Analysis of Factors That Influence Health Insurance Ownership in West Nusa Tenggara Province

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Abstract- ***The number of The National Health Insurance Program (JKN) participants continued to increase from 2014 to 2019, but the National Health Insurance (NHI) target for increasing JKN membership or ownership has not been achieved. Then from 2019 to 2020 there was a decline in JKN participant participation. Thus, this research focuses on the factors that influence ownership of Health Insurance in West Nusa Tenggara Province. This could lead by the factors that influence. The influence factors could be are the number of poor people, the sex ratio, the average net income of informal workers, the number of working people over 15 years, the number of disease cases, and the number of marriages. Lots of the factors that can influence ownership of this health insurance it is important to recognize the level of significance. Because the government will easily trace community groups that need to be prioritized and appeal to the importance of having health insurance, especially for those living in West Nusa Tenggara (NTB), which can be guaranteed and controlled. To find out the influence. These factors on the ownership of health insurance were analyzed by panel data. From this analysis, it was found that the independent variables that have a significant effect on ownership of health insurance in NTB Province are the number of poor people and the sex ratio. Meanwhile, the independent variables that did not have a significant effect were the average monthly net income of informal workers, the number of working people, the number of disease cases, and the number of marriages that occurred.***

Indexed Terms- ***Health Insurance Ownership, Panel Data Analysis.***

I. INTRODUCTION

The National Health Insurance Program (JKN) is a program by the government that provides guaranteed financial protection to the Indonesian population in meeting their basic health needs. JKN uses a form of social insurance mechanism, where the mechanism provides comprehensive health benefit coverage. During the development of the national health insurance program, several problems emerged, that related to participation. The number of JKN participants continued to increase from 2014 to 2019, but the National Health Insurance (NHI) target for increasing JKN membership or ownership has not been achieved. Then from 2019 to 2020 there was a decline in JKN participant participation. Thus, this research focuses on the factors that influence ownership of Health Insurance in West Nusa Tenggara Province (Maryanto et al, 2023). The influence factors could be are the number of poor people, the sex ratio, the average net income of informal workers, the number of working people over 15 years, the number of disease cases, and the number of marriages.

Low economic rates can make people consider taking part in insurance as health insurance. Thus, the poverty rate is a factor that can be linked to the ownership of health insurance. The factors that are based on the sex ratio can related to ownership of health insurance because of awareness of the importance of health insurance is different for each gender. The factors based on the average net income of informal workers can be related to the population having health insurance. Because informal workers tend to be not to encouraged have health insurance. Meanwhile, for formal workers, usually, the agency or company where they work encourages their employees to have health insurance to manage risks in the agency or company. The number of workers over 15 years old can also be factored in associated with having health insurance. This is because as a worker it is possible to consider participating in health insurance to prepare for the worst conditions of the body during work. Another factor is the number of

disease cases. This could be related to the discovery of a disease which can make the population tend to need health insurance to be aware of the disease. The number of marriages also related to the ownership of health insurance. This is because married couples can prepare health insurance in preparation for childbirth.

The book of Indonesian Statistics of West Nusa Tenggara Province (BPS) in Figures records the data of ownership of health insurance, poverty rate factors, sex ratio, average net income of informal workers, number of working populations over 15 years, number of disease cases, and number of marriages. These data are recorded systematically over the years. To find out the relationship between each of these factors, it is necessary to carry out *cross-section* data analysis, and because the data is recorded sequentially by year, *time series* data analysis can be carried out. To avoid the large significance of these two analyses, a combination of *cross-section* and *time series* data analysis, or what is called panel data analysis, is used. With this panel data analysis, the influence of the poverty rate, sex ratio, average net income of informal workers, number of working populations over 15 years, number of disease cases, and number of marriages on health insurance ownership will be tested.

It is important to know the level of significance of the many factors that can influence ownership of health insurance. By knowing the factors that influence and do not have a significant influence, the government will easily identify groups of people who need to be prioritized to be advised about the importance of having health insurance. Thus, it is hoped that public health, especially those living in West Nusa Tenggara (NTB) Province, can be guaranteed and controlled.

II. LITERATURE REVIEW

A. The ownership of health insurance

According to Presidential Regulation of the Republic of Indonesia Number 82 of 2018, Health Insurance is a guarantee that protects participants from health care and protection to meet basic health needs for participants who pay health insurance contributions and participants who are paid by the central government or regional administrators [10]. One of the principles of the National Health Insurance (JKN) program is the principle of mandatory participation, that all Indonesian citizens must become JKN participants which are managed by BPJS [12].

During the development of the national health insurance program, several problems emerged, that related to participation. The number of JKN participants continued to increase from 2014 to 2019, but the National Health Insurance (NHI) target for increasing JKN membership or ownership has not been achieved. Then from 2019 to 2020 there was a decline in JKN participant participation. Thus, this research focuses on the factors that influence ownership of Health Insurance in West Nusa Tenggara Province [10].

B. The Relationship between the Number of Low Poverty Rates and Ownership of Health Insurance

People with low poverty rates are those whose average monthly per capita expenditure is below the poverty line. To measure poverty, the Indonesian Statistics (BPS) uses the concept of the ability to meet basic needs. With this approach, poverty is seen as an economic inability to meet basic food and non-food needs (bps.go.id). People with low poverty rates tend to have lower levels of health insurance than non-poor people. This is caused by economic factors that limit the ability of the poor to pay health insurance premiums or to gain access to government health insurance programs.

The results of this research are in line with research conducted by Laksono et al [8] that the availability of health facilities in urban areas does not guarantee high utilization of health services among poor communities in urban areas. This is due to financial limitations which ultimately cause poor people to become poorer. These financial limitations cause poor people to feel unable to pay insurance premiums, so they are reluctant to become health insurance participants.

These studies prove that the number of people with low poverty rates and ownership of health insurance are closely related, with poverty being one of the main factors influencing access to health protection, including ownership of health insurance.

C. The Relationship between Sex Ratio and Health Insurance Ownership

Sex ratio refers to the ratio between the number of men and women in a population. Research conducted

in several developing countries shows that there is a significant inequality between the sexes in the ownership of health insurance. For example, a study conducted in India found that women tend to have more limited access to health insurance than men, which directly affects their access to adequate health services. This is caused by economic inequality, limited access to education, and social norms that influence decisions regarding health access, namely ownership of health insurance [7]. In contrast to the results of research conducted in Canada, the sex ratio influences health insurance ownership. Women tend to have a better scope of health insurance than men, although inequality is still visible, especially in lower socioeconomic groups [4].

D. The Relationship between the Average Monthly Net Income of Informal Workers and Ownership of Health Insurance

Education, jobs, and income have a significant relationship to health insurance awareness. The research results show that high-income people are more aware and want to have health insurance. So that people with high socio-economic levels are more willing and able to register in the health insurance program [14]. The results of research in Satriawan [13] show that a better economic status indicates a better income level, thereby giving a person access to health insurance. Low economic status reflects the fact that the majority of people are not yet aware of the need for contributions for health insurance, and do not even understand what health insurance is about. According to Carrin et al [3], the low income of workers in the informal sector is the main reason for not joining health insurance compared to individuals who have higher incomes.

E. The Relationship between the Number of Working Population and Ownership of Health Insurance

Job is one of the factors related to having health insurance. Work to earn money to meet the needs and welfare. A good level of welfare can help someone get the health services they need [10].

Research in several European countries shows that health insurance systems that depend on employment status can influence the level of health insurance scope. This study highlights that the unemployed population, including the unemployed or informal workers, often have lower levels of health insurance coverage compared to the employed or employed population, depending on the health insurance policy in each country [11]. Research in developing countries shows that the relationship between employment status and ownership of health insurance is also complex, for example a study in Indonesia found that access to health insurance is often limited among informal workers or those working in the informal sector of the economy [16].

These results indicate that employment status has a significant influence on ownership of health insurance, with full-time workers tending to have better access to health insurance compared to those who are unemployed or work in the informal sector.

F. The Relationship between the Number of Disease Cases and Ownership of Health Insurance

Research conducted by Baros [2] shows that there is a significant relationship between health complaints and ownership of Health Insurance. The results of this research show that respondents who have health complaints have a 1,252 times chance of owning health insurance compared to respondents who do not have health complaints. Health complaints are related to the ownership of health insurance and it was found that there were symptoms of an increase in ownership of health insurance in residents who had health complaints who felt disturbed by existing symptoms of illness. This is related to the large number of cases of disease owned, so ownership of health insurance will also increase.

G. The Relationship between Number of Marriages and Ownership of Health Insurance

Based on research in Baros [2], it shows that there is a significant relationship between marital status and ownership of health insurance. Marital status, divorced/dead, has the largest proportion of health insurance compared to those who are married and unmarried. Respondents with married/married status have a 1.684 times chance of owning health insurance compared to respondents with unmarried/unmarried status. Respondents with divorced/divorced status have a 1,750 times chance of owning health insurance compared to respondents with unmarried/unmarried status. This is in line with the results of Littik's [9] research that ownership of health insurance is highest among people who have experienced a divorce and least among people who have never been married. In addition, other research shows that married

individuals tend to have higher levels of health insurance ownership compared to unmarried individuals. Households with a married head of household have a greater chance of owning health insurance compared to households with an unmarried head of household [12].

III. METHODS

A. Panel Data Regression

Panel data regression analysis is a statistical method used to see the influence of several independent variables on one dependent variable with a data structure in the form of panel data. Panel data is a combination of cross section data and time series data. Cross section data is data that consists of several/many objects in the same time period. Time series data is data consisting of one object observed over several time periods.

B. Panel Data Regression Model

The method used in estimating panel data regression models depends on assumptions regarding the intercept, slope coefficient and error [6]. Based on various assumptions and formation factors, panel data regression models are divided into 3, namely Fixed Effect Model, Common Effect Model, and Random Effect Model [5].

1) Fixed Effect Model

This model assumes that the slope coefficient of each variable is fixed/constant, but the intercept varies for each cross section unit. In the fixed effect model, each object is an unknown parameter, so it will be estimated using the Least Square Dummy Variable method.

2) Common Effects Model

This model assumes that the intercept and slope coefficient values for each variable are the same for all cross section and time series units. In this model, all data is combined, both cross section data and time series data, regardless of the time and place of research.

3) Random Effect Model

This model will estimate panel data where error variables may be interconnected over time and between objects. The fixed effect model usually causes problems, one of which is the reduction in the value of the degrees of freedom which results in a reduction in parameter efficiency, so that the random effect model appears which aims to overcome the problems caused by the fixed effect model.

C. Choosing Panel Data Regression Model

There are three tests in panel data regression, namely:

1) Test Chow

The Chow test is used to select one of the models in panel data regression, namely the Fixed Effect Model or Common Effect Model [1].

2) Hausman test

The Hausman test is used to select one of the models in panel data regression, namely the Random Effect Model or Fixed Effect Model. The Hausman test is used to test the relationship between the error in the model and one or more independent variables in the model [1].

3) Breusch-Pagan Test

The Breusch-Pagan test is used to test for the presence of effects of time, object/individual, or both. This test is used to find out whether the Random Effect Model is better than the Common Effect Model. This test is based on the residual value from the Common Effect Model.

D. Sample and Data Collection

The data used in this research is secondary data obtained from the Central Statistics Agency (BPS) of West Nusa Tenggara (NTB) Province. The data used is data for 2018 – 2023 based on districts/cities in NTB Province. The dependent variable in this research is ownership of health insurance (Y), while the independent variables are the number of poor people (X1), sex ratio (X2), average monthly net income of informal workers (X3), number of working people (X4), number of disease cases (X5), and number of marriages (X6).

E. Data Analysis

Data analysis in this research uses panel data regression. Panel data regression isone of the statistical methods used to see the influence of several independent variables on one dependent variable with a data structure in the form of panel data, namely a

combination of cross section data and time series data. The tool used in this research is R studio software.

IV. RESULSTS AND DISCUSSION

A. Chow Test

This test is the first test carried out in panel data regression analysis. In this test, the best model will be obtained which will be used. This model will test whether the Fixed Effect Model (FEM) is better than the Common Effect Model (CEM). The hypotheses used in this test are H0 : CEM better than dari FEM and H1 : FEM better than CEM

Table 1. Chow Test Results

F	df1	df2	p-value	information
9.1314	9	34	7,325 x 10-7	RejectH_0

(Source: Processed data, 2024)

Based on the results from Table 1, it is known that the decision is to reject because of the p-value ($H_0$7.325e-07) <α (0.05). So it can be concluded that the Fixed Effect Model is better than the Common Effect Model.

B. Hausman test

If the decision from the Chow test is reject, then the next step is to carry out the Hausman test. This test compares the Fixed Effect Model (FEM) with the Random Effect Model (REM). The hypotheses used in this test are H0 : FEM better than REM and H1 : REM better than FEM

Table 2. Hausman Test Results

Chisq	df	p-value	information
7.0685	6	0.3146	AcceptH_0

(Source: Processed data, 2024)

Table 2 explains the decisions on this Hausman test accepted H_0 p-value (0.3146) >α (0.05). So it can be concluded that the Random Effect Model is better than the Fixed Effect Model.

C. Breusch-Pagan Test

This test was carried out to determine whether there were individual effects (cross-section), time effects (time), or both effects in the data.

Table 3. Breusch-Pagan Test Results

Variable	Chisq	df	p-value	information
Individual and time effects	23,046	2	9.9x 10-6	RejectH_0
Individual effects	22,951	1	1,662 x 10-6	RejectH_0
Time effect	0.094715	1	0.7583	AcceptH_0

(Source: Processed data, 2024)

Based on test results Breusch Pagan in Table 3 it can be concluded that in the random effects model there is a two-way effect. However, after testing partially for individual effects and time effects, it was found that there was only an individual effect. Thus, the model formed is a random effect model with a one-way effect, namely an individual effect.

D. Panel Data Regression Model

The panel data regression model for this research data is random effects model (REM) with individual effects. The regression equation of the model is as follows:

Y_{it}=84.945-1.0617X_{1it} - 0.49261 X_{2it} + 0.00000033893 X_{3it}- 0.0000093736X_{4it}+ 0.000054055X_{5it} - 0.001231 X_{6it}+μ_i

In REM with individual effects, there will be different values for each individual. So the estimates for the μ_i values for each district/city in West Nusa Tenggara Province are in Table 4 below :

Table 4. Coefficient Values μ_i

Regency /City	μ_i	Regency/City	μ_i
West Lombok	-1.6286657	Bima	0.3042628
central Lombok	-4.2690485	West Sumbawa	-1.8334657

East Lombok	0.7191384	North Lombok	0.5015224
Sumbawa	2.3562736	Mataram City	6.2134543
Dompu	-4.5788703	Bima City	2.2153987

(Source: Processed data, 2024)

The data in Table 4 shows that the largest individual effect value is located in Mataram City, which is equal to6.2134543which means that the individual effect in Mataram City is higher compared to other districts/cities inWest Nusa Tenggara Province. Apart from that, based on the results from Table 4, the model obtained for each district/city is in Table 5 below:

Table 5. Panel Data Regression Model for Each Region

Regency/ City	Model
West Lombok	$Y_{Lombok\ Barat,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} - 1.6286657$
central Lombok	$Y_{Lombok\ Tengah,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} - 4.2690485$
East Lombok	$Y_{Lombok\ Timur,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 0.7191384$
Sumbawa	$Y_{Sumbawa,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 2.3562736$
Dompu	$Y_{Dompu,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} - 4.5788703$
Bima	$Y_{Bima,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 0.3042628$
West Sumbawa	$Y_{Sumbawa,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} - 1.8334657$
North Lombok	$Y_{Lombok\ Utara,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 0.5015224$
Mataram City	$Y_{Kota\ Mataram,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 6.2134543$
Bima City	$Y_{Kota\ Bima,t} = 84.945 - 1.0617\,X_{1it} - 0.49261\,X_{2it} + 0.00000033893\,X_{3it} - 0.0000093736\,X_{4it} + 0.000054055\,X_{5it} - 0.001231\,X_{6it} + 2.2153987$

(Source: Processed data, 2024)

E. Classic assumption test

There are two classical assumption tests carried out on panel data regression, namely the serial correlation or autocorrelation test and the homoscedasticity test. The results of this test can be seen in Table 6 and Table 7 below:

Table 6. Autocorrelation Test Results

Chisq	df	p-value	information
2.9441	5	0.7086	AcceptH_0

(Source: Processed data, 2024)

Based on the results from Table 6, it is known that the decision from this test is accept H_0. This means that there are no symptoms of autocorrelation or serial correlation in the data.

Table 7. Homoscedasticity Test Results

BP	df	p-value	information
10,877	6	0.0922 6	AcceptH_0

(Source: Processed data, 2024)

The decision on the homoscedastic test results in Table 7 is accept H_0. This indicates that there are no symptoms of heteroscedasticity or homoscedasticity in the data.

F. Test Parameters

The parameter test results of the REM model with individual effects can be seen in Table 8 below.

Table 8. Parameter Test Results

Variable	B	Std. Error	p-value	information

				n
Constant	84,945	17,840	0.000001922	Reject H_0
X1	-1.0617	0.26011	0.00004470	Reject H_0
X2	-0.49261	0.16240	0.00242	Reject H_0
X3	0.00000033893	0.0000017346	0.84508	Accept H_0
X4	-0.0000093736	0.0000082177	0.25402	Accept H_0
X5	0.000054055	0.00010045	0.59047	Accept H_0
X6	-0.001231	0.00071136	0.0835	Accept H_0
Chisq	34.5339		0.0000 05.3046	Reject H_0

(Source: Processed data, 2024)

Table 8 shows the results of the simultaneous test (Chisq test) obtained, namely the decision to reject. This means that there is a significant influence of all variables on the variablesH_0ownership of health insurance (Y). Then the partial test results show that only the variable number of poor people (X1) and the sex ratio (X2) have a significant effect on ownership of health insurance (Y), while for the variable the average monthly net income of informal workers (X3), the number of residents working (X4), number of disease cases (X5), and number of marriages (X6) do not have a significant effect on ownership of health insurance (Y).

G. Goodness of Fit (Model Goodness)

Goodness of fit model or the goodness of the model can be seen from the value of the coefficient of determination (R2) withthe results are as follows.

Table 9. Determination Coefficient Values

Criteria	R2	Adj. R2
Mark	0.4454	0.36802

(Source: Processed data, 2024)

Based on the Adjusted R2 value in Table 9, it is equal to0.36802It is known that the variables are the number of poor people (X1), the sex ratio (X2), the average monthly net income of informal workers (X3), the number of working people (X4), the number of disease cases (X5), and the number of marriages (X6). only able to explain variablesownership of health insurance (Y) is 36,802%, while the remaining 63,198% is explained by other variables or factors.

A. Number of Poor People (X1) Against Ownership of Health Insurance (Y)

The research results show that the number of poor people has a negative or inverse influence on the ownership of health insurance in NTB Province. This indicates that the higher the number of poor people, the lower the ownership of health insurance in NTB Province. Vice versa, if the number of poor people decreases, ownership of health insurance will increase.

This is in line withresearch conducted by Sood & Wagner [15] in several developing countries shows that poverty is often the main obstacle in access to health insurance, for example a study conducted in India found that poor people have more limited access to health services and health insurance, which increases their risk of experiencing financial hardship due to high health costs.

B. Sex Ratio (X2) to Health Insurance Ownership (Y)

Based on the research results obtained, it is known that the sex ratio has a negative or inverse influence on the ownership of health insurance in NTB Province. This means that the higher the sex ratio value, the lower the ownership of health insurance in NTB Province. Vice versa, if the sex ratio is lower, health insurance ownership will increase.

This is in accordance with research conducted by Baros in 2015, namely that gender has a significant relationship with ownership of health insurance. Women have 1.056 times the chance of owning health insurance compared to men. In health matters, women are more vulnerable than men, so more women have health insurance. The results of research in Maryanto in 2023 show that the gender of the head of the family is one of the factors that influences the ownership of health insurance. Women as heads of families are more likely to register their family members in the national health insurance program. Men tend to be

risk averse and act indifferent to health problems. Women are more likely to spend time on health services compared to men, this is due to the lower employment rate of women and the higher incidence of disease compared to men.

C. Average Monthly Net Income of Informal Workers (X3) Against Ownership of Health Insurance (Y)

In accordance with the results of research conducted, it is known that the average monthly net income of informal workers has no relationship or no influence on ownership of health insurance in NTB Province.

This is explained in research conducted by Chung in 2024, namely that income level does not have a significant effect on ownership and health status if the availability of public facilities in a community is adequate and of good quality or insurance is available for people in the lower economic class.

D. Number of Working Population (X4) Against Ownership of Health Insurance (Y)

The research results show that the number of working residents has no influence on ownership of health insurance in NTB Province. This means that a person's employment status does not determine whether that person has health insurance or not.

This is usually caused by high poverty. Even though the number of working people is high, poverty is also high, so this will result in someone being reluctant to have health insurance.

E. Number of Disease Cases (X5) Against Health Insurance Ownership (Y)

Based on the research results obtained, it is known that the number of disease cases that occur has no influence on the ownership of health insurance in NTB Province. This means that even if someone has many or varied disease complaints, it does not determine whether that person has health insurance or not

F. Number of Marriages (X6) Against Ownership of Health Insurance (Y)

Based on the research results obtained, it is known that the number of marriages that occur does not affect the ownership of health insurance in NTB Province. This indicates that the large number of marriages that occur in NTB Province does not determine how many or how few people have health insurance in NTB Province.

CONCLUSION

The appropriate panel data regression model for estimating health insurance ownership in NTB is the Random Effect Model with individual/cross-section effects. The independent variables that have a significant effect on ownership of health insurance in NTB Province are the number of poor people and the sex ratio. Meanwhile, the independent variables that did not have a significant effect were the average monthly net income of informal workers, the number of working people, the number of disease cases, and the number of marriages that occurred.

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