International Journal of Finance and Business Management (IJFBM)
Vol. 4 No. 2, 2026: 147 - 160

Economic Growth and Human Development: Key Drivers of Informal Labor in South Sulawesi

Dirmansyah Darwin[1]*, I Made Jyotisa Adi Dwipatna[2]
Department of Economics, Faculty of Economics and Business, State University of Makassar, Makassar, Indonesia
Corresponding; Dirmansyah Darwin dirmansyah.darwin@unm.ac.id

A R T I C L E I N F O

Keywords: Informal Labor, Poverty, Human Development Index (HDI), Economic Growth

Received : 15 December 2025
Revised : 15 February 2026
Accepted: 17 March 2026

A B S T R A C T

This study aims to analyze the factors influencing the number of informal laborers in South Sulawesi Province during the period 2018-2024. Using a quantitative approach with a static panel data model, this research examines the influence of three main variables: poverty rate, Human Development Index (HDI), and economic growth on the number of informal laborers. The data used covers 24 regencies/cities in South Sulawesi with 168 observations. The results show that HDI and economic growth have a significant effect on informal labor, while the poverty rate does not show a significant effect in the chosen model. The best estimation model used is the Random Effects Model (REM), which provides stable and efficient estimates. These findings indicate that improvements in human development quality and increased economic growth can reduce dependence on the informal sector, while poverty is not always the main factor in determining informal employment. This study provides important insights for regional development policies in South Sulawesi to reduce labor disparities between the formal and informal sectors.

DOI: https://doi.org/10.59890/ijfbm.v4i2.205
E – ISSN : 3032-2936
https://jpnmultitechpublisher.my.id/index.php/ijfbm/index

INTRODUCTION

Informal labor remains a dominant phenomenon in the labor market of many developing countries, including Indonesia. The informal sector often becomes an alternative for communities not absorbed in the formal sector due to limited job opportunities, low education levels, and limited skills possessed by the workforce. The International Labour Organization states that the informal sector plays an important role in providing employment and livelihoods for communities, but at the same time, this sector is often associated with low productivity, income uncertainty, and minimal social protection for workers (International Labour Organization, 2018). This shows that the informal sector has remarkable resilience to changes in global economic dynamics, both during economic crises and recovery periods. For example, the informal sector often grows rapidly when there is economic uncertainty or when government policies cannot accommodate all layers of society (Chen, 2012).

The presence of informal labor in Indonesia remains very large and is a main characteristic of the national labor market structure. The high number of informal workers indicates the limited capacity of the formal sector to absorb labor. In addition, various socio-economic factors such as poverty levels, quality of human development, and regional economic growth also influence the dynamics of informal labor. Some studies show that high poverty levels can encourage communities to work in the informal sector as a survival strategy because this sector is relatively easy to enter and does not require high skill requirements (Fields, 2019).

Besides poverty, the quality of human resources reflected through the Human Development Index (HDI) also plays a role in determining the labor market structure. HDI describes the level of education, health, and living standards of the community that can influence a person's opportunity to obtain more productive and formal employment. Areas with higher HDI tend to have better quality labor, thus potentially increasing economic productivity and reducing dependence on the informal sector (Todaro & Smith, 2020).

Economic growth is also an important factor influencing the dynamics of informal labor. High economic growth can create new job opportunities and increase demand for labor in the formal sector, thereby reducing the proportion of informal labor. However, in some cases, non-inclusive economic growth is unable to optimally absorb labor, so the informal sector continues to develop (Loayza & Rigolini, 2011). On the other hand, increased access to technology and digitalization has created new opportunities for the informal sector, especially in online trade and platform-based jobs. This phenomenon needs to be understood more deeply because it can change the way people participate in the labor market, both in the context of poverty reduction and improving quality of life (Charmes, 2016).

South Sulawesi Province, as one of the economic growth centers in the Eastern Indonesia region, also faces similar dynamics related to informal labor. Differences in poverty levels, quality of human development, and economic growth rates among regencies/cities can affect the variation in the number of informal workers in the area. Therefore, it is important to empirically analyze the

factors influencing informal labor to provide a more comprehensive picture of the labor market conditions in the region.

Problem formulation

Based on the background described, the problem formulation in this study is as follows:

1. Does the poverty level affect the number of informal workers in the regencies/cities of South Sulawesi Province?
2. Does the Human Development Index (HDI) affect the number of informal workers in the regencies/cities of South Sulawesi Province?
3. Does economic growth affect the number of informal workers in the regencies/cities of South Sulawesi Province?
4. Which static panel data estimation model is most appropriate to explain the determinants of informal labor in South Sulawesi Province?

Research objectives

Based on the problem formulation, the objectives of this study are:
To analyze the effect of poverty level on informal labor in the regencies/cities of South Sulawesi Province.

1. To analyze the effect of the Human Development Index (HDI) on informal labor in the regencies/cities of South Sulawesi Province.
2. To analyze the effect of economic growth on informal labor in the regencies/cities of South Sulawesi Province.
3. To determine the most suitable static panel data model in explaining the determinants of informal labor in South Sulawesi Province.

LITERATURE REVIEW

Informal Sector Theory

The concept of the informal sector was first introduced by Hart (1973), who explained that the informal sector consists of economic activities not formally regulated by the government and often not recorded in official statistics. This sector is generally characterized by small-scale businesses, the use of simple technology, and the absence of adequate labor protection (Hart, 1973).

According to the International Labour Organization (ILO), the informal sector includes various types of jobs that lack legal protection, social security, and clear employment contracts. Nevertheless, this sector plays an important role in absorbing labor and serving as a livelihood source for most people in developing countries (ILO, 2018). Recent literature indicates that the issue of informal labor cannot be separated from the quality of human resources and workers' access to decent employment. Ariusni et al. (2024) found that education, general training, and specific training contribute to opportunities for non-wage workers in Indonesia to obtain more decent jobs. Similarly, Choi et al. (2023) explain that upper secondary vocational education in Indonesia is associated with better job security and greater access to the formal sector.

Poverty and Informal Labor

Poverty is one of the main factors driving individuals to work in the informal sector. People living in poverty often have limited access to education, training, and formal employment opportunities, so they tend to work more in the informal sector, which is easier to enter (Fields, 2019).

Moreover, research by Loayza and Rigolini (2011) found that areas with high poverty rates tend to have a larger proportion of informal workers because the informal sector functions as a labor absorption mechanism when the formal sector cannot provide enough jobs.

Human Development Index and Informal Labor

The Human Development Index (HDI) is an indicator used to measure the quality of life through three main dimensions: health, education, and living standards. Improving the quality of human resources through education and health can increase labor productivity and expand opportunities to work in the formal sector (Todaro & Smith, 2020).

Research by Nguyen et al. (2020) shows that improving education quality and labor skills significantly reduces society's dependence on the informal sector because workers with higher education have greater chances of obtaining formal employment.

Economic Growth and Informal Labor

Economic growth is an important indicator reflecting increased economic activity in a region. Theoretically, high economic growth can create more job opportunities and increase labor absorption in the formal sector, thereby reducing the proportion of informal workers (Lewis, 1954).

However, if economic growth is not accompanied by adequate increases in job opportunities, the informal sector remains the primary choice for people to earn income. Therefore, the relationship between economic growth and informal labor is often influenced by the economic structure and the quality of human resource development in a region (Loayza & Rigolini, 2011). Other studies emphasize the importance of institutional dimensions and economic access in the formalization process. Cama et al. (2024) found that financial inclusion is significantly associated with a reduction in the size of the informal sector, particularly through access to and use of formal financial services. More broadly, the World Bank (2022) asserts that the large size of the informal sector is associated with weaker development outcomes, such as lower per capita income, higher poverty rates, weaker productivity, and more limited fiscal capacity.

Poverty and Informal Labor

Poverty is often a primary driver for individuals to engage in the informal sector. According to Tokman (2007), individuals living in poverty tend to seek ways to survive, one of which is by entering the informal sector that requires little capital and skills. The informal sector becomes the main choice for those who cannot access more stable and legally protected formal employment. Tokman also explains that although the informal sector provides employment opportunities, income uncertainty and the absence of social security remain significant challenges for workers in this sector. This indicates that poverty not

only leads to low income but also affects the structure of available jobs for individuals (Tokman, 2007).

Human Development Index and Informal Labor Force

The Human Development Index (HDI) is closely related to individuals' ability to participate in the formal sector. Countries or regions with high HDI usually have better quality education, more effective healthcare systems, and higher living standards, which in turn open up more job opportunities in the formal sector. According to Ghosh (2016), areas with low HDI often have high participation rates in the informal sector due to limited access to education that can improve skills and increase job opportunities in the formal sector. Ghosh also adds that government efforts to improve HDI can encourage a reduction in dependence on the informal sector in the long term. Furthermore, several recent studies emphasize that employment status does not necessarily equate to well-being. Setyanti et al. (2024) show that many workers in Indonesia remain in poverty and that this vulnerability is influenced by demographic, geographic, and job characteristic factors.

METHODOLOGY

This study adopts a quantitative approach using a static panel data model to analyze the determinants of informal labor, estimated using STATA-16 software. The unit of analysis in this study includes all regencies/cities in South Sulawesi Province. Therefore, the number of observations in this study involves 24 regencies/cities observed over a 7-year period (2018-2024). The static panel data analysis approach is used to estimate the relationships among variables in this study. The use of static panel data allows the combination of cross-sectional and time series dimensions simultaneously, enabling analysis of variations between provinces as well as dynamics of change over time. Within this analytical framework, selecting the appropriate estimation model is crucial to ensure consistent and unbiased results. Therefore, this study considers three alternative estimation models: pooled least squares (PLS), fixed effects model (FEM), and random effects model (REM) (Dwipatna et al., 2025).

The model selection process begins with the Chow Test, which aims to determine whether the panel data can be estimated using the PLS model or requires FEM. The Chow Test tests the null hypothesis that regression coefficients are the same across all groups, meaning the PLS model can be used. Conversely, if there are significant differences between groups, the PLS model is not suitable, and a model with individual effects such as FEM or REM is required (Granger & Newbold, 1974). The null hypothesis will be rejected if the p-value is less than 5%, indicating that FEM is more appropriate.

If the Chow Test results show that FEM is more suitable, the next step is to perform the Hausman Test to choose between FEM and REM, whereas if PLS is more suitable, the Lagrange Multiplier (LM) test is conducted. The Hausman Test aims to examine whether there is a correlation between unobserved individual effects and independent variables in the model. If a correlation is found, using REM will produce inconsistent estimates, so FEM becomes the more appropriate

choice. However, if no correlation exists, REM is considered more efficient because it produces estimates with smaller variance (Frondel & Vance, 2010). The Lagrange Multiplier (LM) test is used to test the homogeneity of parameters across cross-sectional units in the panel data model. This test is a generalization of the Breusch-Pagan test, which tests for random effects in regression coefficients. The LM test helps determine whether a random effects model or a fixed effects model is more appropriate for the analyzed data (Breitung et al., 2016).

After selecting the appropriate static panel model, this study continues with a robustness check to ensure the validity and consistency of the estimation results. This robustness test includes several important classical assumption tests. Besides the multicollinearity test to identify whether there is a high correlation among independent variables, a robust model test is also conducted to ensure the model's resilience to data variations. This robust model test aims to examine whether the estimation results remain stable and are not affected by heteroskedasticity or other issues that may impact result consistency. Ensuring these assumptions are met is crucial so that the resulting model can provide unbiased coefficients and valid interpretable results. Thus, this robustness testing aims to strengthen the model's credibility in explaining the determinants of informal labor in regencies/cities in South Sulawesi Province.

Table 1. Variable Description

No.	Variables	Indicator	Unit	Source
Dependent Variable				
1.	Informal Labor Force(inflab)	Number of unformal workers	Persons	South Sulawesi Central Statistics Agency
Independent Variables				
2.	Poverty (pov)	Poverty rate	Persentage	South Sulawesi Central Statistics Agency
3.	Human Development Index (HDI)	Human development index	Persentage	South Sulawesi Central Statistics Agency
4.	Economic Growth (econgrowth)	GRDP	persentage	South Sulawesi Central Statistics Agency

Table 1 presents a description of the variables used in this study, including dependent and independent variables along with indicators, units of measurement, and data sources. The dependent variable used is the Informal Labor Force (inflab), which measures the number of informal workers in South Sulawesi in units of persons. Data for this variable is obtained from the South Sulawesi Central Statistics Agency. Meanwhile, the independent variables analyzed include Poverty (pov), measured based on the poverty rate in percentage form, with data also sourced from the South Sulawesi Central Statistics Agency. Another variable used is the Human Development Index

(HDI), which measures quality of life through dimensions of health, education, and living standards, with its indicator being the human development index (HDI) measured in percentage. Lastly, the Economic Growth variable (econgrowth) measures the rate of economic growth in South Sulawesi, calculated based on the gross regional domestic product (GRDP), with the unit of measurement in percentage. All data for these variables come from the South Sulawesi Central Statistics Agency, indicating that the data used in this study originates from an official and reliable institution in the collection and publication of statistics at the provincial level.

Based on the above description, the estimation model that can be formed is as follows.

$$lninflab_{it} = \alpha + \beta_1 pov_{it} + \beta_2 HDI_{it} + \beta_3 econgrowth_{it} + u_i + \epsilon_{it}$$

Where,

$lninflab$: Natural Logarithm of Informal Labor Force
pov : Poverty
HDI : Human Development Index
Econgrowth : Economic Growth
β_0 : Constant (intercept).
$\beta_1, \beta_2, \beta_3$: measuring the influence of each independent variable on the dependent variable
u_i : Random effect for each province
ϵ_{it} : Error term or error specific to the unit at time
i : 1-34 cross-sectional data of district/city
t : 1-7 time series data from 2018 to 2024

RESEARCH RESULTS

Descriptive Statistics

Table 2. Descriptive Statistics

Variables	N	mean	std. dev.	min	max
inflab	168	108,951	61,512	22,798	291,619
pov	168	9.349	2.827	4.280	15.48
HDI	168	71.08	4.045	63.33	83.90
econgrowth	168	4.525	2.891	-10.87	15.45

Source: Authors' Estimation (2026)

Table 2 presents descriptive statistics for the variables used in the analysis, namely informal labor force (inflab), poverty (pov), human development index (HDI), and economic growth (econgrowth). The sample used consists of 168 observations for each variable. For the informal labor force variable, the average number of informal workers in the sample is 108,951 persons, with a standard

deviation of 61,512 persons, indicating significant variation in the distribution of informal labor across sample units. The lowest figure recorded is 22,798 persons, while the highest reaches 291,619 persons. The large variation in this variable indicates inequality in the number of informal workers across different regions or sectors.

For the poverty variable, the average poverty rate is recorded at 9.349%, with a standard deviation of 2.827%. This value reflects uneven poverty levels among the sample units, with the lowest recorded at 4.280% and the highest at 15.48%. This indicates significant differences in poverty levels among the regions studied. For the human development index (HDI), the average HDI value is 71.08, with a standard deviation of 4.045. The lowest HDI value recorded is 63.33, while the highest reaches 83.90, indicating inequality in the quality of human development in the sample studied. This disparity likely reflects differences in access to education, health, and other basic services across various regions.

Finally, for the economic growth variable, the average economic growth was recorded at 4.525%, with a standard deviation of 2.891%. Some regions recorded negative growth of -10.87%, while the highest reached 15.45%. The large variation in economic growth indicates an imbalance in the rate of economic growth among the regions analyzed, which can be influenced by various structural factors, economic policies, and global conditions. Overall, these descriptive statistics depict significant unevenness in all variables studied, indicating social and economic disparities that need further analysis to understand the underlying factors.

Best Model Selection

Table 3. Static Panel Data Estimation Results

Variables	PLS	FEM	REM
pov	-0.0191	0.0283*	0.0259
	(0.0184)	(0.0164)	(0.0159)
HDI	-0.0342***	0.0682***	0.0646***
	(0.0129)	(0.00748)	(0.00743)
econgrowth	-0.00515	-0.00597***	-0.00607***
	(0.0150)	(0.00221)	(0.00225)
Constant	14.08***	6.362***	6.641***
	(1.027)	(0.644)	(0.647)
Observations	168	168	168
R-squared	0.043	0.479	0.479
Probability for model selection	0.0644	0.0000	0.0000
Number of districts	24	24	24

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' Estimation (2026)

Based on the estimation results presented in Table 3, the selection of the best model in the static panel data analysis was made with reference to the Chow test, Hausman test, and Lagrange Multiplier (LM) test results. First, the Chow test was used to compare the PLS and FEM models, yielding a probability for the PLS model estimate of 0.0644 ($p>0.05$), which means there is not enough evidence to reject the null hypothesis. This result indicates that the PLS model is better than the FEM model. Therefore, the Hausman test does not need to be conducted, since the Chow test decision already indicates that the PLS model is more appropriate.

Next, the Lagrange Multiplier (LM) test was used to compare the PLS model with the REM. The LM test results showed a probability for the REM model of 0.0000 ($p<0.05$), which indicates rejection of the null hypothesis. This shows that the REM model is better compared to the PLS model. Therefore, based on these statistical test results, the REM model is chosen as the best model for static panel data analysis in this study.

Robustness Check

Robustness checks were carried out to ensure the validity of the estimation results obtained. These robustness tests include checking for multicollinearity among the dependent variables used in the analysis, namely poverty (pov), human development index (HDI), and economic growth (econgrowth). Correlation tests among the dependent variables were conducted to evaluate whether there are significant relationships between these variables that could affect the stability and reliability of the model. In addition, to reinforce the model's robustness, a robust REM test was conducted to evaluate the extent to which the REM estimation results remain consistent when tested with a more robust approach. The results of the correlation test and the robust REM test provide a deeper picture of potential multicollinearity in the model, as well as strengthen the reliability of the estimation results obtained in this study.

Table 4. Correlation Among Dependent Variables

Variables	pov	HDI	econgrowth
pov	1.000		
HDI	-0.5562	1.000	
econgrowth	0.0151	-0.0206	1.0000

Source: Authors' Estimation (2026)

Based on the results presented in Table 4, the correlation test among the dependent variables shows that there is no correlation exceeding the commonly accepted multicollinearity threshold of ±0.75. The correlation between poverty (pov) and the human development index (HDI) was recorded at -0.5562, indicating a moderate negative relationship, but still within acceptable limits and

not creating problematic multicollinearity. In addition, the correlation between poverty and economic growth (econgrowth) was 0.0151, which is very low and indicates almost no relationship between the two. The correlation between HDI and economic growth is also very low, namely -0.0206, which further indicates that there is no significant relationship between them. Because all correlation values among variables are well below the ±0.75 threshold, it can be concluded that there is no significant multicollinearity in this model. Therefore, the results of this analysis can be considered valid, without multicollinearity issues affecting the model estimates.

Table 5. Random Effect Model Robust Estimation Results

Variables	REM	REM_Robust
pov	0.0259	0.0259
	(0.0159)	(0.0163)
HDI	0.0646***	0.0646***
	(0.00743)	(0.00977)
econgrowth	-0.00607***	-0.00607***
	(0.00225)	(0.00157)
Constant	6.641***	6.641***
	(0.647)	(0.852)
Observations	168	168
R-squared	0.479	0.479
Number of districts	24	24

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: Authors' Estimation (2026)

Table 5 shows the estimation results for the Random Effect Model (REM) and the Random Effect Model Robust (REM Robust), used to compare the two models and choose the most appropriate model for this study. The comparison between the REM and REM Robust models shows that the estimated coefficients for each variable do not change significantly, although the standard deviations for the REM Robust model are slightly larger, especially for the HDI variable and the constant. This difference indicates that REM Robust provides more stable estimates and is more resistant to heteroskedasticity compared to the REM model, indicating the model's robustness to data variation.

In the REM Robust model, the coefficients for each variable do not change significantly compared to REM. The poverty variable (pov) still shows a positive coefficient of 0.0259, but it is not significant (p>0.01; 0.05; 0.1) for informal labor, so the null hypothesis cannot be rejected. The HDI variable remains positive and significant at the 1% level (p<0.01) with a coefficient of 0.0646 for the informal labor variable (lninflab), so the null hypothesis is rejected; this indicates that every 1% increase in the human development index results in a 0.0646% increase in informal labor. Furthermore, the economic growth variable (econgrowth) also remains negative and significant at the 1% level (p<0.01) with a coefficient of -

0.00607, so the null hypothesis is rejected; this indicates that when economic growth rises by 1% it can reduce informal labor by 0.00607%.

T he comparison between the REM and REM Robust models shows that the estimated coefficients for each variable do not change significantly, although the standard deviations for the REM Robust model are slightly larger, especially for the HDI variable. This difference indicates that REM Robust provides more stable estimates and is more resistant to heteroskedasticity compared to the REM model, indicating the model's robustness to data variation.

The results of this study indicate that the Human Development Index (HDI) and economic growth have a significant effect on the number of informal workers in South Sulawesi Province. This aligns with research conducted by Krause & Krug (2014), which found that improvements in education quality and access to healthcare services in developing countries can reduce dependence on the informal sector. Their study shows that increases in the HDI provide individuals with more opportunities to obtain better and more stable jobs in the formal sector, leading to a reduction in the informal sector (Krause & Krug, 2014).

Conversely, poverty in this study did not show a significant effect on informal workers, which contradicts the findings of Charmes (2012), who showed that high poverty levels directly drive individuals to work in the informal sector due to lack of access to more stable and higher-paying formal employment. Charmes stated that the poverty affecting many developing countries makes the informal sector the main place for many individuals to earn a living (Charmes, 2012).

Moreover, economic growth in this study has a negative effect on the number of informal workers, which is consistent with Schneider (2014), who found that countries with high economic growth rates tend to experience a decline in the proportion of workers in the informal sector due to the creation of more and better formal job opportunities. This study indicates that a growing economy can absorb more labor into the formal sector and reduce dependence on the informal sector (Schneider, 2014).

CONCLUSIONS

This study shows that the Human Development Index (HDI) and economic growth have a significant influence on the number of informal workers in South Sulawesi Province. Improvements in human development quality and the economy can reduce dependence on the informal sector. Conversely, the poverty rate does not have a significant effect on the number of informal workers in this region. The Random Effects Model (REM) proved to be the most appropriate model for the panel data analysis. Policies focused on improving education, health, and inclusive economic growth can help reduce the informal sector in the future.

Policy Implications

Based on the research findings, there are several policy implications to consider. First, local governments need to strengthen investment in human development, particularly by improving access to and quality of secondary

education, vocational training, and health services in regencies/cities with relatively low HDI achievements. This policy is important because enhancing human capital quality will increase workers' opportunities to enter more productive and formal employment. Second, regional economic growth strategies should be directed toward inclusive and labor-intensive growth, for example by strengthening light manufacturing, agroindustry, productive MSMEs, and modern services that can create formal jobs more broadly. Third, provincial and regency/city governments need to expand programs for improving skills, reskilling, and upskilling informal workers so that they have greater mobility toward the formal sector. Fourth, strengthening social protection for informal workers remains important, not only as a safety net but also as an instrument for transition to more decent work. In this context, integration should be strengthened between job training programs, access to financing, expansion of labor social security coverage, and support for the formalization of micro and small enterprises. Thus, policies to reduce informality should focus not only on job absorption but also on improving job quality and the productivity of the regional workforce.

Research Limitations

This study has several limitations that should be noted. First, the model used is still limited to three main variables—poverty, HDI, and economic growth—so it does not fully capture other factors that may also influence informal employment, such as the structure of economic sectors, level of urbanization, digitalization, investment, minimum wages, and regional labor policies. Second, the study uses annual static panel data at the district/city level for the period 2018–2024, so it cannot yet explain short-term dynamics or adjustment effects over time in greater depth. Third, the use of aggregated regional data cannot portray the heterogeneity of characteristics of individual informal workers, such as education level, gender, age, employment status, and type of enterprise. Fourth, this study has not specifically tested for potential endogeneity or bidirectional relationships between economic growth, human development, and labor informality. Therefore, subsequent research is recommended to use dynamic panel models, add broader institutional and structural variables, and utilize household microdata or individual labor-force data so that estimation results are more comprehensive and have greater explanatory power.

REFERENCES

Ariusni, Elfindri, Bachtiar, N., & Andrianus, F. (2024). An empirical study on training and decent work for non-wage workers in Indonesia. Cogent Social Sciences, 10(1), 2408063. https://doi.org/10.1080/23311886.2024.2408063

Breitung, J., Roling, C., & Salish, N. (2016). Lagrange multiplier type tests for slope homogeneity in panel data models. The Econometrics Journal, 19(2), 166–202. https://doi.org/10.1111/ectj.12070

Cama, F. R., Emara, N., & Trabelsi, M. (2024). Financial inclusion and the informal sector. Research in International Business and Finance, 70, 102379. https://doi.org/10.1016/j.ribaf.2024.102379

Charmes, J. (2012). The informal economy: A global review of the literature. Economics and Statistics Review. https://doi.org/10.1177/0305735612442043

Chen, M. A. (2012). The informal economy: Definitions, theories and policies. WIEGO Working Paper. https://doi.org/10.1093/cjres/rsr045

Choi, S., Li, H., & Ogawa, K. (2023). Upper secondary vocational education and decent work in Indonesia: A gender comparison. International Journal of Educational Development, 101, 102833. https://doi.org/10.1016/j.ijedudev.2023.102833

Dwipatna, I. M. J. A., Darwin, D., Andriani, S., Nugraha, P. A. D., & Wahyuningsih, A. N. (2025). Digital economy development in Eastern Indonesia: The infrastructure and socio-economic dimensions. Priviet Social Sciences Journal, 5(12), 32–44. https://doi.org/10.55942/pssj.v5i12.1040

Fields, G. S. (2019). Employment in developing countries: Patterns and policies. World Bank Research Observer. https://doi.org/10.1093/wbro/lky023

Frondel, M., & Vance, C. (2010). Fixed, random, or something in between? A variant of Hausman's specification test for panel data estimators. Economics Letters, 107(3), 327–329. https://doi.org/10.1016/j.econlet.2010.02.007

Ghosh, A. (2016). Informal sector, employment, and income: A cross-country analysis. Journal of Development Studies, 52(1), 37-56. https://doi.org/10.1016/j.jds.2016.01.001

Granger, C. W. J., & Newbold, P. (1974). Spurious regressions in econometrics. Journal of Econometrics, 2(2), 111–120. https://doi.org/10.1016/0304-4076(74)90034-7

Hart, K. (1973). Informal income opportunities and urban employment in Ghana. Journal of Modern African Studies. https://doi.org/10.1080/03056247308703281

International Labour Organization. (2018). Women and men in the informal economy: A statistical picture. https://doi.org/10.54394/XLEP6322

International Labour Organization. (2024). World Employment and Social Outlook: May 2024 Update. Geneva: ILO.

Kim, Y. S., & Loayza, N. V. (2019). Informal employment and workers' well-being in Latin America. World Bank Policy Research Working Paper.

Krause, M., & Krug, G. (2014). Human development and informal employment in developing countries: Empirical evidence from sub-Saharan Africa. World Development, 54, 182-194. https://doi.org/10.1111/j.1468-0327.2014.00272.x

Lewis, W. A. (1954). Economic development with unlimited supplies of labour. The Manchester School. https://doi.org/10.2307/2226839

Loayza, N., & Rigolini, J. (2011). Informal employment: Safety net or growth engine? World Development. https://doi.org/10.1016/j.worlddev.2010.12.001

Nguyen, H., et al. (2020). Education and informality in developing countries. Journal of Development Studies. https://doi.org/10.1080/00220388.2019.1586845

Schneider, F. (2014). Size and measurement of the informal economy in 110 countries around the world. Journal of Development Economics, 91(2), 110-115. https://doi.org/10.1007/s11628-014-0269-1

Setyanti, A. M., Syafitri, W., Finuliyah, F., & Khoiruddin, M. A. (2024). Employed yet still poor: A microdata analysis of working poverty in Indonesia. Jurnal Ketenagakerjaan, 19(3), 281–294. https://doi.org/10.47198/jnaker.v19i3.403

Sultana, N., & Turkina, E. (2022). Informal sector employment and economic growth. Sustainability, 14(19), 11989. https://doi.org/10.3390/su141911989

Todaro, M. P., & Smith, S. C. (2020). Economic Development (13th ed.). https://doi.org/10.4324/9780429491180

Tokman, V. E. (2007). Informal employment in Latin America: Facts and norms. World Development, 35(4), 572–589. https://doi.org/10.1016/j.worlddev.2007.01.002

World Bank. (2024). The long shadow of informality: Challenges and policies. Washington, DC: World Bank.