Application of Structural Equation Model to Analyze Factors Affecting Financial Planning After Retirement

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Abstract

Retirement is something that every working individual will experience. Retirement according to the Big Indonesian Dictionary (KBBI) is not working anymore because the term of office has finished. A person who has retired usually has the right to a pension fund. After retirement, the individual's income will decrease, but the necessities of life can increase. In order to still be able to meet the needs of life after retirement, it is necessary to have financial planning after retirement. There are several factors that influence financial planning after retirement, including income, attitude and culture. Income is an important issue in financial planning. One thing to consider carefully when planning for retirement and setting aside funds for that purpose is the estimate of the amount of money needed to have the expected quality of life in retirement. Attitude towards retirement planning is an internal psychological condition that is influenced by positive or negative assessments related to retirement planning. Cultural differences will result in different financial plans between individuals. Based on the problems that have been described, the purpose of this study is to analyze the factors of income, attitudes and culture that affect the variables of financial planning after retirement.

In this study, the Structural Equation Model will be used to analyze the factors that influence financial planning after retirement for teachers in several schools in Tanah Datar Regency, West Sumatra. This study uses quantitative methods using a questionnaire as a data collection tool. Based on the collected questionnaires, simulations were carried out to obtain 170 data randomly. To facilitate data analysis, the AMOS application will be used. The results showed that these three factors had a significant effect on financial planning after retirement. The most influential factor on financial planning after retirement is culture with a parameter value of 0.639.

Keywords: Pension, financial planning, income, attitude, culture, structural equation model

1. Introduction

Retirement is something that will be experienced by every individual, especially those who have a career in the world of work. Economically, if a person has entered retirement, there is a possibility that his income will decrease. On the other hand, the cost of meeting the necessities of life remains and may even increase. In addition to the cost of living expenses, there is also a cost for medical examinations which is likely to increase in cost with age. To meet the cost of living in retirement, one must have good preparation or planning, especially financially. The need for one's financial awareness can help to obtain a good financial condition during retirement (Sundjaja et al., 2015). Pensions in Indonesia are regulated in Law no. 13 of 2003 concerning Manpower, Law no. 3 of 1992 concerning Labor Social Security and Law no. 11 of 1969 concerning Pensions for Civil Servants (Civil Employees) and Pensions for Widows/Widowers, which regulates pensions

One method that can be used in the analysis of factors that affect financial planning after retirement is the Structural Equation Model (SEM). Structural Equation Modeling (SEM) was first discovered by a scientist named Joreskog in 1970. Structural equation modeling is a second-generation multivariate analysis technique that combines factor analysis and path analysis, allowing researchers to simultaneously test and estimate latent variables, both exogenous and endogenous which also involves the indicator variables. In the structural equation model there are several estimation methods, the method commonly used is the Maximum Likelihood (ML) method or the maximum
likelihood method. ML is a method that has an unbiased estimator and a minimum variance. SEM is a statistical tool that can accommodate research variables regarding finance after retirement (Ghozali, 2017).

According to research conducted by Purnama et al. (2021), retirement planning is the process of determining retirement income goals and the actions and decisions needed to achieve these goals. Retirement planning includes identifying sources of income, estimating costs, implementing savings plans, and managing assets and risks. According to Jalil (2013), various factors can affect retirement planning. These factors include: age, marital status, education, saving habits, attitude toward retirement, and social influence.

In this study, the application of the Structural Equation Model was carried out to analyze the influencing factors in Financial Planning in Retirement. The approach used is the Structural Equation Model (SEM). The object of this research is teachers in several schools in an area of Tanah Datar Regency, West Sumatra. The results of this study are expected to describe the factors that influence the retirement savings program.

2. Literature Review

2.1 Retirement

Retirement according to the Big Indonesian Dictionary (KBBI) is not working anymore because the term of office has finished. A person who has retired usually has the right to a pension fund (KBBI). Hogarth and Hilgert in (Jalil et al., 2013) explain the term pension as termination of employment. Employees terminate employment with the intended employer. This does not imply or include a change in the nature of the service by an employee of the employer.

According to Kasmir (2008), the types of pensions are distinguished as follows:

1. Normal pension, a pension given to employees whose age has reached the retirement age set by the company.
2. Accelerated retirement, a pension that is given due to certain conditions, for example there is a reduction in employees in the company.
3. Postponed retirement, retirement at the request of the employee, but the age of the requester has not yet reached the retirement age. Pensions whose pension funds are given when the requester reaches retirement age.
4. Disability pension, a pension given due to an accident so that it is considered no longer able to be employed in a company.

2.2 Financial Planning

Financial planning can be used as a guide in meeting current and future needs. The existence of financial planning will determine the direction of one's financial decisions. A person will realize that every financial decision as part of an overall financial planning that can affect the short term and long term on his life goals. Financial planning is a series of continuous and dynamic processes. The plan may at some point require adjustments in line with changing conditions (live events) that are being experienced. Doing financial planning, a person can achieve the ultimate goal of financial planning, namely to have financial freedom, which can be interpreted: free from the burden of debt, availability of income streams from investments that have been made, and financially protected from any risks that may occur. According to Certified Financial Planner, Financial Planning Standards Board Indonesia, financial planning is a process to achieve one's life goals through planned financial management (Purnama et al., 2021).

2.3 Income

Income is an important issue in financial planning. One thing to consider carefully when planning for retirement and setting aside funds for that purpose is the estimate of the amount of money needed to have the expected quality of life in retirement. Existing regulations such as social security and pension schemes do not necessarily guarantee a person's comfort in retirement because they may not generate sufficient income to ensure a comfortable standard of living, or security against health care costs (Jalil et al., 2013).

2.4 Attitude

Eagly & Chaiken in (Rameli & Marimuthu, 2018), attitude refers to internal psychological tendencies based on positive or negative judgments on a problem, or action on the subject. So the attitude towards retirement planning is an internal psychological condition that is influenced by positive or negative assessments related to retirement planning (Rameli & Marimuthu, 2018).
Attitude towards retirement is an important factor that influences a person's retirement planning behavior. People who have a positive attitude towards retirement planning will be able to achieve adequate retirement income and tend to be more relaxed (Moorthy et al., 2012).

Financial planning sometimes depends on the attitude of the individual. Most people don't think about saving for a specific purpose, such as college money, vacation money, and retirement money. Some people think financial planning should be done at an older age (Jalil et al., 2013).

2.5 Culture
Culture has differences between one group and another. These cultural differences will result in different financial plans. For example, Asians are more likely to have a large number of family members, compared to Westerners who tend to have a large number of nuclear family members. Therefore, people with large family members will think more about their financial planning than people with nuclear families (Jalil et al., 2013).

3. Materials and Methods

3.1. Materials

The data used in the study were obtained from distributing questionnaires. However, because the number of returned questionnaires is only 10, which means that it is not sufficient to be used as data and the current conditions that make it difficult to distribute the questionnaire, in this study only a simulation will be carried out based on 10 collected data, until 170 random data are obtained.

3.2. Methods

In this research, the method of data analysis is Structural Equation Model with AMOS 24.0 software as a tool. The steps in the Structural Equation Model are:

a. Theoretical model development
b. Flowchart drawing
c. Convert flow chart into equation form
d. Input matrix and model parameter estimation techniques
e. Identify the model problem
f. Evacuating model parameter estimates
g. Interpreting the model and modifying the model

4. Results and Discussion

This study uses income, attitudes, and culture as exogenous variables and financial planning as endogenous variables. There are 15 indicator variables for exogenous and 4 indicator variables for endogenous. The flow chart in this study can be seen in Figure 1.

![Figure 1 Diagram Alur](image-url)

The measurement equation model and the structural equation model are obtained as in Table 1
Table 1. Measurement Equation Model and Structural

| Variabel Eksogen | Variabel Endogen |
|------------------|------------------|
| $X_1 = \lambda_{x11}\xi_1 + \delta_1$ | $Y_1 = \lambda_{y11}\eta_1 + \epsilon_1$ |
| $X_2 = \lambda_{x21}\xi_1 + \delta_2$ | $Y_2 = \lambda_{y21}\eta_1 + \epsilon_2$ |
| $X_3 = \lambda_{x31}\xi_1 + \delta_3$ | $Y_3 = \lambda_{y31}\eta_1 + \epsilon_3$ |
| $X_4 = \lambda_{x41}\xi_1 + \delta_4$ | $Y_4 = \lambda_{y41}\eta_1 + \epsilon_4$ |
| $X_5 = \lambda_{x52}\xi_2 + \delta_5$ | $\eta_1 = \gamma_1\xi_1 + \gamma_2\xi_2 + \gamma_3\xi_3 + \zeta$ |
| $X_6 = \lambda_{x62}\xi_2 + \delta_6$ | |
| $X_7 = \lambda_{x72}\xi_2 + \delta_7$ | |
| $X_8 = \lambda_{x82}\xi_2 + \delta_8$ | |
| $X_9 = \lambda_{x92}\xi_2 + \delta_9$ | |
| $X_{10} = \lambda_{x102}\xi_2 + \delta_{10}$ | |
| $X_{11} = \lambda_{x113}\xi_3 + \delta_{11}$ | |
| $X_{12} = \lambda_{x123}\xi_3 + \delta_{12}$ | |
| $X_{13} = \lambda_{x133}\xi_3 + \delta_{13}$ | |
| $X_{14} = \lambda_{x143}\xi_3 + \delta_{14}$ | |
| $X_{15} = \lambda_{x153}\xi_3 + \delta_{15}$ | |

The data processed in SEM is in the form of a covariance matrix, so that the raw data obtained from the questionnaire must be converted into a covariance matrix. The sample covariance matrix (S) is as follows:

$$SS = \begin{bmatrix}
\sigma_{y1} & \cdots & \sigma_{y1y_p} & \sigma_{y1x_1} & \cdots & \sigma_{y1x_q} \\
\vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\
\sigma_{y_py_1} & \cdots & \sigma_{y_p} & \sigma_{y_px_1} & \cdots & \sigma_{y_px_q} \\
\vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\
\sigma_{x_1y_1} & \cdots & \sigma_{x_1y_p} & \sigma_{x_1x_1} & \cdots & \sigma_{x_1x_q} \\
\vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\
\sigma_{x_qy_1} & \cdots & \sigma_{x_qy_p} & \sigma_{x_qx_1} & \cdots & \sigma_{x_qx_q}
\end{bmatrix}$$

The AMOS software will automatically convert the raw data into a covariance matrix.

4.1 Hasil Analisis Konfirmatori Model Pengukuran

4.1.1 Variabel Eksogen

There are some invalid variables, namely $X_2$, $X_9$, $X_{10}$, $X_{13}$, and $X_{14}$. This invalid variable is removed from the model, obtained in Figure 2.
4.1.2 Variabel Endogen

In the endogenous variable there is also an invalid variable, namely Y2. So the Y2 variable is removed from the model and the results are obtained as shown in Figure 3.

4.2 Hasil Analisis Full Model

The full model is obtained from combining the modified model from the previous confirmatory analysis. The results of the full model analysis are presented in Figure 4 and Table 2.

![Figure 3. Model Endogen Modifikasi](image)

![Figure 4. Hasil Analisis Ful Model](image)

Table 2. Parameter Value

| Parameter                                                                 | Measurement Equation Model | Structural Equation Model |
|--------------------------------------------------------------------------|----------------------------|---------------------------|
| X1 ← Income                                                             | Y1 ← financial planning after retirement | Income ← financial planning after retirement |
| X3 ← Income                                                             | Y2 ← financial planning after retirement | Attitude ← financial planning after retirement |
| X4 ← Income                                                             | Y3 ← financial planning after retirement | 0.166                     |
| X5 ← Attitude                                                           | 0.854                       | 0.594                     |
| X6 ← Attitude                                                           | 0.606                       | 0.926                     |
| X7 ← Attitude                                                           | 0.718                       |                           |
| X8 ← Attitude                                                           | 0.660                       |                           |
| X11 ← Culture                                                           | 0.594                       |                           |
| X12 ← Culture                                                           | 0.926                       |                           |
| X15 ← Culture                                                           | 0.659                       |                           |
| X13 ← Income                                                           | Y4 ← financial planning after retirement | 0.199                     |
| X14 ← Income                                                           | 0.898                       |                           |
| X15 ← Culture                                                           | 0.659                       |                           |
| X16 ← Income                                                           | 0.926                       |                           |
4.3 Asumsi SEM

4.3.1 Normalitas Data
Evaluation of the normality of the data is carried out using the criteria for the critical ratio skewness multi variate value of ± 2.58 at a significance level of 0.01. The data is said to have a multivariate normal distribution if the critical value of the multivariate skewness ratio is below the absolute value of 2.58. The value of the critical multivariate skewness ratio is seen from the AMOS Assessment of normality output which in this study shows the multivariate critical ratio skewness value of $2.131 < |2.59|$. This means that the data is normally distributed multivariate.

4.3.2 Outlier data
The detection of multivariate outliers is carried out by taking into account the value of the mahalanobis distance. The criteria used are Chi - Square at 19 degrees of freedom, namely the number of indicator variables used at a significance level of 0.001. So the value of $\chi^2 (19,0.001)$ is 36.19. This means that all cases that have a mahalanobis distance value greater than 36.19 are multivariate outliers. Based on the output of the observation farthest from centroid (mahalanobis distance) AMOS, the value of the mahalanobis distance is not greater than 36.19, which means there are no outliers in the data.

4.3.3 Multikolinearitas
Multicollinearity can be seen through the determinant of the covariance matrix. The very small value of the determinant indicates that there is a multicollinearity problem so that the data cannot be used (Tabachnick and Fidell, 1998). The AMOS output which can be seen in appendix M gives the determinant value of the covariance matrix of 19.461. This value is far from zero, so it can be concluded that there is no multicollinearity problem.

4.4 Goodness of Fit Testing
Goodness of fit testing is carried out with the aim of assessing whether the hypothesized model is feasible or not. The results of testing the goodness of fit criteria of the full model are presented in the form of Table 3.

| Criteria | Value | explanation |
|----------|-------|-------------|
| RMSEA    | 0.048 | Close fit   |
| GFI      | 0.934 | Good fit    |
| AGFI     | 0.898 | Marginal fit|
| TLI      | 0.962 | Good fit    |
| CFI      | 0.972 | Good fit    |

4.5 Hypothesis Testing
Hypothesis testing analysis was carried out with a significance level of 5%, resulting in a critical $t$-value of ± 1.96. The hypothesis is accepted if the $t$-value obtained is $|1.96|$, while the hypothesis is rejected if the $t$-value is $<|1.96|$. The $t$-value can be seen from the Critical Ratio value at the AMOS regression weight output. Testing of the proposed hypothesis can be seen in Table 4.

| Hypothesis                                    | $t$ – value | P     | Explanation |
|-----------------------------------------------|-------------|-------|-------------|
| H1 : Income affects financial planning after retirement | 2.154       | 0.031 | Significant |
| H2 : Attitudes affect financial planning after retirement | 2.857       | 0.004 | Significant |
| H3 : Culture influences financial planning after retirement. | 6.683       | ***   | Significant |

Based on the results presented in Table 4 it can be said that:
1) Income affects financial planning after retirement
2) Attitudes affect financial planning after retirement
3) Culture influences financial planning after retirement.
5. Conclusion

Based on the analysis and discussion that has been described previously, it can be concluded that the variables of income, attitude and culture have an influence on the variable of financial planning after retirement. The parameter values of income, attitude, and culture variables are 0.166, 0.199, and 0.639, respectively. The cultural variable has the greatest influence between the income and attitude variables with a parameter value of 0.639 followed by the attitude variable and then the income variable.

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