

Determinants of The Quality Human Resources in West Kalimantan Province

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Abstract. This study aims to analyze the determinants of human resources reflected by the Human Development Index (HDI) in West Kalimantan Province, Indonesia. In this study, 14 regencies/cities in West Kalimantan Province served as the research object. The data were secondary from the Central Bureau of Statistics of West Kalimantan Province from 2017-2021. The analysis tool combined the panel data method with a fixed-effect model approach. Based on the analysis, while the poverty variable negatively and significantly affected HDI, HDI was favorably and strongly impacted by the variables per capita expenditure, unemployment, and gross regional product (GDP). For the government, it is recommended to make policies, such as providing capital to MSME actors, farmers, fishermen, and others, to develop their businesses and boost productivity and people's welfare

1 Introduction

A country or region's performance in pursuing development can be gauged by looking at the quality of human resources as defined by the Human Development Index (HDI). Aside from its wealth in vast natural resources, Indonesia, which has a population of around 280 million, has tremendous potential for economic strength as a catalyst for economic expansion. Developing the quality of human resources is also an indicator of successful development in a country or region. The human development index (HDI), which rates the quality of human resources, considers three fundamental aspects: long and healthy life, knowledge, and a decent standard of living. [6] Specifically, the West Kalimantan Province, which borders Sarawak, Malaysia, is trailing behind in raising the quality of its human resources to develop its area. The following data describes the quality of human resources on Kalimantan Island :

Table 1. Human Development Index (HDI) of Regency/City in West Kalimantan Province (Index)

No	Regency/City	Year					Average
		2017	2018	2019	2020	2021	
1	Sambas	65.92	66.61	67	67	67	66.73
2	Bengkayang	65.99	66.85	67.57	67.87	68.04	67.26
3	Landak	64.93	65.45	65.96	65.98	66.21	65.71

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4	Mempawah	64	64.9	65.5	65.74	66.03	65.23
5	Sanggau	64.61	65.15	65.67	65.77	66.2	65.48
6	Ketapang	65.71	66.41	67.16	67.17	67.43	66.78
7	Sintang	65.16	66.07	66.7	66.88	66.93	66.35
8	Kapuas Hulu	64.18	65.03	65.65	65.69	65.75	65.26
9	Sekadau	63.04	63.69	64.34	64.76	64.93	64.15
10	Melawi	64.43	65.05	65.54	65.55	65.87	65.29
11	Kayong Utara	61.52	61.82	62.66	62.68	62.9	62.32
12	Kubu Raya	66.31	67.23	67.76	67.95	68.16	67.48
13	Pontianak City	77.93	78.56	79.35	79.44	79.93	79.04
14	Singkawang City	70.25	71.08	71.72	71.94	72.11	71.42

Source: Central Bureau of Statistics of West Kalimantan Province, Indonesia

As can be observed from Table 1.1 above, each regency/city in West Kalimantan Province had a very different level of Human Development Index (HDI) quality yearly. If assessed based on the class of human development status sourced from the Central Bureau of Statistics, 12 regencies in the province—Sambas, Bengkayang, Landak, Mempawah, Sanggau, Ketapang, Sintang, Kapuas Hulu, Sekadau, Melawi, Kayong Utara, and Kubu Raya—were classified as having a moderate level of development, with a value of $60 \leq \text{HDI} < 70$. Pontianak City and Singkawang City, two cities in the province, were placed in the high-status group, with a value of $70 \leq \text{HDI} < 80$. Among the 14 regencies/cities, while Pontianak City had the highest HDI level, Kayong Utara Regency had the lowest HDI level. Undoubtedly, the lagging Human Development Index (HDI) in West Kalimantan Province stems from factors originating from three basic aspects: a long and healthy life, knowledge, and a decent standard of living. [8]

2. Theoretical Framework

Human resources play a key role since both the subject and the object of development are involved in the process. Humans and development have a simultaneous and reciprocal interaction, which means that humans impact development because they are agents of development as objects and subjects of development. Conversely, the results of development will affect the quality of human life. Theoretically, the role that labor or people play in the production process can be expressed in the production function as follows: [4]

$$Q = f(L, K)$$

Where:

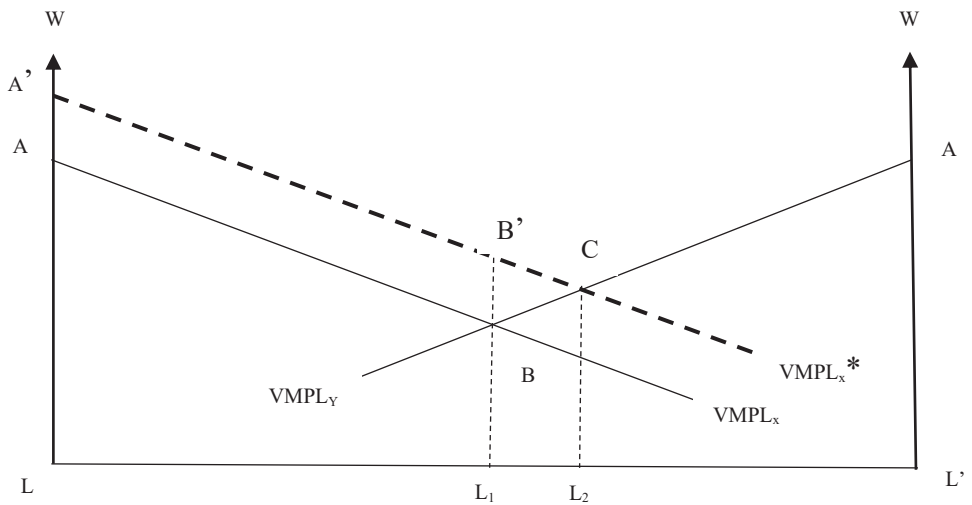
Q = Output

L = Labor inputs

K = Capital input

The contribution of labor in the production process is indicated by the magnitude of the marginal product of input labor (MP_L), and when multiplied by the output price, the value of the marginal product of input labor (VMP_L) is obtained. An illustration of the role of humans or labor in economic activity can be depicted in the following curve: [2] The curve below explains the role of human resources in the economy. The horizontal axis from L to L' shows the total labor force in an economy working to produce two commodities, namely X and Y. The total labor force working to produce X is from left to right, such as from L to L₁, so the total labor which works and produces Y as much as L' to L₁ is from right to left. The marginal value product of labor for X ($VMPL_X$) curve illustrates the value of the marginal output generated by labor to produce output X. The negatively sloped $VMPL_X$

curve elucidates the operation of the additional law of output X, which decreases with each increase in labor input per unit.



The LABL₁ area describes the total X output value an economy produces from the number of workers as much as L to L₁. Also, of course, the magnitude of the output value generated by the workforce working to produce Y from the amount of labor L' to L₁ is shown from the VMPL_Y curve, which has a negative slope, i.e., from right to left. The total value of output Y from the workforce working to produce Y as much as L' to L₁ is the area of L'A'BL₁. Further, the quality of human resources is affected by the quality of education through improving the quality of learning and supporting adequate educational facilities and infrastructure. The quality of human resources is also influenced by the quality of health, which is determined by the quality of nutrition and daily behavior of a person and the support of health facilities and infrastructure, such as hospitals, pharmacies, and health workers. [1], [4]

3. Research Methodology

The equation was used in panel data regression analysis in research on the determinants of the Human Development Index (HDI): [3]

$$Y = \alpha + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 X_3 it + \beta_4 X_4 it + e$$

Description:

Y : Human Development Index

α : Constant

β : Regression coefficient

i : Cross section

t : Time series

it : Panel data

β (1,2,3,4) : The regression coefficient of each independent variable

X₁ : Poverty level

X₂ : Per capita expenditure

X₃ : Unemployment Rate

X₄ : Gross Regional Domestic Product (GRDP)

e : Error term

The Chow, Hausman, Multicollinearity, Heteroscedasticity, and Statistical Significance tests were used to analyze the data. Model selection using the Chow test was to determine whether the model utilized in the study employed the fixed effect model (FEM) or the common effect model (CEM), and the following results were obtained: [3]

Table 2. Chow Test Results

Effect Test	Statistic	d.f	Prob.
<i>Cross-section F</i>	243.249212	(13.52)	0.0000
<i>Cross-section Chi-square</i>	288.687170	13	0.0000

Source: Secondary data processed, 2022

The results of the Hausman test showed that H_0 was rejected since the probability value was $0.0005 < \alpha = 0.05$. Accordingly, the fixed effect model (FEM) was the appropriate analysis model.

H_0 = Random effect model (REM)

H_1 = Fixed effect model (FEM)

4. Results Analysis and Discussion

After going through a series of Chow and Hausman test stages, the regression estimation results by applying three models, i.e., the fixed effect model (FEM), the random effect model (REM), and the common effect model (CEM), obtained the following results: [3], [5]

Table 4. Panel Data Regression Results

Dependent Variable: HDI	Model		
	<i>Common Effect</i>	<i>Fixed Effect</i>	<i>Random Effect</i>
Constant ©	-179.0234	-203.6528	-201.9026
Error standard	21.19102	12.91047	18.77568
t-Statistics	-8.448078	-15.77424	-10.75341
LOG(X1)	0.456769	-2.510601	-3.196019
Error standard	0.499105	0.517518	0.0634892
t-Statistics	0.915177	-4.851233	-5.033956
LOG(X2)	14.27953	6.234375	12.62443
Error standard	1.442061	1.321761	1.596184
t-Statistics	9.902165	4.716719	7.909130
X3	0.372878	0.086995	0.101199
Error standard	0.110591	0.022439	0.029548
t-Statistics	3.371696	3.876959	3.424879
LOG(X4)	0.505181	8.600384	4.340692
Error standard	0.458783	0.737959	0.029548
t-Statistics	1.101131	11.65428	6.102673
R2	0.884079	0.998059	0.897114
F-statistics	123.9318	1573.049	141.6914
Probability	0.000000	0.000000	0.000000
Durbin-Watson stat	0.101601	1.908339	1.125108

Source: Secondary data processed, 2022

The results of the Chow and Hausman tests demonstrated that the model in the research on the determinants of the human development index (HDI) in West Kalimantan Province was the fixed effect model (FEM). This conclusion got better by looking at the results of the coefficient of determination test (R^2), where the highest value was in the fixed effect model (FEM), i.e., 0.998059, greater than the coefficient of determination test (R^2) of other models. Based on the fixed effect model test results in Table 5.6 above, a panel data analysis model was created to analyze the effect of poverty, per capita expenditure,

unemployment, and GRDP on the Human Development Index (HDI) in 14 regencies/cities of West Kalimantan Province as follows.

$$Y = \alpha + \beta_1 \text{LOG}(\text{POV}_{it}) + \beta_2 \text{LOG}(\text{PE}_{it}) + \beta_3 \text{UE}_{it} + \beta_4 \text{LOG}(\text{GRDP}_{it}) + e$$

$$Y = -203.6528 + (-2.510601) X_{1it} + 6.234375 X_{2it} + 0.086995 X_{3it} + 8.600384 X_{4it} + e$$

Description:

Y	: HDI
α	: Constant
LOG(POV)	: Poverty
LOG(PE)	: Per capita expenditure
UE	: Unemployment
LOG(GRDP)	: GRDP
β (1,2,3,4)	: The regression coefficient of each independent variable
e	: Error
i	: Sambas, Bengkayang, Landak, Mempawah, Sanggau, Ketapang, Sintang, Kapuas Hulu, Sekadau, Melawi, Kayong Utara, Kubu Raya, Pontianak, Singkawang
t	: 2017, 2018, 2019, 2020, 2021

The following is an interpretation of the regression estimation results above, which was made using a panel data analysis model of the factors influencing the Human Development Index (HDI) in 14 regencies/cities in West Kalimantan Province.

- HDI_Sambas = $-3.917099 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Sambas} + 6.234375 * \text{PE_Sambas} + 0.086995 * \text{UE_Sambas} + 8.600384 * \text{GRDP_Sambas}$
- HDI_Bengkayang = $2.372884 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Bengkayang} + 6.234375 * \text{PE_Bengkayang} + 0.086995 * \text{UE_Bengkayang} + 8.600384 * \text{GRDP_Bengkayang}$
- HDI_Landak = $2.630223 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Landak} + 6.234375 * \text{PE_Landak} + 0.086995 * \text{UE_Landak} + 8.600384 * \text{GRDP_Landak}$
- HDI_Mempawah = $1.161493 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Mempawah} + 6.234375 * \text{PE_Mempawah} + 0.086995 * \text{UE_Mempawah} + 8.600384 * \text{GRDP_Mempawah}$
- HDI_Sanggau = $-5.635525 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Sanggau} + 6.234375 * \text{PE_Sanggau} + 0.086995 * \text{UE_Sanggau} + 8.600384 * \text{GRDP_Sanggau}$
- HDI_Ketapang = $-5.314498 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Ketapang} + 6.234375 * \text{PE_Ketapang} + 0.086995 * \text{UE_Ketapang} + 8.600384 * \text{GRDP_Ketapang}$
- HDI_Sintang = $-0.612471 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_Sintang} + 6.234375 * \text{PE_Sintang} + 0.086995 * \text{UE_Sintang} + 8.600384 * \text{GRDP_Sintang}$
- HDI_Kapuas Hulu = $1.711380 + (-203.6528)$ (area effect) + $(-2.510601) * \text{POV_KapuasHulu} + 6.234375 * \text{PE_KapuasHulu} + 0.086995 * \text{UE_KapuasHulu} + 8.600384 * \text{GRDP_KapuasHulu}$

$$\begin{aligned}
& 2.510601) * \text{POV_Kapuas Hulu} + 6.234375 * \text{PE_Kapuas Hulu} + 0.086995 * \text{UE_Kapuas Hulu} + 8.600384 * \text{GRDP_Kapuas Hulu} \\
9. \quad \text{HDI_Sekadau} &= 2.139450 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Sekadau} + 6.234375 * \text{PE_Sekadau} + 0.086995 * \text{UE_Sekadau} + 8.600384 * \text{GRDP_Sekadau} \\
10. \quad \text{HDI_Melawi} &= 6.383495 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Melawi} + 6.234375 * \text{PE_Melawi} + 0.086995 * \text{UE_Melawi} + 8.600384 * \text{GRDP_Melawi} \\
11. \quad \text{HDI_Kayong Utara} &= 4.051200 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Kayong Utara} + 6.234375 * \text{PE_Kayong Utara} + 0.086995 * \text{UE_Kayong Utara} + 8.600384 * \text{GRDP_Kayong Utara} \\
12. \quad \text{HDI_Kubu Raya} &= -6.239127 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Kubu Raya} + 6.234375 * \text{PE_Kubu Raya} + 0.086995 * \text{UE_Kubu Raya} + 8.600384 * \text{GRDP_Kubu Raya} \\
13. \quad \text{HDI_Pontianak} &= -0.554372 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Pontianak} + 6.234375 * \text{PE_Pontianak} + 0.086995 * \text{UE_Pontianak} + 8.600384 * \text{GRDP_Pontianak} \\
14. \quad \text{HDI_Singkawang} &= 1.822966 + (-203.6528) (\text{area effect}) + (-2.510601) * \text{POV_Singkawang} + 6.234375 * \text{PE_Singkawang} + 0.086995 * \text{UE_Singkawang} + 8.600384 * \text{GRDP_Singkawang}
\end{aligned}$$

Based on the equation above, it can be seen that there was a different cross-sectional effect in each region. Some regencies/cities had a cross-section (operational area effect) with positive or negative values. It is where seven areas had a positive effect on the Human Development Index (HDI) in West Kalimantan Province: Bengkayang Regency (2.372884), Landak Regency (2.630223), Kapuas Hulu Regency (1.711380), Sekadau Regency (2.139450), Melawi Regency (6.383495), North Kayong Regency (4.051200), and Singkawang City (1.822966). Also, six areas negatively affected the Human Development Index (HDI) in West Kalimantan Province: Sambas Regency (-3.917099), Sanggau Regency (-5.635525), Ketapang Regency (-5.314498), Sintang Regency (-0.612471), Kubu Raya Regency (-6.239127), and Pontianak City (-0.554372). In addition, from the value of the influence of the cross-section above, Melawi Regency had the greatest positive influence on the Human Development Index (HDI) in West Kalimantan Province. Meanwhile, Kubu Raya Regency negatively influenced the Human Development Index (HDI) in West Kalimantan Province. [1], [7]

$$Y = -203.6528 + (-2.510601) \text{POV}_{it} + 6.234375 \text{PE}_{it} + 0.086995 \text{UE}_{it} + 8.600384 \text{GRDP}_{it} + e$$

Then, the results of the research regression estimation on the determinants of the quality of human resources in West Kalimantan Province showed that all the independent variables in this study, including poverty (POV), per capita expenditure (PE), unemployment (UE), and gross regional domestic product (GRDP), revealed significant results for increasing the development index (HDI) in West Kalimantan Province. The highest value was in the gross regional domestic product (GRDP) variable, amounting to 8.600384. It denotes that a 1%

rise in GRDP will result in an 8.6000384 increase in West Kalimantan Province's human development index (HDI). This statistic suggests that improving the quality of a province's human resources is primarily encouraged by economic growth. The availability of people's basic requirements, such as food, clothing, and housing, will rise as the economy grows. The availability of healthcare infrastructure, including hospitals, medications, and medical professionals, will rise along with the economy. [6], [10]

On the other hand, the smallest coefficient value was the unemployment variable of 0.086995, meaning that increasing unemployment will encourage an increase in the human development index (HDI) in West Kalimantan Province of 0.086995. Due to the socio-economic phenomenon in West Kalimantan, where many educated unemployed workers have just finished their education and are waiting for a suitable job, this finding is fascinating to investigate. Frictional unemployment is the term for it. Educated unemployment in West Kalimantan Province can positively influence the Human Development Index (HDI), although their families are still responsible for providing for their needs. As a result, in the short term, they can still maintain good purchasing power and consumption patterns. [8], [11]. To address problems affecting HDI in West Kalimantan Province, several suggestions can be made by the government, one of which is to increase the efforts made by the community, both MSME and small-scale plantations or agriculture. The government can increase access to capital, improve product quality and access to marketing, and develop business skills and services, partnerships, and others. The government can also carry out expansionary fiscal policies by making expenditures greater than income. An example is by providing subsidies to MSMEs to farmers and fishermen. [7] By doing this, people's productivity will increase so that people's development increases and purchasing power also increases. Thus, poverty and unemployment in West Kalimantan Province will be reduced and able to improve the quality and welfare of its people and have a good impact on the Human Development Index (HDI). In addition, the government can expand employment opportunities so that educated unemployment in this province will decrease. Also, training and programs designed specifically for people who do not have a job can be carried out so that they have the ability and skills to be of added value; hence they can find employment and obtain suitable employment with good pay[2],[9].

5. Conclusion and Recommendations

The conclusions from research on the determinants of the quality of human resources in West Kalimantan Province are as follows. In West Kalimantan Province, between 2017 and 2021, the poverty variable negatively and significantly impacted the Human Development Index (HDI). It implies that HDI will fall if poverty rises. It occurs as a result of low productivity, low income, and decreased welfare, all of which have a detrimental impact on the quality of human resources. Between 2017 and 2021, the Human Development Index (HDI) in West Kalimantan Province was positively and significantly influenced by the variables of per capita expenditure, indicating that the HDI will rise if per capita expenditure rises. It happens due to rising individual income and purchasing power, which boost well-being as per capita expenditure rises. In West Kalimantan Province, between 2017 and 2021, the unemployment variable positively and significantly impacted the Human Development Index (HDI). In other words, HDI will rise in tandem with rising unemployment. It is because there is frictional unemployment, where in the short term, they are still the family's responsibility to make ends meet. Finally, the Human Development Index (HDI) in West Kalimantan Province was favorably and significantly influenced by the variable gross regional domestic product (GDP) between 2017 and 2021, suggesting

that if GRDP rises, HDI will also rise. It is because as society becomes more productive, welfare likewise rise.

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