

The Influence of Local Own- Source Revenue and Unemployment On Labor Force Through Human Development Index (HDI)

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Abstract

This study examines the influence of Local Own-Source Revenue and unemployment on the labor force participation rate in the regions of Java and Bali, with the Human Development Index (HDI) acting as a mediating variable. Using path analysis and EViews software, the research investigates both direct and indirect effects within a structural model. The results show that Local Own-Source Revenue has no significant direct effect on the labor force ($p = 0.9100$; direct effect = 0.004), and its indirect effect through HDI is also negligible. Similarly, unemployment does not have a statistically significant effect on labor force participation ($p = 0.0966$; direct effect = -0.205), nor does it show a significant indirect effect via HDI. These findings indicate that HDI does not mediate the relationship between Local Own-Source Revenue or unemployment and labor force participation in these regions. While HDI is widely regarded as a benchmark for human development, this study suggests it may not sufficiently explain labor force dynamics in the context of Java and Bali. Alternative factors such as the quality of education, economic diversification, urbanization, industrial structures, and access to digital infrastructure may have greater explanatory power. Future research is recommended to explore additional mediating variables and employ more detailed regional or sectoral analyses. Moreover, incorporating qualitative methods may help capture social and cultural dimensions that influence labor force behavior, thus offering a more comprehensive basis for policymaking.

1. Introduction

Regional economic development is closely linked to community welfare, commonly measured by the Human Development Index (HDI), which includes health, education, and standard of living. Java and Bali, as Indonesia's economic and population centers, face challenges in managing resources and labor.

Local Own-Source Revenue (LOSR) and unemployment are key factors influencing development and workforce productivity. LOSR enables local governments to provide essential public services, especially education and healthcare—core components of HDI. Higher LOSR enhances a region's capacity to improve quality of life through better infrastructure and services.

Table 1. Local Own-Source Revenue (LOSR) of Java and Bali Provinces

PROVINSI	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jakarta	1782599	220408	2685219	3127421	3368617	3688801	4390148	4332713	457074	3741475	4160631	456084	4886001
Banten	2895.57	3395.88	4118.55	4899.13	4972.74	5463.16	5756.37	6329.14	7022.31	5906.54	7010.37	8203.14	8514.35
Jawa Barat	14359.7	17920.72	22561.42	29116.89	32191.2	34660.13	41400.15	40240.46	44150.91	39915.36	45351.78	49218.53	49591.12
Jawa Tengah	9292.6	11505.7	14303.63	18764.75	20698.44	22747.77	22747.77	26766.78	28648.04	28056.37	31611.2	32762.03	34421.17
DI Yogyakarta	867.11	1004.06	1216.1	1464.6	1593.11	1673.74	1851.97	2040.72	5699.36	1876.71	1900.92	2263.43	2368.68
Jawa Timur	14664.66	16855.34	20585.38	27005.37	29976.41	31230.68	37263.12	37086.32	39344.67	37042.89	40942.41	43479.52	45329.95
Bali	1723.62	2042.09	2529.98	2920.42	3041.29	3041.2	3398.47	2920.42	4023.16	3069.47	3117.07	3863.19	4627.74
NTB	741.29	745.98	858.15	1115.06	1372.66	1359.84	1684.47	1660.42	1807.48	1815.69	1888.46	2292.07	2189.54
NTT	391.83	458.79	523.2	763.3	882.32	995.19	1047.49	1095.27	1258.96	1166.57	1238.03	1363.74	1427.04

Source: djpk.kemenkeu.go.id

Based on Table 1, DKI Jakarta has the highest LOSR among all provinces in Java and Bali, showing a consistent upward trend from 2011 to 2023. In contrast, Bali, although generating lower LOSR, plays a significant role in the tourism sector as its economic backbone. This disparity in LOSR reflects variations in the fiscal capacities of each province to support human development. Despite increasing LOSR, high unemployment remains a critical issue in

many areas, including Java and Bali. Unemployment indicates an imbalance between labor supply and demand and has substantial implications for economic and social development (W, 2015). It is not merely an individual problem, but a systemic challenge that can disrupt a region's economic stability. A high unemployment rate reduces household purchasing power, exacerbates income inequality, and ultimately lowers a region's HDI.

Table 2. Unemployment Rates in Java and Bali

PROVINSI	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jakarta	599515	516136	440704	429110	368190	317007	346945	336491	339402	572780	439899	377294	354496
Banten	696811	514783	494170	484053	509383	498596	519563	494868	489825	661061	562310	523013	448432
Jawa Barat	1926537	1859141	1888667	1775196	1794874	1873861	1839428	1877431	1929515	2533076	2430147	2125606	1888287
Jawa Tengah	1203342	982093	1054062	996344	863783	801330	823938	815083	818276	1214342	1128223	1084475	21069135
DI Yogyakarta	84494	77397	63172	67418	80245	57036	64019	75032	71482	101846	106432	94945	81984
Jawa Timur	1050333	828615	878543	843490	906904	839283	838496	847224	835130	1301145	1281395	1255719	1165587
Bali	65716	48230	41820	44126	47210	46484	36143	35811	39288	144500	138669	131469	72421
NTB	109352	111150	113720	127710	128376	97021	79449	84293	85501	113430	82495	80833	83243
NTT	65308	66464	70664	73210	88446	76580	78548	77256	84874	121884	109928	107128	93815

Source: BPS, 2024

As seen in Table 2, unemployment rates vary across the regions. Provinces like West Java and Banten have relatively higher unemployment rates compared to Bali, which maintains a lower rate. This variation is largely due to differences in economic structure and leading sectors in each province. There is a strong interconnection between LOSR, unemployment, and HDI, especially in relation to workforce dynamics. A productive and high-

quality labor force is a central driver of regional economic growth. Schultz (1961) emphasized that workforce quality is highly dependent on human capital investment, including in education and health—both of which are core components of the HDI. Thus, human capital development through increased LOSR and reduced unemployment is key to regional progress.

Table 3. Labor Force in Java and Bali

PROVINSI	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jakarta	5128104	5339994	5108943	5063479	5092219	5178839	4856116	5062229	5192351	5232031	5177314	5252396	5427233
Banten	5072921	5177151	5181796	5338045	5334843	5587093	5596963	5845978	6042279	6213233	6260654	6463631	5965088
Jawa Barat	19334053	20474894	20620610	21006139	20586356	21075899	22391003	22814361	23993348	24207930	24743628	25578174	25391885
Jawa Tengah	17026107	17513488	17524022	17547026	17298925	17312466	18010612	18228952	18421193	18751277	18963993	19474934	1080260
DI Yogyakarta	1924318	1983542	1949243	2023461	1971463	2099436	2117187	2226284	2246194	2228162	2334955	2336076	2221694
Jawa Timur	19513939	20167517	20432453	20149998	20274681	19953846	20937716	21679425	21867742	22264112	22319145	22869012	23868764
Bali	2224874	2300705	2283896	2316758	2372015	2463039	2434450	2561518	2508294	2567919	2580523	2738539	2690237
NTB	2083445	2126849	2146002	2221810	2255879	2464331	2396169	2353873	2607615	2689386	2739890	2799178	2976225
NTT	2097545	2186713	2175171	2247438	2307737	2353648	2398609	2708135	2699913	2847839	2847839	3022421	2990716

Source: BPS, 2024

Table 3 illustrates that Java has a significantly larger labor force than Bali. However, the challenges each region faces are

distinct. Bali relies heavily on tourism and agriculture, while Java possesses a more

diversified economy encompassing industry and services.

Table 4. Human Development Index (HDI) in Java and Bali

PROVINSI	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jakarta	76.98	77.53	78.08	78.39	78.99	79.6	80.06	80.47	80.76	80.77	81.11	81.65	75.91
Banten	68.22	68.92	69.47	69.89	70.27	70.96	71.42	71.95	72.44	72.45	72.72	73.32	73.87
Jawa Barat	66.67	67.32	68.25	68.80	69.50	70.05	70.69	71.3	72.03	72.09	72.45	73.12	73.74
Jawa Tengah	66.64	67.21	68.02	68.78	69.49	69.98	70.52	71.12	71.73	71.87	72.16	72.79	73.39
DI Yogyakarta	75.93	76.15	76.44	76.81	77.59	78.38	78.89	79.53	79.99	79.97	80.22	80.64	81.07
Jawa Timur	66.06	66.74	67.55	68.14	68.95	69.74	70.27	70.77	71.50	71.71	72.14	72.75	73.38
Bali	70.78	71.62	72.09	72.48	73.27	73.65	74.30	74.77	75.50	75.50	75.69	76.44	77.10
NTB	62.14	62.98	63.76	64.31	65.19	65.81	66.58	67.30	68.14	68.25	68.65	69.46	70.20
NTT	60.24	60.81	61.68	62.26	62.67	63.13	63.73	64.39	65.23	65.19	65.28	65.90	66.68

Source: BPS

HDI data in Table 4 reveals that Jakarta and Yogyakarta exhibit the highest human development indices, which indicates that regions with strong LOSR and manageable unemployment are generally associated with better quality of life. However, the relationship between LOSR, unemployment, workforce, and HDI may differ depending on regional economic policies and sectoral priorities. The interaction between LOSR and unemployment influences the workforce through the HDI. According to Wright (1934), path analysis can be employed to examine the causal relationships among these interrelated variables simultaneously. This method provides a more comprehensive understanding of how economic factors influence workforce quality in Java and Bali. Furthermore, Sen (1999) argued that sustainable economic development is not only dependent on economic growth but also on enhancing individual capabilities to lead dignified lives. In this context, the HDI serves as a measure of human potential to attain a better life. Consequently, increasing LOSR and reducing unemployment are expected to contribute significantly to HDI improvement, which in turn enhances labor productivity and regional economic growth. This study aims to analyze the influence of LOSR and unemployment on the labor force in Java and Bali, while examining the mediating role of HDI in this relationship. The study is expected to provide insights into more effective and sustainable regional development policies, with

a particular focus on improving quality of life and strengthening human capital.

2. Literature Review

2.1 Locally-Generated Revenue (PAD)

Locally-Generated Revenue (Pendapatan Asli Daerah/PAD) refers to regional income sources that reflect the fiscal independence of a local government in financing development and administrative operations without excessive reliance on central government transfers. According to Law No. 33 of 2004 concerning the Fiscal Balance between the Central Government and Regional Governments, PAD consists of revenues from regional taxes, regional retributions, the management of separated regional assets, and other legitimate regional income.

PAD plays a crucial role in supporting the Regional Revenue and Expenditure Budget (APBD). The larger the PAD, the greater the fiscal capacity of a region to implement various development programs, especially in education, health, and infrastructure—sectors that directly affect the Human Development Index (HDI) (Mardiasmo, 2009). Therefore, optimizing local potential through effective fiscal management is essential to strengthening regional autonomy and improving citizens' welfare.

2.2 Unemployment

Unemployment is a condition where individuals of working age are not engaged in any paid employment or self-employment

activities, despite being actively seeking and available to work. According to the International Labour Organization (ILO), a person is considered unemployed if they are without work, currently available for work, and actively seeking work during a specified reference period.

Unemployment is a key indicator of economic performance. It can be categorized into several types:

- **Disguised Unemployment:** A situation where the workforce is not utilized to its full potential.
- **Underemployment:** Individuals working fewer hours than they are willing or able to.
- **Open Unemployment:** Individuals who are completely jobless and actively seeking work.

High levels of unemployment have detrimental effects on both individuals and the economy, such as reduced consumer spending, increased poverty, and slower economic growth (Todaro & Smith, 2015). Addressing unemployment requires comprehensive policy interventions, including skills development and job creation programs.

2.3 Human Development Index (HDI)

The Human Development Index (HDI) is a composite statistic developed by the United Nations Development Programme (UNDP) to measure a country's average achievements in three basic dimensions of human development: a long and healthy life (life expectancy), knowledge (mean years of schooling and expected years of schooling), and a decent standard of living (GNI per capita).

HDI is widely used to assess the development level and quality of life in a region or country. It reflects not only economic growth but also improvements in health and education. As such, it serves as an important benchmark for evaluating the success of development policies and identifying areas in need of intervention (UNDP, 1990).

In the context of regional development, a high HDI indicates that the population has good access to basic services, which enhances

workforce productivity and contributes to sustained economic growth.

2.4 Labor Force

The labor force is a key component in economic development, representing the total number of individuals of working age (typically 15–64 years) who are either employed or actively seeking employment. According to the ILO, the labor force includes both formal and informal sector workers.

In classical economic theory, labor is considered one of the fundamental factors of production, alongside land and capital. Adam Smith (1776) emphasized that the productivity of a nation largely depends on the size and efficiency of its workforce. A larger and more skilled labor force enhances national output and competitiveness.

Neoclassical economist A.C. Pigou (1933) suggested that unemployment could be reduced through wage flexibility, where lower wages would allow employers to hire more workers. In contrast, Keynesian theory (Keynes, 1936) argued that unemployment results from insufficient aggregate demand, and therefore, government intervention through fiscal and monetary policies is essential to create jobs and stimulate the economy.

A productive, healthy, and educated labor force is vital to improving regional economic performance and achieving higher HDI levels. Hence, policies aimed at reducing unemployment and improving labor quality are central to inclusive and sustainable development.

3. Research Methods

This study was conducted in Indonesia from September to October 2024, utilizing existing secondary sources such as those provided by the Central Statistics Agency (BPS), the Ministry of Finance, and previous relevant studies. This research employs a **quantitative approach** using a **literature-based research design**, aiming to analyze the influence of Locally-Generated Revenue (PAD) and unemployment on the labor force through the

Human Development Index (HDI) in the regions of Java and Bali.

The secondary data were collected from various official and credible sources, including the Directorate General of Fiscal Balance (<https://djpk.kemenkeu.go.id>), BPS publications, and related academic literature. The data cover variables such as PAD, unemployment rates, labor force size, and HDI for the most recent available year. This provides a comprehensive overview of the interrelationship among the studied variables.

3.1 Analysis Method

Data analysis was conducted using **descriptive and inferential statistical techniques** to evaluate the relationship between PAD, unemployment, HDI, and the labor force. The analysis was carried out using **EViews** software. To examine the direct and indirect effects of PAD and unemployment on the labor force through HDI as an intervening variable, this study employed **path analysis**. This method follows the analytical framework proposed by Hair, Black, Babin, and Anderson (2021), which emphasizes the use of path analysis to understand causal relationships in social and economic contexts. The path analysis model in this study is structured as follows:

Equation (1):

$$Z = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

Equation (2):

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Z$$

Where:

- X_1 = Locally-Generated Revenue (PAD)
- X_2 = Unemployment
- Z = Human Development Index (HDI)

- Y = Labor Force

3.2 Sobel Test

To test the significance of HDI as a mediating variable between PAD/unemployment and the labor force, a **Sobel test** was conducted using the following formula:

$$Z = \frac{a \cdot b}{\sqrt{b^2 \cdot s_a^2 + a^2 \cdot s_b^2}}$$

Where:

- a = Coefficient of the path from X (PAD or unemployment) to Z (HDI)
- b = Coefficient of the path from Z (HDI) to Y (labor force)
- s_a = Standard error of coefficient a
- s_b = Standard error of coefficient b

This test helps determine whether HDI significantly mediates the relationship between the independent variables (PAD and unemployment) and the dependent variable (labor force).

4. Results and Discussion

Path analysis is a statistical method used to analyze causal relationships between variables in a model. In this study, path analysis is applied to examine the influence of Local Original Income (PAD) and unemployment rates on the workforce through the Human Development Index (HDI) in the Java and Bali regions. The results of the study are presented as follows:

4.1 Model Selection Test

a. Chow Test

Figure 2. Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1767.419401	(8,105)	0.0000
Cross-section Chi-square	574.488209	8	0.0000

Source : Secondary Data Processed , 2024



Analysis results through the Chow Test shows that mark the probability on the cross section reaches 0.0000, which is clear be under threshold 0.05. Discovery This indicates that there is difference significant between the models tested , then the better model appropriate For applied in study This is the Fixed Effect Model (FEM). The selection of FEM

shows that variations in individual or the entity being analyzed own important influence , and with Thus , this model more capable catch dynamics that occur in the data. This decision underlying better understanding accurate about connection between variables studied .

b. Hausman test

Figure 3. Results of the Hasuman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.689952	3	0.0008

Source : Secondary Data Processed , 2024

The results of the Hausman Test show mark the probability in the random cross-section is 0.0008 , which is more small from threshold 0.05. With Thus , it can confirmed that the most appropriate model For applied in analysis This is the Fixed Effect Model (FEM). Findings This confirm that the FEM model is more appropriate, considering his ability in

catch variation specific in individual or the entity being analyzed, so that give better understanding deep about connection between variable in study this.

4.2 Path Analysis

a. Model 1

Figure 4. Path Analysis Model 1

Dependent Variable: IPM
Method: Panel Least Squares
Date: 10/04/24 Time: 22:27
Sample: 2011 2023
Periods included: 13
Cross-sections included: 9
Total panel (balanced) observations: 117

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	71.41872	0.241587	295.6237	0.0000
PAD	-4.17E-08	3.69E-07	-0.113217	0.9101
PENGANGGURAN	1.81E-07	1.07E-07	1.684997	0.0949

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.857000	Mean dependent var	71.54137
Adjusted R-squared	0.843510	S.D. dependent var	5.255292
S.E. of regression	2.078933	Akaike info criterion	4.390886
Sum squared resid	458.1281	Schwarz criterion	4.650578
Log likelihood	-245.8668	Hannan-Quinn criter.	4.496318
F-statistic	63.52602	Durbin-Watson stat	0.177753
Prob(F-statistic)	0.000000		

Source : Secondary Data Processed , 2024

Analysis to variable Local Original Income (PAD) shows t-Statistic value of -0.113217, with mark probability (significance) reaches 0.9101, which is more big from threshold 0.05. This result indicates that PAD is not own significant influence to Human Development Index (HDI). In other words, changes in PAD no contribute in a way significant to IPM variations, which can show that other possible factors own more impact big on value development man.

Next , analysis to variable Unemployment produce The t-statistic value is 1.684997 and the value probability (significance) of 0.0949, which also exceeds 0.05. This is to signify that unemployment No own significant influence towards IPM. Although There is trend For to argue that unemployment can play a role in influence development human , result This show that influence the No Enough strong For stated significant in context analysis conducted.

Finally , the Adjusted R Square value obtained of 0.843510 indicates that combination PAD and Unemployment variables give contribution by 84.3% against variation in IPM. This indicates that part big variations that occur in IPM can explained by both variable said , although each one does not influential in a way

significant individually . Findings This give outlook important about factors that play a role in development humans , and the need study more carry on For explore other possible variables more relevant.

b. Model 2

Figure 5. Path Analysis Model 2

Dependent Variable: ANGKATANKERJA
Method: Panel Least Squares
Date: 10/04/24 Time: 22:29
Sample: 2011 2023
Periods included: 13
Cross-sections included: 9
Total panel (balanced) observations: 117

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12012705	2433961.	-4.935455	0.0000
PAD	-0.007940	0.129254	-0.061428	0.9511
PENGANGGURAN	-0.878248	0.038196	-22.99346	0.0000
IPM	302804.3	34059.50	8.890450	0.0000

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.993059	Mean dependent var	8986160.
Adjusted R-squared	0.992332	S.D. dependent var	8325226.
S.E. of regression	729007.1	Akaike info criterion	29.93367
Sum squared resid	5.58E+13	Schwarz criterion	30.21697
Log likelihood	-1739.120	Hannan-Quinn criter.	30.04869
F-statistic	1365.743	Durbin-Watson stat	0.315248
Prob(F-statistic)	0.000000		

Source : Secondary Data Processed , 2024

Analysis to The Human Development Index (HDI) shows The t-statistic value is 22.99346, with mark probability (significance) of 0.0000, which is clear be under threshold 0.05. This result indicates that IPM has an effect significant towards the Labor Force . In other words, improvement or decline in HDI substantial influence amount force work , reflect importance factors development man in context employment .

Development Index (HDI) provide contribution by 99.2% against variation in the Work Force . This figure to signify that part big changes that occur in the workforce can explained by the interaction third variable The findings This confirm that variables the each other relate close and instrumental important in determine dynamics force work at a area.

Next the Adjusted R Square value obtained of 0.992332 indicates that combination variable Local Original Income (PAD), Unemployment , and Human

4.3 Sobel Calculation Results

a. Sobel Test Calculation Results: The Influence of PAD on the Workforce through IPM

Figure 6. Sobel Results of the Influence of PAD on the Workforce through IPM

Input:	Test statistic:	Std. Error:	p-value:
a -4.17E-08	Sobel test: -0.112999	0.11174381	0.91003135
b 302804.3	Aroian test: -0.11229101	0.11244836	0.91059267
s _a 3.69E-07	Goodman test: -0.11372056	0.1110348	0.90945931
s _b 34059.50	Reset all	Calculate	

Source : Secondary Data Processed , 2024

Analysis results show that P-Value value obtained is of 0.91003135 , which is above threshold 0.05. In addition that , the Test Statistic value of the Sobel Test was recorded of -0.112999. Based on findings this , can concluded that Local Original Income (PAD) does not influential significant towards the

Workforce through role Human Development Index (HDI) as variable mediation . In other words, IPM does not capable mediate influence between PAD and the Workforce in a way effective . This indicates that other factors may be more influential in determine connection between PAD and the Labor Force , and

necessary done analysis more carry on For understand dynamics This as well as explore other possible variables can play a role as a mediator in more context wide.

5. Sobel Test Calculation Results: Influence Unemployment towards the Workforce through IPM

Figure 7. Sobel Influence Results Unemployment towards the Workforce through IPM

Input:		Test statistic:		Std. Error:	p-value:
a	1.81E-07	Sobel test:	1.66177575	0.03298133	0.09655775
b	302804.3	Aroian test:	1.65172277	0.03318207	0.09859108
s _a	1.07E-07	Goodman test:	1.67201457	0.03277937	0.09452145
s _b	34059.50	Reset all	Calculate		

Source : Source : Secondary Data Processed , 2024

Analysis results show that P-Value value obtained of 0.09655775 which is above the limit of 0.05. Furthermore , the value Sobel test statistics recorded of 1.66177575. Based on results said , can concluded that variable unemployment No own significant influence to force Work through role Human Development Index (HDI) as a mediator. In other words, HDI does not can in a way effective convey influence between unemployment and the working class work . Findings This show that There is other possible factors more dominant in influence connection between unemployment and the working class work , and important For do analysis addition For identify other variables that can act as a mediator in context This .

5. Closing

5.1 Conclusion

Based on the path analysis results, this study concludes that Locally-Generated Revenue (PAD) and Unemployment do not have a statistically significant effect on the Labor Force through the Human Development Index (HDI) as a mediating variable. The p-value for PAD is 0.9100 with an indirect effect value of 0.0012, while the p-value for Unemployment is 0.0966 with an indirect effect value of 0.0217 both exceeding the 0.05 significance threshold. These findings indicate that HDI does not play a mediating role in the relationship between PAD and Labor Force participation, nor between Unemployment and Labor Force participation in Java and Bali. This suggests that while HDI encompasses key dimensions of human welfare

(health, education, and income), it may not capture the full complexity of labor force dynamics in these regions. Therefore, future research should consider incorporating alternative mediating variables such as access to vocational training, digital infrastructure, regional wage levels, or industrial sector composition. In addition, conducting disaggregated analyses at the district/city level or applying panel data over time may help uncover spatial and temporal variations that were not captured in this study.

5.2 Suggestion

Considering the study's findings that PAD and unemployment do not significantly influence the labor force through HDI, future policy efforts should go beyond conventional HDI indicators and focus on more targeted and context-specific strategies. Conceptually, this highlights the need to revisit the adequacy of HDI as a sole mediator in explaining labor force participation, especially in economically complex and demographically diverse regions like Java and Bali. Policymakers should consider integrating alternative development metrics such as the Multidimensional Poverty Index (MPI), Labor Market Efficiency Index, or regional digital inclusion indicators to better capture labor market dynamics. Practically, this calls for the realignment of fiscal and social policies. Local governments should not only allocate PAD toward basic services but also strategically invest in workforce development initiatives tailored to regional economic

strengths, such as tourism, manufacturing, or digital industries. Vocational education should be designed in collaboration with local industries to ensure relevance and employability. Furthermore, implementing regionally adaptive labor policies—such as digital upskilling programs in urban centers and agricultural modernization in rural areas—can bridge structural gaps in labor absorption. These strategic shifts will better align human capital development with labor market needs, ultimately improving employment outcomes and regional economic resilience.

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