ORIGINAL ARTICLE

Does Human Capital and Gender Equality Affect Economic Growth for Ten Province in Sumatera?

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ABSTRACT

Purpose – The abundance of human resources becomes a burden on a country. On the other hand, the abundance of natural resources is an advantage if the government can use it well. The efforts made by the government are to improve the quality of human resources, including three indicators, namely healthy living, education, and decent living standards. However, it is accompanied by problems regarding gender discrimination that often occurs in various countries; this discrimination is often experienced by women, ranging from being objects of exploitation, subordination, violence and discrimination in all sectors. This study aims to analyze the effect of the Human Development Index and Gender Development Index on economic growth and the distribution of economic growth in ten provinces on the island of Sumatra in 2018-2021.

Methodology – This research uses Static Panel Data Regression analysis tool and economic growth mapping using ArcGIS

Findings – The results of this study show that life expectancy and Income per capita have a positive and significant effect on economic growth. Meanwhile, the Mean Year of School variables and gender development index do not affect economic growth. Based on the results of mapping the distribution of economic growth, the area with the highest economic growth is North Sumatra Province. Then the area that has the lowest economic growth is Bengkulu Province.

Originality/Novelty – The novelty in this study is mapping the distribution of economic growth for ten provinces on Sumatera Island with the results of the constant effect of panel data regression output.

Implications – This research is still limited to the role of human resource development on economic growth and has not examined other variables that can affect economic growth. So that future research can use a different point of view on human resource development on economic growth.

Keywords: Economic Growth, Life Expectancy of Birth, Mean Years of School, Income Per Capita, Gender Development Index

INTRODUCTION

Institutional quality is one of the most important factors in improving economic development in a country. The most important goal of governments of all countries in the world is to increase economic growth to support people's standard of living. Improving a country's economic development means also growing its economic growth. The economic development of a country must be able to improve the standard of living of its people. Therefore, it is necessary to optimize economic growth and income balance between generations, between tribes, between genders, and regions. One of the efforts to improve the competitiveness of a country is the growth of its human resources, to achieve the goal of becoming a competitive country, it is necessary to improve the quality of human resources by increasing their abilities, skills and productivity. Human development often discusses the context of gender-based human development which is used to determine quality achievements regardless of the position of men or women. Various policy efforts are taken to encourage the achievement of gender equality and justice.

The Human Development Report (HDR) 2023 reports that Indonesia's HDI in 2021 is at a high level with an achievement of 70.5, a decrease compared to 2020 which reached 70.9 and places Indonesia in the high HDI category in Southeast Asia. Indonesia's ranking among countries in the world is increasing. The ranking achieved is ranked 114 out of 190 countries in the world. At the Southeast Asian level, Indonesia's position is included in the high category below Singapore, Brunei Darusalam, Malaysia, and Thailand or ranked fifth. The achievements of HDI formers are life expectancy, average length of schooling, and Income per capita. In 2021, life expectancy in Indonesia is 67.6 years. Mean Years of School is 8.7 years. Meanwhile, for Income per capita in Indonesia is 11.466\$. This condition shows that community empowerment efforts in the economic sector are getting better.

The Gender Development Index (IPG) is part of the Human Development Index (HDI) with special attention to gender inequality. The calculation of the Gender Development Index carried out by the United Nations Development Program (UNDP) Indonesia's achievement in 2023 is 99.65 (UNDP, 2021). Problems regarding gender discrimination often occur in various countries in the world, discrimination is often experienced by women ranging from being objects of exploitation, subordination, violence and discrimination in employment. This problem triggered the organization of The Universal Declaration of Human Rights so that women's rights emerged by the United Nations through CEDAW (Committee on the Elimination of Descrimination Against Women) in addition to the convention (Women's Rights are Human Right's) affirming that women's rights are Human Rights. Gender equality is increasing every year, and more people have special attention to the problem and are increasingly fighting for their rights to achieve justice, and equal treatment. Indonesia is a country that uses HDI and IPG to measure success in building the quality of human life to increase economic growth.

Sumatra Island is the third largest island in Indonesia which has an area of 473.481 km². Sumatra Island has the largest number of provinces, namely ten provinces. Sumatra Island is in the *ring of fire*, therefore the Sumatra Island region has fertile soil and abundant biodiversity. The number of provinces on the island of Sumatra also has many differences in the potential of natural and human resources owned by each region. Based on the BPS annual report, South Sumatra is the province that has the highest economic growth on the island of Sumatra for four consecutive years. While the lowest economic growth on the island of Sumatra is Riau Province.
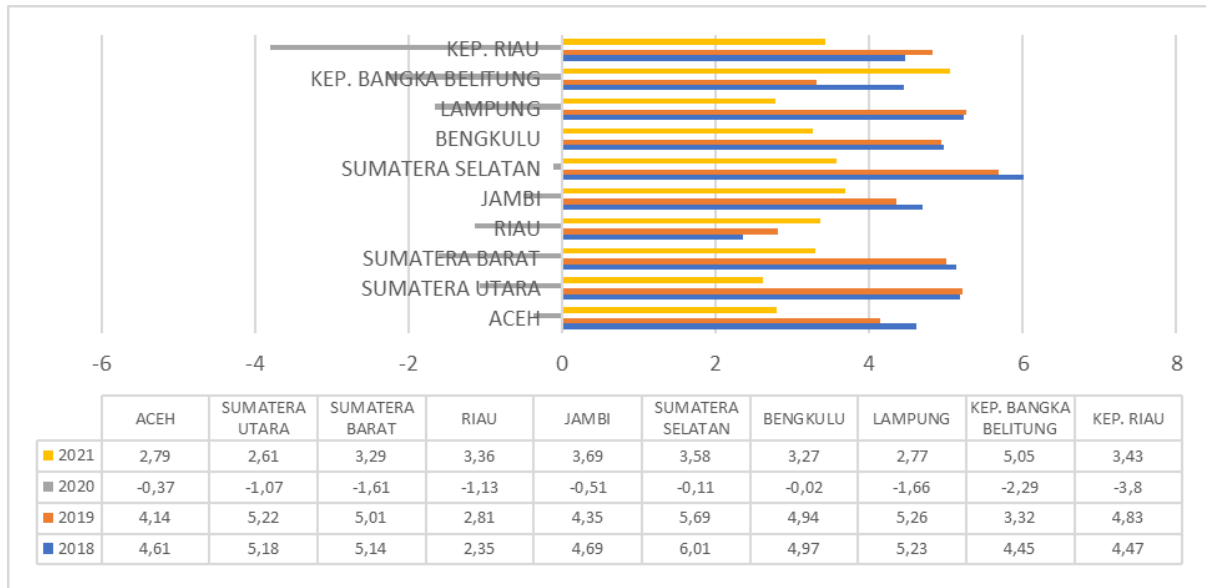
	ACEH	SUMATERA UTARA	SUMATERA BARAT	RIAU	JAMBI	SUMATERA SELATAN	BENGKULU	LAMPUNG	KEP. BANGKA BELITUNG	KEP. RIAU
2021	2,79	2,61	3,29	3,36	3,69	3,58	3,27	2,77	5,05	3,43
2020	-0,37	-1,07	-1,61	-1,13	-0,51	-0,11	-0,02	-1,66	-2,29	-3,8
2019	4,14	5,22	5,01	2,81	4,35	5,69	4,94	5,26	3,32	4,83
2018	4,61	5,18	5,14	2,35	4,69	6,01	4,97	5,23	4,45	4,47

Figure 1. Economic Growth at Sumatera Island 2018-2022. Source: (*BPS*, 2022)

Differences in human capital in a region result in significant differences in productivity growth, capital accumulation, educational attainment, and cause income inequality as well. Previous research conducted by (Surjono et al., 2015) found that the development paradigm in Indonesia is based on social capital, hence gender development is part of the focus of social development. This research is limited to Malang Regency, East Java using SOCAT (Social Capital Assessment Tool) analysis tool by combining qualitative and quantitative analysis. In addition, another study conducted by (Uddin et al., 2023) which states that around 38% of the variation in the human development index can be attributed to the national development of developing countries around the world. In addition, the human development index includes the economic progress of a country and the social dimension of human development. Increased economic growth should be developed by investing national income in building infrastructure that leads to an increase in the standard of living of a country's population.

The importance of quality of life development to face many challenges and environmental changes in a global way. Analysis of the achievement of quality of life development in an area that can be seen from HDI (Khan et al., 2019; Masduki et al., 2022; Osakede et al., 2023a; Rahim et al., 2021; Sultana et al., 2022), but these indicators do not yet reflect gender disparity which is becoming a global issue, so GDI is needed as an indicator of human quality of life development that emphasizes gender status more, so that the success of national development can be measured Agénor & Agénor, 2023; Asongu & Odhiambo, 2023; Baerlocher et al., 2021; Elias, 2022; Iqbal et al., 2022; Minasyan et al., 2019; Surjono et al., 2015b). Therefore, it is necessary to conduct research aimed at determining the factors that affect economic growth by statistical analysis using static panel data regression involving HDI and IPG. In addition, this study will map the distribution of economic growth in Sumatra Island using a Geographic Information System. Growth mapping in this study aims to determine the distribution of economic growth influenced by the human development index and gender development index on the island of Sumatra.

Using previous research and the explanation above, it can be used to describe human development and gender development to economic growth in the following way:
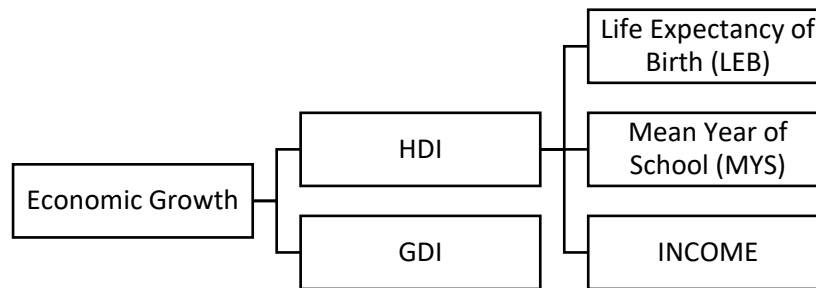
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                                        ┌──────────────────┐
                                   ┌────│ Life Expectancy of│
                      ┌──────────┐ │    │   Birth (LEB)     │
                   ┌──│   HDI    │─┤    └──────────────────┘
                   │  └──────────┘ │    ┌──────────────────┐
┌────────────────┐ │               ├────│  Mean Year of    │
│ Economic Growth│─┤               │    │  School (MYS)    │
└────────────────┘ │  ┌──────────┐ │    └──────────────────┘
                   └──│   GDI    │─┤    ┌──────────────────┐
                      └──────────┘ └────│     INCOME       │
                                        └──────────────────┘
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Figure 2. Conceptual Framework

Hypothesis Development

Several studies have been conducted to determine the effect of human development and gender development on economic growth. However, several studies produced conflicting findings and this caused policymakers and researchers to re-pay attention to human development and economic growth relations. In addition, research focusing on the dual effects of human development and human development is still limited.

Human resource development is well consolidated, supported by increased labor productivity through increased life expectancy, literacy and per capita income so as to accelerate economic growth. (Rahim et al., 2021) conducted research on exploring the indirect impact of economic growth from human resource development through transmission channels of natural resource utilization of several countries in the world. The purpose of this study is to analyze the influence of natural resources and human resources on economic growth. The results of this study show that human and natural resources have a positive impact on economic growth. Therefore, human development helps mitigate the impact of the curse of natural resources.

In another study, all aspects of human capital have a positive effect on growth in developing countries, especially the increase in life expectancy due to demographic transitions. However, it is different from developed countries, where increasing life expectancy hinders economic growth. This is due to the increasing population of old age and dependency ratio (Saleh et al., 2020).

A partial debate has been outlined about the gender gap in the process of economic growth. According to Hassan, the gender gap means women and men should benefit equally from equal resources and opportunities. The gender gap can have serious economic impacts because it hinders opportunities for women. This research shows that the gender gap has a positive impact on economic growth. This is possible awareness of gender equality in the country and society (Iqbal et al., 2022a).

The theoretical framework adopted in this study and the concepts of human development, gender development, and economic growth. The theory used in this study is the theory of human capital. Economic growth theory examines the determinants of long-run economic growth rates through the accumulation of input factors such as physical capital and labor. The function is generally expressed by $Y = F(K,L)$ where Y is output or income, K is capital stock, and L is labor force. Assuming constant returns to scale, the relationship between each labor unit and capital in production does not change the amount of capital or labor in the economy. The endogenous growth model considers human capital as the main source of technological progress so that the economy can develop (Zhang et al., 2023)

METHOD

This research is included in the type of explanatory research, which is a study that connects causally between variables through hypothesis testing. The data used are secondary data obtained from the Central Statistics Agency, in the form of time series data and cross-section data consisting of ten provinces on the island of Sumatra. The region consists of the Provinces of North Sumatra, South Sumatra, West Sumatra, Aceh, Bangka Belitung, Bengkulu, Riau, Riau Islands, Jambi, and Lampung within four years, from 2018 to 2021. This study used a panel data regression analysis tool using 40 observations.

The variables in this study consist of dependent variables and independent variables. The classification of variables used in this study are: (1) Independent variables are life expectancy, mean year of school, Income per capita, and gender development index, and (2) Dependent variable is economic growth.

This study analyzes life expectancy, mean year of school, Income per capita, and gender development index on economic growth from the above backgrounds. This study follows the model used by (Iqbal et al., 2022; Minasyan et al., 2019; Osakede et al., 2023; Uddin et al., 2023)

This research was tested using multiple linear analysis techniques of static panel data regression Therefore, this study uses static models as follows:

$$Growth = f(LEB, MYS, INCOME, GDI) \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (1)$$

$$GROWTH_{it} = \beta_0 + \beta_1 LEB_{it} + \beta_2 MYS_{it} + \beta_3 Income_{it} + \beta_4 GDI_{it} + \varepsilon_{it} \quad \dots \quad (2)$$

Table 1. Variables description and data sources

Variable	Description	Year	Unit of Measurement	Data Source
Growth	Economic Growth	2018-2021	Percent	(*BPS*, 2022)
LEB	Life expectancy	2018-2021	Year	(*BPS*, 2022)
MYS	Mean Year of School	2018-2021	Year	(*BPS*, 2022)
Income	Income per capita	2018-2021	Rupiah	(*BPS*, 2022)
GDI	Gender Development Index	2018-2021	Index	(*BPS*, 2022)

Panel data regression There are three approaches to obtaining the selected model. First, the Common Effect Model assumes that the intercept values of each variable are the same, as well as slope coefficients for all cross section and time series units. Second, Fixed Effect Model is one way to pay attention to cross section units in panel regression models with different intercept values for each cross section unit but still assumes a fixed slope coefficient. Third, the Random Effect Model has different parameters between individuals and between times entered into error so that this model is also referred to as the error component model. This model will reduce the use of degrees of freedom and will not reduce the number as in fixed effect models.

Furthermore, two ways can be used to determine the right technique for estimating panel data parameters. First, the F statistical test is used to choose between the Common Effect or Fixed Effect methods. Second, the Hausman test is used to choose between the Fixed Effect or Random Effect methods.

RESULTS AND DISCUSSION

The results of estimating econometric models in advance with *Pooled Least Square* (*PLS*) / CEM, Fixed Effect Model (FEM) and *Random Effect Model* (*REM*) approaches along with the results of the model selection test are summarized in Table 2.

Table 2. Econometric Model Estimation Results of Panel Data Regression

Variable	Regression Coefficient		
	CEM	FEM	REM
C	-7,554	1,123	1,346
	(0,721)	(0,739)	(0,689)
LEB	0,305	0,079	0,078
	(0,156)	(0,024)**	(0,023)**
MYS	0,487	0,028	0,032
	(0,022)**	(0,647)	(0,602)
INCOME	-2,105	0,542	0,532
	(0,086)***	(0,012)**	(0,012)**
IPG	0,137	0,001	0,0005
	(0,249)	(0,959)	(0,981)
R^2	0,192	0,999	0,733
Adjusted. R^2	0,100	0,999	0,703
Statistics F	2,079	8860,872	24,066
Prob. *Statistics F*	0,105	0,000	0,000

Model Selection Test
A. Chow
   Cross- Section $F(9.26)= 0.000$
B. Hausman
   Cross-Section random $\chi^2(4) = 0.853$

Description: *Significant at $\alpha = 0.01$; ** Significant at $\alpha = 0.05$; ** * Significant at $\alpha = 0.10$; The number inside the parentheses is the probability of the statistical value t.

The Chow test shows that the Random Effect Model (R*EM)* is selected as the best-estimated model, as seen from the probability or significance in the Chow test has a prob value of 0.000 < 0.05. While the Hausman Test shows (FEM) selected as the best model seen in probability or significance of 0.853 > 0.05. So that the complete estimation result of the selected estimated model is *REM*, shown in Table 2.

Table 3. *Random Effect Model (REM)* Estimation Model

$Growth_{it}= 1,346 +0,078LEB_{it} + 0,032 MYS_{it}\ 0,532\ INCOME_{it} + 0,0005\ GDI_{it}$
$\quad\quad\quad\quad\quad\quad (0,023)^{**}\quad\quad (0,602)\quad\quad (0,012)^{**}\quad\quad\quad (0,981)$
$R^2= 0.733$; Adj $R^2 = 0.703$; F.Stat = 24.066; Prob F-Stat = 0.000

Description: *Significant at $\alpha = 0.01$; ** Significant at $\alpha = 0.05$; ** * Significant at $\alpha = 0.10$; The number inside the parentheses is the probability of the statistical value t.

Table 2 shows that the *estimated model of REM* exists with probability or statistical empirical significance *F* in the Hausman Test is 0,854 (> 0,1), with a coefficient of determination (R^2) value of 0.733; which shows the Mean length of schooling, Income per capita, and gender development index of 73,3%. While the remaining 26,7 % was influenced by other variables outside the model. The probability or empirical significance of the statistic

f in the model is 0,000. That is, the independent variables in the model simultaneously affect economic growth.

Test partial statistical significance in this model, *the first* variable life expectancy (LEB) to economic growth. It can be seen from the results of regression with random effect, the variable life expectancy (LEB) has a probability of 0,023 with a significance of $\alpha = 0.05$. The probability of life expectancy is less than the α level $(0,023 < 0,05)$ hence H_0 is rejected. It is concluded that life expectancy has a positive and significant effect on economic growth. *Second*, the variable of average length of schooling (MYS) to economic growth. The variable average length of schooling (MYS) has a probability of 0.602 with significance $\alpha = 0.05$. The probability of life expectancy is greater than the α level $(0.602 > 0.05)$ hence H_0 is accepted. It was concluded that Mean Years of School had a positive and insignificant effect on economic growth. *Third*, the variable Income per capita (INCOME) to economic growth. The variable Income per capita (INCOME) probability is 0.012 with significance $\alpha = 0.05$. The probability of Income per capita is less than the level of α $(0.012 < 0.05)$ hence H_0 is rejected. It is concluded that Income per capita has a positive and significant effect on economic growth. *Fourth*, the variable of the Gender Development Index (GDI) on economic growth. The gender development index (GDI) variable has a probability of 0.981 with significance $\alpha = 0.05$. The probability of the gender development index is greater than the level of α $(0.981 < 0.05)$ then H_0 accepted. It was concluded that the gender development index has a positive and insignificant effect on economic growth.
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Discussion

Based on the results of this study, the influence of variables such as life expectancy, Mean length of schooling, Income per capita, and gender development index on economic growth based on previous (Agénor & Agénor, 2023; Khan et al., 2019b; Masduki et al., 2022b; Minasyan et al., 2019b).

Life expectancy of birth has a positive and significant influence on economic growth on the island of Sumatra. Life expectancy is a tool to evaluate the government's performance in improving the welfare of the population in general and improving health in particular. In addition, life expectancy correlates with programs in the health sector, both preventive efforts and access to health services. Public health efforts by increasing knowledge and awareness about health in the community through socialization and preventive efforts with the slogan GERMAS (Gerakan Masyarakat) initiated by the Ministry of Health of the Republic of Indonesia. GERMAS is an activity that aims to cultivate a healthy lifestyle community by having several program target focuses such as building access to meet sanitary hygiene, clean water needs for drinking, decent and good health installations and the construction of environmentally decent and livable people's housing (Sigit et al., 2022). GERMAS efforts also aim to reduce stunting rates and increase population productivity and reduce the burden of health service costs due to disease. In addition, mortality has a correlation with a country's economic growth, developed countries that have high economies tend to have lower mortality rates than poor countries. Therefore, efforts made to improve life expectancy can accelerate national income reflecting good economic growth. Graph 2 illustrates the development of life expectancy of ten provinces on the island of Sumatra from 2018 to 2021.

Based on Graph 2 illustrates the development of life expectancy tends to increase every year. Life expectancy in Riau Province is 71,22 in 2021, the highest in Sumatra. High life expectancy in Riau Province. This reflects the implementation of the GERMAS program in

Riau Province is going well. The relationship between health and economic growth has a very close relationship and is a prerequisite for achieving human development, because increasing economic development will encourage increased community productivity through filling job opportunities with productive businesses so that the welfare of people in the region can be realized.
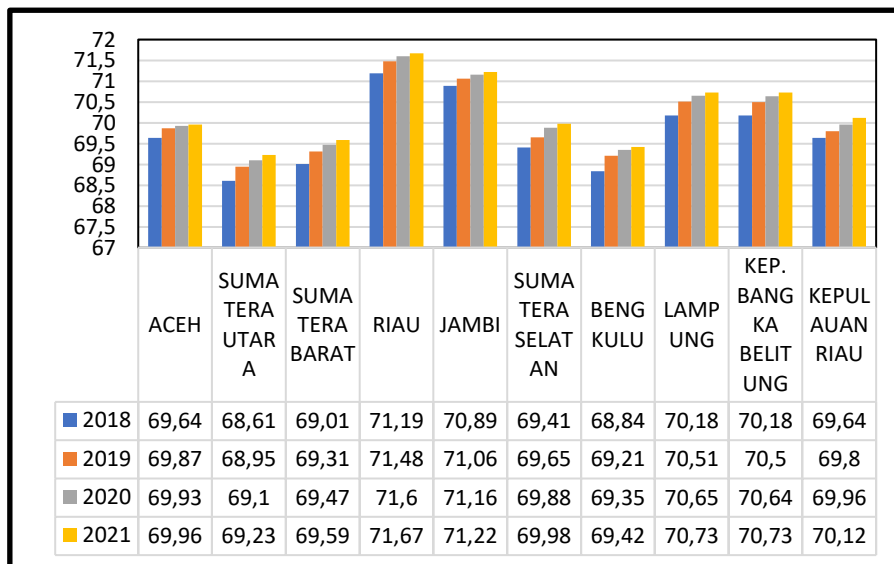

	ACEH	SUMA TERA UTAR A	SUMA TERA BARAT	RIAU	JAMBI	SUMA TERA SELAT AN	BENG KULU	LAMP UNG	KEP. BANG KA BELIT UNG	KEPUL AUAN RIAU
2018	69,64	68,61	69,01	71,19	70,89	69,41	68,84	70,18	70,18	69,64
2019	69,87	68,95	69,31	71,48	71,06	69,65	69,21	70,51	70,5	69,8
2020	69,93	69,1	69,47	71,6	71,16	69,88	69,35	70,65	70,64	69,96
2021	69,96	69,23	69,59	71,67	71,22	69,98	69,42	70,73	70,73	70,12

Figure 3. Life Expectancy in Sumatera Island 2018 – 2021., Source: (*BPS*, 2022)

Education has an important role in the ups and downs of economic growth in a region, with an increase in the average level of school length of the community will be easier to adjust technology according to the existing era, the development of technology will have an impact on improving the level of community welfare and facilitate the process of economic development, then when an area has an average level of higher school length it will be more prosperous as well. This study is in line with research conducted by (Minasyan et al., 2019c) proving that Mean Years of School has a positive and insignificant effect on economic growth, this situation shows that high quality or quality human resources often cause high unemployment. This condition illustrates the high quality of human resources spurring the community to get jobs that match the skills and wages expected, but the available jobs and the income offered are not appropriate. This situation forces people to postpone working and hope to work in a place that is in accordance with their field and get the appropriate wage, therefore this problem can cause a spike in unemployment which can cause a burden on the state (Zhang et al., 2023b). These results are in line with the advance hypothesis that states in the theory that Mean Years of School (MYS) has a positive influence on economic growth. Investment in human resources through advances in education is expected to generate national income that is transformed into higher economic growth. Research conducted by (Farayibi & Folarin, 2021) proves that the level of education does not have a positive and significant influence on economic growth. This happens, because it considers the level of education is not always in accordance with the quality of the work produced, so that someone who has higher or low education does not look different in productivity in coping with the same job, so this condition becomes a problem that can cause education to not be able to increase GDP or the economy in the region. The same study conducted by (Putria et al.,

2023) in the study proves that education as a social institution whose function is to allocate socially based on the level of education taken. The desire to be able to take a higher education strata encourages a person to be able to go to a higher level. Although a highly educated person has a high average income, an increase in the average income received by a highly educated person in a certain period of the economy in the country will not directly accelerate economic growth. Based on the regression results, panel data reflects that education is proxied for the variable of average length of schooling acting as a picture of the ability of an economy to modernize technology in the context of sustainable economic growth. In addition, the desire to obtain a higher social status can spur a person to pursue higher education. Although higher education has a higher income, increasing the amount of income in a region does not automatically encourage economic growth (Osakede et al., 2023).

Income per capita is one indicator of the prosperity and welfare of a region, high Income per capita tends to encourage an increase in the level of people's purchasing power or per capita consumption then causes additional income or incentives for changes in the structure of production. If Income per capita increases, then the demand for finished goods produced by manufacturing and service production will increase faster than the demand for agricultural products or raw goods. The same study was conducted by (Daryon Soebagiyo et al., 2019) on the klassen typology between Income per capita and economic growth in East Java shows that development policies that prioritize relatively underdeveloped areas still pay attention to and without neglecting regions that are already developed and growing rapidly. Regions that are included in the category of developed regions provide support in the form of assistance for underdeveloped regions in the form of funding for community empowerment programs that can improve the quality of human resources, because improving the quality of human resources will have a positive impact on economic growth through increased employment. Moreover, developed and rapidly developing regions have relied on the industrial sector as their leading sector where the industrial sector requires quality human resources. Inter-regional consolidation is carried out with clear development planning so as to minimize income inequality and development inequality as well as connectivity so that the process of sending natural resources and labor from one region to another will be more cost and time efficient (Aksan & Chakraborty, 2023).

Based on the results of regression analysis, the panel data in advance shows that the ratio of the Gender Development Index (GDI) has a positive direction to economic growth, meaning that the higher the ratio of the Gender Development Index, the higher the economic growth. Economic growth is not only caused by the success of increasing the basic skills of the male population but also the female population. This also reflects the large number of Gender Development Index still increasing and decreasing or fluctuating in line with the economic growth rate which tends to increase (Agénor & Agénor, 2023). Economic growth is not always accompanied by overall economic improvement, but this situation is often accompanied by inequality. This inequality is more experienced by women where they have difficulty in obtaining access to both health and education. It is possible that countries with high income levels and high economic growth sometimes face challenges with high levels of gender inequality. The low level of education in women causes women to be positioned in manual or lowly labor, resulting in high gender inequality in a region. The job does not require special skills and abilities to do so many women are involved in the job. In addition, there are stereotypes that prohibit women from working and identify women as housewives whose job is to serve their husbands, take care of children, and cook in the kitchen. This condition certainly greatly limits the space for women's movement, resulting in gender

inequality (Surjono et al., 2015a). The limited space for women to move causes unpreparedness in facing severe challenges in the development process of a country. Challenges in the field of women's education are colored by views on socio-cultural and economic reasons that cause women's education on the island of Sumatra to be lower than that of men. In addition, inequality in the health sector is also experienced by women because women have higher physical vulnerability so that women's health is a priority carried out by the government to improve the quality of human resources. Women are the focus of health improvement because women experience pregnancy and lactation periods where these times are the weakest conditions experienced by women so they require special attention, especially the fulfillment of nutritional adequacy (Asongu & Odhiambo, 2023b). Nutritional adequacy in mothers is related to children's health later because the prevalence of children will be stunted into a measure of children who have poor nutrition. But on the other hand, government programs are not only aimed at women.

Based on the estimated panel data, the results can be displayed through mapping the area of economic growth concentration on the island of Sumatra, can be seen in Figure 1. Figure 1 shows that the concentration of economic growth on the island of Sumatra varies. North Sumatra Province and Riau Province have the highest concentration of economic growth. While the area with the lowest concentration of economic growth is Bengkulu Province. In addition, areas that have a positive impact on economic growth on the island of Sumatra during 2018-2021 are concentrated in an adjacent area. While regions that negatively affect economic growth are relatively far from each other.

North Sumatra Province and Riau Province are the largest provinces on the island of Sumatra where these two provinces have a lot of biodiversity. In addition, North Sumatra Province experienced a high economic growth rate supported by the information and communication sector. The information and communication sector in North Sumatra Province in 2018 was 8.43 percent, and 6.51 percent in 2021. Despite the decline, the economic growth rate of the information and communication sector remains the leading sector in North Sumatra Province. Then the second leading sector is the provision of accommodation and food and drink. The economic growth rate in the accommodation and food and drink sector of North Sumatra Province in 2018 was 7.53 and 7.16 in 2021. The development of the information and communication sector as well as the sector of providing accommodation and food and drink in North Sumatra indicates that the people of North Sumatra Province have high purchasing power for food and drink needs as well as information and communication needs. Along with these conditions, North Sumatra Province is classified as an area that has advanced economic growth on the island of Sumatra.

Based on Figure 1, regions that have advanced economic growth tend to be close together. This is because, regions that both have relatively advanced economic growth will find it easier to transfer natural wealth and labor because it is supported by closer access. As in Figure 1, North Sumatra Province is adjacent to Riau Province then South Sumatra Province is adjacent to Lampung Province. On the other hand, the region that has the lowest concentration of growth on Sumatra Island is Bengkulu Province. When viewed on the map, geographically the location of Bengkulu Province is located on the western tip of Sumatra Island and part of the area is in the Bukit Barisan Mountain area. Bengkulu Province has a high level of natural disaster vulnerability. In addition, Bengkulu Province is the province with the highest poverty composition out of 34 provinces in Indonesia (Nurohmah et al., 2014). The province that has the second lowest concentration of economic growth is Bangka Belitung Province. When viewed on the map, the position of Bangka Belitung Province is

located to the east of Sumatra Island and its territory is separated by the ocean from Sumatra Island. Bangka Belitung Province has a leading sector, namely tin mining. However, there are concerns that poor management and governance of mining businesses in the long term lead to dependence of the regional economy on natural energy resources such as tin. This can have negative economic impacts and potentially lead to phenomena such as slower economic growth, decreased social welfare, and environmental damage (Sulista & Rosyid, 2022) .
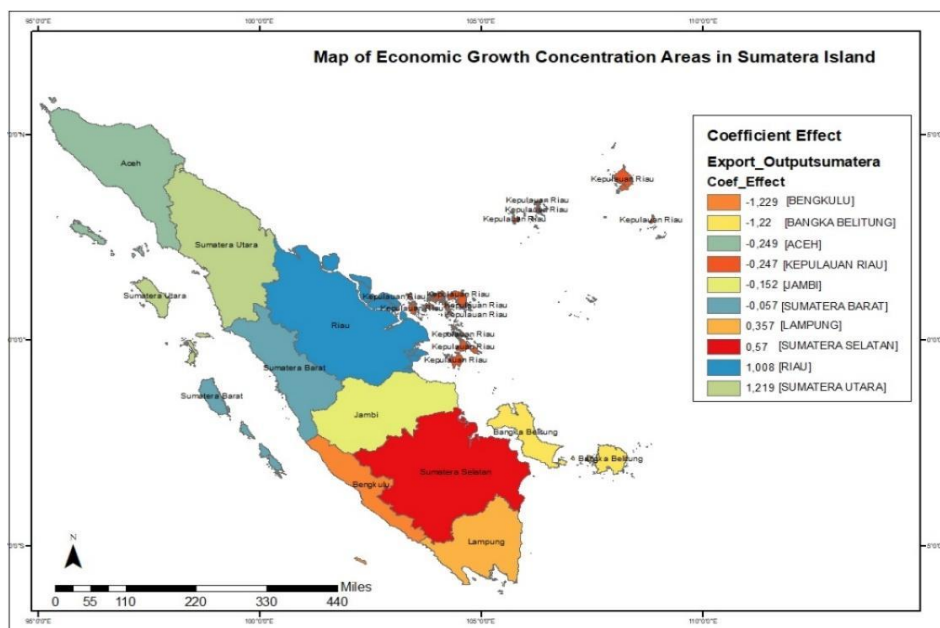

Figure 4. Map of Economic Growth Concentration Areas in Sumatra Island (Source : ArcGIS (Processed)

Implication

This research is still limited to the role of human resource development on economic growth and has not examined other variables that can affect economic growth. So that future research can use a different point of view regarding human resource development on economic growth. Along with this research, the author hopes that the government together with the community as economic actors can implement strategies in increasing economic growth by improving the quality of human resources and increasing awareness of gender equality.

CONCLUSION

The success of development can be seen from how big and appropriate the government is in managing the potential of existing human resources. Efforts to increase or improve development can be seen, for example, by increasing community income, increasing HDI and narrowing gender bias in a region. Based on the results of regression analysis that has been carried out, it was found that life expectancy and Income per capita positively and significantly affect economic growth. Meanwhile, the variables of average length of schooling and gender development index did not affect economic growth. The next finding is that the distribution of economic growth on the island of Sumatra is concentrated

in areas close to each other, such as North Sumatra Province and Riau Province as well as Lampung Province and South Sumatra Province. In addition, increasing economic growth requires strategies that can encourage human resources on the island of Sumatra, such as increasing life expectancy, literacy rates or average school expectations and per capita income so as to produce human resources with high productivity.

Although our study illustrates economic development trends at the provincial level, it seems necessary to conduct further research on the relationship between the human development index and the gender development index to explore the framework for economic growth at the provincial level. In addition, to evaluate the governance of natural resources and human resources is important to consider considering that these two potentials contribute greatly to the economic development of a region.

This study certainly has some limitations, for example the research sample only consists of four years and only covers ten provinces on the island of Sumatra. However, some researchers argue that regional research is much more informative compared to research that covers the entire region. Regions on the island of Sumatra have different areas and therefore separate studies need to be carried out for each province on the island.

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