

## Determinants of the Human Development Index for Women: The Role of Education and Income Inequality

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### ABSTRACT

*Women's empowerment is an important step in creating equitable and sustainable development. Women not only play a role within the family sphere, but also have a significant contribution in the fields of education, economics, social affairs, and national development to demonstrate their capacity and potential as human resources capable of driving economic growth and improving community welfare. This study aims to examine the effect of Expected Years of Schooling and the Gini Index on the Human Development Index (HDI) of Women in Banten Province for the period 2020–2025. Women's human development is an important indicator in measuring the quality of life of women through aspects of education, health, and economic welfare. Expected Years of Schooling reflects women's access to education, while the Gini Index illustrates the level of income inequality in society. This study uses a quantitative approach with time series data for the period 2020–2025 obtained from the Central Statistics Agency (BPS). The analytical method used is multiple linear regression with the help of the E-Views application. The results show that Expected Years of Schooling has a positive and significant effect on the HDI of Women with a coefficient value of 6.225901 and a probability of  $0.0390 < 0.05$ . Meanwhile, the Gini Index has a negative and significant effect on the Female Human Development Index with a coefficient value of -47.10225 and a probability of  $0.0464 < 0.05$ . Simultaneously, Expected Years of Schooling and the Gini Index have a significant effect on the Female Human Development Index with an F-statistic probability value of  $0.018708 < 0.05$ . The coefficient of determination ( $R^2$ ) value of 0.929528 indicates that 92.95% of the variation in the Female Human Development Index can be explained by the Expected Years of Schooling and the Gini Index variables, while the rest is influenced by other factors outside the study. Increasing access to women's education and reducing income inequality are important factors in improving the quality of women's human development in Banten Province.*

**Keywords:** Gender and

## INTRODUCTION

Quality source Power man a country determines development and sustainability its ecosystem , in the development process subject women own a very important role as part from source Power humans who participate contribute . Empowerment Woman is effort For increase ability , access , and opportunity women to be able to participate in a way active in various field life , such as education , health , economy , and decision making decision . According to United Nations , gender equality and empowerment Woman become part important in objective development sustainable or *Sustainable Development Goals (SDGs)*, especially on the 5th objective regarding *gender equality* . Empowerment women are also important in reduce gap social and gender inequality . Until moment This Still there is women who experience discrimination in education , work , and access economic conditions the cause Woman more prone to to poverty and low quality life . Improvement empowerment Woman through education , opportunities work , and access economy become step important in increase quality development man in a way evenly distributed . Women who have quality good education , health and economy will capable contribute in a way more big to development social and economic society . Therefore that , the effort empowerment Woman need Keep going done For increase quality life women and support improvement index development man in a way sustainable .(Gede Suasridewi et al., n.d.)

Empowerment Woman can reflected through increasing quality life women being measured use *Human Development Index* or Human Development Index (HDI). HDI is indicators used For measure success development man through three dimensions main , namely health , education , and standards life worthy . The more tall HDI value , then the more Good quality life community in a region (Sari & Sulastri, 2024). Context women , HDI becomes indicator important For see to what extent women get access to education , health and welfare economy . Human development aim expand choice society so that it can life healthy , get education , and have decent life .

Human development aim expand choice society so that it can life healthy , get education , and have decent life . Concept development man No only focus on growth economy , but also on increasing quality life public in a way comprehensive . Education is one of the component main Because education capable increase ability individual in develop potential self , gain decent work , and improve welfare live , indicator education used in measure quality development man is school term expectations . school term expectations show estimation duration somebody can enjoy formal education . Increasingly tall long school expectations , then the more big chance public For get required knowledge and skills in life social and economy . Better education tall will increase quality source Power man so that

individual own ability For increase productivity and income . Increase long school expectations can push improvement index development man Because education is factor important in increase quality life public .(Syifa Mauludina et al., 2025)

Expected length of school own a very important role to development man women 's education No only impact on increasing quality individual Woman That alone , but also influential to welfare family and society . Women who have level education more tall tend own greater awareness Good to health , management economy family , and importance education for generation next . Education can also increase participation Woman in the world of work so that Woman own chance more big For increase level his life , increasingly tall long school expectations women , then quality development man women also tend to increase .(Andari et al., n.d.)

Inequality measured income using the Gini Ratio also becomes factor important in development humans . The Gini Ratio describes level inequality distribution income in society . Inequality high income cause access to education , health , and opportunities economy become No evenly distributed . Group public with income low often experience limitations in get adequate education and services adequate health . As a result , the quality of life public become low and development man difficult develop optimally .(Retnowati Kusno et al., 2023)

Inequality income also provides sufficient impact big to development man women . Women from group economy low tend face obstacle in get education , employment , and access to service health . Condition the can cause low quality life women and hinder improvement index development man women . The more tall inequality income , then gap quality life between group society is also increasingly big . Reduction inequality income become step important in create development more human gender (Ilham et al., n.d.)equality and fairness . . Expected length of schooling and the Gini Ratio have close relationship with development human . Old school expectations contribute positive to improvement quality source Power man through education , whereas inequality high income can hinder equality quality life society . Improvement access education as well as subtraction inequality income become factor important in increase index development humans , in particular development man Woman .(Heni Meidiyan et al., 2025)

One of factor important things that influence development man Woman is education . Education is form investment source Power human beings who can increase productivity and quality life public .(Ginting & Lubis, n.d.) Theodore Schultz in theory *Human Capital* state that education capable increase ability individual so that can increase welfare economy . One of the indicator education used in the HDI is school term expectations . school term expectations show estimation duration somebody go through formal education . The height long school expectations Woman reflect the more the good access education for Woman . High education will increase skills , opportunities work and income Woman so that impact on increasing quality development man Woman .(Jauhar Mahya, 2020)

Expected length of school is one of the indicator education in describe estimation duration somebody can go through formal education . Education has role important in increase quality source Power man Because through education individual get knowledge , skills , and abilities that can increase productivity and well-being life . (Alviani et al., 2021). Education is form investment capable human being increase quality power work and productivity economy . Increasingly tall level education someone , then the more big opportunity For get more work good , more income high , and quality a better life good . Improvement long school expectations can push improvement development man Because education become base in increase ability individual . Education is not only increase ability economy individual , but also improve quality health , ability taking decisions and participation social society , higher education will expand chance Woman in get work , improve income , and participate in development .(Heni Meidiyan et al., 2025)

Education is one of the means main in expand ability said . With increasing long school expectations women , then ability Woman in access opportunity economic , social and health also improved so that impact positive towards the Human Development Index for Women, in general theoretical long school expectations own connection positive with HDI because education capable increase quality life , productivity , and well-being public .

Inequality income also becomes influencing factors development man women . Inequality income measured use Gini Ratio or Gini Index . The Gini Index shows level inequality distribution income in society . Increasingly tall Gini Ratio value , then the more high level inequality income . Inequality high economy can cause access to education , health , and opportunities Work become No evenly , especially for Women's Group . Simon Kuznets in the theory inequality income can influence welfare society and development man Because distribution income that is not evenly cause part public difficult get access to need base .(Umamah et al., 2025)

Inequality income is condition distribution income that is not evenly in society and measured using the Gini Ratio. High inequality show existence gap welfare between group society . Conditions the can influence quality development man Because No all public get equal access to education , health , and opportunities economy . High inequality can cause part public experience limitations in get service education and health so that impact on low quality life society . Society with income low own limitations in develop ability and acquire quality good life . Inequality income can enlarge risk low access education , high poverty women , and low participation economy Woman so that impact negative on the female HDI .(Retnowati Kusno et al., 2023)

In a way theoretically , the more tall inequality income so quality development man tend decrease Because access to source Power development No enjoyed in a way evenly distributed throughout society . Because of this that , reduction inequality income be one of step important in increase quality development man women . (Safitri & Gunarto, n.d.). Research previously show that education and inequality income own connection with

development human education become dimensions important things to measure through indicator Expected years of schooling and average years of schooling . Expected years of schooling describe opportunity somebody For get formal education in term time certain . (Kevin Andre Sipahutar et al., 2024).The more tall long school expectations , then the more big chance public For increase quality his life . Good education will open access to more work worthy , improve income , as well as expand ability individual in participate in activities social and economic .(Safitri & Gunarto, n.d.)

Inequality measured income using the Gini Ratio also becomes factor important things that influence development humans . The Gini Ratio shows level inequality distribution income society . Inequality high income cause access to education , health , and opportunities economy become No evenly distributed . Condition This can hinder part society , especially group income low , for get service proper education and health .(Kevin Andre Sipahutar et al., 2024) As a result , the quality development man become low . The more tall inequality income , then the more big gap quality life between public so that potential lowering the HDI.(Angkat, n.d.) Connection between inequality income and development humans were also described by Simon Kuznets who stated that inequality economy can influence welfare society and distribution access to source Power development . High inequality can cause group certain difficult enjoy results development in a way evenly distributed . income that is not evenly can reduce chance public For increase quality education and health , so that impact negative towards HDI.(Gini et al., n.d.)

Study about influence education and inequality income towards the actual HDI has Lots done , partly big study Still focused on development man in a way general without in a way special see conditions of women, while Woman is groups that are still face various challenge in development , such as limitations access education , discrimination jobs , gaps wages , and low participation economic conditions the cause quality development man women in some area Still more low compared to man .

Urgency study This lies in the importance of see development man from perspective women . Women have role strategic in development economic and social so that improvement quality life Woman will impact on welfare family and society in a way wide with analyze influence long school expectations women and index like this on the female HDI , research This can give description about factors that influence quality development Human Women. Research this is also important as material consideration for government in formulate policy further development inclusive , gender -equitable , and supportive empowerment Woman through improvement access education as well as subtraction inequality economy .

Based on description said , research This done For analyze influence long school expectations women and index like this to index development man women . Research This expected can give information and input for government in formulate policy supportive development empowerment women and improvement quality development man in a way more equitable and sustainable .

## RESEARCH METHODS

Study This use approach quantitative with method *explanatory research* For analyze The influence of women's expected years of schooling and the Gini ratio on Human Development Index (HDI) for Women in Banten. Research done using secondary data in the form of a time series. Time series data includes 2020–2025 period .

Data obtained from publication official Central Bureau of Statistics Banten Province and BPS Indonesia . Variables dependent in study This is Female Human Development Index (Y). Variable independent consists of on Expected Years of Schooling for Girls (X1) and Gini Ratio (X2). Measurement all over variables use scale ratio according to data published by BPS.

Data analysis was performed use regression use *E - Views* software assistance version 12. The regression model used is :

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + e_{it}$$

Information :

- $Y_{it}$  = Female Human Development Index
- $X1_{it}$  = Expected Years of Schooling for girls
- $X2_{it}$  = Gini Ratio
- $\beta_0$  = constant
- $\beta_1, \beta_2$  = regression coefficient
- $e_{it}$  = error term
- $i$  = district/city
- $t$  = year of observation

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + e_{it}$$

Testing hypothesis done using the t-test for see influence partial variables independent to variables dependent , F test for see influence simultaneously , as well as coefficient determination ( $R^2$ ) for measure model capabilities in explain variation of female HDI .

## RESULTS AND DISCUSSION

Study This aim For analyze The influence of Expected Years of Schooling for Girls and the Gini Index on Human Development Index (HDI) for Women in Banten Province for the period 2020–2025.

Based on results processing of data obtained equality regression as following :

$$Y = 8.447860 + 6.225901X_1 - 47.10225X_2$$

Information :

- $Y$  = Female Human Development Index
- $X_1$  = Expected Years of Schooling
- $X_2$  = Gini Index

Research result show that Harapan Lama School has coefficient amounting to 6.225901 with mark probability of 0.0390. The probability value is higher small from 0.05 shows that

Expected Years of Schooling have an effect positive and significant towards the Human Development Index for Women. This means that the more tall long school expectations women , then the more high quality development man women . Education provides contribution big to improvement quality source Power man Because women who have access education more Good tend get knowledge , skills , and opportunities more work wide so that can increase level his life .(Jauhar Mahya, 2020)

Table 1. Data Processing Results

Dependent Variable: Y				
Method: Least Squares				
Date: 05/07/26 Time: 18:57				
Sample: 2020 2025				
Included observations: 6				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.447860	25.92629	0.325842	0.7659
X1	6.225901	1.770120	3.517220	0.0390
X2	-47.10225	14.35890	-3.280352	0.0464
R-squared	0.929528	Mean dependent var		73.83500
Adjusted R-squared	0.882546	SD dependent var		1.206130
SE of regression	0.413359	Akaike info criterion		1.377852
Sum squared residual	0.512597	Schwarz criterion		1.273731
Log likelihood	-1.133555	Hannan-Quinn criter.		0.961050
F-statistic	19.78501	Durbin-Watson stat		1.962361
Prob(F-statistic)	0.018708			

Research result This in line with theory *Human Capital* proposed by Theodore Schultz who stated that education is investment source Power capable human being increase productivity and well-being public .

Variables The Gini index has coefficient of -47.10225 with probability of 0.0464. The probability value is higher small from 0.05 shows that The Gini index has an impact negative and significant towards the Human Development Index for Women. This means that the more tall level inequality income , then quality development man Woman tend decreasing . Inequality income cause distribution welfare become No evenly so that part Woman experience limitations access to education , health , and opportunities economy . The results in accordance with theory inequality income stated by Simon Kuznets who stated that inequality economy can influence welfare society and hinder equality development . The height inequality income can cause group public certain difficult enjoy results development in a way evenly so that impact on low quality development man .(Heni Meidiyan et al., 2025)

In a way Simultaneously , Expected Years of Schooling and the Gini Index have an effect significant towards the Human Development Index for Women. This proven with mark probability *F-statistic* by 0.018708 which is more small from 0.05, with Thus , the goal study For know influence second variables independent towards the Human Development Index for Women has succeed achieved through method multiple linear regression used . The coefficient value determination of 0.929528 shows that 92.95% of the variation in the HDI for women can be explained by Expected Years of Schooling and the Gini Index , whereas the rest 7.05 % is influenced by other variables outside research , such as level poverty , figures hope life , level participation Work women , and growth economy area .

### CONCLUSION AND SUGGESTIONS

Research result This own equality with a number of study previously stated that education influential positive to development humans and inequality income influential negative towards HDI. Research previously generally using national data or all over provinces in Indonesia with method panel regression as well as linear regression . Research This own difference in focus subject research , namely the Human Development Index (HDI) of Women in Banten Province with using time series data for the period 2020–2025. Research This more emphasize on perspective empowerment Woman in development human beings . Based on results analysis , research This show that improvement education Woman through long school expectations become factor main in increase quality development man women , on the other hand , inequality high income can become obstacle in equality quality life women . Action steps further necessary done government is increase access education women , expanding chance Work women , and reduce inequality economy through policy further development inclusive and gender- equitable .

With Thus , research This succeed answer problem study in accordance with goals that have been determined , namely analyze The influence of expected years of schooling and the Gini Index on the Human Development Index for women. Research results expected can become material consideration in compilation policy development more human side with empowerment women and equality welfare public .

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