 percent in 2023 due to falling prices of leading export commodities and the declining performance of the oil and gas sector in Banggai Regency (BPS Sulawesi Tengah, 2023).

The indicators of HR quality in Central Sulawesi Province show differing developmental dynamics. MYS increased consistently from 7.89 years in 2014 to 8.96 years in 2023, supported by the growth in the number of professional teachers as well as the implementation of a zoning-based new student admission system and the socialization of the 12-year compulsory education program (LPPD, 2023). LE also increased from 67.18 years to 69.17 years, in line with the declining morbidity rate and the increase in health facilities and personnel (BPS Sulawesi Tengah, 2023).

In contrast to the two indicators above, APE actually fluctuated. Central Sulawesi's APE was recorded at IDR 8,602 thousand per person per year in 2014 and increased to IDR 9,604 thousand in 2019, but declined to IDR 9,335 thousand in 2020 due to the Covid-19 pandemic, which depressed economic activity, household income, and people's purchasing power. APE rose again to IDR 9,378 thousand in 2021 until it reached IDR 10,149 thousand in 2023 (BPS Sulawesi Tengah, 2023). The inconsistency between the increases in MYS and LE on one side and the fluctuations in economic growth and APE on the other raises the question of the extent to which HR quality plays a role in driving regional economic growth.

The research gap in this study is apparent from empirical findings that are not yet consistent: MYS was found to have a significant positive effect in the Special Region of Yogyakarta (Yusuf et al., 2022) but a significant negative effect in Kalimantan (Fitrianingtyas & Nuryadin, 2023); the health indicator was insignificant in several regions (Nurwijayati, 2017) yet significant in West Sumatra (Aryandi, 2024); and per capita expenditure was significantly positive in Kalimantan but insignificant in North Maluku (Marlin, 2022), while similar studies for Central Sulawesi Province with its growth characteristics based on the nickel manufacturing industry are still limited. The novelty of this study lies in the use of panel data from 13 regencies/cities of Central Sulawesi Province for the 2014-2023 period, which covers the times before, during, and after the Covid-19 pandemic, so that it is able to capture inter-regional heterogeneity through the Fixed Effect Model in a province with a growth surge based on nickel downstreaming. To fill this gap, this study aims to analyze the influence of MYS, LE, and APE, both partially and simultaneously, on the economic growth of Central Sulawesi Province in 2014-2023.

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LITERATURE REVIEW

Human capital theory states that education, training, and health constitute investments that increase individual productivity and ultimately drive economic growth. The concept of human capital can be traced to the thought of Adam Smith, who regarded the abilities and skills of the population as part of a society's stock of capital (Ganeva, 2010). The quality of HR produced through the education system enriches individual knowledge and skills, which play a role in labor productivity and economic development (Burhanudin, 2021). In addition to education, human capital is also measured through health; the higher the health status of the population, the better the labor productivity, which in turn affects the increase in economic growth (Nurkholis, 2018).

This human capital theory is supported by a number of empirical findings. Yusuf et al. (2022) found that education, proxied through Mean Years of Schooling and Expected Years of Schooling, has a positive and significant effect on economic growth in the Special Region of Yogyakarta, consistent with the proposition that the accumulation of education increases labor productivity. Suhendra (2020), using panel data estimation in Indonesia, also affirmed the role of human capital in driving economic growth. Nevertheless, empirical support for the health component of this theory is not always consistent; Nurwijayati (2017) found the health indicator to have no significant effect on economic growth, indicating that the benefit of health to growth depends on whether the improvement in health status is accompanied by improvements in skills and productivity.

The new growth theory, or endogenous growth theory, was developed by Paul M. Romer in 1986 and Robert Lucas in 1988. This theory states that long-term economic growth is determined by internal factors of the economy, especially investment in human capital, innovation, and knowledge, rather than merely the accumulation of physical capital or the increase in consumption (Romer, 1990; Juhro & Trisnanto, 2018). This theory foregrounds the role of creativity and innovation that stem from human quality in supporting sustainable economic development, so that it is relevant for explaining the relationship between HR quality and regional economic growth.

The proposition of endogenous growth theory that consumption alone is insufficient to drive growth is also supported by empirical evidence. Marlin (2022) found that a decent standard of living proxied through per capita expenditure has no significant effect on the economic growth of North Maluku Province, reinforcing the argument that an increase in expenditure does not necessarily affect growth if it is not directed toward productive investment and improvements in HR quality. Conversely, Fitrianingtyas and Nuryadin (2023) found per capita expenditure to have a significant positive effect on the economic growth of Kalimantan, so that the direction and significance of its effect are contextual, depending on expenditure allocation patterns and regional characteristics.

Mean Years of Schooling (MYS) reflects the average number of years of formal education completed by the population aged 25 years and over, thus serving as an indicator of a region's educational attainment. Life Expectancy (LE) is an estimate of the average lifespan of a person from birth, assuming that the age-specific mortality pattern does not change; a high LE is an indicator of the success of health development, whereas a low LE indicates suboptimal health services. Adjusted Per Capita Expenditure (APE) reflects the purchasing power and decent standard of living of the population, calculated from adjusted per capita household consumption expenditure. These three indicators are components of the Human Development Index that are commonly used to measure HR quality.

Regional economic growth is measured through the development of Gross Regional Domestic Product (GRDP). GRDP at Constant Prices removes the effect of price changes so that it reflects the change in real production volume, and is therefore used as a proxy for economic growth in this study. Quality economic growth is characterized by an increase in production

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accompanied by improvements in productivity and community welfare (Arsyad, 1999; Prawoto, 2020).

Empirical Review

Several previous studies serve as references for this research. Nurwijayati (2017) examined the effect of composite human development indicators on the economic growth of regencies/cities in the Special Region of Yogyakarta and found that life expectancy had no significant effect while MYS had a significant effect on economic growth. Yusuf et al. (2022) tested the effect of education and the Human Development Index on economic growth in the Special Region of Yogyakarta using panel data analysis and found that MYS and Expected Years of Schooling had a positive and significant effect, whereas the HDI and the Literacy Rate had no effect.

Fadilla (2023) found that education and the HDI had a positive effect on economic growth in West Aceh Regency. Fitrianingtyas and Nuryadin (2023) examined HR quality and the economic growth of Kalimantan using panel data regression and found that, partially, MYS had a significant negative effect, life expectancy was insignificant, and per capita expenditure had a significant positive effect, while simultaneously the three were significant. Aryandi (2024) found that life expectancy and MYS had a significant effect on the economic growth of West Sumatra Province, whereas per capita expenditure and population size had no effect. Marlin (2022) found that a decent standard of living proxied by APE had no significant effect on the economic growth of North Maluku Province, and Suhendra (2020) affirmed the role of human capital in Indonesia's economic growth using panel estimation.

The diversity in the direction and significance of these findings shows that the effect of each HR quality indicator on economic growth is contextual, depending on the characteristics of the region and the observation period. This study complements those studies by positioning Central Sulawesi Province as the object, namely a province with a growth surge based on the downstreaming of the nickel industry, using panel data of regencies/cities for the 2014-2023 period.

Hypotheses

Based on the theoretical and empirical review, the research hypotheses are formulated as follows. Ha_1: MYS partially has a significant effect on the economic growth of Central Sulawesi Province. Ha_2: LE partially has a significant effect on the economic growth of Central Sulawesi Province. Ha_3: APE partially has a significant effect on the economic growth of Central Sulawesi Province. Ha_4: MYS, LE, and APE simultaneously have a significant effect on the economic growth of Central Sulawesi Province in 2014-2023.

METHOD

This study uses an associative research type with a quantitative approach, namely research that aims to examine the influence and relationship between two or more variables and to seek cause-and-effect relationships among variables (Abdullah et al., 2022). The research location is Central Sulawesi Province, with the research object being MYS, LE, APE, and economic growth proxied through the value of GRDP at Constant Prices per regency/city over the period 2014-2023 (Abubakar, 2021).

The type of data used is quantitative data (Sugiyono, 2017) sourced from secondary data, namely data obtained from documents, publications, and institutional reports (Dermawan, 2013). The research data comprise MYS, LE, APE, and GRDP at Constant Prices per regency/city in Central Sulawesi Province for 2014-2023, obtained from the publications of the Statistics Indonesia office of Central Sulawesi Province. Data collection was carried out through documentation study, namely recording data already available in official documents (Hardani et al., 2020).

The variables in this study consist of one dependent variable and three independent variables, all of which are on a ratio scale. The dependent variable is economic growth (Y), defined as the development of the value of Gross Regional Domestic Product at Constant Prices, 2010

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series, per regency/city, expressed in percent, which is then transformed into natural logarithm form. The first independent variable is Mean Years of Schooling (X_1), namely the average number of years of formal education completed by the population aged 25 years and over, expressed in years. The second independent variable is Life Expectancy (X_2), namely the average estimated number of years a person can live from birth, also expressed in years. The third independent variable is Adjusted Per Capita Expenditure (X_3), namely adjusted per capita consumption expenditure as a measure of a decent standard of living, expressed in thousand rupiah per person per year.

The analytical method used is panel data regression, namely a combination of time series and cross section data, with the aid of EViews 12 SV software. The study's panel data cover 13 regencies/cities in Central Sulawesi Province over ten years (2014-2023), yielding 130 observations. There are three approaches to estimating panel data models, namely the Common Effect Model (CEM), which combines all data without regard to the individual and time dimensions; the Fixed Effect Model (FEM), which assumes different intercepts across individuals with the same coefficients; and the Random Effect Model (REM), which handles intercept differences through error terms (Kusumaningtyas et al., 2022).

The selection of the best model is carried out through the Chow test to choose between CEM and FEM, the Hausman test to choose between FEM and REM, and the Lagrange Multiplier test to choose between CEM and REM (Kusumaningtyas et al., 2022). The panel data regression model of this study is formulated as follows:

$$lnPE_{it} = a + \beta_1 lnMYS_{it} + \beta_2 lnLE_{it} + \beta_3 lnAPE_{it} + e_{it}$$

where PE is economic growth, α is the constant, β_1, β_2, and β_3 are the regression coefficients, ln is the natural logarithm, i is the cross section dimension (regency/city), t is the time series dimension (year), and e is the error term.

Before interpreting the results, classical assumption tests were conducted, comprising the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test (Nuryadi et al., 2017). Hypothesis testing was carried out through the partial test (t-test) to assess the effect of each independent variable, the simultaneous test (F-test) to assess the joint effect of all independent variables, and the coefficient of determination test (R^2) to assess the proportion of variation in the dependent variable that can be explained by the independent variables, with decision criteria at a significance level of 0.05.

RESULTS AND DISCUSSION

Research Results

The development of economic growth of regencies/cities in Central Sulawesi Province during 2014-2023 shows varied dynamics. The province's growth surge in 2015 of 15.50 percent was driven mainly by Morowali Regency, which grew 67.82 percent owing to the expansion of the mining and nickel manufacturing sectors, and the peak of growth in 2018 of 20.56 percent was supported by Morowali's growth, which reached 112.20 percent. The Covid-19 pandemic in 2020 depressed the province's growth to negative 4.86 percent and almost all regencies/cities experienced contraction, although Morowali still grew positively at 28.74 percent thanks to continued nickel exports. During the recovery, the province's growth increased to 11.68 percent in 2021 and 15.22 percent in 2022, before declining to 11.91 percent in 2023, with Morowali, North Morowali, and Banggai as the main contributors through the manufacturing and mining sectors.

The value of GRDP at Constant Prices of all regencies/cities increased throughout 2014-2023, with the most prominent growth in Banggai Regency, Morowali Regency, and Palu City, supported by the nickel manufacturing industry in Morowali, the oil and gas industry in Banggai, and the development of the services and infrastructure sectors in Palu City as the province's center of government and trade. In terms of HR quality, MYS increased consistently from 7.89 years to 8.96 years, LE increased from 67.18 years to 69.17 years, while APE increased from IDR

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8,602 thousand to IDR 10,149 thousand per person per year, with a decline in 2020 due to the pandemic.

The results of the classical assumption tests indicate that the model is suitable for use. The Jarque-Bera normality test produced a probability below 0.05; however, because the number of samples is 130 observations (n > 30), the data are still considered normally distributed based on the Central Limit Theorem, which states that the sample distribution approaches normal when the number of samples is sufficiently large (Basuki & Prawoto, 2016). The multicollinearity test produced Centered VIF values of 2.795317 for MYS, 1.835006 for LE, and 2.100457 for APE, all smaller than 10, so that the model is free from multicollinearity problems. The heteroscedasticity test using the residual graph shows that the residual variance does not exceed the boundary, so that there is no heteroscedasticity symptom. Meanwhile, the Durbin-Watson test produced a value of 0.629651, which is smaller than dL of 1.6667, indicating autocorrelation; nevertheless, in panel data regression only the multicollinearity and heteroscedasticity tests are required because autocorrelation is essentially a pure time series data problem, so that this indication does not affect the validity of the Fixed Effect Model used (Basuki & Prawoto, 2016).

The selection of the panel data estimation model was carried out through the Chow test and the Hausman test. The Chow test produced a Cross-section Chi-square probability of 0.0000 (< 0.05), so that H0 is rejected and the more appropriate model is the Fixed Effect Model rather than the Common Effect Model. The Hausman test produced a Cross-section random probability of 0.0000 (< 0.05), so that H0 is rejected and the Fixed Effect Model is more appropriate than the Random Effect Model. Because both tests consistently select the Fixed Effect Model (FEM), the Lagrange Multiplier test is not required and estimation continues using FEM. The results of the panel data regression estimation using FEM are presented in Table 1.

Table 1. Panel Data Regression Results of the Fixed Effect Model

Variable	Coefficient	t-Statistic	Probability	Description
C (Constant)	6.421071	0.425695	0.6711	-
Mean Years of Schooling (X_1)	3.083947	2.216518	0.0286	Significant
Life Expectancy (X_2)	-0.697529	-0.179010	0.8582	Insignificant
Adjusted Per Capita Expenditure (X_3)	0.620501	0.647427	0.5187	Insignificant
R-Squared = 0.878261			Adjusted R-Squared = 0.862243	
F-Statistic = 54.82876			Prob (F-Statistic) = 0.000000	

Source: Secondary data processed with EViews 12 SV (2025)

Based on Table 1, the panel data regression equation obtained is ln(PE) = 6.421071 + 3.083947 ln(MYS) − 0.697529 ln(LE) + 0.620501 ln(APE) + e. The constant value of 6.421071 indicates that if MYS, LE, and APE are held constant, the economic growth of Central Sulawesi Province is at that level. The MYS coefficient of 3.083947 indicates that every one percent increase in MYS raises economic growth by 3.083947 percent; the LE coefficient of −0.697529 indicates that every one percent increase in LE lowers economic growth by 0.697529 percent; and the APE coefficient of 0.620501 indicates that every one percent increase in APE raises economic growth by 0.620501 percent.

The cross section fixed effect estimation results for the 13 regencies/cities show differences in intercepts across regions with the same coefficient (slope). These intercept differences reflect the differing potentials and characteristics of each region, such as the manufacturing-based economic structure in Morowali and Banggai or the services-based structure in Palu City, which are not fully explained by the HR quality factor but still contribute to shaping economic growth.

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The partial test (t-test) shows that MYS has a t-count of 2.216518, greater than the t-table of 1.978671, with a probability of 0.0286 (< 0.05), so that MYS has a positive and significant effect on economic growth; the first hypothesis is accepted. LE has a t-count of −0.179010, smaller than the t-table, with a probability of 0.8582 (> 0.05), so that LE has no significant effect; the second hypothesis is rejected. APE has a t-count of 0.647427, smaller than the t-table, with a probability of 0.5187 (> 0.05), so that APE has no significant effect; the third hypothesis is rejected.

The simultaneous test (F-test) produced an F-count of 54.82876, greater than the F-table of 2.676525, with a probability of 0.000000 (< 0.05), so that MYS, LE, and APE simultaneously have a significant effect on economic growth; the fourth hypothesis is accepted. The coefficient of determination test produced an R-squared of 0.878261 and an adjusted R-squared of 0.862243, meaning that the three HR quality variables are able to explain 87.83 percent of the variation in the economic growth of Central Sulawesi Province, which is classified as very strong because it lies in the range of 0.80-1.00, while the remaining 12.17 percent is explained by other variables outside the model.

Discussion

MYS has a positive and significant effect on the economic growth of Central Sulawesi Province. This finding is in line with human capital theory, which positions education as an investment that enriches individual knowledge and skills, thereby increasing labor productivity and economic development. The increase in MYS not only reflects an improvement in access to education, but also contributes to the formation of a more skilled and competent workforce, which in turn drives economic growth in a sustainable manner. This finding is consistent with Yusuf et al. (2022), who found that MYS and Expected Years of Schooling have a positive and significant effect on economic growth in the Special Region of Yogyakarta, as well as with Nurwijayati (2017), who found MYS to be significant.

Field facts support this finding. During 2014-2023, Central Sulawesi's MYS increased from 7.89 years to 8.96 years, supported by the 12-year compulsory education program as well as the construction of educational facilities and infrastructure reaching remote areas. The number of schools increased from 5,681 units in the 2013/2014 academic year to 7,054 units in the 2022/2023 academic year, covering the addition of kindergartens/equivalent from 1,771 to 2,172 units, primary schools/equivalent from 2,763 to 3,137 units, junior secondary schools/equivalent from 799 to 1,160 units, and senior secondary schools/equivalent from 187 to 585 units. In line with this, the province's Human Development Index increased from 66.43 in 2014 to 70.95 in 2023, indicating an improvement in access to and quality of education that contributes to economic growth through the improvement of HR quality (BPS Sulawesi Tengah, 2023).

LE has a negative and insignificant effect on the economic growth of Central Sulawesi Province. This finding is consistent with Nurwijayati (2017), who found the health indicator to have no significant effect on the economic growth of regencies/cities in the Special Region of Yogyakarta, as well as with Fitrianingtyas and Nuryadin (2023) in Kalimantan. Theoretically, human capital theory regards health as a component of human capital that increases productivity; however, the findings of this study do not align with that prediction because a high LE that is not accompanied by an increase in skills can instead become a burden on regional development.

In the context of Central Sulawesi Province, most of the population with long life expectancy is in the non-productive age, namely around 63 years and over, whose work productivity tends to decline so that their economic participation also declines. The non-productive-age population does not contribute directly to economic activity yet still requires consumption as well as social security and health services, so that it can reduce the budget allocation for productive investment and enlarge health care costs, which ultimately depresses economic growth. This finding implies that the success in increasing life expectancy needs to be accompanied by policies that maintain the quality of life and productivity of the elderly population.

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APE has a positive but insignificant effect on the economic growth of Central Sulawesi Province. This finding is in line with Marlin (2022), who found that a decent standard of living proxied by APE has no significant effect on the economic growth of North Maluku Province, and is consistent with the endogenous growth theory of Romer and Lucas, which emphasizes that long-term growth is driven by investment in human capital, innovation, and knowledge, rather than merely an increase in consumption or per capita expenditure (Romer, 1990). An increase in APE does not necessarily drive economic growth if it is not accompanied by improvements in productivity and education.

The structure of household consumption in Central Sulawesi explains this insignificance. Throughout 2014-2023, monthly per capita expenditure was allocated more to the consumption of food, beverages, and tobacco, which increased from IDR 383,546 in 2015 to IDR 602,468 in 2023, than to non-food consumption, which increased from IDR 377,066 to IDR 571,212 over the same period. Non-food expenditure was itself dominated by the housing and household facilities group, while the allocation for health and education was relatively low, namely IDR 79,950 in 2015 and only reaching IDR 107,783 in 2023 (BPS Sulawesi Tengah, 2023). Expenditure focused on basic consumptive needs, rather than on investment in improving HR quality, is not sufficient to drive sustainable economic growth.

Simultaneously, MYS, LE, and APE have a positive and significant effect on economic growth, with the ability to explain 87.83 percent of the variation in economic growth. This shows that HR quality as a whole makes a real contribution to the economic growth of Central Sulawesi Province; investment in the education, health, and decent-standard-of-living sectors jointly has a significant impact even though, individually, only education is significant. This finding reinforces the view of endogenous growth theory that the main driver of economic growth lies in improving the quality of human capital, and at the same time indicates that the main transmission channel in Central Sulawesi is the education pathway.

The policy implications of this finding are multilayered. First, because education is the strongest lever, strengthening access to and the quality of education up to the secondary and tertiary levels needs to be a priority of regional development spending, including the provision of jobs capable of absorbing the educated workforce so that the increase in MYS does not stop as a statistical achievement. Second, health policy needs to be directed not only at extending lifespan but also at ensuring that the elderly population remains healthy and productive through the integration of health programs with skills development and economic empowerment. Third, efforts are needed to steer household expenditure toward productive consumption such as education, health, and small investments that strengthen HR quality and long-term productivity.

This study's findings contribute to the development of development economics by affirming that the effect of HR quality on economic growth is contextual and not uniform across regions. In Central Sulawesi Province, whose growth is largely driven by the downstreaming of the nickel industry, the education pathway proves to be the most tangible transmission channel of HR quality, while the health and decent-standard-of-living pathways have not yet worked optimally because of the demographic structure and household consumption patterns. This modified understanding enriches the application of human capital theory and endogenous growth theory in the context of natural-resource-based regions, while correcting the assumption that all components of the Human Development Index automatically have a uniform impact on economic growth. Practically, this finding directs policymakers to prioritize education investment as the main driver, while improving the quality of productive health and steering people's expenditure patterns toward activities that increase productivity, so that the accumulation of human capital genuinely culminates in inclusive and sustainable economic growth.

CONCLUSION AND SUGGESTIONS

Based on the research results, partially, Mean Years of Schooling as an education indicator has a positive and significant effect on the economic growth of Central Sulawesi Province in 2014-

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2023; Life Expectancy as a health indicator has a negative and insignificant effect; and Adjusted Per Capita Expenditure as an indicator of a decent standard of living has a positive but insignificant effect. Simultaneously, MYS, LE, and APE have a positive and significant effect on economic growth.

Based on these findings, the government is advised to continue and strengthen education revitalization programs, especially the construction and renovation of schools in underdeveloped areas as well as the development of technology-based classrooms, accompanied by the wider opening of employment opportunities so that educated communities can contribute to economic growth. The government also needs to formulate policies that not only increase lifespan but also ensure the quality of life and productivity of the population, particularly the elderly, through the integration of health programs with skills development and economic empowerment. In addition, efforts are needed to encourage the use of household expenditure for education, health, and small investments that can improve the quality of life and long-term productivity.

This study is limited to three proxies of HR quality and the observation period of 2014-2023, and shows an indication of autocorrelation that is common in panel data with a short time dimension. Future research is advised to add other variables such as investment, labor force, or infrastructure, extend the observation period, and consider dynamic estimation methods to obtain a more comprehensive picture of the determinants of regional economic growth.

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