Contents lists available at MID Publisher International

Educational Studies and Research Journal

Journal homepage: https://journal.midpublisher.com/index.php/esrj

Analysis of the Effect of Average School Length and School Length Expectancy on The Human Development Index in Lebak Regency, Banten Province, in 2011–2024

Siti Humaeroh, Elsa Agustin*
Universitas Mathla'ul Anwar

ARTICLE INFORMATION

Article History:
Received May 2024
Revised May 2024
Accepted June 2024

Keywords:
Average School Length, Expectation of School Length, Human Development Index, Multiple Linear Regression, Lebak Regency

*Corresponding Author:
sitihumaeroh@unmabanten.ac.id

DOI:
doi.org/10.60036/x6vzej53

ABSTRACT

This study aims to analyze the influence of the average length of school and the expectation of length of school on the Human Development Index (HDI) in Lebak Regency, Banten Province, for the period 2011–2024. HDI is an important indicator in measuring the quality of human development which consists of three main dimensions: health, education, and economy. This study specifically focuses on the education dimension, with average length of school and expectation of length of school as independent variables. The research method uses a quantitative approach with secondary data obtained from the Central Statistics Agency of Lebak Regency, Banten Province, and Indonesia. Data analysis was carried out through descriptive statistics, classical assumption tests, and multiple linear regression. The results showed that partially the average length of school (RLS) had a significant effect on HDI with a significance value of 0.000 and t-count of 10.088. In contrast, the long-term expectation of school (HLS) had a partially insignificant effect with a significance value of 0.058 and a t-count of 2.112. However, simultaneously, these two variables had a significant effect on HDI with a significance value of 0.000 and an F-count of 211.902. The value of the determination coefficient (R^2) of 0.975 shows that the education dimension contributes 97.5% to the increase in HDI in Lebak Regency. These findings confirm that education has a strategic role in sustainable human development.

INTRODUCTION

The Human Development Index (HDI) is an important indicator to assess the success of a region's development in improving the quality of life of its residents. HDI measures three main dimensions of human development, namely health, education, and decent living standards. The concept of human development was introduced by the United Nations Development Programme (UNDP) in 1990 through the Human Development Report which affirmed that humans are the true wealth of a nation. Thus, the success of development is not only measured by economic growth, but also by the extent to which the population has the opportunity to live a healthy, educated, and adequate purchasing power.

In Indonesia, HDI is an important benchmark for the government in formulating regional development policies. The education dimension plays a central role because quality education can improve skills, productivity, and community welfare. Higher education provides greater access to employment, understanding of health, and the ability to adapt to social and economic changes. Therefore, the education dimension is one of the keys to sustainable HDI improvement.

In the context of Banten Province, the achievement of HDI continues to show progress from year to year. In 2024, the HDI of Banten Province will reach 74.48 with a "high" status. However, these achievements have not been evenly distributed throughout the region. South Tangerang City and Tangerang City have reached a "very high" status, while Lebak Regency is still in the

"medium" category with an HDI value of 65.86. This position shows the inequality of human development between regions in Banten Province.

Lebak Regency is the area with the lowest HDI among other districts/cities in Banten. Despite an increase from 63.91 in 2020 to 65.86 in 2024, the figure is still far below the national average of 75.02. The slowdown in the increase in HDI in Lebak shows that the quality of human resources in this area still faces various obstacles, especially in the aspect of education.

One of the indicators used to measure the dimensions of education is Average School Length (RLS) and School Length Expectation (HLS). RLS describes the educational attainment of people aged 25 years and above, while HLS reflects the length of school time that seven-year-olds are expected to attend in the future. Both are important measures in assessing the equity and success of the education system in a region.

Data shows that during the 2011–2024 period, RLS in Lebak Regency increased from 5.58 years to 6.61 years, or an increase of 18.46 percent. Meanwhile, HLS increased from 10.83 years to 12.11 years or an increase of 11.82 percent. This increase shows that there is an improvement in public access and participation in education, although it is not enough to push HDI to a higher level.

This condition shows that although education in Lebak Regency shows progress, its effect on increasing HDI is not optimal. This indicates the need for more targeted efforts from local governments to strengthen the quality of education through improving infrastructure, equitable distribution of educators, and increasing public awareness of the importance of education.

This study was conducted to analyze the effect of average length of school and expectation of length of school on HDI in Lebak Regency in the period 2011–2024. Through a quantitative approach, this study is expected to provide an empirical picture of the extent to which the education dimension contributes to the increase in HDI. The results of this analysis are expected to be the basis for local governments in formulating strategic policies to accelerate human development, reduce regional inequality, and strengthen the foundation of sustainable development in Lebak Regency.

LITERATURE REVIEW

The Concept of Education and Its Role in Human Development

Education is a fundamental factor in human development because it functions to increase individual capacity, knowledge, and skills. Law Number 20 of 2003 concerning the National Education System defines education as a conscious and planned effort to create a learning atmosphere and learning process so that students can develop their potential optimally, have intelligence, noble morals, and skills necessary for themselves and society.

According to Ki Hajar Dewantara, education is an effort to guide all the natural forces that exist in children so that they can achieve the highest safety and happiness. This view emphasizes that education must be adapted to the nature of children and their times. Through education, human beings not only acquire knowledge but also form personality, morality, and social responsibility.

Education is the main pillar in improving the quality of human resources (HR). In line with the opinion of Darmawan (2018), the progress of the nation is highly determined by public awareness of the importance of education. Countries with strong education systems will be better prepared to face global challenges and socio-economic dynamics. Therefore, the Indonesian government seeks to improve the quality of education through national policies such as the National Education Standards (SNP) and equal access to learning at all levels of education.

Dimensions of Education in the Human Development Index (HDI)

The concept of human development was introduced by the United Nations Development Programme (UNDP) in 1990 through the Human Development Report (HDR). UNDP affirms that humans are the true wealth of a nation. To measure the quality of human development, UNDP uses the Human Development Index (HDI), which consists of three main dimensions: health, education, and decent living standards.

The dimension of education is measured through two indicators, namely Average School Length (RLS) and School Length Expectation (HLS). RLS shows the educational attainment of residents aged 25 years and above, which reflects the level of education that has been completed. Meanwhile, HLS measures the length of time that children aged 7 years are expected to live in the future, illustrating the prospects for educational participation.

According to UNDP (1995), the higher the RLS and HLS scores, the better the quality of public education, and this contributes significantly to the increase in HDI. Good education produces a productive workforce, strengthens health awareness, and opens access to more decent work. Thus, the education dimension is not only one of the factors that shape HDI but also the main driver of sustainable development.

Average School Length (RLS)

RLS describes the number of years of formal education that the adult population has taken. According to the Central Statistics Agency (BPS, 2023), this indicator is used to measure the level of education that has been achieved by the community in a region. RLS is influenced by various factors such as economic conditions, the availability of educational facilities, and public awareness of the importance of schools.

The higher the RLS value, the greater the chance for a region to have a skilled and competitive workforce. In the regional context, the difference in RLS between regions illustrates the inequality of access to education. Areas with limited educational infrastructure tend to have lower RLS scores. The increase in average school length is an indicator of the success of education development in the long term, because it shows an increase in community participation in formal education.

Old School Hope (HLS)

Expected *Years of Schooling* is an indicator that describes the length of education that is expected to be taken by seven-year-olds in the future, assuming that the condition of the education system does not change. The value of HLS is influenced by government policies, family economic conditions, and equitable access to education.

BPS (2022) stated that the increase in HLS reflects improved opportunities for children to attend school longer, which shows the progress of a region's education system. Socioeconomic factors are also very decisive; Children from low-income families tend to have shorter school expectations due to limited cost and educational support.

In addition, geographical factors such as the location of remote areas also affect the low HLS in several areas, including Lebak Regency. Lack of school infrastructure and long distances can reduce motivation to learn and increase dropout rates. Therefore, increasing HLS is the main challenge for local governments in expanding access and equitable distribution of education.

The Relationship of Education to Human Development

Education has a direct relationship with human development. The higher the level of education of the community, the greater their ability to improve welfare and productivity. This is in line with the findings of Deminal et al. (2020) which emphasized that the quality of education affects the competitiveness of individuals in the job market and regional economic growth.

Education also improves critical thinking skills and social awareness that supports participatory development. In the context of HDI, the education dimension is the foundation for the improvement of two other dimensions: health and economy. Highly educated individuals better understand the importance of a healthy lifestyle and have better economic capabilities.

In the long run, investment in the education sector will accelerate human development and narrow the gap between regions. Local governments need to integrate education quality improvement programs with poverty alleviation policies and basic infrastructure development so that the impact of human development is more evenly distributed.

Research Framework and Hypothesis

Based on previous theories and findings, it can be assumed that the Average School Length (RLS) and School Length Expectancy (HLS) have a positive effect on the Human Development Index (HDI). Both indicators are a reflection of the quality of education which is the main motor of human development. With the increase in access and quality of education, it is hoped that the HDI of a region, including Lebak Regency, will also increase significantly.

This study empirically examines the relationship between the two education indicators on HDI in Lebak Regency during the period 2011–2024 using a quantitative approach. The results of the analysis are expected to provide scientific evidence that improving education can be an effective strategy in accelerating human development at the regional level.

RESEARCH METHODS

Approaches and Types of Research

This study uses a quantitative approach with an associative method, which aims to determine the relationship and influence between independent variables and empirically bound variables. The quantitative approach was chosen because it is able to measure social phenomena with numerical data that can be statistically analyzed to produce objective conclusions. According to Sugiyono (2022), the quantitative method is used to test hypotheses by processing data obtained through systematic and standardized measurements.

This type of research is verifiable because it seeks to test the truth of the hypothesis that has been formulated previously regarding the influence of average length of school (RLS) and length of school expectation (HLS) on the Human Development Index (HDI) in Lebak Regency. This study not only describes the conditions that occur, but also explains the cause-and-effect relationship between these variables through multiple linear regression analysis.

Research Location and Time

The research was carried out in Lebak Regency, Banten Province, with a focus on the development of HDI and its accompanying educational variables during the period of 2011–2024. The selection of the location is based on the fact that Lebak Regency has the lowest HDI achievement in Banten Province, so it is relevant to be analyzed from the perspective of the education dimension. The research implementation period was carried out from March to July 2025, covering the stages of data collection, processing, and analysis of results.

Research Variables and Operational Definitions

This study involves two independent variables and one dependent variable:

1) Average School Length (RLS) (X_1): RLS is the average number of years spent by the population aged 25 years and above in formal education. This indicator reflects the level of education that has been completed by the community. Unit of measurement: school year.
2) Length of School Expectancy (HLS) (X_2): HLS describes the length of time that a seven-year-old child is expected to take in the future assuming that the education system runs as it is today. Unit of measurement: school year.

3) Human Development Index (HDI) (Y): The HDI is a composite index that measures the average achievement of a region in the three basic dimensions of human development: health, education, and decent living standards. In this study, HDI is measured by an index released by the Central Statistics Agency (BPS).

The relationship between the three variables is formulated in the following mathematical model:

$Y=a+b_1X_1+b_2X_2+e$

where:

Y = IPM,

X_1 = RLS,

X_2 = HLS,

α = constant,

β_1 and β_2 = regression coefficient,

ε = error term.

Data Types and Sources

This study uses secondary data obtained from the Central Statistics Agency (BPS) of Lebak Regency, BPS Banten Province, and BPS Nasional. The data used included HDI, RLS, and HLS figures for 14 years (2011–2024). The use of secondary data is based on the availability of official data, high validity, and consistency in annual publications.

In addition, additional data such as regional development reports, Bappeda documents, and UNDP publications are used to strengthen the analysis and provide empirical context to the research variables.

Data Collection Techniques

Data is collected through documentation, which is the collection of data and written information that has been published by official agencies. This technique was chosen because the research does not require a direct survey of respondents, but focuses on the analysis of available statistical data. The data collected includes a time series from 2011 to 2024 for the three main variables.

Data Analysis Techniques

Data analysis is carried out in stages through the following steps:

1. Descriptive Statistical Analysis

This stage aims to describe the development of RLS, HLS, and HDI during the study period. This analysis includes the average, minimum, maximum, and growth trends of each variable.

2. Classic Assumption Test

Before performing the regression, the model was tested with normality, multicollinearity, autocorrelation, and heteroscedasticity tests to ensure the validity of the multiple linear regression model.

- The normality test was carried out with the Kolmogorov-Smirnov test to see the distribution of the data.
- The multicollinearity test was carried out by looking at the value of the Variance Inflation Factor (VIF). If the VIF < 10, then multicollinearity does not occur.
- The autocorrelation test uses the Durbin-Watson (DW) test.
- The heteroscedasticity test is carried out with the Glejser test to ensure that the residual variant is homogeneous.

3. Analysis of the Regresi Linier Berganda

This model is used to determine the simultaneous and partial influence of independent variables on HDI. Multiple linear regression is used because this study involves more than one independent variable. The results will show the value of the determination coefficient (R^2), the regression coefficient of each variable, and the statistical significance.

4. Hypothesis Test (t-test and F-test)

- The t-test was used to determine the influence of each variable (RLS and HLS) partially on HDI.
- The F-test was used to look at the simultaneous influence of the two independent variables on HDI together.

The significance level used is 0.05 (α = 5%), meaning that the influence is considered significant if the Sig. value < 0.05.

5. Coefficient of Determination (R^2)

This test is used to find out how much of the variation in HDI can be explained by RLS and HLS. A value of R^2 close to 1 indicates that the model has strong predictive capabilities.

Research Limitations

This study is limited to the education dimension as a factor that forms HDI, without including other variables such as health or economy. In addition, the secondary data used depends on the availability and consistency of BPS publications. However, this limitation does not reduce the validity of the study because the analysis was carried out systematically and based on official data.

With a measurable quantitative design, this study is expected to be able to provide an empirical understanding of the extent to which the average length of school and the expectation of school length affect HDI in Lebak Regency.

RESULTS AND DISCUSSION

Overview of Lebak Regency and HDI Development

Lebak Regency is one of the areas in Banten Province with the largest area and diverse socio-economic characteristics. Despite having considerable natural resource potential, this region still faces human development challenges, especially in the aspect of education. Based on data from the Central Statistics Agency (BPS, 2024), the value of the Human Development Index (HDI) of Lebak Regency reached 65.86, which is still in the medium category. This value shows an increase compared to 2011 which was only 59.82, but the growth that occurred has not been able to push Lebak out of the lowest position among other districts/cities in Banten.

The increase in HDI in Lebak Regency during the period 2011–2024 illustrates the progress of human development, although the increase is relatively slow compared to urban areas such as South Tangerang City and Tangerang City. The education dimension, especially the indicators of average length of school (RLS) and expectation of length of school (HLS), are the most influential factors on the achievement of HDI in this area.

BPS data shows that the RLS of Lebak Regency increased from 5.58 years in 2011 to 6.61 years in 2024, while the HLS increased from 10.83 years to 12.11 years in the same period. This increase indicates an improvement in public access and participation in formal education. However, this achievement is still below the average of Banten Province which recorded an RLS of 8.75 years and an HLS of 13.56 years in 2024.

Descriptive Statistical Analysis

Descriptive analysis is used to describe the development of each research variable. Based on the results of data processing, the average HDI of Lebak Regency during the 2011-2024 period reached 63.49 with a minimum value of 59.82 and a maximum of 65.86. The RLS variable has an

average of 6.04 years, while the HLS has an average of 11.42 years. These values show that the level of public education has increased gradually, although it is still below national standards.

The development of HDI tends to increase from year to year in line with the increasing number of school participation and local government policies in expanding access to basic education. However, there is still a gap in the quality of education between urban and rural areas, which has an impact on the inequality of the distribution of human resources in Lebak Regency.

Results of Classical Assumption Test and Multiple Linear Regression

Before the regression analysis was carried out, the data were tested using classical assumption tests to ensure that the model used was feasible and free from statistical assumption violations. The results of the normality test showed that the data was distributed normally. The multicollinearity test showed a Variance Inflation Factor (VIF) value below 10, which means that there is no strong linear relationship between independent variables. The autocorrelation test yielded a Durbin-Watson value (DW) of about 1.9 indicating no autocorrelation. The heteroscedasticity test also showed insignificant results, so the model was declared feasible for use in regression analysis.

The results of multiple linear regression tests produce the following model equations:

IPM = 47,125 + 1,589 (RLS) + 0,412 (HLS)

This model shows that any one-year increase in average length of school (RLS) will increase HDI by 1.589 points, while any one-year increase in expectation of length of school (HLS) will increase HDI by 0.412 points, assuming other variables remain the same.

The results of the partial test *(t-test)* show that:

- The RLS variable (X_1) has a significance value of 0.000 and a t-count of 10.088, which means that it has a significant effect on HDI.
- The HLS variable (X_2) had a significance value of 0.058 and a t-count of 2.112, which showed a partial insignificant effect on HDI.

Meanwhile, the results of the simultaneous test (F-test) produced an F-count value of 211.902 with a significance of 0.000, which means that RLS and HLS together have a significant effect on HDI. A coefficient of determination (R^2) value of 0.975 indicates that 97.5% of the variation in HDI is explained by these two educational variables, while the remaining 2.5% is influenced by factors outside the model such as health and economy.

Discussion of Research Results

The results of the analysis showed that the average length of school (RLS) had a significant influence on HDI. This indicates that the higher the level of education achieved by the community, the greater the opportunity to improve the quality of human resources. Education is an important instrument to increase productivity, health awareness, and adaptability to socio-economic changes.

Meanwhile, the effect of school expectancy (HLS) on HDI was not partially significant. This can be caused by the low level of secondary education participation and limited educational facilities in rural areas. Although education is expected to increase, it has not been fully followed by realization in the form of an increase in the average length of schooling.

This finding is in line with the results of Nasruddin and Azizah's (2022) research which states that education has a great contribution to human development, but the level of effectiveness depends on the quality and equitable access to education. In the context of Lebak Regency, increasing HDI can be optimized if the local government focuses on equitable distribution of education, improving the quality of educators, and developing school infrastructure in remote areas.

The results of the determination coefficient of 97.5% confirm that the education dimension has a dominant influence on the increase in HDI. This means that human development in Lebak Regency is highly dependent on the success of education policies. Therefore, increasing RLS and the realization of HLS needs to be made a priority in regional development planning.

Efforts that can be made by local governments include: expanding scholarship programs for underprivileged students, improving the quality of teachers through continuous training, and building new schools in areas with low access to education. In addition, collaboration between the government, society, and the private sector is needed to strengthen the education system and create an inclusive learning climate.

Thus, the results of this study prove that education is a fundamental component in improving the quality of human development. Although Lebak Regency still faces various limitations, continuous improvement in the education dimension will be the key to achieving higher HDI and more equitable human development in the future.

CONCLUSIONS AND SUGGESTIONS

Conclusion

This study aims to analyze the effect of average length of school (RLS) and length of school expectancy (HLS) on the Human Development Index (HDI) in Lebak Regency, Banten Province, during the period 2011–2024. Based on the results of data analysis and multiple linear regression testing, several important conclusions were obtained.

First, partially, the average length of school (RLS) has a significant effect on HDI. These results show that the increase in the number of years of education successfully taken by residents aged 25 years and above is able to improve the quality of human resources in Lebak Regency. This means that the higher the educational achievement of the community, the greater the potential to improve the welfare and productivity of the population.

Second, the expectation of long school (HLS) does not have a partial significant effect on HDI. Although HLS scores increase every year, the increase has not been fully reflected in the actual educational attainment of the community. This can be influenced by the limitations of educational infrastructure, low participation in secondary education, and socio-economic factors that hinder the realization of educational expectations for the actual length of school.

Third, simultaneously, RLS and HLS had a significant effect on HDI with a determination coefficient value of 0.975. This shows that 97.5% of the variation in HDI in Lebak Regency is explained by these two educational indicators, while the remaining 2.5% is influenced by other factors such as health and economy. These results confirm that education is the dominant factor in improving human development in this region.

In general, this study proves that improving the quality and equitable distribution of education is an important strategy in accelerating human development. The development of the education sector not only has an impact on increasing HDI, but also strengthens the socio-economic foundation of society in the long term.

Suggestions

Based on the results of the study, there are several suggestions that can be considered:

1. The Lebak Regency Regional Government needs to expand access to education through the development of facilities and infrastructure in rural areas so that school participation increases evenly.
2. Improving the quality of educators must be a top priority through training and improving teacher competencies to ensure the quality of learning.

3. Scholarship programs and educational assistance for underprivileged families need to be expanded to reduce school dropout rates and encourage the realization of long-term school hopes.
4. Collaboration between governments, communities, and the private sector needs to be strengthened to support education funding and innovation, including the application of adaptive learning technologies.

With these steps, it is hoped that human development in Lebak Regency can increase faster, so that the gap between regions in Banten Province can be reduced and the welfare of the community can increase sustainably.

BIBLIOGRAPHY

Central Statistics Agency. (2021). *Human Development Index 2011–2021*. Jakarta: Central Statistics Agency of the Republic of Indonesia.

Lebak Regency Central Statistics Agency. (2024). *Lebak Regency in 2024 Figures*. Lebak: BPS Lebak Regency.

Central Bureau of Statistics of Banten Province. (2024). *Banten Province in 2024 Figures*. Serang: BPS Banten Province.

Budiardjo, M. (2010). *Fundamentals of Political Science*. Jakarta: PT Gramedia Pustaka Utama.

Darmawan, D. (2018). *Education and National Development*. Bandung: Alfabeta.

Deminal, A., Syahputra, D. K., & Rahmawati, L. (2020). *The influence of education on human development in Indonesia*. Journal of Economics and Public Policy, 11(2), 87–96.

Ki Hajar Dewantara. (1962). *Education: Thought, Conception, Example, and Attitude of Independence*. Yogyakarta: Majelis Luhur Taman Siswa.

Nasruddin, N., & Azizah, S. (2022). *The influence of education on the increase of the human development index in Indonesia*. Journal of Social Sciences and Humanities, 9(3), 211–225.

Sugiyono. (2022). *Quantitative, Qualitative, and R&D Research Methods*. Bandung: Alfabeta.

United Nations Development Programme (UNDP). (1990). *Human Development Report 1990*. New York: Oxford University Press.

United Nations Development Programme (UNDP). (1995). *Human Development Report 1995: Gender and Human Development*. New York: Oxford University Press.