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DETERMINANTS OF MANUFACTURING INDUSTRY LABOR PRODUCTIVITY IN INDONESIA (CASE STUDY OF 2018-2022)

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ABSTRAK

Indonesia sebagai negara berkembang mengutamakan keberhasilan pembangunan ekonomi dengan memanfaatkan sektor manufaktur untuk meningkatkan PDB. Salah satu indikator yang digunakan untuk mengukur tingkat keberhasilan adalah produktivitas, yang erat kaitanya dengan industri manufaktur.. Studi ini mencakup 34 provinsi di Indonesia dengan tujuannya adalah untuk mengevaluasi faktor-faktor yang mempengaruhi produktivitas tenaga kerja dalam industri manufaktur selama periode 2018–2022. Data yang dikumpulkan melalui situs web resmi Badan Pusat Statistika diproses dengan regresi data panel menggunakan Stata 14 serta menggunakan model Seemingly Unrelated Regression (SUR). Hasil penelitian menunjukkan bahwa upah minimum dan variabel Indeks Pembangunan Manusia (IPM) berpengaruh terhadap produktivitas tenaga kerja dalam industri manufaktur di Indonesia. Sementara itu, angka harapan hidup dan pendidikan tidak berpengaruh terhadap produktivitas tenaga kerja. industri manufaktur.

ABSTRACT

Indonesia as a developing country prioritizes the success of economic development by utilizing the manufacturing sector to increase GDP. One of the indicators used to measure the level of success is productivity, which is closely related to the manufacturing industry. This study covers 34 provinces in Indonesia with the objective being to evaluate the factors affecting labor productivity in the manufacturing industry over the period 2018-2022. Data collected through the official website of the Central Bureau of Statistics was processed with panel data regression using Stata 14 as well as using the Seemingly Unrelated Regression (SUR) model. The results show that minimum wage and Human Development Index (HDI) variables affect labor productivity in the manufacturing industry in Indonesia. Meanwhile, life expectancy and education have no effect on labor productivity in the manufacturing industry.

INTRODUCTION

The structural transformation experienced by Indonesia has led to a change in the structure of the economy from an agrarian-based economy to an industrial-based economy. The industrial sector is an option taken by the government to be able to

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compete with other countries' competition and contribute to the national economy. The industrial sector has a high value because of its difficulty in processing raw goods to make goods with high yields. One of the economic development structural transformations experienced by Indonesia led to a change in the structure of the economy from an agrarian-based economy to an industrial-based economy.

The industrial sector is an option taken by the government to be able to compete with other countries' competition and contribute to the national economy. The industrial sector has a high value because of its difficulty in processing raw goods to make goods with high yields. The process of industrialization can be interpreted as a business process to expand the scope of human economic activities that can provide high added value produced by economic activities, indicating that this process leads to the creation of many new and wider employment opportunities and creates new labor productivity(Febriani & Satrianto, 2022).

One of the economic developments carried out by the Indonesian government is to strengthen the improvement of the manufacturing industry, both in the processing industry sector and small-scale industries. The contribution of the manufacturing sector continues to increase. It was noted that throughout 2022 the manufacturing industry sector occupied an expansionary level as seen from the achievement of the purchasing managers index (PMI) which was at a value of 50.9 (Ministry of Finance, 2023). In 2021, the manufacturing industry sector contributed IDR 2,946.9 trillion to the Gross Domestic Product (GDP), an increase of IDR 2,760.43 trillion from the previous year (Ministry of Industry, 2021).

To strengthen the manufacturing industry so that it can again support Indonesia's economic growth, immediate steps are needed to be able to achieve improved performance through increased competitiveness. Labor with its productivity can be one that increases the ability to be competitive, indicators of measuring progress in achieving the Sustainable Development Goals (SDGs) using labor productivity (Fadillah et al., 2020). The calculation of the ratio between the production of work results (output) and all existing inputs such as the amount of labor in carrying out a job is said to be labor productivity (Atifudin et al., 2016).

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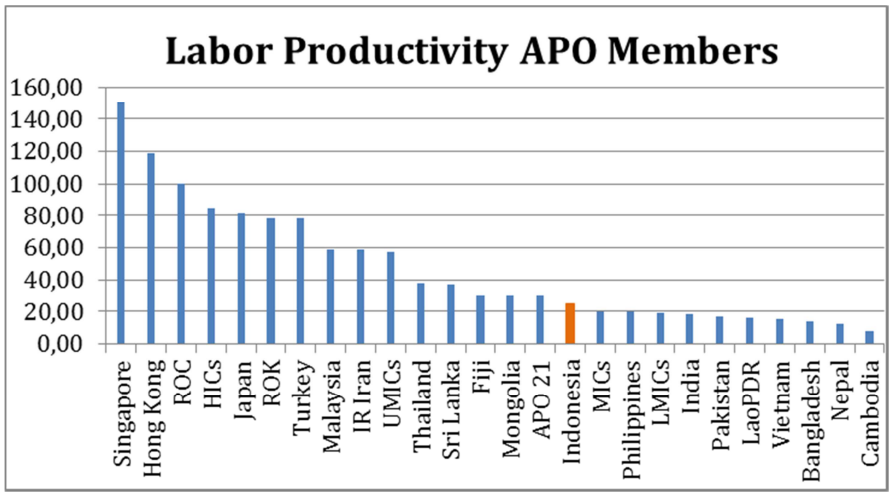
Low labor productivity will affect the quality of a company so that it is difficult to keep up with broad market competition.

Gambar 1. 1 Produktivitas Tenaga Kerja APO Tahun 2018



Sumber : *APO Productivity Outlook 2022*

From the Asian Productivity Organization (APO, 2021) data in 2018 which displays the results of measuring the productivity of 20 countries that joined, Indonesia has low labor productivity, is at the 11th level of APO members consisting of 20 countries and is at a low level on average (APO, 2022). To create a competent and competitive workforce, it is necessary to increase the quality of labor productivity, particularly in the manufacturing sector. Increased work productivity will have a positive influence on the level of production which will also increase. This will make a company able to meet all requests and production targets well, so that the company's goal of increasing revenue and labor productivity will be achieved. This study's goal is to ascertain how independent variables such as HDI, education, minimum wage, and life expectancy affect worker productivity in Indonesia's manufacturing sector over a five-year period (2018-2022).

LITERATURE REVIEW

Research conducted (Sari & Oktora, 2021) analysis of the factors affecting the labor productivity of the big and medium manufacturing sectors in the provinces of Banten, DKI Jakarta, West Java, Central Java, and East Java on the island of Java. The findings of this study, which employed a quantitative descriptive approach with panel data regression, demonstrate that the variables of human development index,

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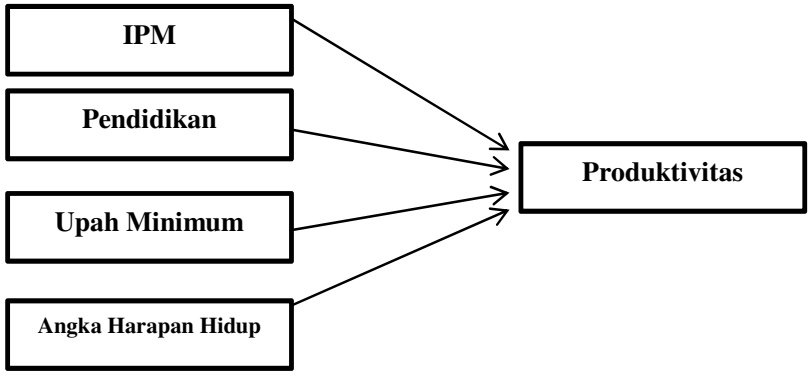
real wages, and vehicle pmtb have a significant impact while the variable of machine The labor productivity of the major and medium manufacturing sectors on Java Island is unaffected by PMTB machine. Research by (Chairunnisa & Juliannisa, 2022) on the effect of education, health, age and wages on labor productivity in DKI Jakarta. The research, which focuses on DKI Jakarta Province, uses time series analysis with 30 secondary data obtained from the BPS website. According to the study's findings, labor productivity in the DKI Jakarta Province is positively impacted by pay and age, but not by education or health.

Productivity itself is closely related to production theory with production defined as the stage of converting raw materials (input) into products (output). In other words, production is the process of combining various inputs to produce an output that will have added value. The production function equation, without considering product prices and production factors, shows the relationship between the number of production factors used and the number of products made in a unit of time is a production function (Zahara, 2021).

Gambar 1. 2 Framework Of Thingking



Based on the framework above, the hypotheses in this study are:

H1: HDI affects the labor productivity of the manufacturing industry in Indonesia.

H2 : Education affects the labor productivity of the manufacturing industry in Indonesia.

H3 : Minimum wage affects the labor productivity of the manufacturing industry in Indonesia.

H4 : Life Expectancy affects the labor productivity of the manufacturing industry in Indonesia.

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METHODS

A quantitative descriptive approach was used to perform this study, and the results are presented as numeric values. Secondary data were gathered through the website of the BPS for use in this study. In the study, panel data regression was employed with cross-section data from 34 Indonesian provinces and time series data that covered a period of 5 years (2018-2022). The following is the operational definition of the variables used: first,labor productivity is productivity is the ratio between input and output of goods and services. This variable uses an indicator of manufacturing industry wages divided by working hours of manufacturing industry workers in Indonesia. Second, HDI is a measure of human achievement measured in terms of education, economy and health.

Third, education is the process of changing one's attitude through learning. Education in this study uses the percentage of education graduation rates with 12 years of compulsory education. Fourth, In exchange for the creation of goods and services in the company's business or work environment, employers must pay their employees a minimum wage, which is a standard obligation set by the government. Fifth, Life Expectancy is a measure of how long people expect to live and how long they will live on average when they are born. It indicates the general level of public health.

The model used in this research is Seemingly Unrelated Regression (SUR) which is another model of linear regression, consisting of regression equations that are correlated with data on independent and dependent variables (Baltagi, 2014). The SUR model was first introduced in 1962 by Arnold Zellner. The equation used in the SUR model:

$$Y_{it} = \beta_0 + \beta_{11}X_{11,t} + \ldots + \beta_{1K1}X_{1K1,t} + \varepsilon_{1t}$$

$$Y_{2t} = \beta_{20} + \beta_{21}X_{11,t} + \ldots + \beta_{2K2}X_{2K2,t} + \varepsilon_{2t}$$

$$Y_{Gt} = \beta_{G0} + \beta_{G1}X_{G1,t} + \ldots + \beta_{GKG}X_{GKG,t} + \varepsilon_{Gt}$$

Description:

t = 1,2,3…n.

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RESULTS

The determination of SUR as a model in this study is due to the problem of classical assumptions on the data used in the study. The advantages of using the SUR model are a higher level of efficiency and parameter estimation is carried out jointly.

Table 1.1 Hasil Estimasi SUR

Variabel	Coef.	Std.Error	Z	p>|z|
Human Development Index (HDI)	0.0330325	0.0139574	2.37	0.018
Education	-0.0170376	0.0054051	-3.15	0.002
Minimum Wage	0.9680759	0.2289896	4.23	0.000
Life Expectancy Rate	0.0315731	0.0199196	1.59	0.113

Source : Data processed using stata 14

1. Human Development Index

   The probability value of the HDI variable is 0.018 which means the value is below alpha (0.05), with the value of the t table obtained using the formula Df = NK = the results obtained are 170-5 = 165, namely 1.65414, with the meaning that H0 is rejected and H1 is accepted. where the Human Development Index (HDI) has a significant effect on the labor productivity of the manufacturing industry in Indonesia. Then from the results of the human development index coefficient value has a value of 0.0330325 percent, which means that if the human development index variable increases by 1%, it will increase the productivity of manufacturing industry workers in Indonesia by 0.0330325%. This is in accordance with the hypothesis of previous research conducted (Sari & Oktora, 2021) that HDI has a significant effect on labor productivity.

2. Education

   The probability value of Education variable is 0.002 which means the value is below alpha (0.05), with the value of t table obtained by using the formula Df = NK = the result obtained is 170-5 = 165 which is 1.65414. Therefore, the hypothesis rejects H1 and accepts H0, where the education variable has no effect on labor productivity in the manufacturing industry in Indonesia. However, the coefficient result on the education variable shows a number of -

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0.0170376 percent, which means that an increase in the education variable will not affect the productivity of manufacturing industry workers in Indonesia. So the results obtained are not in accordance with the hypothesis that education affects labor productivity. The results obtained are in line with research (Chairunnisa & Juliannisa, 2022) that the level of education has no effect on labor productivity.

3. Minimum Wage

   The probability value of the HDI variable is 0.000 which means the value is below alpha (0.05), with the t table value obtained by the formula Df = NK = which is the result 170-5 = 165 which is equal to 1.65414. With these results, the hypothesis accepts H1 and rejects H0, which means that the provincial minimum wage has a significant effect on the labor productivity of the manufacturing industry in Indonesia. The coefficient of the provincial minimum wage variable result is 0.9680759, which means that every increase in the provincial minimum wage of 1 thousand rupiah will increase the productivity of the manufacturing industry in Indonesia by 0.9680759%. This fits with the research (Fadillah et al., 2020) which claims that the impact of provincial minimum wages on labor productivity is both favorable and considerable positive. The existence of the influence of the level of wages that affect labor productivity, any increase in wage levels automatically also increases labor productivity.

4. Life Expentacy

   The probability value of the HDI variable is 0.113 which means the value is below alpha (0.05), with the t table value obtained using the formula Df = NK = the result obtained is 170-5 = 165 which is 1.65414 which means accepting H0 and rejecting H1, where the workforce productivity of Indonesia's industrial industry is unaffected by life expectancy. The coefficient value of 0.0315731 indicates that life expectancy has no significant effect on labor productivity in the Indonesian manufacturing industry. This is not in line with the hypothesis that life expectancy affects labor productivity. Research conducted (Adnan, 2022) health explained by the variable life expectancy has no significant effect on labor productivity in Aceh Province in 2010-2020.

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CONCLUSION AND SUGGESTION

Based on the results of the analysis and discussion that has been carried out, it can be concluded that the Seemingly Unrelated Regression (SUR) panel regression model is the most suitable model for this study. The conclusion is clarified in the study by using independent variables.

1. The Human Development Index (HDI) variable has a positive impact on labor productivity, demonstrating the effectiveness of enhancing Indonesian society's human resources.
2. Labor productivity is negatively influenced by the education variable. this is because if a person is not balanced by training his soft skills, then a high level of education will not guarantee the person's ability.
3. Minimum Wage Variable has a positive influence on labor productivity, this is because wages are still an important factor in influencing labor productivity. Wages have a real effect in influencing productivity, the level of wages provided by the company will increase labor motivation to increase productivity.
4. Life Expectancy Variables have no effect on labor productivity, Technology that is growing rapidly encourages humans to work assisted by sophisticated machine power to save time and be more efficient. For this reason, health is not the main factor that supports the increase in labor productivity in the manufacturing industry in Indonesia.

Based on the findings in the previous discussion, the suggestions that can be given are :

1. Labor productivity is important because it has a good effect in helping to improve the economy in Indonesia. The role of the government is needed in providing related policies to be able to continue to support in increasing the productivity of the manufacturing industry sector which is one of the major GDP contributors for Indonesia.
2. Human resource management is expected to continue to be improved through training programs and field practice to be able to help increase labor productivity.

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3. There are shortcomings and limitations in this study, it is hoped that further research can use other models and other variables, so that the analysis of labor productivity can be more extensive.

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