Analysis of Human Development Index Indicators to Build Quality Human Resources

Agustifa Zea Tazliqoh

Management, Faculty of Economics, Singaperbangsa University Karawang, Karawang, Indonesia

| ABSTRACT	ARTICLE INFO
Quality human resources is one of the important elements to support economic growth because humans are the true wealth of the nation which humans not only act as actors in development programs but humans are the goal of development programs. Quality of human resources is represented by human development index. According to UNDP indicators of human development index are health, education and average length of schooling, as well as a measure that represents income. Therefore, the purpose of this study is to determine indicators that have a significant effect on the quality of human resources. This study used secondary data which was analyzed using correlation and regression analysis. Based on the analysis of the variables Life Expectancy, Years of School Expectation, the average length of schooling has an effect on the human development index while real spending per capita has no effect on the human development index at a significance level of 5%. In this regard, it can be said that health and education play a role in building quality human resources especially in Indonesia.	

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* Corresponding Author at Management, Faculty of Economics, Singaperbangsa University Karawang, Karawang, Indonesia.
E-mail address: agustifa.tazliqoh@fe.unsika.ac.id

1. Introduction

In the current era of globalization, quality human resources are needed for a country, especially developing countries, to be able to face global competition, as revealed by Sholihah and Firdaus (2019), that national development priorities placed in the economic field together by improving the quality of human resources (HR), especially in face the era of globalization, in particular free trade in the ASEAN region 2003 and in the Asia-Pacific region 2020, filled with competition strict and self-determining nation. According to Raharti et al (2020), stated that the quality of human resources in each country is directly proportional to the availability of supporting facilities and infrastructure. If the availability of supporting facilities and infrastructure such as the availability of education, health and infrastructure services is good, then it can increase good human resources. However, in reality, in developing countries there are still many issues related to the inadequate availability of education, health and infrastructure services so that the development of quality human resources often becomes an issue that many developing countries face, including Indonesia.

The Central Statistics Agency (BPS) through its publication entitled Human Development Index 2021 states that from year to year Indonesia's HDI has always increased, even before the COVID-19 pandemic, HDI growth was always above 0.7%. Even during the COVID-19 pandemic, Indonesia's HDI still experiencing an increase, although very small, from 71.92 in 2019 to 71.94 in 2020, then increase again in 2021 to 72.29. Even though Indonesia's HDI continues to increase, HDI growth in the last four years has been dominated by a slowdown in achievements, especially in 2020. In 2020, Indonesia's HDI only grew by 0.03 % as shown in Figure 1. This due to the wider spread of COVID-19 in 2020 and then followed by restrictions activities in various fields.

Figure 1. HDI Achievements and HDI Growth in Indonesia (2010 – 2021)
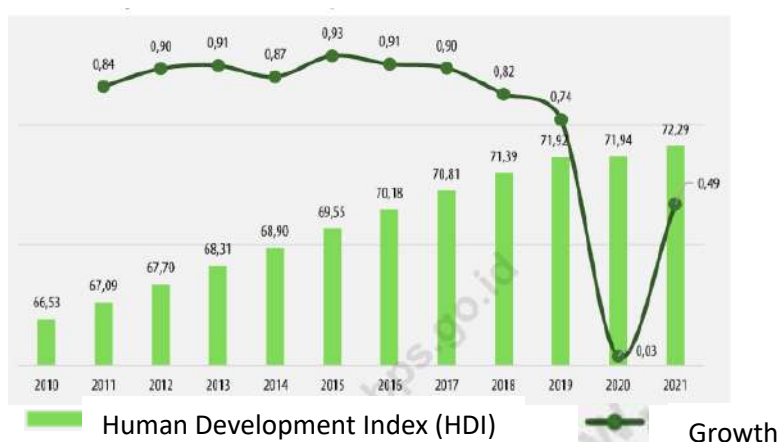
Source: Central Statistics Agency (BPS)

The United Nations Development Program (UNDP) in its report explains that there are three dimensions that make up the human development index, namely health, education and average length of schooling, as well as a measure that represents income. In Indonesia, these three indicators have not fully worked well. This can be seen from the achievements of the three dimensions, for example in the health dimension which is represented by the indicators of longevity and healthy life which are experiencing a slowdown in 2021. The knowledge dimension which is represented by the indicators of the average length of schooling and the expected length of schooling has actually increased, however the average length of schooling has slowed in recent years. In fact, according to BPS data in 2021, the indicator for the longevity of schooling has a growth pattern that continues to slow down from 2018 to 2020 by up to 0.08% point. The income dimension, which is represented by the adjusted real per capita expenditure indicator, has decreased in 2020 to Rp. 11,013.00 per year and has slightly increased in 2021, namely to Rp. 11,156,000 per year. So that aspects of developing quality human resources in Indonesia require more intensive attention in order to improve the quality of human resources better. Because humans are the real wealth of the nation in which humans not only act as actors in development programs but humans themselves are the goal of the development program to realize prosperity for all Indonesian people. This is in accordance with the ideas conveyed by The United Nations Development Program (UNDP) through its report in 1990 entitled Human Development Report (HDR).

In research conducted by Asang (2019), said that the theory of increasing human capital assumes that spending on "Human Capital Resources" is the most strategic element of management compared to other management such as machinery, technology, land, money, and materials in determining performance of management process. In this theory, experts believe that human resource development in the form of education will bring efficiency. In this theory education is considered to have a very decisive role in the development of a society. Education and skills are perceived to be able to help increase capital stock which is able to encourage increased productivity of owned capital so that it will have an impact on increasing the economy more efficiently.

Hastarini (2005), in Human Resource Investment through education states that investment in human capital through education in developing countries is very necessary even though investment in education is a long-term investment and the benefits of this investment can only be felt after decades. Sholihah and Firdaus (2019), in improving the quality of human resources through education state that education is the basic capital of nation building which is directed at efforts to empower all of Indonesia's human potential.

In the two studies conducted by Asang (2019), Hastarini (2005), Sholihah and Firdaus (2019) focus on education. Therefore, this study will involve all indicators measuring the human development index used by BPS to see the effect of each indicator used and also see how much influence each indicator has on the human development index. So the purpose of this study is to determine the effect of each indicator that represents the three dimensions, namely the Old School Expectancy (HLS) and the Average Years of Schooling (RLS), longevity and healthy life, real spending per capita and to find out how much influence each indicator has on the quality of human resources which is represented through the human development index. With this study, it is hoped that it will be able to provide input as material for consideration by policy makers in building quality human resources in Indonesia.

2. Literature Review

Human Resources

Human resources are factors that play an active role in driving an organization to achieve its goals. The achievement of organizational goals is only possible because the efforts of the actors in the organization are able to work well (Pratama, 2019). According to Wiley 2022 in Pratama (2019) states that human resources are the main supporting pillar as well as driving the wheels of the organization in efforts to realize the vision and mission and goals of the organization. In line with this statement, in a country it is necessary to have good quality resources so that the vision, mission and goals of the country can be realized. Therefore, increasing qualified human resources is an important thing that must be done by a country, especially in this digital era so that it can remain competitive through the role of human resources.

Various phenomena in all aspects of life both from the economic, social, cultural and political aspects currently illustrate that actually what is owned becomes meaningless if human resources are unable to manage it. Poor management stems from the problem of low human resources. Sanusi (1998) in sholihah and Firdaus (2019), found that if the past century was called the century of quality product/service, then the future will be the century of quality HR. Qualified human resources and HR quality development is no longer rhetorical issues or themes, rather it is a bet or mainstays and tests for each individual, groups, groups of people, and even every nation.

According to Sholihah and Firdaus (2019), HR development is a process throughout life covering a wide range areas of life, especially done through education. Education is an alternative that can be used to improve the quality of human resources. Through education, efforts to increase quality human resources can provide various benefits such as productivity, morale, efficiency, effectiveness, and organizational stability in anticipating the environment, both from within and outside the organization

which is required to always change with the times (Sholihah and Firdaus, 2019). Therefore, the Government of Indonesia has planned to improve the quality of human resources contained in the 1998 GBHN which reads "Improving the quality of human resources as main actor of development have the ability to utilize develop, as well as mastering knowledge knowledge and technology and fixed based on motivation and control faith and devotion to God Almighty. Increasing globalization encourage market openings international; for goods and products services (education)".

Human Development Index

The Human Development Index (IPM) is a composite index covering three basic areas of human development, namely age of life, knowledge, and a decent standard of living. The Human Development Index is a composite index that is used to measure the average achievement of a country in three basic terms of human development, namely: length of life, education, and standard of living. UNDP uses three dimensions to form HDI. These three dimensions are the chosen approach in describing the quality of human life and have not changed until now (BPS, 2021). These dimensions are:

1. Longevity and healthy life (a long and healthy life);
2. Knowledge and
3. Decent standard of living.

According to BPS (2022), UNDP uses data on Gross National Income (GNI) per capita as an indicator on a decent standard of living dimension. However, this data is not available at the regional level, so an adjusted real per capita expenditure indicator is used as an alternative. This indicator can be calculated up to the district/city level. The dimensions of longevity and healthy life are represented by life expectancy indicators alive at birth. The knowledge dimension is represented by Old School Expectations (HLS) and Average Old School (RLS).

3. Method, Data, and Analysis

This study uses quantitative research methods using correlation analysis and multiple linear regression. Correlation analysis is used to see the linear relationship that occurs between all variables used both dependent and independent. Correlation analysis is used as a first step to see if there is a linear relationship that occurs between the variables, both the independent variable and the dependent variable and between the independent variables. In addition, correlation analysis can also be used to detect multicollinearity problems in multiple linear regression models by looking at the correlations between the independent variables.

Montgomery and Peck (1991), Regression analysis is a statistical technique that is often used to determine the relationship between the independent variable and the dependent variable. Regression model used is as follows:

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 \; _{i2} + \cdots + \beta_k x_{ik} + \varepsilon_i \qquad (1)$$
$$= \beta_0 + \sum_{j=1}^{k} \beta_j X_{ij} + \boldsymbol{\varepsilon}_i \text{ where i = 1,2,…,n}$$

This study used multiple regression analysis because more than one independent variable was used. There are two variables used in the study, namely the independent variable and the dependent variable. The dependent variable used is the human development index and the independent variables used are life expectancy, years of school expectation, average length of schooling and real spending per capita.

This study uses secondary data, namely data on the human development index, life expectancy, years of school expectation, average length of schooling and real expenditure per capita from 34 Provinces in Indonesia. The data was obtained from the publication of the Central Statistics Agency (BPS) through the Central Statistics Agency's website. The data used includes data on the human development index, life expectancy, expected length of schooling, average length of schooling and real spending per capita in all provinces in Indonesia in 2021. In this study only uses one year, namely in 2021 with the consideration that 2021 is the year the recovery of activities begins after 2020 all activities are limited due to the covid-19 pandemic. In this research, the steps taken in conducting data analysis are:

1. Collecting data;
2. Perform correlation analysis of all variables;
3. Create a multiple regression model;
4. Perform parameter significance test;
5. Make conclusions based on the analysis performed.

4. Result and Discussion

Correlation Analysis

Based on Table 1, it indicates that there may not be a multicollinearity problem that occurs in the multiple linear regression model. This can be seen from the no correlation between the independent variables, namely between life expectancy and years of schooling, average years of schooling and real per capita expenditures. There is also no correlation between the old expectations of schools and real spending per capita. Likewise with the average length of schooling with real spending per capita. There is a strong positive correlation between the human development index variable and life expectancy and the average length of schooling. There is also a positive correlation between the human development index and old school expectations but the correlation is weak. Meanwhile, for the human

development index variable and real per capita expenditure, the correlation value is very small, so it can be concluded that there is no correlation between the human development index and real per capita expenditure.

The results of the correlation between the four independent variables and the dependent variable indicate that the results of the parameter significance test in the regression model will most likely give significant results. So based on the results of this correlation analysis it can be said that in Indonesia the life expectancy factor as a representation of the health dimension, the expected length of schooling and the average length of schooling as a representation of the education dimension have a positive linear relationship to the human development index. This means that the better the level of health and education in Indonesia, the better the human development index.

These results support the research conducted by Asang (2019), Hastarini (2005), Sholihah and Firdaus (2019), that education is indeed the basic capital for a nation in increasing good and quality human resources to encourage development for a country. Therefore, in order to strengthen the development of quality human resources, the government needs to invest in human resources. For example, by increasing the budget for education and health expenses, especially for the underprivileged, so that all levels of society get proper education and health through free education and health programs for the poor. In addition to making policy programs, the government should also evaluate the policies that have been implemented to improve services to the community and see whether the policy programs are on target. So there is no term "the rich get richer the poor get poorer" because education and health are expected to be able to improve the quality of human resources. With quality human resources, it is hoped that it will be able to improve the quality of life of the community so that it can create a prosperous community life.

The correlation analysis was only able to see a linear relationship between the dimensions of health, education and a decent standard of living on the human development index. In proving whether these three dimensions have an influence on the human development index, we need other analytical tools. Therefore, this study uses multiple linear regression analysis to see whether life expectancy as a dimension of health, expected length of schooling and average length of schooling as a dimension of education as well as real expenditure per capita as a dimension of decent standard of living affect the human development index.

Table 1. Correlation Value between Variables

Variable	Uhh	HLS	RLS	Expenditure
uhh				
HLS	0.225			
RLS	0.417	0.466		

Expenditure	0.275	-0.084	-0.196	
IPM	0.778	0.501	0.779	0.113

Note: Correlation value between variables

Source: Results of data processing using Minitab software

Multiple Linear Regression Analysis

Based on the data analysis that has been carried out, a regression model for the human development index is obtained with the four independent variables used, namely life expectancy, expected length of schooling, average length of schooling and expenditure as follows:

HDI = -14.96 + 0.792 UHH + 0.829 HLS + 2.176 RLS + 0.000094 Expenditures   (2)

Based on the model above, it can be seen that all the coefficients of the independent variables are positive. This is in line with the results of the correlation analysis that has been carried out which states that the relationship that occurs is a positive linear relationship. Life expectancy will be able to increase the human development index by 0.792 per one unit of life expectancy. The school's old expectations can increase the human development index by 0.829 per one unit of school's old expectations. The average length of school can increase by 2,176 human development indexes per one unit of average length of school. Meanwhile, spending is only able to increase the human development index by 0.00094 per unit of real expenditure per capita. The coefficient shows that the average length of schooling has the greatest coefficient. This indicates that the higher the level of human education, the higher the index of human development in Indonesia.

These results are in line with Kasper and Streit's (2012) explanation in Raharti et al (2020), in the process of economic growth there are several factors that must be considered, one of which is skills. In this case education has an important role to improve the abilities possessed by humans. If education and skills are properly accommodated, they will be able to improve the economy more efficiently.

The model that has been obtained needs to be tested to see whether the model is significant or not and to see the effect of the four variables on the human development index by using the parameter significance test. The parameter significance test used is the F test and t test. The F test is used to see whether the model is significant or not, while the t test is used to see the effect of these four variables on the human development index.

a. Simultaneous Parameter Significance Test

Hypothesis formulation:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$
$$H_1 : \beta_j \neq 0 \text{ for } j = 1, 2, 3, 4$$

Based on the P-value in Figure 2, it is obtained that P-value = 0 < α = 0.05, then H_0 is rejected so that it can be concluded that the independent variables, namely life expectancy, expectation of school length, average length of schooling and real expenditure per capita have a significant effect simultaneously to the response variable, namely the human development index or in other words a significant model.

Figure 2. *Analysisi of variance* (ANOVA)

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Analysis of Variances

Source        DF    Adj SS      Adj MS      F -Value    P-Value
Regression    4     450.730     112.683     53.67       0.000
UHH           1     90.592      90.592      43.15       0.000
HLS           1     9.692       9.692       4.62        0.040
RLS           1     82.029      82.029      39.07       0.000
Expenditure   1     3.202       3.202       1.53        0.227
Error         29    60.883      2.099
Total         33    511,613
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Source: Processed data using Minitab *software*

b.   Parameter Significance Test individually

Based on the test in Table 2, it shows that the variables life expectancy, years of school expectation, average years of schooling are significant while real expenditure per capita is not significant. So it can be concluded that life expectancy, long schooling expectancy, average length of schooling have a partial effect on the human development index while real spending per capita has no effect on the human development index at a significance level of 5%.

Table 2 . Individual Parameter Significance Test

Free Variables	Coefficient	t_0	Sig	Conclusion
UHH	0.792	6.57	0	Significant
HLS	0.829	2.15	0.04	Significant
RLS	2.176	6.25	0	Significant
Expenditure	0.000094	1.24	0.227	Not significant

Note: Significance values for each parameter in the model

Source: results of data processing with Minitab software

Based on the tests that have been carried out, it can be said that the human development index in Indonesia is influenced by health and education factors. The better the level of health and education in Indonesia, the better the human development index. Increasing the human development index can improve the quality of human resources in Indonesia. Quality human resources will not only grow the economy but will also have an impact on the socio-cultural aspects of society.

The results of this study support the explanation presented by Raharti, Sarnowo, and Aprillia (2020), namely that in an effort to improve community welfare, the main focus of development not only

economic development alone, but more directed at the development of human resources. The development model strategy that focuses more on increasing physical capital turns out to be lead to imbalances in the distribution of income. Apart from growth economically, human development is very important in efforts to reduce levels poverty and inequality. This is because of good education and health enable the poor to increase the value of their assets given the assets what matters to them is their power. In connection with that, investment in education and health is very important important for poverty reduction. This is in line with the results of the Conference High-Level world leaders in 2000 have agreed on the so -called with the Millennium Development Goals (MDGs). Development will put human development as the key to achieve sustainable socio-economic development of society.

In order to measure the goodness of the model that is formed, it can be seen the coefficient of determination that is formed. Based on Figure 3, it shows that the coefficient of determination of the regression model formed is 88.10%. This means that 88.10% of the diversity of the response variable, namely the human development index, can be explained by the independent variables, namely life expectancy, expected years of schooling, average length of schooling and real per capita expenditures, while the remaining 11.90% is explained by other variables. outside the models. This figure shows that the regression model that has been formed is good so that the regression model for the human development index in Indonesia with four variables life expectancy, expected years of schooling, average length of schooling and real per capita expenditure is feasible to use. In addition, the coefficient of determination shows the magnitude of the simultaneous influence of the four independent variables on the human development index. This indicates that health, education, and a good standard of living can improve the quality of human resources on an ongoing basis.

Figure 3. Model Summary

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Summary models

S              R- sq        R -sq (adj)   R-sq (pred)
1.44893        88.10%       86.46%        80.71%
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Source: Results of data processing with Minitab *software*

In multiple regression analysis there are several assumptions that must be met, namely the assumption of normality, homoscedasticity, non-autocorrelation and non-multicollinearity. One of these assumptions is also to see the goodness of the model formed. If there are assumptions that are not met, the model obtained will also reduce its accuracy (Gujarati, 2004).

a. Normality
    Figure 4. Probability Plots
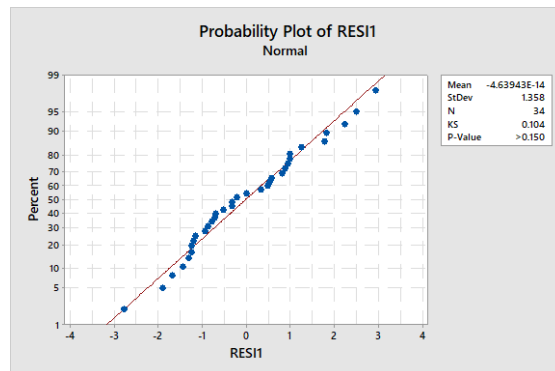
Source: Processed data using Minitab *software*

Based on the figure above, it can be seen that the distribution pattern of the data follows a straight line so that it can be said that the assumption of normality is fulfilled. Besides that, based on the Kolmogorov Smirnov value > 0.150, this value is more than the 5% alpha significance level, which means that the assumption of normality is fulfilled.

b. Homoscedasticity

Based on Figure 5, it can be seen that the distribution pattern does not show a specific pattern, such as a funnel pattern or other patterns. Thus it can be concluded that the model meets the assumption of Homoscedasticity.

Figure 5. Residuals versus Fits
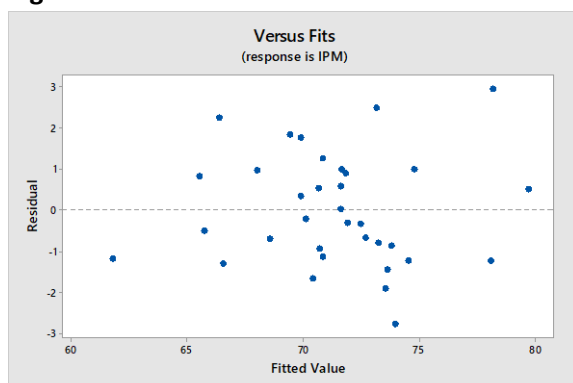
Source: Processed data using Minitab *software*

c. Non-autocorrelation

Based on Figure 6 it can be seen that the graph pattern shown does not show a specific pattern so that it can be said that there is no autocorrelation. Thus it can be concluded that the model fulfills the assumption of non-autocorrelation.

Figure 6. Residuals versus Orders
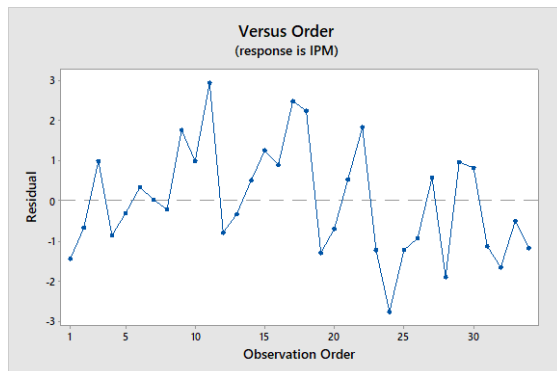
Source: Processed data using Minitab *software*

d. Multicollinearity

Figure 7. Coefficients

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Coefficients
Term        Coef       SE Coef     T -Value    P-Value     VIF
Constant    -14.96     8.10        -1.85       0.075
UHH         0.792      0.121       6.57        0.000       1.44
HLS         0.829      0.386       2.15        0.040       1.28
RLS         2.176      0.348       6.25        0.000       1.64
expenses    0.000094   0.000076    1.24        0.227       1.24
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Source: Processed data using Minitab *software*

Based on the output results in Figure 7 it can be seen that the VIF values for all variables are less than five which indicates that there is no multicollinearity.

Thus it can be concluded that all the assumptions in the multiple linear regression model are fulfilled. So it can be said that the regression model formed is good. The model that has been formed can be used to predict how big the human development index will be in the coming years. So that we can predict the possibility of fluctuations in the level of human development in the coming year. This will be useful for anticipating a decline in the level of human development and this can also be used as a benchmark for human development targets in the coming year. Thus, the results of this study can be used as material for consideration for related parties to improve the quality of education and health in order to improve the quality of human resources. Quality human resources will be able to manage the state order and good governance so as to be able to increase economic growth which has an impact on income distribution for all elements of society. Quality human resources will not only have an impact on economic growth, but will also have an impact on the social, cultural and political life of a country, especially Indonesia.

5. Conclusion and Suggestion

Based on the analysis results that has been done, it can be concluded that the dimensions of health which are represented by life expectancy, and education which are represented by the expected length of schooling and the average length of schooling have an influence on human resources which are represented by the human development index. Meanwhile, the decent standard of living represented by real per capita expenditure has no effect on human resources represented by the human development index. So it can be said that the better the level of health and education in Indonesia, the better the quality of human resources in Indonesia. Thus, the results of this study can be used as material for consideration for related parties to improve the quality of education and health in order to improve the quality of human resources because quality human resources will be able to manage state order and good governance so as to increase economic growth and also social, cultural, and political life for the better.

References

Asang, H. S. (2019). *Membangun Sumberdaya Manusia Berkualitas: Prespektif Organisasi Publik*. Firstbox Media.

Dwi Atmanti, H. (2005). Investasi sumber daya manusia melalui pendidikan. *Jurnal Dinamika Pembangunan (JDP)*, *2*(1), 30-39.

Gujarati, D. (2004). Basic econometrics (ekonometrika dasar). *Alih Bahasa Sumarno Zain. Jakarta: Penerbit Erlangga*.

Harahap, Y., & Adry, M. R. (2020). Analisis Determinan Kualitas Sumber Daya Manusia di Indonesia. *Ecosains: Jurnal Ilmiah Ekonomi dan Pembangunan*, *9*(2), 125-132.

Kapriaji, M. N., & Siswidiyanto, S. (2022). Desentralisasi dan Kapasitas Pemerintah dalam Pembangunan Sumber Daya Manusia di Indonesia. *Jurnal Ilmiah Administrasi Publik*, *8*(2), 241-255.

Montgomery, D. C., Peck, E. A. (1991). *Introduction Linear Regression Analysis*. John Wiley & Sons.

Pratama, S. (2019). Analisa pengaruh sumberdaya manusia, prasarana dan lingkungan kerja terhadap kinerja studi pada pegawai universitas pembangunan panca budi Medan. *Jumant*, *11*(1), 235-250.

Raharti, R., Sarnowo, H., & Aprillia, L. N. (2020). Analisis Pertumbuhan Ekonomi Dan Indeks Pembangunan Manusia Di Daerah Istimewa Yogyakarta. *Jurnal Perspektif Ekonomi Darussalam (Darussalam Journal of Economic Perspec*, *6*(1), 36-53.

Sanusi, Achmad. (1998). *Pendidikan Alternatif*. Bandung: Program Pascasarjana dan PT Grafindo Media Pratama.

Sholihah, I., & Firdaus, Z. (2019). Peningkatan kualitas sumber daya manusia melalui pendidikan. *Jurnal Al-Hikmah*, *7*(2), 33-46.

Statistik, B. P. (2022). Indeks pembangunan manusia 2021. *Jakarta. Badan Pusat Statistik*.

United Nations Development Programme. (1990). *Human Development Report 1990*. Oxford University Press