

# Analysis of Factors Affecting Youth Motivation in Madura to Improve Education with the Structural Equation Modeling Method

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**Abstract**—Madura is an area in Indonesia that is still far behind compared to other regions, especially in the field of education. The education system in Madura is dominated by boarding school where boarding school has become a distinctive culture that is still maintained by the Madura community, especially among adolescents who are deciding the future of a country to receive education, it can be a motivation to improve the education system in Madura. In addition there are many things that are the reason for the Madura community that causes the education system in Madura is unstable so it needs to be further analyzed factors that influence the motivation of adolescents to improve education. For this purpose, collected through a survey of adolescents in Madura who became the sample. The survey was conducted online related to the reasons for the interruption of adolescent education in Madura including motivation, environment and poverty data obtained and then processed using Structural Equation Modeling. The method has the advantage of being able to analyze latent variables or variables that cannot be measured such as motivation. Based on the results of the study, it can be seen that the factors that influence motivation to improve education are motivation and poverty. Environmental factors do not affect the improvement of adolescent education in Madura.

**Keywords:** *teenagers in Madura, Stuctural Equation Modeling, influence analysis, education in Madura*

## I. INTRODUCTION

The Indonesian nation as a nation which in its position is still said to be a developing country is looking for forms of how and how to become a developed country, especially in the field of education, because Education is very influential on the progress of a region. education is able to produce good quality Human Resources (HR) in terms of spiritual, intelligence, and skill. Improving the quality of Human Resources through education can reduce poverty because with education can increase employment opportunities, reduce income inequality and welfare and productivity of the poor [9].

Education is indeed not an area of life that is separate from other fields of life. Education is often seen as an

influential factor of the problems that occur in a strategic environment so that education often receives bad consequences from these changes [7]. Education policy that will be determined must at least be able to anticipate various challenges and problems that occur in a strategic environment, even education must be able to make itself as a factor that can move or direct changes in the environment. therefore it is necessary to have an assessment of several factors that need to be addressed to make Human Resources (HR) in Madura able to be motivated to continue to improve education [10].

This study was conducted to determine whether there is a relationship between motivation variables with several factors, namely environmental conditions, education, and poverty found in Madura [1]. The hypothesis in this study is there a positive relationship between environmental conditions, education, and poverty on the motivation of adolescents in Madura to improve education using the Structural Equation Modeling (SEM) method [3], [4]. SEM is a statistical method that allows testing a series of relatively structured relationships simultaneously. The structural relationship can be built from one or several variables with one or several independent variables. Each dependent and independent variable can be in the form of factors or constructs that are built from several indicators [11]. SEM is widely used in a study because SEM has many advantages including, SEM allows for more flexible assumptions to facilitate users to read the results of the analysis, the possibility of testing the model as a whole rather than the coefficients individually and so on. In addition there are several programs offered by SEM in analyzing factors, one of which is the AMOS program, where the AMOS program can facilitate researchers in SEM completion [6].

Based on previous research that is relevant in the use of the Structural Equation Modeling (SEM) method. [5] who explained about the application of Structural Equation Modeling on the influence of motivation and trust factors on construction project managers with the conclusion that the model is acceptable, which means there is a match between

the model and the data. Motivation and trust have a positive effect on commitment. [8] also explained about Structural Equation Modeling (SEM) on the calculation of the customer satisfaction index with the conclusion of data analysis techniques using Structural Equation Modeling (SEM), conducted to explain thoroughly the relationship between variables in the study. SEM is used not to design a theory, but rather is intended to examine and justify a model.

Based on the above research, no one has examined the Structural Equation Modeling (SEM) method to analyze the factors that influence the motivation of adolescents in Madura to improve education with endogenous variables of motivation and three exogenous variables in the form of environmental conditions, education, and poverty. Analysis by SEM method aims to determine whether there is an influence of exogenous variables on endogenous variables [4].

II. MATERIALS AND METHOD

A. Education System in Indonesia

Education is the main thing that will sustain the progress of a nation. The progress of a nation is measured by the quality and existing education system. Without education, a country will be far behind other countries. The quality of education in Indonesia today is very alarming, especially in Madura, Madura has long been considered a poem as a disadvantaged area, both on a national and regional scale (provincial level). According to the reading indexality of education, the sign of backwardness is so striking, compared to the three regions (Surabaya, Gresik, and Sidoarjo) that are geographically close to the western end of the island [9].

B. Factors Affecting Motivation

Learning motivation is an impulse or driving force from within an individual that gives direction and enthusiasm to learning activities, so as to achieve the desired goals. In a motivation that does not escape from several influencing factors such as the environment, education and poverty, it is a factor that can be a motivation to keep trying to improve an education. Structural Equation Modeling (SEM) is known by several other names, such as Covariance Structural Analysis (CSA), latent variable analysis and confirmatory factor analysis. The Structural Equation Modeling equation model, hereinafter abbreviated (SEM), is a statistical method that is currently very popular in management research because of its superiority [2]. Structural Equation Modeling (SEM) is a multivariate statistical technique which is a combination of factor analysis and regression analysis that aims to examine the relationships between variables that exist in a model, be it between indicators with the construct, or relationships between constructs.

1) Data and Procedures

Data Collection

The data used in this study are primary data obtained through surveys conducted online using google forms specifically for people in Madura.

Hipotesis and Variables

hypothesis of this research is:

$H_0$  : There is no impact from the manifest variables to the latent variables

$H_1$  : There is impact from the manifest variables to the latent variables

The variables used in this study are the factors that influence adolescents in Madura to improve education consisting of dependent variables (endogenous variables) and independent variables (exogenous variables). The dependent factor is motivation which consists of several indicators namely ideals, interests, sincerity, hard work, and not despair. While the exogenous variables in this study are environmental factors, education and poverty which have their respective indicators.

2) Analysis and Procedures

The steps undertaken for this analysis are given as follows:

- Determine the hypothesis to be tested
- Defining latent variables, manifest variables and relationships between variables
- Make a path diagram of variables that have been defined

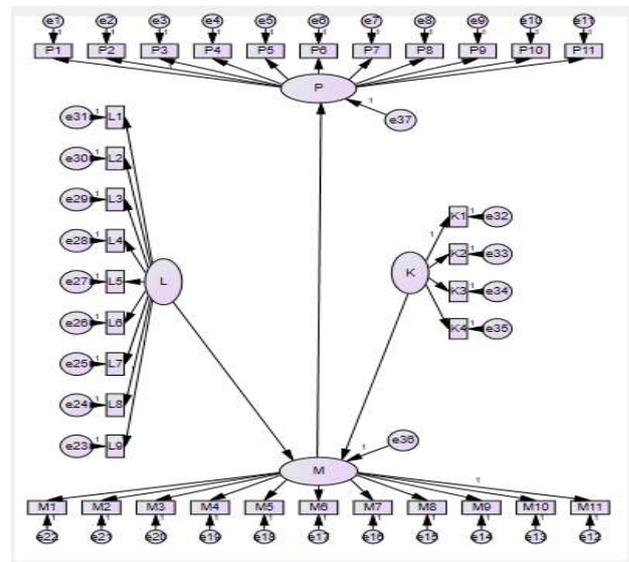


Figure 1 SEM Path Diagram

1. Detect the existence of Multivariate Outliers and Multivariate Normality
2. Perform validity tests with SPSS 20 and reliability tests with AMOS 22 on the data that has been collected
3. Estimating the loading factor ( $\lambda$ ) for each manifest variable against the associated latent variable
4. Test the significance of each loading factor ( $\lambda$ )
5. Conduct correlation analysis between latent variables to calculate gamma ( $\gamma$ )
6. To test the suitability of the model with the criteria of CMIN / DF, RMSEA, GFI, AGFI, TLI, PNFI
7. Interpreting the output

The mean of geometric form from figure1 is given as follows :

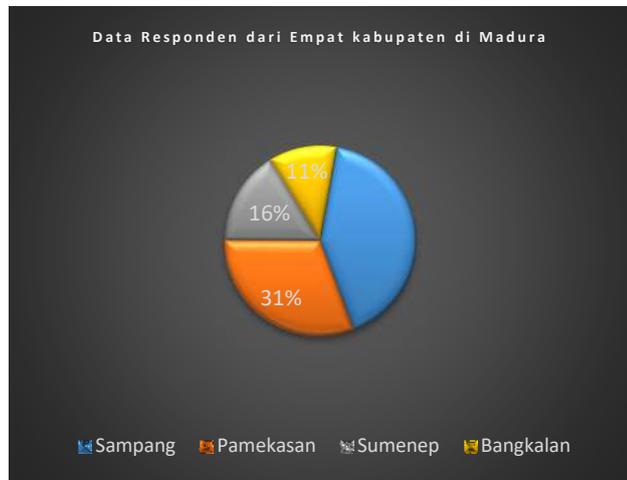
= latent variables

= manifest variables

III. RESULTS AND DISCUSSION

A. Descriptive statistics

This study uses primary data by distributing online questionnaires about factors that influence the motivation of



adolescents in Madura to improve education and from the questionnaire obtained 130 respondents from various districts in Madura. General description of the data is displayed in a pie chart and about the number of responses from each district in Madura below:

Figure 2 Pie Chart of Respondent Data from Four districts in Madura

From Figure 2 it can be seen that respondents are representatives of four districts in Madura. With 54 Sampang details, Pamekasan 40 respondents, Sumenep 20 respondents, and Bangkalan 15 respondents are displayed in the form of percent (%).

B. Analysis of Factors Affecting Youth Motivation in Madura to Improve Education with the SEM method

1) Multivariate detection outlier

In Appendix 1, it can be seen that the maximum d-squared mahalnobis of 40,962 is smaller than the  $\chi^2$  table value of 41,638 so it can be concluded that there is no multivariate outlier.

3.2.2 Multivariate Normality Test

Hypothesis:

H<sub>0</sub>: Data is normally distributed

H<sub>1</sub>: Data is not normally distributed

The critical area of this test is rejecting H<sub>0</sub> if the Multivariate CR (Critical Ratio) value is in the range of -2.58 or +2.58.

In Appendix 2, we can know that the Multivariate value of 2.548 is smaller than 2.58 so that it can be concluded that the data is normally distributed.

3.2.3. Reliability Test

The reliability test received was  $\geq 0.60$ .

The following are the results of the reliability test using AMOS 22 on latent variables.

TABLE 1 RESULTS OF RELIABILITY TESTS WITH AMOS 22

latent variable	C.R	Information
Education	0,807	well

Motivation	0,773	well
Poverty	0,805	well

Based on the analysis results, it can be concluded that all latent variables have good model reliability because CR.CR 0.60 so that it means that the manifest variable can really explain each latent variable.

2) Correlation Analysis

Following are the results of correlation analysis using AMOS 22

TABLE 2 CORRELATION ANALYSIS RESULTS WITH AMOS 22

	Estimate
Poverty to motivation	0,395
Motivation to education	0,502

From the results of the analysis, it is known that there is a positive correlation between poverty and motivation, motivation and education. This can be interpreted that poverty and motivation affect the improvement of education.

3) Model Conformity Test

The results obtained from the AMOS 22 output are as follows:

TABLE 5 MODEL CONFORMITY TEST RESULTS WITH AMOS 22

Criteria	AMOS results	Cut Of Value	Model Evaluation
$\chi^2$	40,962	41,638	Well
Probability	0,7	$\geq 0,05$	Well
RMSEA	0,01	$\leq 0,08$	Well
GFI	0,908	$\geq 0,90$	Well
AGFI	0,925	$\geq 0,90$	Well
TLI	1,384	$\geq 0,95$	Well
CFI	1,445	$\geq 0,95$	Well
CMIN/DF	1,445	$\leq 2,00$	Well
PNFI	0,930	$\geq 0,90$	Well

Based on the results of testing using AMOS, it can be seen that the evaluation of the whole model is good, meaning that the conceptual model developed and based on the theory has been supported by facts (empirical data).

IV. CONCLUSION

Based on the results of a survey of 3 factors that influence adolescent motivation to improve education, namely motivation, poverty and the environment along with its indicators, it was widely agreed by adolescents in Madura that the statement could be a factor influencing adolescent motivation in Madura to improve education. The results of the analysis of factors that influence the motivation of adolescents in Madura to improve education with the structural Equation Modeling method can be assessed from various aspects. Based on the correlation results it is known that there is an effect of poverty on motivation and motivation on improving education. While for the environment after being tested the significance was not significant so it needed to be modified and the results stated that there was no environmental effect on improving education.

REFERENCES

[1] Anekawati A, Otok B W. (2017). Structural Equation Modelling with Three Schemes Estimation of Score Factors on Partial Least Square (Case Study: The Quality of Education Level SMA/MA in Sumenep Regency. IOP Conference Series, Journal of Physics, 855 012006.

[2] Banerjee, A., & Chaudhury, S. (2010). Statistics without tears: Populations and samples. Industrial Psychiatry Journal, 19(1), 60.

- [3] Blunch, N. (2012). Introduction to structural equation modeling using IBM SPSS statistics and AMOS. Sage.
- [4] Bollen, K. A. (2014). Structural equations with latent variables (Vol. 210). John Wiley & Sons.
- [5] Wibowo, M. A., 2013. The influence of motivation and trust factors on performance through commitment to the Construction Project Manager with the Structural Equation Modeling approach. *Civil Engineering Communication Media*, 19 (No.2), p. 100
- [6] Byrne, B. M. (2010). Structural equation modeling with AMOS: basic concepts, applications, and programming (multivariate applications series). New York: Taylor & Francis Group, 396, 7384.  
Constitutions Number 33 Year 2009 Movie October 8th 2009 Gazetted Republic Indonesia. (2009). Jakarta
- [7] Basri, I., 2014. Poverty and Effects on Motivation and Achievement, Volume 8, p. 80
- [8] Nawangsari, A. Y., 2011. Thesis. In: Structural Equation Modeling on the calculation of the customer satisfaction index using the AMOS software. Yogyakarta: Yogyakarta State University, p. 62.
- [9] Munirah, 2015. Sistem pendidikan di indonesia. *Auladuna*, volume 2, p. 234.
- [10] Kulsum, U., 2013. *Jurnal Ilmiah. Rendahnya Kualitas Pendidikan di Indonesia*, Volume 137.
- [11] Steven, J., 2002. *Applied Multivariate Statistic for the Social Science*. London: Laurence Erlbaum Associates.