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Informal Workers' Wage Levels and Factors Influencing Them

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ABSTRACT

Labour issues are still a common problem, especially in developing countries in the informal sector, in Indonesia the informal sector has increased in recent years, this also affects the level of wages received by informal workers. This study tries to explain how the role of education, employment and health on changes in wages of informal workers. The author uses a panel data regression approach to find out the effect on 34 provinces in Indonesia. The results of this study show that education and employment cause the wages of informal workers to fall, the high number of layoffs makes workers switch to the informal sector with lower wages. Health factors play a positive role in increasing wages, health affects wages through increased labour productivity. The government needs to make a policy in maintaining wage stability such as reducing dependence on labour absorption in the manufacturing sector through the expansion of the agricultural sector which is directly supported by the state with a predetermined wage. In addition, it is necessary to improve the skills of workers at various levels of education, age and gender in order to strengthen the bargaining power of workers.

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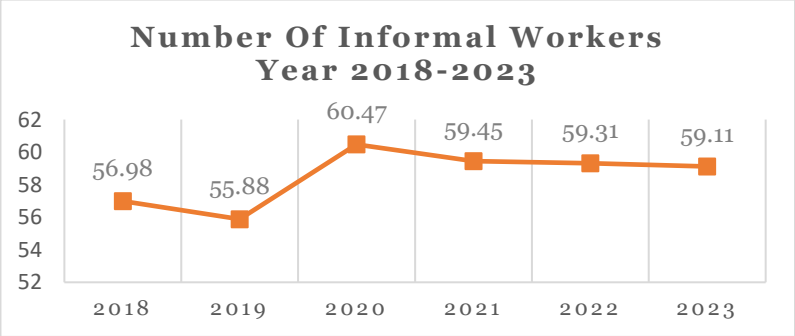
INTRODUCTION

In the literature of studies, especially development studies, the term informal sector was first coined by Keint Hart in a paper in the urban environment of Ghana in 1971 (Hart, 1973) and then began to be officially used and disseminated through publications published by the International Labor Organization (ILO) in 1972 with the theme: A Strategy for Increasing Productive Employment in Kenya (ILO, 1972). The informal sector arose as a result of rapid development towards a modern economic system in the formal sector. The result of this phenomenon is the birth of a dualistic economic system, namely the formal and informal sectors. The informal sector is designated for those who do not have special skills and education as a condition for supporting the development of a modern economy, while those who are trained and educated are mostly absorbed by the formal sector, and this is dominant in developing countries.

Although the informal sector is not organised, it absorbs more workers in various countries than the formal sector (Bonnet, 2019). Indonesia's Central Bureau of Statistics (BPS) in February 2023 recorded the number of people working in the informal sector as 59.17% or equivalent to 84.13 million people, this has increased by 2.19% since 2018 where the number of informal workers was 56.98%.

Figure 1. Development the number of informal workers

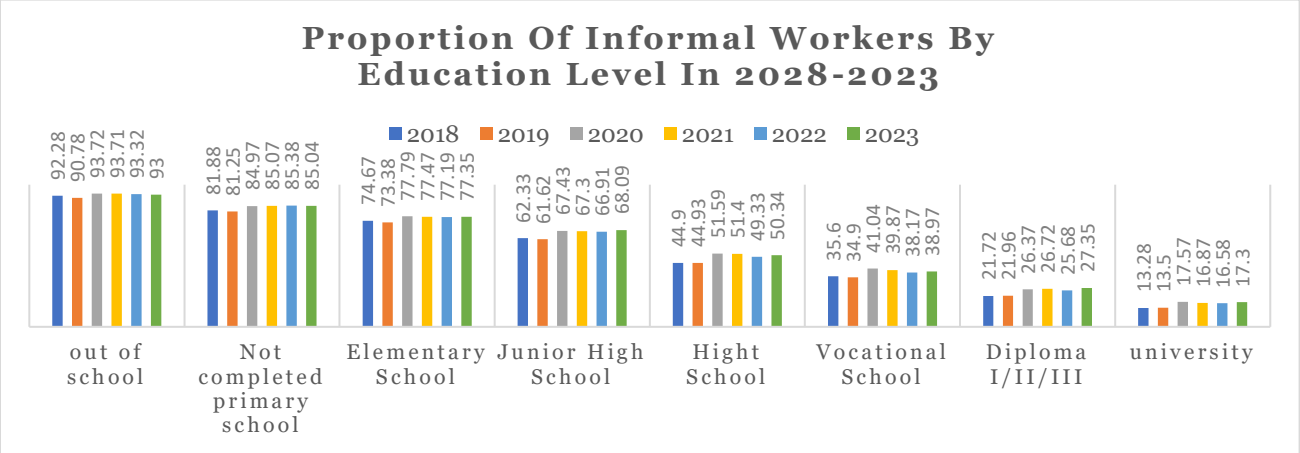


Source: BPS data processed

Figure 1 shows that the highest increase in informal workers occurred in 2020 where there was a massive layoff due to the Covid-19 factor. Then it decreased in 2021 as the national economy improved.

Based on the level of education, informal workers from 2018 to 2023 are dominated by workers with a junior high school education. A striking difference can be seen between senior high school and junior high school education levels, indicating that the dominant minimum standard of education recruited for formal workers is senior high school graduates.

Figure 2. Proportion of informal workers by education

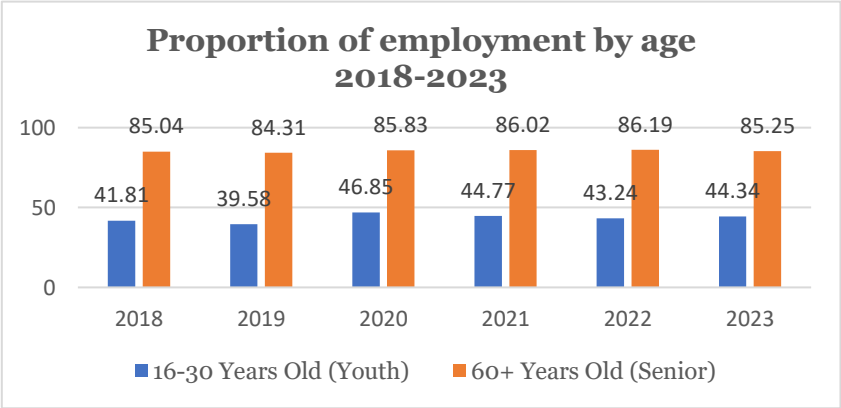


Source: BPS data processed

Figure 2 shows that the number of informal workers decreased from 2018 to 2019 at various levels of education, and increased again in 2020. The decline in the number of informal workers informs us that the formal sector is beginning to absorb labour from the informal sector. High school graduates have been at greater risk from economic changes over the past five years, with high school education showing the highest increase in informal workers among other education levels, with an increase of 6.66% from 44.93% in 2019 to 51.59% in 2021 (BPS, 2024).

Indonesia's informal labour force is 84% made up of workers aged 60 years and above or the elderly, while 43.3% is made up of workers aged 16 to 30 years.

Figure 3. Informal employment according to age



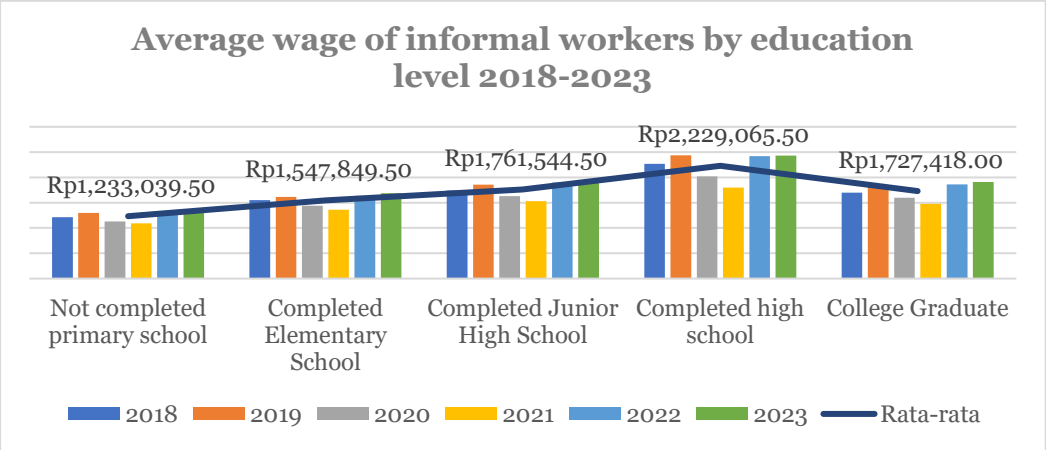
Source: BPS data processed

The high participation of the elderly in the informal sector is due to several factors, such as low education, lack of assets saved, predominantly living in rural areas, not being the head of the household and having low health (Rahayuwati, 2024).

The wage problem is still a special concern in various countries, both developed and developing countries. According to the International Labor Organization (ILO) data in 2021 there are 3.3 billion workers worldwide and 1.7 billion of them are wage earners. The International Labor Organization (ILO) issued a report on the living wage agreement on 19-23 February 2024 in Geneva, Switzerland. Experts agree that a living wage is necessary to fulfil the standard of living for workers and their families. This standard of living is indispensable for the economic and social development of a country Internationally, the feasibility of wages is a major player in reducing poverty and inequality in order to create a decent and dignified life (ILO, 2024).

Many research results show that wages in the informal sector tend to be lower than the formal sector, as seen in Figure 4 below shows that the highest wage achievement in the informal sector is received by high school graduates with an average wage of Rp. 2,229,065 then junior high school graduates of Rp. 1,761,544 while for the wage of university graduates is Rp. 1,727,418 or slightly greater than Rp. 179,569 from the wage of elementary school graduates, namely Rp1,547,849.50, but the wage of university graduates is far below the wage of high school graduates with a difference of Rp. 501,647.

Figure 4. Wages of informal workers by level of education

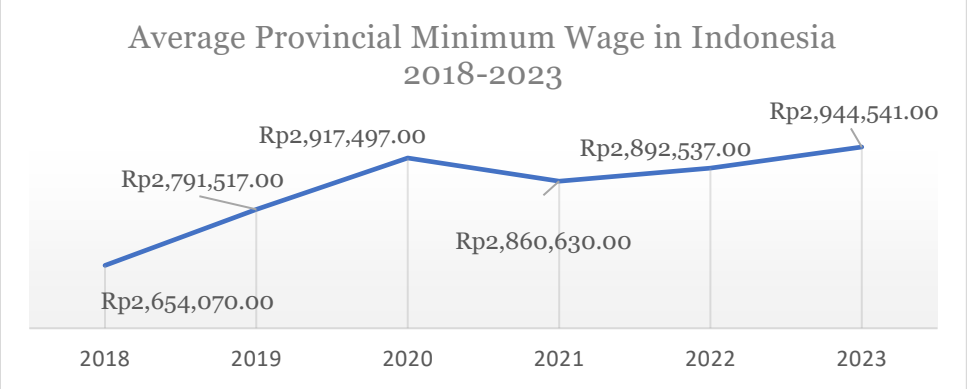


Source: BPS data processed

Figure 4 shows that workers with higher education in the informal sector have not been able to reach the provincial average wage and are still far below the wage of high school graduates in the last five years.

The highest wage received by informal workers is still below the provincial average wage. Figure 5 illustrates how the provincial minimum wage has increased from 2018 to 2023.

Figure 5. Average Minimum Wage in 34 Provinces



Source : BPS data processed

Low wages are vulnerable to targeting workers with low skills and education, when there is an increase in wages, employers will look for alternatives to reduce labour costs in the form of switching to technology to replace the wage costs of workers with low education and skills (BPS, 2024). These workers will be faced with at least two choices, namely being replaced and unemployed or willing to take a job with lower wages. Meanwhile, wage increases for workers with higher education and skills are a good opportunity (Lordan & Neumark, 2018).

This paper examines how wage levels change in the informal sector in 34 provinces. This study examines whether the education variable is still dominant as a variable that can increase the wages of informal sector workers (Kahyalar et al., 2018; Matuszewska & Witkowska 2021; Portugal et al., 2018). The author also explores further whether workers' health and available jobs in the informal sector can have a positive impact on the welfare of workers' wages.

LITERATURE REVIEW

Shahen et al. (2020) stated that workers with higher education tend to stay in the formal sector, this is due to education, age and experience factors that cause wage differences in the formal and informal sectors, both in public and private companies. High wages are largely determined by workers' previous experience and education, but longer education can provide much greater incentives. This concept only applies to jobs that match their educational qualifications, but when educational qualifications do not match the type of work obtained, the effect will dramatically reduce wages, when getting low wages, workers with higher education will move to places that match their educational qualifications to obtain higher income (Kahyalar et al., 2018; Matuszewska & Witkowska, 2021; Bol et al., 2019; Liull, 2018). When education is an important variable in influencing wage increases, as long as there are no changes in job titles, skills and company policies, the wages received are not so significant. Employers will pay higher wages for high-skilled jobs that outperform low-skilled workers, while low-skilled jobs do not always require low-skilled workers. This phenomenon shows that highly skilled workers are in demand at all levels of job difficulty (Stinebrickner et al., 2019; Portugal et al., 2018). Work skills will only be obtained in vocational schools, this is evident in India that workers with a vocational education background earn higher wages especially in the primary sector and followed by the secondary sector (Kumar et al., 2019). Education in Indonesia has the

same impact on increasing wages for men and women, but the treatment of working hours and experience that women have does not have an impact on increasing wages (Nurpratiwi, Syamsurijal & Yunisvita, 2020).

Health can be influenced by education as explained by Zajacova & Lawrence (2018) workers who have a higher educational history have a healthier lifestyle compared to workers with low education. Therefore, education is always the best predictor in influencing the quality of longer life expectancy (Lutz & Kebede, 2018). Rodriguez et al. (2018) and Pintor et al. (2024) said that the factor that affects wage constraints apart from the economic cycle, temporary contracts and gender is health, health affects wages through labour productivity. Workers who are sick will reduce their potential income for a while, limited conditions force them to be unable to guarantee the temporary loss of income. According to Lenhart (2019) a strong shock to the labour market will occur if a severe health shock occurs in male individuals with higher education and working in managerial areas. When experiencing a decline in health, it will automatically reduce worker productivity which results in shocks to certain positions. Health shocks can be caused by economic factors, such as economic recession, poor working environment and weak labour market attraction (Hammarströmet al., 2024). Another factor according to Cai (2009) is that a harmonious household will have a positive effect on worker health and productivity, high productivity will increase household income, and this cycle will continue as long as there are no shocks from other factors such as company policies. Health problems can occur to both men and women, Gambin (2004) shows that male and female workers who experience a decline in health have different implications for wages. The decline in women's health has a greater impact on the decline in potential wages compared to men, to increase labour productivity and wages it is necessary to invest in health in the form of physical activity, stop smoking and stop drinking alcohol (Kaneva et al., 2024). The decline in income due to health factors also has a strong effect on workers with low income where the effect of this decline has an impact on reducing the level of personal and family consumption for a husband, the factor of residence with urban and rural specifications also certainly has a diverse impact (Xie et al., 2020).

The informal sector has a negative impact on sustainable development, especially in developing countries, so governments urgently need to reduce the informality of economic and business activities. The low rationing of the proportion of employment in the formal sector has an impact on the increase in the informal employment sector. The solution to overcome this is in the form of state intervention in raising the prospects of informal workers, especially in the labour market, so that workers have high bargaining power (Sultana et al., 2022; Wang et al., 2016). Informal workers are accommodated by employers by using wages as a recruitment tool so that the initial wages given to informal workers are lower. The reason is because the proportion of informal workers gives a negative signal to potential employers of workers' incompetence, low ability initiates low wages, especially in a competitive labour market (Mueller et al., 2019; Chen, 2018). The results of Adam et al. (2020) and Thaiprasert et al. (2020) provide a slightly different opinion, where job flexibility will determine the amount of wages received, the more flexible the tasks received, the smaller the wage will be, but when the work received is rigid, workers will get a fixed wage. The convenience and flexibility of working time is a choice for informal workers voluntarily, while workers who are forced to work in the informal sector are more influenced by family needs. Faberman & Menzio (2018) explain that long job openings have a positive impact on the wages given, but have a negative

impact on the number of applications and interview participants each week. When companies announce wage rates, job seekers in the informal sector will direct their applications based on their wage preferences. Informal jobs are mostly obtained based on family and friend contacts, so there is a penalty on the initial wage (Elamin, 2023). According to Hensel et al. (2022) when companies use social networks to inform jobs, this limits the entry of highly skilled employees, but when employers use non-networks the job supply increases so that employers do not limit their search for highly skilled workers..

METHODOLOGY

The wages of informal workers are of particular concern in Indonesia due to the lack of social security and the low wages received. The author tries to test whether the factors of education, health and employment shown for the informal sector can affect the wages received, whether it has an impact on increasing wages or reducing wages or even no impact at all. To answer the above problems, the author tries to use quantitative research methods, because quantitative research needs to be done to test and confirm the proposed hypothesis (Sardana et al., 2023).

To test the overall variables proposed, the authors use data available at the Central Statistics Agency (BPS), the data is related to the four variables that are the object of research, the authors use data from 34 provinces with a data range of 2018 to 2023. The data obtained were then processed using multiple linear regression in the form of panel data using the EViews 12 analytical tool. Panel data can measure the components of changes in individual objects with a wider range of data in each sample compared to cross-sectional (Duncan, 2015).

The use of panel data regression must go through several important stages such as; best model selection test, classical assumption test, partial test, simultaneous test and ditermination coefficient test before the data processing results are interpreted. To select a panel data model, there are three models presented in this study including the Common Effect Model, Fixed Effect Model and Random Effect Model.

As a data measurement, the author uses the education variable (EDC) measured by the length of schooling in each province, the health variable (HLT) measured by the Life Expectancy Rate (AHH), employment (EMINF) measured by the proportion of employment by main occupation and the average wage of informal workers (WAGE) as the dependent variable measured using the average wage of informal workers in 34 provinces based on the main occupation. The model form in this study is;

$$\boldsymbol{WAGE_{it} = \propto + \beta_2 EDC_{1it} + \beta_2 EMINF_{2it} + \beta_3 HLT_{3it} + \varepsilon_{it}} \quad \textbf{.....(1)}$$

RESULTS AND DISCUSSION

In determining the best equation or model, a model selection test is carried out including the cow test, Hausman test and LM Test.

Table 1. Cow and Hausman Test

Model Selection Test	Chi-Sq. Statistic	Probability
Redundant Fixed Effects Tests	254.172276	0.0000
Correlated Random Effects - Hausman Test	47.116500	0.0000

Source : Eviews 12 2024 Output Results

The results of the Cow and Hausman Tests in table 1 show that both the Fixed Effect Model and Random Effect Model selection tests select the Fixed Effect Model (FEM) as the model to be used in this study, this can be seen from the value of each test probability below 0.05. The test results of the two models choose FEM, so the LM Test on the Common Effect Model does not need to be done. After knowing the best result is the Fixed Effect Model, the classical assumption test is next.

Table 2. Classical Assumption Test

1.	Normality (Jarque-Bera)	Jarque-Bera	Probability	
		5.230375	0.073154	
2.	Multicollinearity (Pair Wise Correlation)	Log(EDC)	Log(EMINF)	HLT
		-0.637147	-0.637147	-0.526269
3.	Autocorrelation (Durbin-Watson)	DU Value	DW Value	4-DU Rated
		1.7851	2.212443	2.214
4.	Heteroscedasticity (Glejser)	R-Squered	F-Statistic	Prob. @ Independen
		0.438943	2.890344	> 0,05

Source : Eviews 12 2024 Output Results

Table 2 above explains the results of the panel data classic assumption test. The normality test using the Jaque-Bera model shows that the data is normally distributed, this can be seen from the Jarque-Bera value of 5.230375 with prob. 0.073154. In conducting the multicollinearity test, the author uses the Pair Wise Correlation approach, the results show that the data is free from multicollinearity because the value of each independent variable is below 80. The next test is the autocorrelation test, the approach taken in this test is the Durbin-Watson (DW) value, the model is said to pass if the DW value is between the DU value and the 4-DU value or DU<DW<4-DU. The autocorrelation test results show that the DW value of 2.212443 is between the DU value of 1.7851 and the 4-DU value of 2.214. The last classic assumption test is the heteroscedastistas test, where in this test using the Glejser approach by regressing the absolute value of the residual together with the independent variables. The results of this test show that all the probabilities of the independent variables are insignificant, which means that they are free from heteroscedasticity, this is marked by the low R-Square and F-Statistic values of 0.438943 and 2.890344.

The fixed effect model passes all classical assumption tests, then a partial test is carried out where in this test it will be explained how the role of each EDC, EMINF and HLT variable on the average wage of informal workers.

Table 3. Parsiall Test

Variable	Coefficient	Prob.

C	1.404233	0.0000
Log(EDC)	-0.264646	0.0009
Log(EMINF)	-0.125122	0.0000
HLT	0.021424	0.0000

Source: *Eviews* Output Results 12, 2024

The regression results of the data above are expressed in the form of an equation

Log(WAGE) = 1.404 - 0.264*Log(EDC) - 0.125*Log(EMINF) + 0.021*HLT + [CX=F].....(2)

Table 3 shows that all independent variables have a significant role in changing the wages of informal workers. In equation 2, it can be seen that two variables have a negative impact on the wages of informal workers, including the education variable (EDC) which has an impact on reducing labour wages by 0.264% while employment (EMINF) has a negative impact on wages by 0.125%. The health variable (HLT) has a positive impact on wages by 0.021%. Wages will be in the position of Rp. 1,402,233 when the role of all independent variables is zero. The next stage is the simultaneous test and the coefficient of determination.

Table 4. Simultaneous Tests and Coefficients Terminated

R-Squared	0.871244
Adjusted R-squared	0.836392
S E of Regression	0.007181
Sum Squared resid	0.006858
Log Likelihood	618.8283
F-Statistik	24.99888
Prob (F-Statistic)	0.000000

Source: *Eviews* Output Results 12, 2024

Based on table 4, it is known that simultaneously all EDC, EMINF and HLT variables play a significant role in the wage level of informal workers, this can be seen from the F-Statistic value of 24.99888 with a Prob value of 0.00000. The diterminationcoefficient test in this study explains that the three independent variables above can explain their role in influencing wages by 87.1%, while 12.99% is explained by other variables outside this study.

After knowing the role of all independent variables on wage changes, then we will see how wages change throughout the province..

Table 5. *Cross-Section Effect Result*

No.	Provinsi	Effect	No.	Provinsi	Effect	No.	provinsi	Effect
1	Aceh	0.022334	**12**	Jawa Barat	-0.07789	**23**	Kalimantan Timur	-0.06951
2	Sumatera Utara	0.041131	**13**	Jawa Tengah	-0.12907	**24**	Kalimantan Utara	-0.04212
3	Sumatera Barat	0.029614	**14**	DI Yogyakarta	-0.1011	**25**	Sulawesi Utara	0.000157
4	Riau	-0.02153	**15**	Jawa Timur	-0.05447	**26**	Sulawesi Tengah	0.041899
5	Jambi	-0.01777	**16**	Banten	0.000152	**27**	Sulawesi Selatan	-0.00737
6	Sumatera Selatan	-0.00599	**17**	Bali	-0.04448	**28**	Sulawesi Tenggara	-0.00909

7	Bengkulu	0.030378	**18**	Nusa Tenggara Barat	0.040331	**29**	Gorontalo	0.011281
8	Lampung	-0.0191	**19**	Nusa Tenggara Timur	0.025101	**30**	Sulawesi Barat	0.090199
9	Kep. Bangka Belitung	-0.03837	**20**	Kalimantan Barat	-0.05206	**31**	Maluku	0.125454
10	Kep. Riau	-0.00183	**21**	Kalimantan Tengah	0.006247	**32**	Maluku Utara	0.0605
11	DKI Jakarta	-0.01799	**22**	Kalimantan Selatan	0.014252	**33**	Papua Barat	0.073094
						34	Papua	0.09761

Source: *Eviews* Output Results 12, 2024

Table 5 shows the level of change in the wages of informal workers in each province. Central Java Province is the Province with the largest decrease in wages at 0.129% and the smallest decrease occurred in Riau Islands Province at 0.002%. Maluku is the province with the highest increase in wages compared to other provinces, namely 0.125%. North Sulawesi became the province with the lowest wage increase of 0.001%. Overall, the wages of informal workers decreased in 17 provinces and 17 other provinces experienced an increase. The decline in wages occurred in almost all provinces on the island of Java. In contrast, provinces in eastern Indonesia such as Maluku and Papua Island experienced a relatively high increase in wages.

DISCUSSION

The results of this study explain the role of education on the level of wages for informal workers in Indonesia, the measure of education used is the length of schooling for the population over fifteen years, the results of this study explain that the longer the schooling, the impact on the decline in wages for informal workers in Indonesia. The Job Creation Regulation explains in article 81 paragraph 33 about the wage structure, in this regulation education is no longer included as a factor that increases wages, in other words companies can determine the amount of wages according to the company's ability and the level of productivity of each. This policy has an impact on reducing wages, especially in provinces with a high population, as seen in table 5, several provinces with a high population and a fairly high length of schooling experienced a decrease in wages including West Java, East Java, Central Java, North Sumatra, DKI Jakarta, South Sulawesi, Lampung, South Sumatra and Riau. Pascual & Lanza (2023) explain that excessive education will have a negative effect on the income received, this is due to the large number of qualified prospective workers who are not accommodated by the available employment opportunities. To return the cost of education they are willing to work in fields that are not in accordance with their expertise. Highly educated workers are increasing, which causes market recognition of workers with higher education to slowly decline (Peng & Su, 2020).

The results of the next study talk about informal employment, to measure informal employment the author uses the proportion of informal employment by province. The results of this study show that the increasing employment in the informal sector causes a decrease in wages. The average increase in informal employment occurred from 2019 to 2022 where for almost two years Indonesia experienced an economic recession due to covid-19, this situation forced workers to reduce wage levels, especially in the informal sector. In addition to the covid 19 factor, the effect of the Fed's interest rate hike also has an impact on the wages of informal workers, where when interest rates rise, there are several companies that reduce labour costs so that they divert them to the informal sector,

the informal sector involving workers will open new jobs with lower wages than before. Informal workers are growing every year, where they not only work in the informal sector, but also in formal companies. Cost efficiency, flexibility are the reasons why formal companies employ workers informally (Abraham, 2019).

The results of the last study related to the role of health on wage levels in the informal sector in table 3 show that health plays a positive role in increasing wages, indicating that there has been an increase in productivity through improved worker health levels. The previous literature that has been discussed in this study is mainly related to changes in wage levels caused by education, skills and work experience, overall these factors aim to increase company productivity. Productivity will experience a strong shock if there is a decline in health in individuals who have high education, experience and skills (Lenhart, 2019). Mehmood (2022) and Kruz (2023) provide evidence that in South Asia and in OEDC countries health is used as an indicator of increased labour productivity, so it has a positive reciprocal relationship to increased wages.

The differences in wage changes in Table 5 are due to economic growth, inflation rates that differ by region and gender (Rodriguez et al., 2018). The decline in wages in the Province, especially those on the island of Java, was caused by the high layoffs that occurred, especially in the manufacturing sector, with a population that has a high density level, Java is the island with the largest contributor to layoffs in Indonesia, the phenomenon of high layoffs resulted in the shift of workers to the informal sector, this caused a fairly high decline in wages. Guschanski & Onaran (2022) explain that technological shifts in various business sectors do not really affect the decline in wages, but wages will decline due to the fall in bargaining power of workers due to the encouragement of outsourcing in developing countries as well as changes in domestic labour markets such as labour density, government spending in the social sector and minimum wages. This wage decline tends to target middle-skilled workers.

In contrast to the islands of Maluku and Papua, the level of layoffs that occurred in the region was the lowest including at the time of covid 19 compared to other provinces, this was due to population factors and the small number of industrial sectors in the region, so that low layoffs did not result in a decrease in wages and even tended to increase. The difference in wage growth in each province according to Kalb & Meekes (2019) is caused by differences in age in each region, differences in education, occupation and industry, of all the factors mentioned, it is known that demographic characteristics and type of work have a greater role in wage changes.

CONCLUSION

The research conducted by the author aims to see the role of workers' education levels, including in terms of health and employment aspects, to wage changes for informal workers. The results of this study are known that the length of education and the increasing number of informal workers result in a decrease in wages, including at various levels of education, this decline can be caused by high layoffs, gender and low labor power. The health factor of workers has a positive impact on increasing wages, health affects wages through the level of worker productivity, so that wages are adjusted to the amount of productivity produced by workers.

The author suggests that to keep the wage level stable, the government needs to make a new breakthrough in labor absorption, as well as reduce dependence on labor

absorption in the manufacturing sector, the expansion of agricultural land that is directly under the government's auspices with the wage standards set. It will absorb more labor and keep workers' wages stable. In addition, improving the skills of workers needs to be carried out at various levels of education, age and gender to strengthen the bargaining power of workers in Indonesia

REFERENCE

Abraham, R. (2019). Informal employment and the structure of wages in India: A review of trends. *Review of Income and Wealth*, *65*, S102-S122. https://doi.org/10.1111/roiw.12435

Adams-Prassl, A., Balgova, M., & Qian, M. (2020). Flexible work arrangements in low wage jobs: Evidence from job vacancy data. https://ssrn.com/abstract=3696343

Badan Pusat Statistik, *Rata-rata Pendapatan Bersih Sebulan Pekerja Informal Menurut Provinsi dan Pendidikan Tertinggi yang Ditamatkan (rupiah), 2023* 22 Februari 2024

Bol, T., Ciocca Eller, C., Van De Werfhorst, H. G., & DiPrete, T. A. (2019). School-to-work linkages, educational mismatches, and labor market outcomes. *American Sociological Review*, *84*(2), 275-307. https://doi.org/10.1177/0003122419836081

Bonnet, F., Vanek, J., & Chen, M. (2019). Women and men in the informal economy: A statistical brief. International Labour Office, Geneva, 20, 22.

Cai, L. (2009). Effects of health on wages of Australian men. *Economic record*, *85*(270), 290-306. https://doi.org/10.1111/j.1475-4932.2009.00552.x

Chen, Y., Wang, L., & Zhang, M. (2018). Informal search, bad search?: the effects of job search method on wages among rural migrants in urban China. *Journal of Population Economics*, *31*, 837-876. https://doi.org/10.1007/s00148-017-0672-x

Cruz, M. D. (2023). Labor productivity, real wages, and employment in OECD economies. *Structural Change and Economic Dynamics*, *66*, 367-382. https://doi.org/10.1016/j.strueco.2023.05.007

Duncan, G. J. (2015). Panel surveys: uses and applications. https://doi.org/10.1016/B978-0-08-097086-8.44040-7

Elamin, O. A. (2023). The causal effect of informal job search on wage and job satisfaction: evidence from Egypt and Jordan using random forest method. *International Journal of Social Economics*, *50*(4), 522-536. https://doi.org/10.1108/IJSE-05-2022-0318.

Faberman, R. J., & Menzio, G. (2018). Evidence on the Relationship between Recruiting and the Starting Wage. *Labour Economics*, *50*, 67-79. https://doi.org/10.1016/j.labeco.2017.01.003

Gambin, L. (2004). Gender differences in the effect of health on wages in Britain. *York, University of York Department of Economics and Related Studies (ECuity III Working Paper 20)*.

Guschanski, A., & Onaran, Ö. (2022). The decline in the wage share: falling bargaining power of labour or technological progress? Industry-level evidence from the OECD. *Socio-Economic Review*, *20*(3), 1091-1124. https://doi.org/10.1093/ser/mwaa031

Hammarström, A., Westerlund, H., Janlert, U., Virtanen, P., Ziaei, S., & Östergren, P. O. (2024). How do labour market conditions explain the development of mental health over the life-course? a conceptual integration of the ecological model with life-course epidemiology in an integrative review of results from the Northern Swedish Cohort. *BMC Public Health*, *24*(1), 1315. https://doi.org/10.1186/s12889-024-18461-6

Hart, K. (1973). Informal Income Opportunities and Urban Employment in Ghana. *The Journal of Modern African Studies*, *11*(1), 61–89. http://www.jstor.org/stable/159873

He, Y., Peng, X., & Xu, H. (2020). Overeducation, market recognition, and effective labour supply. *China Economic Review*, *59*, 101384. https://doi.org/10.1016/j.chieco.2019.101384

Hensel, L., Tekleselassie, T., & Witte, M. (2022). Formalized employee search and labor demand. https://dx.doi.org/10.2139/ssrn.4114392

ILO. (2024). Report of the Meeting of Experts on wage policies, including living wages. Janeva.

International Labour Organisation (ILO). (1972). A Strategy for Increasing Productive Employment in Kenya.

Kahyalar, N., Fethi, S., Katircioglu, S., & Ouattara, B. (2018). Formal and informal sectors: is there any wage differential?. *The Service Industries Journal*, *38*(11-12), 789-823.https://doi.org/10.1080/02642069.2018.1482877

Kalb, G., & Meekes, J. (2019). Wage Growth Distribution and Decline among Individuals: 2001-2017. *Melbourne Institute of Applied Economic and Social Research, Melbourne, Australia for the Reserve Bank of Australia*.

Kaneva, M. A., Zabolotsky, A. A., & Moroshkina, O. N. (2024). Impact of Health Indicators on Men and Women's Wages in Russia. *Regional Research of Russia*, *14*(2), 240-251.https://doi.org/10.1134/S2079970524600148

Kumar, R., Mandava, S., & Gopanapalli, V. S. (2019). Vocational training in India: Determinants of participation and effect on wages. Empirical Research in Vocational Education and Training, 11(1), 1-17. https://doi.org/10.1186/s40461-019-0078-y

Lenhart, O. (2019). The effects of health shocks on labor market outcomes: evidence from UK panel data. *The European Journal of Health Economics*, *20*(1), 83-98. https://doi.org/10.1007/s10198-018-0985-z

Llull, J. (2018). Immigration, wages, and education: A labour market equilibrium structural model. *The Review of Economic Studies*, *85*(3), 1852-1896. https://doi.org/10.1093/restud/rdx053

Lordan, G., & Neumark, D. (2018). People versus machines: The impact of minimum wages on automatable jobs. *Labour Economics*, *52*, 40-53. https://doi.org/10.1016/j.labeco.2018.03.006

Matuszewska-Janica, A., & Witkowska, D. (2021). Differences between determinants of men and women monthly wages across fourteen European Union states. *Equilibrium: Quarterly Journal of Economics and Economic Policy*, *16*(3), 503-531.https://doi.org/10.24136/eq.2021.018

Mehmood, A., Siddique, H. M. A., & Ali, A. (2022). Impact of health on worker productivity: Evidence from South Asia. https://mpra.ub.uni-muenchen.de/id/eprint/113557

Mueller, A. I., Osterwalder, D., Zweimüller, J., & Kettemann, A. (2024). Vacancy durations and entry wages: Evidence from linked vacancy–employer–employee data. *Review of Economic Studies*, *91*(3), 1807-1841. https://doi.org/10.1093/restud/rdad051

Nurpratiwi, I., & Ak, S. (2020). Factors that influence wages differences in formal sector on male and female workers in Palembang City. *Theoretical & Applied Economics*, *27*(1).

Pascual-Sáez, M., & Lanza-Leon, P. (2023). The mismatch of over-education and earnings in Spain: how big are differences?. *Applied Economics*, *55*(46), 5369-5383. https://doi.org/10.1080/00036846.2022.2139807

Pintor, M. P., Fumagalli, E., & Suhrcke, M. (2024). The impact of health on labour market outcomes: a rapid systematic review. *Health Policy*, 105057. https://doi.org/10.1016/j.healthpol.2024.105057

Portugal, P., Raposo, P. S., & Reis, H. (2018). The distribution of wages and wage inequality. *ars*, *15*, 20.

Rahayuwati, L., Arsyad, SS, Ekawati, R., Dawam, M., Rahmadewi, R., Nurhayati, S., ... Fauziah, SR (2024). Faktor-faktor yang Mempengaruhi Tingginya Jumlah Lansia yang Bekerja di Sektor Informal. *Jurnal Kesehatan Multidisiplin* , *17* , 1827–1837. https://doi.org/10.2147/JMDH.S450047

Rodriguez-Alvarez, A., & Rodriguez-Gutierrez, C. (2018). The impact of health on wages: evidence for Europe. *The European Journal of Health Economics*, *19*(8), 1173-1187.https://doi.org/10.1007/s10198-018-0966-2

Sardana, N., Shekoohi, S., Cornett, E. M., & Kaye, A. D. (2023). Qualitative and quantitative research methods. In *Substance use and addiction research* (pp. 65-69). Academic Press. https://doi.org/10.1016/B978-0-323-98814-8.00008-1

Shahen, M. E., Kotani, K., Kakinaka, M., & Managi, S. (2020). Wage and labor mobility between public, formal private and informal private sectors in a developing country. *Economic Analysis and Policy*, *68*, 101-113. https://doi.org/10.1016/j.eap.2020.09.006

Stinebrickner, R., Stinebrickner, T., & Sullivan, P. (2019). Job tasks, time allocation, and wages. *Journal of Labor Economics*, *37*(2), 399-433. https://doi.org/10.1086/700186

Sultana, N., Rahman, M. M., & Khanam, R. (2022). The effect of the informal sector on sustainable development: Evidence from developing countries. *Business Strategy & Development*, *5*(4), 437-451. https://doi.org/10.1002/bsd2.217

Thaiprasert, N., Leurcharusmee, S., Jatukannyaprateep, P., & Sirisrisakulchai, J. (2020). Determinants of Labor Force Participation and Wages in Thailand: What is the Role of the Informal Sector?. *Asian Economic Journal*, *34*(3), 301-326.https://doi.org/10.1111/asej.12219

Wang, J., Cooke, F. L., & Lin, Z. (2016). Informal employment in C hina: recent development and human resource implications. *Asia Pacific Journal of Human Resources*, *54*(3), 292-311.https://doi.org/10.1111/1744-7941.12099

Xie, M., Huang, Z., & Zang, W. (2020). The inequality of health-income effect in employed workers in China: a longitudinal study from China Family Panel Studies. *International Journal for Equity in Health*, *19*, 1-15. https://doi.org/10.1186/s12939-020-01211-6

Zajacova, A., & Lawrence, E. M. (2018). The relationship between education and health: reducing disparities through a contextual approach. *Annual review of public health*, *39*(1), 273-289.https://doi.org/10.1146/annurev-publhealth-031816-044628