Factors Affecting Wage in Indonesia Manufacturing Sector

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ABSTRAK

The mincer earnings function is the cornerstone of a large literature in empirical economics, which wage is a function of educational attainment and experience. This study aim to analyze the factors that affect the wage in Indonesian manufacturing sector. The study estimates are based on Mincerian wage equation by using multiple linear regression with a large cross-section data of Indonesian Family Live Survey (IFLS) wave 5 with 1.175 the number of observations. The result suggest that education and experience are positively correlated with the earnings. And social factors such as, age and area of living also affect on earnings significantly. Other social factor which is health status has an insignificant on earnings.

Keywords: Wage, Educational Attainment, Experience

INTRODUCTION

Economic development is the process of fusion between population growth and technological advancement. In this case, Todaro & Smith (2012) defined development as multidimensional process involving major changes in

the structure of social attitudes, institutional national and the acceleration of economic growth, the reduction and elimination of poverty uneven absolute. Hence economic development is the effort to improve the standard of living of a nation that is often measured by real per-capita income low high.

The word education has no fixed essential meaning. It is a complex, evolving, and shaped by the norms prevailing at a given time and in a given place. Mankiw et al (1992) argued that education is an investment in human capital-the accumulation of investment in people such as education and on-the-job training.

In particular, when people have higher educational attainment, the quality of productivity will be better. While there is an increment of productivity, the economic growth will be increased as well, which then improve the economy in General (national), and the welfare of the nation. Since education has an important role in economic development in creating qualified human capital, therefore, investment in human capital (education) is paramount.

In terms of individual, education is a basic needs of everyone. Generally, many people attend to enter education to gain skills and knowledge which are used later when they involve in the labor market. It is obvious that a good education will give people more hope on better future income. This microeconomic reason has been proven scientifically by many scholars and has strong evidence that both education and earnings are positively correlated. For instance, Mincer (1974) argued that educational attainment has a strong

positive correlation on earnings. Moreover, Becker (1962) argued that in order to increase earnings, labor needs to increase their educational attainment.

In Indonesia, it is compulsory that people must have at least 12 years of education. The cost of education will be provided by the government, especially for those who are poor or having financial difficulty. This program aims to improve the quality of human capital so that may increase their productivity and improve the chance to receive a better job and wage later in the labor market.

Improving quality of human resources can be done by human capital investment, because it is expected that human resources can increase the productivity. Human capital will rise with a process of investment activities in education, formal and non formal. Education is a process of investment activities that increases expertise (investment in human capital). According to Becker (1975) labor production power has a positive relationship with the level of education and training. The higher the level of education and training possessed by someone, the more productive the individual.

In addition, Thomas (1996) argues by using the Mincerian Equation model for finding out the investments in education and increased work experience. He also stated that education, work experience, work hours per week, age and area of living give positive impact on wages.

Based on the above description of the background, then the formulation of the problems in this study are:

1. How does years of education affect wage in Indonesian manufacturing

sector?

2. How does work experiences affect wage in Indonesian manufacturing sector?

3. How do social factors such as age, area of living and also health status affect wage in Indonesian manufacturing sector?

LITERATURE REVIEW

Wage

According to BPS (2015), wages are rewards received in the form of money or goods, which are paid company/office/employer. Rewards in kind are valued at local prices. Wage in theoretical economics is the results received, both in the form of money and other uses wealth (human services). He also explained that income is the result of the sale of the factors of production that it has to the production sector (Ridwan, 2000).

Human Capital

Human capital is an economist's term for knowledge and expertise acquired by workers through education, training and experience. Human capital increases a country's ability to produce goods and services (Mankiw, 2003). According to Todaro and Smith (2011), human capital is a productive investment in people that includes knowledge, skills, abilities, ideas, health and location often resulting from spending in education, training programs in employment, and health care. The formation of human capital is the

process of obtaining and increasing the number of people who have expertise, education and decisive experience of the economic and political development of a country.

Mincerian Model

Earnings is the cornerstone of empirical economics. It is the framework used to estimate the returns to schooling, returns to schooling quality, and to measure the impact of work experience of male-female wage gaps. It is the basis for economic studies of education in developing countries and has been estimated using data from a variety of countries and time periods. Recent studies in economic growth use the Mincer model to analyze the relationship between growth and average schooling levels across countries (Mincer, 1974).

In one equation, Mincer's framework captures two distinct economic concepts: (a) a pricing equation or hedonic wage function revealing how the labor market rewards productive attributes like schooling and work experience and (b) the rate of return to schooling which can be compared with the interest rate to determine optimality of human capital investments.

Education

According to Law Number 20 of 2003, education is a business conscious and planned to realize the learning atmosphere and learning process so that students actively develop their potential to have religious, spiritual strength, self-control, personality, intelligence,

noble character, and skills needed by themselves, society, nation and country.

Experience

Experience is an event that has been experienced (lived, felt, borne etc.) either long or just happened. Experience can be the most important of the experience is the lessons or lessons to be learned. Experience also the process of getting knowledge or skill from doing, seeing, or feeling things. In the Indonesian dictionary (1993) experience is interpreted: (n) ever experienced (lived, felt, and borne, and so on). Various experiences can happen to everyone, funny, moving, sad, exciting, and proud experience. According to Roth, Wolff Michael & Jornet (2014) stated that experience is one of the most used terms in (science) education, and it is recognized as being related to learning (education). Yet what experience is and how it is related to learning and change remains untheorized.

Age

In the studio demographics are calculated according to the las recurring period. The age structure of the population, according to WHO is divided into three major groups, namely :

1) Young people, namely residents under the age of 15 years or age group 0-14 years.

2) Productive age population, namely residents aged 15-59 years.

3) Elderly population, namely residents aged 60 years and over.

Health Status

In 1948 World Health Organization (WHO) defined health as "a state of complete physical, mental and social well-being, and not merely the absence of disease". Health can be considered in terms of a person's body structure and function and the presence or absence of disease or signs **(health status)** their symptoms and what they can and cannot do i.e. the extent to which the condition affects the person's normal life **(quality of life)**.
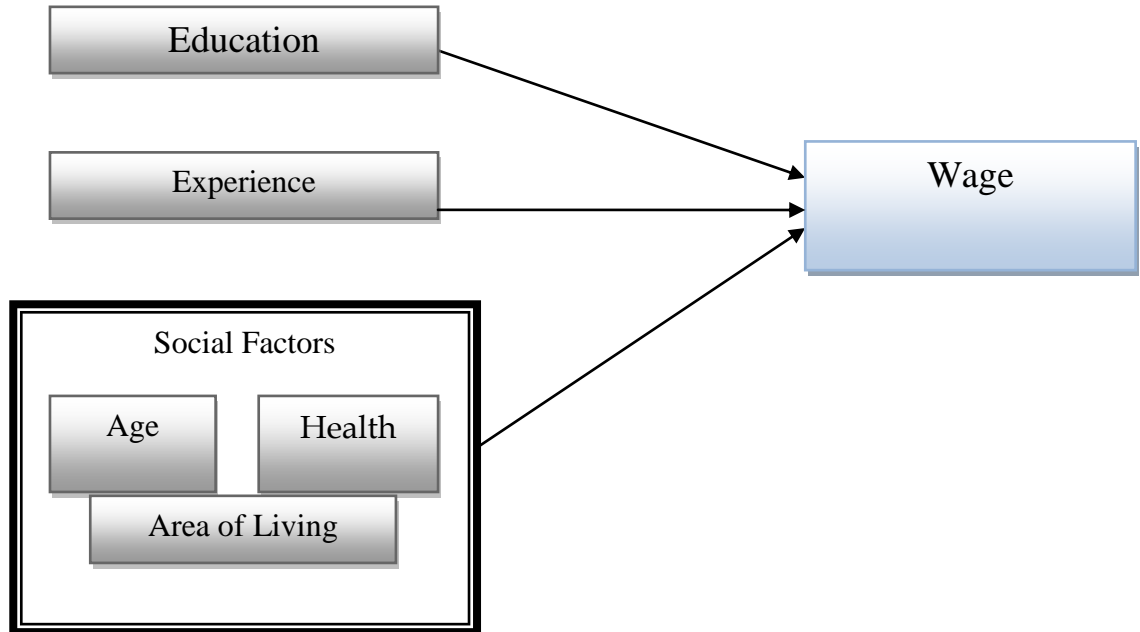
In general, health is a person's feeling prosperous physically, mentally and socially, which enables the person to live a productive life both socially and economically. This definition is the same as the definition from WHO (1947).

Area of Living

According to civil law article 17 of domicle or area of living of is where a person considered to be always present doing his rights and fulfilling its obligations, even though he resides elsewhere. According to the book of the law of civil law, the residence was often being his home, sometimes his city. Therefore any person is deemed always to have had a place to live where he did his daily activities or where he live staple. Meanwhile based in the large Indonesian dictionary area of living is is a legitimate place of residence of the person or official residence.

Theoritical Framework

Figure 2. 1 Theoretical Framework

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┌─────────────────────────┐
│        Education        │──────────┐
└─────────────────────────┘          │
                                      │    ┌──────────────────────┐
┌─────────────────────────┐          │    │                      │
│       Experience        │──────────┼───▶│        Wage          │
└─────────────────────────┘          │    │                      │
                                      │    └──────────────────────┘
┏━━━━━━━━━━━━━━━━━━━━━━━━━━┓          │
┃      Social Factors      ┃          │
┃                          ┃──────────┘
┃ ┌──────┐   ┌──────────┐  ┃
┃ │ Age  │   │  Health  │  ┃
┃ └──────┘   └──────────┘  ┃
┃   ┌──────────────────┐   ┃
┃   │  Area of Living  │   ┃
┃   └──────────────────┘   ┃
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Hypothesis

Based on the objectives, problem statements, and background of this study, the hypotheses are stated as follows:

1. H1: Expected education has a positive impact on wage in the manufacturing sector.

2. H2 : Expected experience has a positive impact on wage in the manufacturing sector.

3. H3 : Expected age has a positive impact on wage in the manufacturing sector.

4. H4 : Expected health status has positive impact on wage in manufacturing sector.

5. H5 : Expected area of livng has positive impact on wage in manufacturing sector.

RESEARCH METHODOLOGY

In this study, used the data from the Indonesia Family Live Survey (IFLS) that have been surveyed by RAND in Indonesia was conducted in 24 provinces with the total observation of 1175 in the form of cross-section data. The research method used the documentation technique from which the study used data from the Indonesia Family Live Survey (IFLS) which was related to the research topic by performing direct cross-section data on IFLS-5. The use of a regression model analysis requires an assumption test to investigate the effect of one variable on other variables. The required assumptions included the normality test, heteroscedasticity, and no multicollinearity This study used multiple linear regression technique, which connecting between variables by including the element of causality. The model in the regression adopts The Mincerian model. The research variables equations as follows :

$$\beta \ln W_i = \beta_0 + \beta_1 Edu_i + \beta_2 Exp_i + \beta_3 Age_i + \beta_4 Healthstatus_i + \beta_5 Areaofliving + \varepsilon_i$$

Known :

W_i	= individual wage $_i$
Edu_i	= individual school year $_i$
Exp_i	= individual work experience $_i$
Age_i	= individual of age
Healthstatus	= indiviual health status (unhealthy = 0, healthy = 1)

Areaofliving = individual area of living (rural = 0, urban = 1)

ε_i = error term

In this case of study school year replaced to a level of education other than that independent variables namely age, health status, and area of living. So the equations model as follows:

$$\ln Y_{it} = \beta_0 + \beta_1 Es_{it} + \beta_2 JHS_{it} + \beta_3 SHS_{it} + \beta_4 Diploma_{it} + \beta_5 Univ_{it} +$$

$$\beta_6 Exp_{it} + \beta_7 Age_{it} + \beta_8 Health\ Status_{it} + \beta_9 Area\ of\ Living_{it} + \varepsilon_i$$

LnY = log a wage in manufacturing sector

Es = a level of education Elementary School (ES=1, other = 0)

JHS = a level of education Junior High School (JHS = 1, other =0)

SHS = a level of education Senior High School (SHS = 1, other = 0)

Diploma = a level of education Diploma (Diploma = 1, other = 0)

Univ = a level of education University (University = 1, other = 0)

Exp = work experience in proxy with the age minus a year of school minus year of t

Age = Age in one year

Health Status = Health status (healthy = 1, unhealty = 0)

Area of Living   = area of living (urban = 1, rural =0)

ε_i = error term

B   = regression coefficient

REVIEW AND DISCUSSION

Table 4. 1
Descriptive Statistic

Variable	Mean	Minimum	Maximum	Std.dev	Observation
Wage	2201346	2500	32.000.000	2063121	1175
Educ	10.03234	0	18	3.272514	1175
Experience	3.125957	0	12.83333	3.222064	1175
Age	32.7617	15	72	9.406823	1175
Health Status	.8391489	0	1	.36755	1175
Area of Living	.7770213	0	1	.4164214	1175

Source: Data Processed

From the table descriptive statistic above can be explainded as follows :

Wage

The wage in manufacturing sector in 1175 samples which has the average Rp 2.201.300,00 with the minimum wage of Rp 2.500 and the maximum wage Rp 32.000.000. The amount of inequality wage can be seen from the standard deviation value of Rp 2.063.100,00.

Table 4. 2
Frequency of wage in manufacturing sector

Wage	Frequency	Percent
< Rp 500.000	91	7.74
Rp 500.000 - Rp 1.500.000	334	28.43
Rp 1.500.000 - Rp 2.500.000	362	30.81
Rp 2.500.000 - Rp 3.500.000	235	20
Rp 3.500.000 - 4.500.000	72	6.13
> Rp 4.500.000	81	6.89
Total	1175	100.00

Source: Data Processed

Education

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Table 4. 3
Educational Attainment

Level of education	Frequency	Percent
No School	9	0.77
Elementary School	238	20.26
Junior High School	256	21.79
Senior High School	585	49.79
Diploma	41	3.49
University	46	3.91
Total	1175	100.00

</div>

Source: Data Processed

Table 4.3 describes the level of education earned by individuals in IFLS-5 household's data. from 1175 total observation overall has completed senior high school which has 585 people or 49.79 percent, the smaller percentage that has no school only 9 people or 0.77 percent, 238 people or 20.26 percent has completed elementary school, 256 people or 21.79 percent has completed junior high school and then 41 people or 3.49 percent has completed diploma while 46 people or 3.91 percent has graduated from university.

Experience

Based on table 4.1 Experience with the total observation 1175 has the average 3.125957, the minimum value is 0, the maximum is 12.83333 and the standard deviation is 3.222064. Table 4.4 bellow describe the frequency of experience in manufacturing sector.

Table 4. 4
Experience Data

Experience	Frequency	Percent
> 3 years	714	60.77
< 3 years	461	39.23
Total	1175	100.00

Source: Data Processed

Age

Table 4.1 tells the variable age with 1175 observation with the average 32 years, the lowest age is 15 years and the highest is 72 years. Table 4.5 describe the frequency of age.

Table 4. 5
Age data

Age	Frequency	Percent
<= 25 Years Old	304	25.87
26 - 30 Years Old	448	38.13
36-50 Years Old	368	31.32
> 50 Years Old	55	4.68
Total	1175	100.00

Source: Data Processed

Health Status

Table 4.1 describes the variable of health status with the total observation 1175 people with the average .8391489, the minimum is 0 which means unhealthy and the maximum is 1 which means healthy. Table 4.6 below will tell the frequency of health status.

Table 4. 6
Health Status Data

Health Status	Frequency	Percent
Unhealthy	189	16.09
Healthy	986	83.91
Total	1175	100.00

Source : Data Processed

Area of Living

Based on table 4.1 explain the variable area of living with total observation 1175 has average .7770213, with the minimum value is 0 which means rural area and the maximum is 1 which means urban area. Table 4.7 explains the frequency area of living.

Table 4. 7
Area of Living Data

Area of Living	Frequency	Percent
Rural	262	22.30
Urban	913	77.70
Total	1175	100.00

Source : Data Processed

Normality Test

Table 4. 8
Normality Test

Variable	Obs	W	V	Z	Prob>z
R	1175	0.91747	60.290	10.217	0.00000
Wage	1175	0.61610	280.450	14.049	0.00000
Education	1175	0.97505	18.228	7.236	0.00000
Experience	1175	0.84701	111.763	11.756	0.00000
Age	1175	0.97324	19.551	74.111	0.00000
health status	1175	0.99375	4.562	3.783	0.00008
area of living	1175	0.99675	2.375	2.156	0.01554

Source: Data Processed

The table shows that all of variable is normal or not distributed. Gujarati (2009) said if the normality test is dominant, not normal, then the assumption that can be used is the Central Limit Theorem assumption.

Heteroscedasticity Test

The test of heteroscedasticity on this research data by Breusch-Pagan test Cook and Weisberg (1983) shows the data does not have heteroscedasticity.

Table 4. 9
Heteroscedasticity

chi2 (5)	80.09
Prob > chi2	0.0000

Multicolinearity Test

The test of multicolinearity on this research aims to determine the existence linear relationship between independent variable in the regression model. Multicolinearity test in this study can be seen from the value of *Tolarance or Variance Inflation Factor* (VIF).

Table 4. 10
Multicolinearity

Variable	VIF	1/VIF
Education	1.14	0.873810
Age	1.11	0.903849
AreaofLiving	1.03	0.975129
Experience	1.02	0.979783
Healthstatus	1.01	0.986290
Mean VIF	1.06	

The table shows the VIF < 10, it means the regression is free from the problem of multicollinearity.

Linear Regression Analysis

Table 4. 11
Linear regresion

Variable	Coefficient	Robust Std. Error	Prob
C	1.259.989	.1548869	0.000
Education	.1132031	.0081739	0.000
Experience	.0248869	.0066843	0.000
Age	.0091346	.0026535	0.001
Health Status	.0145506	.0623789	0.816
Area of Living	.2262575	.0650141	0.001
R²	0.2081		
N	1175		
F-hitung	52.56		

Source: Data Processed by Stata

Based on the table above is the result of processing data that use linear regression using data IFLS-5 with the total observation 1175. As the results show that not all variable is significant with the probability value is < 0,005. Therefore, the wage in manufacturing sector is influenced by educational attainment, experience, age and area of living, while health status has probability > 0,05 which means the variable health status does not give impact to the wage.

The impact education on wages

The impact educational attainment on wages based on analysis result show the variable education has a positive and significant correlation with wage with the level of probability 0.000 or on the level of significant at 1%. Therefore, and additional year of schooling in 1 year will increase earnings as much 0,1132031%.

On the variable education, it has been proven that the education variable has an impact on wage. This study is also in line with research conducted by Kedir (2008) found that education has a positive relationship with wage in Ethiopia.

The impact experience on wages

As a presented in the result, show the variable experience has a positive and significant correlation with wage with the level of probability 0.000 or on the level of significant at 1%. Those results explain employee who has work experience more than 1 year will increase earnings by 0,0248869%. Experience variable generates the same result as studies conducted by Newell and Socha (2007) found the relationship between the experience on wage determination in Poland, using ordinary least squares of Mincerian equations.

The impact age on wages

The impact age on wages based on analysis result show the variable age has a positive and significant correlation on wage with the level of probability 0.001. Therefore, an employee who is older than 1 year will earn wages as much as 0,0248869%. The results of this study are in line with the results of previous studies conducted by Moullet (2001) that variable age has a positive impact on wages.

The impact health status on wages

The impact health status on wages based on analysis result shows the variable health status has no statiscally impact on wages. Level of probability 00.816 or on the level of insignificant. Furthermore, Matthew

et al, (2010) analyze the impact health status on wages by using mincerian model regssion has small negative effect on wages.

The impact area of living on wages

The impact area of living on wages based on analysis result shows the variable age has a positive and significant correlation on wage with the level of probability 0.001. This study also in line with research conducted by Novita (2016) that variable area of living or domicle has positive impact on wages.

CONCLUSION AND RECOMENDATION

1. This study provides an empirical study that wage in manufacturing setor in Indonesia was influenced education, experience, age, and area of living. Nevertheless, the health status variable has a negative effect on wages. Meanwhile, the variables of education, experience, age and area of living have a positive impact on wages.

2. The result of estimation shows all the coefficient of educational attainment has positive and significant on wages. Which means a higher education that is completed will increasing earnings.

3. Experience has a positive and siginificant impact on wages, people who have 1 year experience will increase earnings as much as 2%. This is likely because experience greatly to wage level, in addition the longer experience will earn higher wage.

4. Age has a positive and siginificant impact on wages, the employee who is older than 1 year they will earn higher wage as much as 1%. Age is important control to include because people who older, generally have more experience and therefore tend to earn higher wages, the younger individual has less experience than older ones.

5. Health status has no correlation on wages because the probability value is >0,05% which means, the variable health status does not give impact on wage. Using individual's wages as an indicator of productivity leads to results that are likely to understate the effects of health status on productivity. It is

likely that individuals' wages do not adjust fully to changes in their health status, and that some of the reduction in labor productivity caused by illness is borne by firms and co-workers, or collectively by society. This would suggest that the reductions in productivity arising from health conditions are understated.

6. Area of living has a positive impact on wages, thus employee who live in urban earn a higher wage as much as 22% rather than who live in rural area.

Recomendation

1. In order to increase educational attainment, in this study, the level of education has significant impact on wage in manufacturing sector. Therefore, government should increase society awareness about how important education. On the other hand, to make the labor force get a bigger oppurtunity to increase the welfare and standard living through increasing earnings.

2. Most of employee lives in urban area and only 22% live in rural area, this is something that must be considered due to reduce disparate economic activities in urban and rural. It should improve the facilities and infrastructure from rural to urban. And to improve the quality of education of villagers. It is hoped to be solution to overcome difference wage between urban and rural area.

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