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# Analysis of factors affecting income micro and small industries of Central Java province

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**ABSTRACT**
This study intention to predispose wheeveryr the independent variables such as the total of micro and small industries (IMK), the total of labors, wages and average working hours have an impact on the dependent variable, namely the micro and small industry income (IMK) in 35 regencies/cities of the province Central Java during the 2018-2020 period. The data found came from the Central Java Province Central Statistics Agency (BPS), using panel data analysis methods and tools. Fixed Effect Model (FEM) is the best model chosen. The research results show that IMK and wage variables have a significant negative impact on micro and small industry income, while the total of labor variables have a significant positive impact on micro and small industry income. Meanwhile, the variable average working hours has no effect on micro and small industry income in Central Java Province during the 2018-2020 period.



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## INTRODUCTION

Indonesia is a country that has characteristics of economic development in each region. Economic development is the attempt to increase per capita income by transforming the future economy into a real economy complete the use of various means such as technology, knowledge expansion and investment [1]. There are several indicators that can measure the success of economic development, one of which is the employment aspect, this aspect has an influence on economic development in reducing the unemployment rate and increasing labor absorption. Central Java Province has an average population in the 2018-2020 period of 35.241.691 people with an open unemployment rate that has increased by 2,01% (BPS Jawa Tengah, 2020). Economic development is related to the industrialization process. The industrialization process is a step to improve people's welfare in the sense of a more modern and quality standard of living [3].

Micro and Small Industries (IMK) are industries that employ less than 20 people and contribute to the economy of a region through increasing GRDP. One of them is the processing industry sector which has a role as an economic driver in Central Java Province. In the 2019 period the processing industry sector contributed 34,62%. This contribution is greater than the agricultural and trade sectors which only contributed 14.30% and 13,49%

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(BPS Jawa Tengah, 2019). Another positive contribution is that the area provides employment occasion that can reduce the total of unemployed people in Central Java. In the same period, the processing industry sector in Central Java Province succeeded in absorbing a workforce of 3.89 million people or around 20,64%. (BPS Jawa Tengah, 2020). Micro and Small Industries (IMK) play a strategic role in Central Java Province. It is believed that the economic sector can be developed to absorb labor and increase income.

**Table 1.** Micro and Small Industry Income in Central Java Province 2018-2020 Period (Billion Rupiah)

| Period | Income |
|---|---|
| 2018 | 118.814.179.994 |
| 2019 | 79.219.115.690 |
| 2020 | 83.686.883.470 |

Source: BPS Jawa Tengah, 2020

Based on table 1, it shows that the business income of Micro and Small Industries (IMK) in Central Java Province in the 2018-2020 period experienced a decline due to internal and external obstacles. Internal barriers include business strategy and input, while external barriers are more about market access and access to funding (Warman and Ariusni, 2023). In 2020, with the onset of the Covid-19 pandemic the government restricted activities outside the home, especially economic activities, which resulted in many micro and small industries going out of business and reducing the total of labors so that the income earned by micro and small industries decreased. In this problem, of course the government has tried to increase the total of micro and small industrial enterprises by creating various programs. Especially in 2020, the Central Java Provincial Government implemented the Micro and Small Enterprise Strengthening Plan.

**Table 2.** Total of Micro and Small Industries in Central Java Province 2018-2020 Period (Thousand Units)

| Period | Total of Industries |
|---|---|
| 2018 | 914.850 |
| 2019 | 912.421 |
| 2020 | 901.163 |

Source: BPS Jawa Tengah, 2020

Based on table 2, it shows that there was a decline in the total of micro and small industries in Central Java Province in the 2018-2020 period. According to data from the Central Java Province Central Statistics Agency, the total of Micro and Small Industry (IMK) businesses in the 2020 period has reached 901,163 thousand businesses, dominated by the food industry group (32.13%), apparel industry group (18.86%), clothing industry group (18.86%), wood industry, wood products and cork (14.01%).

Apart from the total of micro and small industries, another factor that influences the income of Micro and Small Industries (IMK) is the availability of labor. Labor is the key holder in developing an industry or company. To increase competitiveness and industrial

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development in the market, quality workers are needed in every production process with good service to meet community needs.

**Table 3.** Total of Micro and Small Industry Labors in Central Java Province for the 2018-2020 Period (Million People)

| Period | Total of Labors |
|---|---|
| 2018 | 1.888.295 |
| 2019 | 1.874.926 |
| 2020 | 2.051.532 |

Source: BPS Jawa Tengah, 2020

According to Table 3 the total of micro and small industry labors in Central Java province in the 2018-2019 period decreased by 13,369 thousand people, while in the 2019-2020 period it experienced an increase of 176,606 thousand people.

Furthermore, there is compensation for workers in the form of wages. In economic theory, wages are the income workers receive for providing services. Wages also have an influence on increasing income because the amount of wages given by the company can influence the amount of goods produced.

**Table 4.** Central Java Province Wages 2018-2020 Period (Million Rupiah)

| Year | Wages |
|---|---|
| 2018 | 59.017.926 |
| 2019 | 63.853.809 |
| 2020 | 69.327.461 |

Source : BPS Jawa Tengah, 2020

Based on table 4, it shows that wages in Central Java Province in the 2018-2020 period increased by 10.309.535 million rupiah.

Then in an industry there are average working hours. Working hours are the time period from production preparation to completion of business activities [7], while the average working hours is the total of hours actually worked divided by the total of people working. Average working hours refer to the number of hours worked by a worker in a certain time. Average working hours can affect the income of micro and small industries because they are influenced by good working hours management so that they indirectly impact the net profits obtained by an industry.

Research conducted by Hardana (2018) in the title "Analysis of Factors Affecting Small Industry Income in Padangsidimpuan City and South Tapanuli Regency" Indicates that the total variable of small industries exerts a positive and significant influence on the income of small industries. Furthermore, in research conducted by Puspa (2022) states that the variable total of labors has a positive and significant influence on industrial income results. This is because when the total of labors increases, it will result in a boost to industrial income. This research is relevant to research conducted by Maliha (2018) and Hardana (2018). Meanwhile, in research conducted by Polandos et al., (2019) is inversely

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proportional and states that the variable total of labors has no effect on the income of MSME entrepreneurs in East Langowan District

Ayuningtyas and Abdullah (2021) in research entitled "The Influence of Capital, Labor Wages, and Raw Materials on the Cracker Industry" Indicates that wages for labor positively and significantly affect the total income of the cracker industry. Wulandari (2021) in the title "Analysis of the Influence of Capital and Labor Wages on the Income of Small and Medium Wood Craft Enterprises in Rejoso Hamlet, Junrejo District, Kota Baru" Indicates that wages for labor positively and significantly affect on business income. This research is relevant to the research conducted by Setiomeini (2021). Furthermore, research conducted by Supri Anggraini et al., (2019) with the title "Analysis of Factors Affecting the Income of Small Tofu Entrepreneurs' Industries in Bonai Darussalam District" states that working hours have an effect on industry income. This research is relevant to research undertaken by Sasmitha and Ayuningsasi (2017), Sa'dah (2020), and Saragih et al., (2021). Meanwhile, research conducted by Warman and Ariusni (2023) states that working hours do not affect industrial income.

From previous research, researchers found that there were inconsistencies in research results. Therefore, further research is needed regarding the factors that influence micro and small industry income variables. The novelty of this research is the variable total of micro and small industries which has not been studied together with other independent variables. So researchers are interested in observing problems related to the income of Micro and Small Industries (IMK) in Central Java Province in 35 Regencies/Cities and carrying out a deeper analysis regarding "Factors that Influence the Income Levels of Micro and Small Industries in Central Java Province". The aim of the research is to assess the extent of influence of the variables number of micro and small industries (IMK), total of labors, wages, and average working hours on the income level of Micro and Small Industries (IMK) in 35 regencies/cities Central Java Province in the 2018-2020 period.

## METHOD

### Types of research

This research uses a quantitative approach combined with panel data. Panel data is a combination of cross sections and time series [19]. The cross section data used is 35 Regencies/Cities of Central Java Province and the time series uses data for the 2018-2020 period. This research examines the influence of the number of Micro and Small Industry businesses (IMK), workforce, wages, and average working hours on the income of Micro and Small Industries (IMK) in Central Java Province. Data information was obtained from the Central Java Province Central Statistics Agency.

**Table 5.** Definition of Operational Variables

| Variable | Definition | Reference |
|---|---|---|
| Micro and Small Industry Income (Dependent) | IMK income is the result of the process of selling products or services offered by IMK without additional capital. | Azzahra et al., (2022) |
| Micro and Small | Micro and small industry is an economic activity | Azzahra et al., |

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| Variable | Definition | Reference |
|---|---|---|
| Industries (Independent) | that focuses on the production of goods or services to meet community needs. Micro and small industries are included in the classification of processing industries, micro industries consist of 1-4 people while small industries consist of 5-19 people. | (2022) |
| Labor (Independent) | Labors is all individuals who do work to produce goods or services to meet personal and community needs.<br><br>Labor are people who are looking for or are working in the process of producing goods or services that meet the requirements or age limits set by law and whose aim is to achieve results or salaries for daily living needs. | KEMENPERIN (2003)<br><br>Purnomo (2021) |
| Wages (Independent) | Wages are an effort used by a worker to improve health. | Prayogo and Indira Hasmarini (2022) |
| Average Working Hours (Independent) | Working hours are the time specified for doing work.<br>Average working hours are the total of working hours divided by the total of labors In one time such as days, weeks, months, or years of doing work. | Prihatminingtyas (2019) |

**Data analysis method**

This research applies panel data regression techniques processed with Eviews 12. The research estimation model can be modeled as follows:

$$\boldsymbol{MSII_{it} = C + \beta_1 TMSI_{it} + \beta_2 TMSIL_{it} + \beta_3 W_{it} + \beta_4 AWH_{it} + \varepsilon_{it}}$$

MSII = Micro and Small Industry Income (Billion Rupiah)
TMSI = Total Micro and Small Industries (Thousand Units)
TMSIL = Total Micro and Small Industry Labor (Thousand people)
DMW = Wages (Million Rupiah)
AWH = Average Working Hours (Hours/day)
$\varepsilon$ = *Error term (error factor)*
$\beta_0$ = Constant
$\beta_1 \ldots \beta_4$ = Independent variable coefficient
$i$ = Region of i
$t$ = year to t

The method for estimating panel data regression is the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) approaches. Next, you need to

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test the suitability of the model using the Chow Test and Hausman Test to determine the best estimation model.

## RESULTS AND DISCUSSION

### Estimated Results

Table 6 below displays the results of panel data regression estimation with three models: Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).

**Table 6.** Panel Regression Results

| Variable | Regression Coefficients | | |
|---|---|---|---|
| | CEM | REM | FEM |
| C | 0.2947 | 0.6116 | 0.0414 |
| TMSI | 0.8664 | 0.5895 | 0.0075 |
| TMSIL | 0.0124 | 0.0064 | 0.0039 |
| W | 0.3959 | 0.2908 | 0.0550 |
| AWH | 0.0444 | 0.1217 | 0.6203 |
| R-squared | 0.197008 | 0.160261 | 0.581668 |
| Ajd R-squared | 0.164889 | 0.126671 | 0.340809 |
| Prob. F-Statistic | 0.000187 | 0.001452 | 0.000825 |

Source: Panel data output using Eviews 12

### Determination of the best model

### Chow Test

The Chow test is conducted to ascertain the optimal model choice between the Common Effect Model (CEM) and the Fixed Effect Model (FEM) with the hypothesis criteria being that if the probability value of the F-statistic for the Chow test is > α then the model selected is CEM, whereas if the probability value of the F-statistic Chow test < α then the FEM model is selected. The α value used is 0.05 or 5%.

**Table 7.** Chow Test Results

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 1.784924 | (34,66) | 0.0222 |
| Cross-section Chi-square | 68.467132 | 34 | 0.0004 |

Source: Panel data output using Eviews 12

Table 7 shows that the F-statistic probability value for the Chow test is 0.0222 < 0.05, which means that H0 is rejected, so the selected model is the Fixed Effect Model (FEM).

### Hausman Test

The Hausman test is performed to identify the superior model between the Fixed Effect Model (FEM) and the Random Effect Model (REM) with the hypothesis criteria being that if the probability value of the X2-statistic for the Hausman test is > α then the model

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selected is REM, whereas if the probability value of the X2-statistic Hausman test < α then the FEM model is selected. The α value used is 0.05 or 5%.

**Table 8.** Hausman Test Results

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 12.070289 | 4 | 0.0168 |

Source: Panel data output using Eviews 12

Table 8 shows that the probability value for X2-statistics is 0.0168 < 0.05, which means H0 is rejected, so the model chosen is the Fixed Effect Model (FEM). The Fixed Effect Model (FEM) was chosen as the best model after going through the Chow test and Hausman test.

**Table 9.** Fixed Effect Model (FEM) Estimation Model

$$MSII_{it} = 1.85E+10 - 293274.2TMSI_{it} + 71151.24TMSIL_{it} - 4970.200W_{it} - 4.59E+08AWH_{it}$$

(0.0075)* (0.0039)* (0.0550)*** (0.6203)

$R^2$ = 0.581668; DW-stat = 0.340809; F-stat = 2.414980; sig. F-stat = 0.000825

**Notes:** *significant at α = 0.01; ** significant at α = 0.05; *** significant at α = 0.10

Source: Panel data output using Eviews 12

**Model Goodness Test**

**F test**

In table 9, the estimation results show that the sig. The F statistic is 0.000825 < 0.05, which means that H0 is rejected, so together the total of IMK, total of labors, wages and average working hours have an effect on micro and small industry income in Central Java Province 2018-2020 period.

**Coefficient of Determination ($R^2$)**

Based on table 9, it shows that the coefficient of determination (R2) is 0.581668, which means that 58% of the variation in micro and small industry income can be explained by variations in the variables total of IMK, total of labors, regency/city minimum wages, and average working hours. Meanwhile, the remaining 42% is explained by other variables not included in the model.

**Partial Significance Test of the Effect of Independent Variables (t-Test)**

**Table 10.** Validity Test Results of the Effect of Independent Variables

| Variable | t-stat. | Sig.t | Criteria ($\alpha$) | Conclusion |
|---|---|---|---|---|
| TMSI | -293274.2 | 0.0075 | < 0.01 | Significant Effect |
| TMSIL | 71151.24 | 0.0039 | < 0.01 | Significant Effect |
| W | -4970.200 | 0.0550 | < 0.1 | Significant Effect |
| AWH | -4.59E+08 | 0.6203 | > 0.1 | No Significant Effect |

Source: Panel data output using Eviews 12

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## Discussion

### The Effect of The Total of IMK Variables on Micro and Small Industry Income

The results of the analysis show that the variable total of IMK has a negative and significant effect on micro and small industry income in Central Java Province during the 2018-2020 period with a sig.t value of 0.0075. In this research, there are new analysis results where the total of micro and small industries in Central Java Province in the 2018-2020 period has increased but industrial income has decreased. This can happen if production costs increase, competition is high, and there are no distinctive characteristics in a product. However, this research is different from the research results Hardana (2018) which suggests that the variable total of IMK has a positive and significant influence on small industry income.

### The Effect of The Total Of Labors Variable on Micro and Small Industry Income

Analysis of the variable total of labors shows a positive and significant influence on micro and small industry income in Central Java Province in the 2018-2020 period with a sig.t value of 0.0039. This is because if labor increases, the production of goods increases and the income of an industry will also increase. This research is in accordance with the research results Nayaka and Kartika (2018) stated that the total of labors has a positive and significant effect on the income of the sanggah industry in Mengwi District. This finding is in accordance with the research results Tungga Dangin and Marhaeni (2019), Jahrani (2019), and Meilinda and Mahmud (2020).

### The Effect of The Wages Variable on Micro and Small Industry Income

The results of the analysis of the wage variable have a negative and significant effect on micro and small industry income in Central Java Province in the 2018-2020 period with a sig.t value of 0.0550. This finding is different from the results of research conducted by Irmayanti et al., (2021) which suggests that wages have a positive and significant influence on the income of Campalagian Silk Mandar MSMEs. In this research, there are new analysis results which show that wages in Central Java Province in the 2018-2020 period increased but income for micro and small industries decreased. This is caused by factors such as increasing labor costs, lack of product innovation, and low unemployment rates.

### The Effect of The Average Working Hours Variable on Micro and Small Industry Income

The results of the analysis of the variable average working hours have no influence on micro and small industry income in Central Java Province in the 2018-2020 period with a sig.t value of 0.6203. This finding is the same as the findings made Warman and Ariusni (2023) which stated that working hours have no effect on IMK income, this is because the average working hours do not have a large enough influence on IMK income. Average working hours can have a big influence if there is an increase in working hours in a micro and small industry.

## CONCLUSION

Below are the conclusions of the test results and discussion of this research. The variables total of macro and small industries and wages have a negative and significant influence. Meanwhile, the variable total of labors has a positive and significant effect on micro and

small industry income. Meanwhile, the variable average working hours has no effect on micro and small industry income in Central Java Province in the 2018-2020 period. The results of the F test conclude that the variables total of IMK, total of labors, wages and average working hours have a significant influence on micro and small industry income in Central Java Province in the 2018-2020 period. There is a correlation between variables with a coefficient of determination (R2) value of 0.581668, which means that the variables total of IMK, total of labors, wages and average working hours have an influence of 58% on micro and small industry income in Central Java Province in the 2018-2020 period and the rest 42% is influenced by other variables.

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