

# Measurement Model Design of Socio-Economic Status, Knowledge of The Environment, and Gratitude on Enviromental Awareness for The Residents of West Jakarta

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## Abstract

This study was a descriptive and verification study that aimed to explore and analyze the variables of socioeconomic status (X1), knowledge about the environment (X2), and gratitude (Y) for caring for the environment (Z). This study used a survey method by using 60 questionnaire items given to respondents. Based on the results of data analysis carried out with the Structural Equation Modeling (SEM) approach, it is known that (1) The questionnaire used in this study is valid and reliable based on Confirmatory Factor Analysis (CFA) with the item loading factor value of the 60 items above 0.50, the value of Construct Reliability (CR)  $\geq 0.70$ , and the value of Variance Extracted (VE)  $\geq 0.50$ . (2), after modification of the model, the structural model of all variables in this study was fit based on the Goodness of Fit (GoF) criteria. That is, the instrument developed is empirically proven to be used to measure the variables of socioeconomic status (X1), knowledge about the environment (X2), gratitude (Y) and concern for the environment (Z) residents of West Jakarta.

**Keywords :** Socio-economy, environment, gratitude, caring

## INTRODUCTION

Global issues about the environment are very often heard nowadays; where a lot of environmental damage occurs due to illegal logging and excessive use of natural resources, without any sustainable conservation. Rapid technological advances in various fields have had an impact on the environment, both positive and negative. One of the negative impacts is the occurrence of environmental damage, resulting in a decrease in environmental quality (Nasution, 2016).

Environmental factors greatly affect the quality of human life. Vice versa, various human activities and attitudes also affect the quality of the environment itself. The interdependence of life between the two then places humans as the main subjects who take advantages of natural resources to support their survival. The position

of humans as subjects in the use of natural resources, sometimes makes humans forget themselves because they are driven by a desire to fulfill their needs. The development process that only pursues economic growth and equity, without considering environmental sustainability aspects, can certainly lead to environmental degradation or decline of environmental quality (Narut & Nardi, 2019).

The environment is the place where life takes place between living things without exception of humans. The existing environmental conditions have decreased every year. Environmental problems are a constant threat. Environmental damage is mostly caused by human behavior. A lot of environmental damage has occurred in Indonesia, including illegal logging and excessive use of natural resources, without any sustainable conservation (Narut & Nardi, 2019).

The environment is the unity of space with all objects, power, circumstances, and living things including humans and their behavior so as to create a reciprocal relationship and influence each other (Wulandari, 2020). Based on Law No. 32 of 2009, the environment is a unitary space with all objects, power, circumstances, and living things, including humans and their behavior, which affect nature itself, the continuity of life, and the welfare of humans and other living creatures.

All forms of environmental problems faced today in the world, as well as in Indonesia, are mostly caused by human attitudes and behavior towards their environment, and one of the problems being faced in Jakarta is the problem of environmental management (Kumurur, 2012).

In everyday life, a person is faced with various choices of behavior, both harmful and beneficial for the environment. To support the attitude of human concern for the environment, through educational institutions, it is necessary to provide an understanding of the importance of preserving the environment (Central Bureau of Statistics, 2014). A complete understanding of the environment is expected to change people's behavior to be more concerned about the surrounding environment.

According to the Ministry of National Education (2010: 9) caring for the environment is one of the eighteen character values. Caring for the environment is an attitude and action that always tries to prevent damage to the surrounding natural environment and develops efforts to repair the natural damage that has already occurred. From this definition, it can be seen the importance of growing concern for the environment. Caring for the environment is shown by concrete actions that start from simple actions and from oneself. Some concrete actions that can be taken are not littering, planting trees around the house, cleaning the yard, doing the recycling process for waste that can be used, and other useful actions.

Environmental awareness is a possible predictor of purchasing behavior for environmentally friendly products. Concern for the environment (Angelovska et al., 2012). Concern for the environment can be considered as a level of commitment and emotional from consumers to various issues in the surrounding environment

(Aman et al., 2012). According to Asmani in (Narut & Nardi, 2019) environmental care is an attitude and action that is always carried out to prevent damage to the surrounding environment and foster efforts to repair the natural damage that has occurred.

Environmental care is the level of focus of attention on a place where a living thing grows which includes important elements such as soil, water and air, which have important meaning in the life of every living thing, where humans are located and affect the survival and welfare of humans and other living things, which include the natural environment, the built or artificial environment and the cultural or social environment (Fauziyah et al., 2020).

Environmental changes greatly affect aspects of human life that attitudes and behavior do not always succeed in creating environmental change (Zaelani & Kunto, 2021). The current apprehensive environmental conditions require people to be more concerned about the environment. Concern for the environment is an urgent matter that really needs attention to minimize various environmental damage that occurs (Firmando, 2022).

Caring for the environment is defined as attitudes and actions that always try to prevent damage to the surrounding natural environment and develop efforts to repair the natural damage that has already occurred. The character of caring for the environment is an attitude possessed by someone someone who strives to improve and manage the surrounding environment properly so that the environment can be enjoyed continuously without destroying its condition, as well as maintaining and preserving so that there are sustainable benefits (Purwanti, 2017).

Socio-economic status is the position or status of parents in society based on economic criteria, education, income, and power or social positions held by parents in society (Darmawan, 2017).

Socio-economic status shows certain inequalities, where members of society have jobs that vary in achievement, and some individuals have greater access to higher status jobs than others, different levels of education, greater access to better education than others, different economic resources, and the level of power to influence the institutions of society (Santrock, 2007).

Differences in the ability to control resources and participate in societal rewards result in unequal opportunities. Socio-economic status describes the condition of a person or a society from an economic point of view such as the level of education, income, and occupation. Every individual or society would want a better socio-economic status. However, in reality there are still many individuals or communities with low socio-economic status (Indrawati, 2015).

Socio-economic status is the level or position of a person based on the ability to meet the needs of daily life from the income obtained, besides that it can be based on the high and low level of achievement that a person has based on the position he holds in a society (Atika & Rasyid, 2018).

According to Law no. 32 of 2009 concerning Environmental Protection and Management, the environment is a unitary space with all objects, power, circumstances and living things, including humans and their behavior, which affect the survival and welfare of humans and other living creatures. There is a reciprocal relationship between humans and their environment. Humans affect their environment and vice versa humans are influenced by their environment. Humans are in their environment and they cannot be separated from it (Sastrawijaya, 2009). If the environment is damaged, then humans in carrying out their activities will be disturbed as well.

Knowledge of the environment is a series of ecological knowledge possessed by individuals about the environment of Gratitude (Chen, 2013). Environmental awareness according to the Environmental Awareness Ability Measure (EAAM) developed by Jha (in Shobeyri et al., 2007) consists of 5 dimensions, namely the dimensions of causes of pollution, the dimensions of soil; air; water; and forest conservation, dimension of energy conservation, dimension of conservation of human health, dimension of conservation of wild life and animal husbandry.

The gratitude that a person has is closely related to the happiness that will be obtained (Prabowo & Laksmiwati, 2020). Gratitude makes a person will have a more positive view and a broader perspective on life, namely the view that life is a

gift (Listiandini, 2015). Individuals who have a high level of gratitude will have a high level of happiness because there is a tendency to be more satisfied and optimistic when compared to individuals who are not grateful (Sativa & Helmi 2013).

Based on this background, the focus of this research is the influence of socio-economic status, knowledge of the environment, and gratitude for the care for the environment of the residents of West Jakarta.

## RESEARCH METHODS

This type of research was descriptive and verification. Descriptive research is used to obtain a clear description of a certain situation or condition, while verification research aims to determine the clarity of the relationship between a variable (testing hypotheses) through data collection in the field. The research method used was a survey method, namely this study selected samples from the population with a questionnaire technique.

The research hypothesis was tested using the Structural Equation Modeling (SEM) approach. In this study, the measurement model testing and structural model testing were carried out on the research model built from the theory used (Ghozali, 2014 ). The use of Structural Equation Modeling method (SEM) in this study, emphasized on the use of covariates compared to individual cases. If in ordinary statistical analysis, the function that is minimized is the difference between the observed and predicted values, then Structural Equation Modeling (SEM) which is minimized is the difference between the sample covariance and the population covariance. The stages of data analysis in this study were developed using the concept of Structural Equation Modeling (SEM).

A model is said to be fit if the covariance matrix of a model is the same as the covariance of the data matrix. The measurement results are compared with the measurement criteria, to determine whether a model can be declared fit. Table 1 shows the acceptance criteria of a model.

Table 1. Criteria for Acceptance of a Model

<i>No</i>	<i>Goodness of Fit</i>	<i>Target Value</i>
1	Chi-square (P-value)	p-value $\geq$ 0.05
2	RMSEA	RMSEA $\leq$ 0.08
3	NFI	NFI $\geq$ 0.90
4	CFI	CFI $\geq$ 0.90
5	IFI	IFI $\geq$ 0.90
6	RFI	RFI $\geq$ 0.90
7	SRMR	SRMR $\leq$ 0.05
8	GFI	GFI $\geq$ 0.90
9	AGFI	AGFI $\geq$ 0.90

Sources: Wijanto (2015)

## RESEARCH RESULTS AND DISCUSSION

### Validity and Reliability

Quantitative data in this study were collected through a questionnaire instrument with a total of 60 statement items which were then rated on a scale of 1 to 5. The questionnaire had previously been tested for validity and estimated reliability. The variable construct verification analysis was carried out using the Confirmatory Factor Analysis (CFA) test method. Hair et al. (2014) suggest that the relative importance and significance of the factor loading of each item, states that the standard factor loading value (SFL)  $\geq$  0.50 is significant and can be declared valid. A construct has good reliability if it has a Construct Reliability (CR) value of  $\geq$  0.70, and a Variance Extracted (VE) value of  $\geq$  0.50. Based on the results of the analysis conducted, all statement items have an item loading factor of more than 0.50 so that all items were declared valid. The reliability coefficient of each variable

also showed a number greater than 0.70 or was declared reliable.

### Variable of socio-economic status (X1)

Evaluation of factor loading for the socio-economic status variable (X1) empirically using the 2<sup>nd</sup> Order CFA with the help of the LISREL program showed that the factor loading value on all items in the socio-economic status variable (X1) was more than 0.7. Therefore, the items used and analyzed in this study can be declared valid based on factor analysis.

Measurement consistency can be tied by paying attention to the results of the value analysis (Construct Reliability) and VE (Variance Extracted). Table 2 showed that the values of CR and VE on the socio-economic status variable (X1) reached 0.97 and 0.66. Measurements carried out in the study of socio-economic status variable (X1) was reliable based on construct analysis.

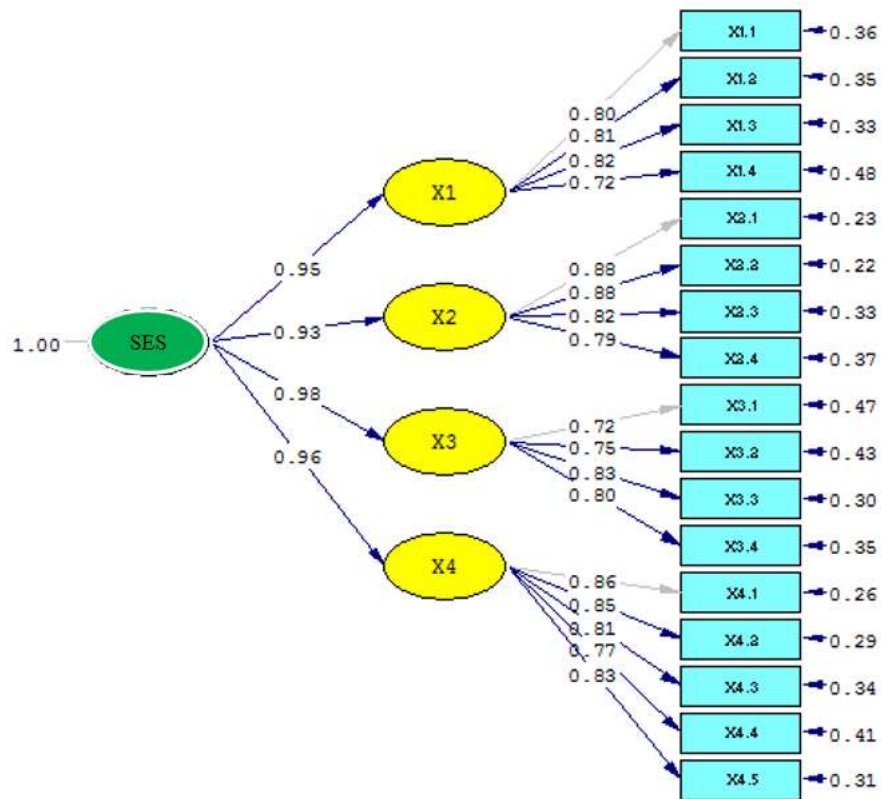


Figure 1. Output path diagram of second order CFA of variable of socio-economic status (X1)

Table 2. Result of factor analysis of variable of socio-economic status (X1)

No	Loading factor	Loading factor ^2	ME	CR	VE
X1.1	0,80	0,64	0,36		
X1.2	0,81	0,6561	0,3439		
X1.3	0,82	0,6724	0,3276		
X1.4	0,72	0,5184	0,4816		
X2.1	0,88	0,7744	0,2256		
X2.2	0,88	0,7744	0,2256		
X2.3	0,82	0,6724	0,3276	0,97	0,66
X2.4	0,79	0,6241	0,3759		
X3.1	0,72	0,5184	0,4816		
X3.2	0,75	0,5625	0,4375		
X3.3	0,83	0,6889	0,3111		
X3.4	0,80	0,64	0,36		
X4.1	0,86	0,7396	0,2604		

<b>X4.2</b>	0,85	0,7225	0,2775
<b>X4.3</b>	0,81	0,6561	0,3439
<b>X4.4</b>	0,77	0,5929	0,4071
<b>X4.5</b>	0,83	0,6889	0,3111

**Knowledge about environment variable (X2)**

The results of the factor analysis carried out on the empirical data collected to represent the

variable of knowledge about the environment (X2) using the 2<sup>nd</sup> order CFA were described in Figure 2.

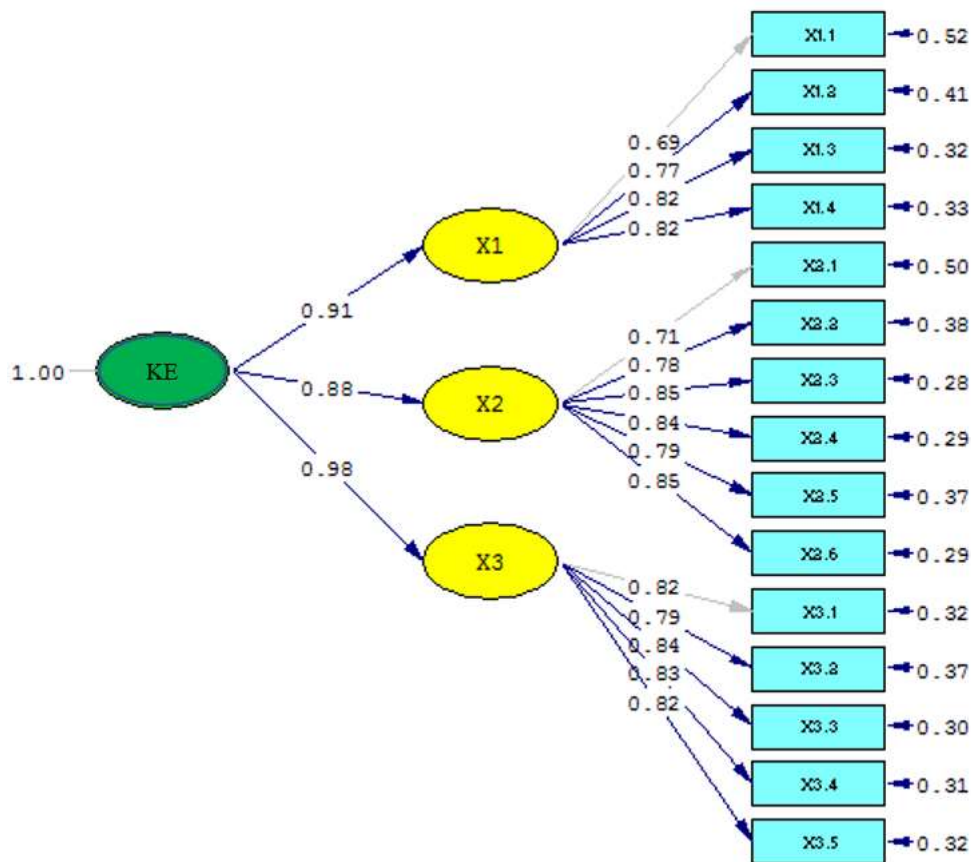


Figure 2. Output path diagram of the second order CFA of variable knowledge of the environment (X2)

Figure 2 explained that all of the items used in this study to describe the variable of knowledge about the environment (X2) had a loading factor value of more than 0.7. Therefore, all X2 items were declared valid. Furthermore, table 3 explained that the CR and VE values for the

measuring instruments used reach 0.96 and 0.64. These results indicated that the measuring instrument used to measure the variable of knowledge about the environment (X2) can be said was reliable.

Table 3. Output path diagram of the second order CFA of variable of knowledge about environment (X2)

No	Loading factor	Loading factor ^2	ME	CR	VE
X1.1	0,69	0,4761	0,5239		
X1.2	0,77	0,5929	0,4071		
X1.3	0,82	0,6724	0,3276		
X1.4	0,82	0,6724	0,3276		
X2.1	0,71	0,5041	0,4959		
X2.2	0,78	0,6084	0,3916		
X2.3	0,85	0,7225	0,2775	0,96	0,64
X2.4	0,84	0,7056	0,2944		
X2.5	0,79	0,6241	0,3759		
X2.6	0,85	0,7225	0,2775		
X3.1	0,82	0,6724	0,3276		
X3.2	0,79	0,6241	0,3759		
X3.3	0,84	0,7056	0,2944		

### Gratitude variable (Y)

Empirical data collected through a questionnaire to represent the variable of gratitude (Y) was then analyzed using the 2<sup>nd</sup> order CFA to determine the validity of each item and estimate the reliability of the measuring instrument used.

Figure 3 showed that all items in the gratitude variable (Y) were valid with a loading factor value of more than 0.5. The ideal standardized loading factor value is more than 0.5 or 0.7 (Hair et al., 2010). Another opinion explains that the conditions for acceptance of the factor charge are  $> 0.5$ .

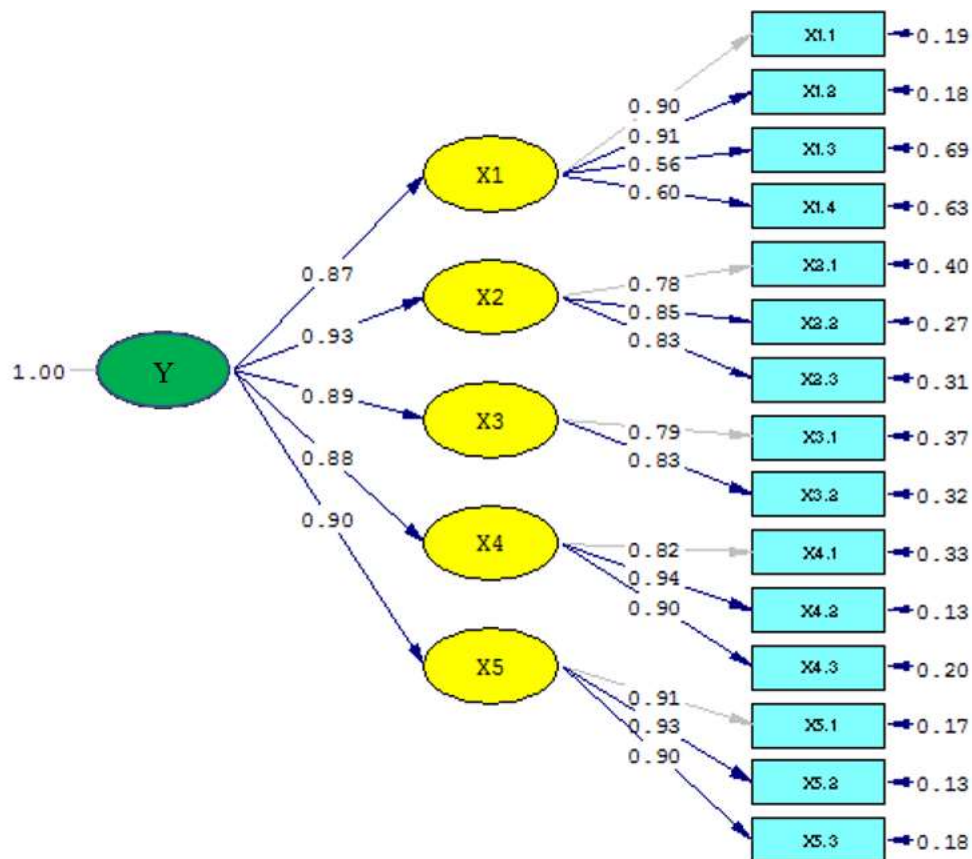


Figure 3 Output path diagram of second order CFA of gratitude variable (Y)

The reliability coefficient of the instrument used can be estimated by analyzing the CR and VE values. Table 4 described the values of CR and VE on the instrument used to measure the

variable of gratitude (Y) reaching 0.97 and 0.70. These results indicated that the instrument used to measure the variable of gratitude (Y) was reliable based on the 2<sup>nd</sup> order CFA analysis.

Table 4. Output path diagram of second order CFA of gratitude variable (Y)

No	Loading factor	Loading factor ^2	ME	CR	VE
X1.1	0,9	0,81	0,19		
X1.2	0,91	0,8281	0,1719		
X1.3	0,56	0,3136	0,6864		
X1.4	0,6	0,36	0,64		
X2.1	0,78	0,6084	0,3916	0,97	0,70
X2.2	0,85	0,7225	0,2775		
X2.3	0,83	0,6889	0,3111		
X3.1	0,79	0,6241	0,3759		
X3.2	0,83	0,6889	0,3111		



<b>X4.1</b>	0,82	0,6724	0,3276
<b>X4.2</b>	0,94	0,8836	0,1164
<b>X4.3</b>	0,9	0,81	0,19
<b>X5.1</b>	0,91	0,8281	0,1719
<b>X5.2</b>	0,93	0,8649	0,1351
<b>X5.3</b>	0,9	0,81	0,19

**Environmental concern variable (Z)**

The 2<sup>nd</sup> order CFA analysis was conducted to analyze the loading factor value of each item used to measure the environmental concern variable (Z) and calculate the CR and VE values. Figure 4 showed that all items used to measure the environmental concern variable (Z) had a loading factor value of more than 0.7, so that all

of the items used can be said to be valid. Furthermore, table 5 explained that the CR and VE values of the environmental concern variable (Z) reach 0.98 and 0.77, so it can be concluded that the instrument used to measure the environmental concern variable (Z) can consistently measure what it wants to measure (reliable).

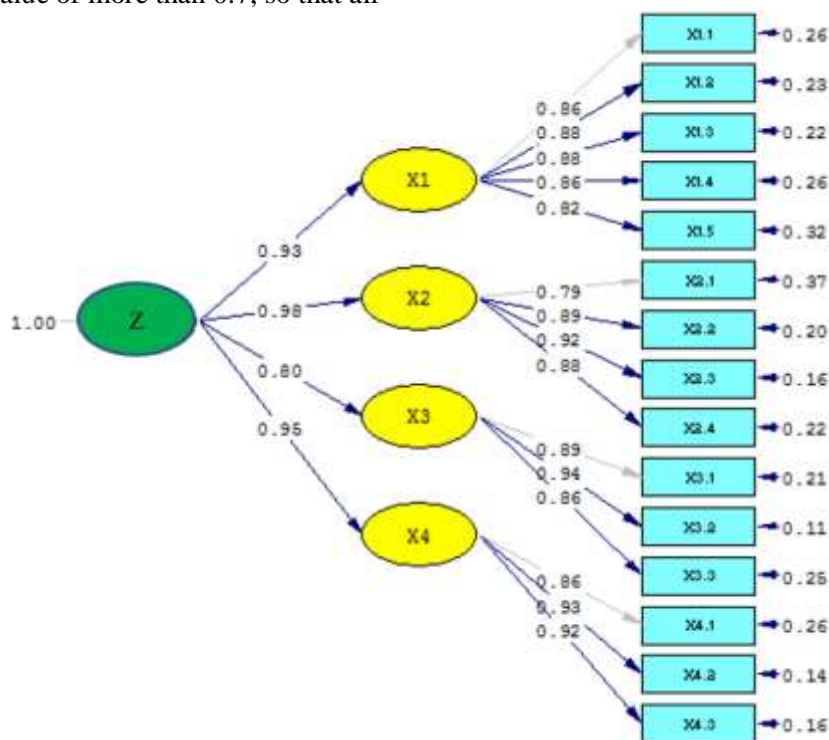


Figure 4. Output path diagram of the second order CFA of variable concern for the environment (Z)

Table 5. Output path diagram of second order CFA of variable concern for the environment (Z)

No	Loading factor	Loading factor ^2	ME	CR	VE
<b>X1.1</b>	0,86	0,7396	0,2604		
<b>X1.2</b>	0,88	0,7744	0,2256	0,98	0,77
<b>X1.3</b>	0,88	0,7744	0,2256		

<b>X1.4</b>	0,86	0,7396	0,2604
<b>X1.5</b>	0,82	0,6724	0,3276
<b>X2.1</b>	0,79	0,6241	0,3759
<b>X2.2</b>	0,89	0,7921	0,2079
<b>X2.3</b>	0,92	0,8464	0,1536
<b>X2.4</b>	0,88	0,7744	0,2256
<b>X3.1</b>	0,89	0,7921	0,2079
<b>X3.2</b>	0,94	0,8836	0,1164
<b>X3.3</b>	0,86	0,7396	0,2604
<b>X4.1</b>	0,86	0,7396	0,2604
<b>X4.2</b>	0,93	0,8649	0,1351
<b>X4.3</b>	0,92	0,8464	0,1536

### Structural Model Analysis

Analysis of the research structural models formed was carried out by taking into account the values or figures of the relationship coefficients that emerged from each model. In this analysis, the values of the model suitability indicators (Fit Index) as the output of LISREL will be discussed.

In path analysis, to see whether the model obtained has met the model's accuracy measure (Goodness of fit measures / GoF) so that it can be said that the model obtained from the comparison between the data and the model is good, it can be seen based on the following criteria:

Table 6. Results of Variable Measurement Model Analysis

<b>No</b>	<b>Indicator</b>	<b>Benchmark value</b>	<b>Acquired Value</b>	<b>Model fit criteria</b>
<b>1</b>	Chi-Square	< 2df	212,89 < 2 (182)	Fit Model
<b>2</b>	Probability (p-value)	≥ 0,05	0,0582	Fit Model
<b>3</b>	Root Mean Square Error of Approximation (RMSEA)	≤ 0,08	0,036	Fit Model
<b>4</b>	Normed Fit Index (NFI)	≥ 0,90	0,98	Fit Model
<b>5</b>	Comparative Fit Index (CFI)	≥ 0,90	1,00	Fit Model
<b>6</b>	Incremental Fit Index (IFI)	≥ 0,90	1,00	Fit Model
<b>7</b>	Goodness of Fit Index (GFI)	≥ 0,90	0,96	Fit Model

The size of the model fit in SEM, as follows:

➤ The results of the calculation of the Chi-square value (X2) for the model studied was

obtained at 212.89. The model is said to be fit if the *Chi-square value* ( $X^2$ ) for the model is less than 2 times df. The df value was 182 while the *Chi-square* ( $X^2$ ) for the model studied was 212.89, so it can be concluded that the model in this study was in the good fit category.

➤ The probability (p-value) for the model is said to be fit if it has a value greater than 0.05. The results of the analysis showed the probability value (p-value) was 0.0582 which indicated that the model in this study was included in the good fit category.

➤ Judging from the RMSEA (Root Mean Square Error of Approximation) value for the model under study, it was 0.036, indicating that the model studied was fit because it met the criteria, namely  $RMSEA < 0.08$ . This means that the model under study was a good fit.

➤ The Goodness of Fit Index (GFI), can be classified as an absolute fit measure, because basically GFI compares the hypothesized model with no model at all. GFI value  $> 0.90$  is good fit while  $0.80 < GFI < 0.90$  is called marginal fit. In this model, the GFI value was 0.960, which means that the model in this study was included in the good fit category.

➤ Expected Cross Validation Index (ECVI) in this model was 2.41 while the ECVI for saturated model was 3.58 and the ECVI for Independence model is 97.85. The ECVI value of the model which is lower than the ECVI for saturated model or the ECVI value for the Independence model can be said to be good fit. So it can be concluded that the model can be used for replication in subsequent studies.

➤ The NFI (Normed Fit Index) value of this research model was 0.98, indicating that the model was fit because it was still greater than 0.9, which means that the model formed in this study was good fit.

➤ The AGFI (Adjusted Goodness of Fit Value) value of the research model was 0.930, which means that the model belonged to the good fit category.

➤ The IFI (Incremental Fit Index) value of this research model was 1.000, indicating that the model formed was good fit because the IFI value was greater than 0.90.

➤ The value of the Comparative Fit Index (CFI) of this research model was 1.000. This indicated that the model formed was good fit because the CFI value was greater than 0.90.

➤ The PGFI (Parsimonious Goodness of Fit) value of the research model was 0.980, indicating that the parsimony model was good

where the PGFI value ranges from 0-1, which means that the model had high savings because fewer parameters were used.

Referring to the opinion of Karl G. Jöreskog & Dag Sörbom, a model is said to meet the criteria of a suitable model if it meets at least four model fit indices. The fit model index are the Chi-square test ( $\chi^2$ ), Root Mean Square of Error Approximation (RMSEA), P-Value and GFI (Goodness of Fit Index). Based on the table above, it appears that in general the Goodness of Fit requirements have been met because the values obtained are within the required intervals, so it is said that the model obtained is fit. The results of the calculation of the measurement of the accuracy of the model (Goodness of Fit measures) show that the model "socio-economic status, knowledge of the environment, and gratitude for caring for the environment of the residents of West Jakarta" was a good model to describe the relationship between the variables studied.

## CONCLUSION

Based on the results of the analysis carried out, it was known that the questionnaire used in this study was valid and reliable based on Confirmatory Factor Analysis (CFA) with the item loading factor value of the 60 items above 0.50, the value of Construct Reliability (CR) 0.70, and the value of Variance Extracted (VE) 0.50. In addition, after modification of the model, the structural model of all variables in this study was fit based on the Goodness of Fit (GoF) criteria. That is, the instrument developed was empirically proven to be used to measure the variables of socioeconomic status (X1), knowledge about the environment (X2), gratitude (Y) and concern for the environment (Z) residents of West Jakarta.

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