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FINANCE | RESEARCH ARTICLE

Analysis of the Financial Literacy Behavior Model

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Abstract: Financial literacy is a combination of awareness, knowledge, abilities, attitudes, and behaviors needed to make financial decisions. This study aims to find a behavioral model of financial literacy. This study uses a survey method with a quantitative approach. Respondents involved homemakers in Maros Regency, South Sulawesi, to fill out the questionnaire provided. Path Analysis was used to analyze the data SPSS and Winistep are used as tools in analyzing the data. Specifically, the data analysis used in this study used Structural Equation Modeling (SEM) data analysis techniques. Statistically, the value of the sample covariance matrix must not differ significantly from the population covariance matrix value. Financial Literacy Attitudes had a direct effect on Financial Literacy Behavior. Basic Knowledge of Financial Literacy had a direct effect on Financial Literacy Behavior. Financial literacy behavior is determined by financial literacy attitudes and basic financial literacy knowledge. Therefore, financial literacy knowledge and attitudes need to be improved to improve financial literacy behavior among homemakers. Financial Literacy Attitudes contribute the most to financial literacy factors. financial attitudes that have a more significant influence on financial knowledge in financial management practices

Keywords: Financial Literacy Attitude, Financial Literacy Behavior, Basic Knowledge, Financial Literacy

JEL Classification Code: G24, G21, E58

1. INTRODUCTION

Financial literacy issues continue to develop along with technological developments and advances (Lusardi, 2019). Knowledge of financial literacy will significantly impact public awareness in making intelligent financial decisions (Goyal & Kumar, 2021). Effective money management skills will help establish a good budget and control savings, loans, and investments are the benefits of financial literacy behavior. Financial literacy is essentially individual awareness and collective consciousness, including private and government organizations (Grohmann, Klühs & Menkhoff, 2018).

In Indonesia, financial literacy has been recognized as necessary (Pelu et al., 2020). Governments in various countries have tried to find effective strategies and approaches to improve the financial literacy of their people through the creation or improvement of national financial education strategies (Atkinson & Messy, 2012). However, there are still many obstacles and challenges faced by the central government and local governments to improve financial literacy in Indonesia. Survey data from the National Survey of Financial Literacy and Inclusion (SNLIK) conducted by the Financial Services Authority (OJK) stated that Indonesia's financial literacy rose from 21% in 2013 to 40% in 2020. Despite the increase, the potential to increase the role of the financial services sector for the economy is still very large. In 2019, South Sulawesi was ranked 27th in financial inclusion and financial literacy with a percentage of 86.91% (Financial Services Authority, 2019). Under these conditions, the Indonesian people do not yet know how to optimize money for productive activities. In addition, the public also does not understand well the various financial products and services offered by formal financial services institutions. It is more interested in other investment offers that have the potential to harm them.

The Organization for Economic Co-operation and Development (OECD) describes financial literacy as knowledge and understanding of financial concepts and risks, accompanied by motivation, skills, and confidence. It is to apply this knowledge and understanding to make more effective financial decisions and improve financial literacy well-being. Individuals and society and participate in the economy. According to (Remund, 2010; Huston, 2010) financial literacy is a measurement of a person's understanding of financial concepts and having the ability and confidence to manage



personal finances through making appropriate short-term decisions, long-term financial planning, and paying attention to economic events and conditions. Financial knowledge, skills, and beliefs possessed by an individual affect his financial attitudes and behavior. Increased knowledge possessed by a person can have an impact on active participation in financial-related activities, as well as more positive financial behavior in an individual. In addition, the relationship between behavior and one's attitude is seen in someone who has a positive attitude in the long term is likely to show better financial behavior than someone who has a financial attitude in the short term (Atkinson & Messy, 2012; Fernandes et al., 2014; Potrich et al., 2016; Yong et al., 2018).

Several studies have shown that financial literacy has an essential role in improving individual financial management abilities (Klapper & Lusardi, 2020). According to Lusardi & Mitchell (2014), consumers are positioned to manage savings and expenditures optimally to provide benefits throughout their lifetime. Households with low financial literacy tend not to plan their retirement (Lusardi & Mitchell, 2014). Research (Adams & Rau, 2011; Achari et al., 2020; Hauff et al., (2020) further confirms that financial literacy has financial planning readiness is facing retirement. Financial literacy is closely related to planning for retirement preparation and retirement in developed countries and is associated with more sophisticated investment habits (Xu & Zia, 2012).

2. Literature Review

Financial literacy has become a life skill for everyone to plan and manage finances well so that prosperity is achieved. Financial literacy has been found to have multiple benefits, showing positive benefits for individuals and families (Blalock et al., 2004; Kerkmann et al., 2000). According to Schmeiser & Seligman (2013) an increase in financial literacy can encourage changes in wealth from time to time. According to the OECD, (2016) tries to conceptualize financial literacy as a combination of awareness, knowledge, abilities, attitudes, and behaviors needed to make financial decisions. However, there is still a lack of models that present the dimensions of these concepts. Remund, (2010) stated that although there is no uniformity among the proposed definitions, most of the definitions fit into one of the following categories, namely knowledge of financial concepts, financial communication skills, attitudes towards managing personal finances, ability to make appropriate financial decisions, and confidence to plan for future financial needs. Financial literacy can be defined by four variables: financial knowledge, financial attitudes, financial behavior, and financial ability, all of which are correlated with each other, and financial knowledge, which coordinates attitudes that affect financial management behavior (Hung et al., 2009). Financial literacy is focused on three dimensions: financial knowledge, financial attitudes, and financial behavior (Atkinson & Messy, 2012). Meanwhile, Agarwal et al., (2010) stated that financial literacy is focused on three dimensions: financial knowledge, financial attitudes, and financial behavior.

Financial literacy is a measurement of a person's understanding of financial concepts and having the ability and confidence to manage personal finances through making appropriate short-term decisions, long-term financial planning, and paying attention to economic events and conditions (Remund, 2010). Financial literacy includes financial awareness and knowledge and its application in business and life (Carpena et al., 2019; Huston, 2010). Meanwhile (Willis, 2008) suggests knowledge in the context of financial literacy consists of education, knowledge and information about finance and its sources, banking, deposits, insurance, credit and taxes. A person's financial knowledge will develop into financial skills, which are defined as applying the financial knowledge they have in everyday life (Palameta et.al, 2016). According to Kurihara (2013), with financial skills, a person can make more rational and effective decisions about finances and economic resources. Therefore, financial literacy is not just a fundamental concept in financial education (McCormick, 2009; Huston, 2010). Effective financial management is not only related to financial knowledge but is also measured by financial behavior and attitudes (Norvilitis & Maclean, 2010; Xiao et al., 2011).

Financial knowledge is a specific type of capital acquired in life by learning how to manage income, expenses, and savings safely (Delavande et al., 2008). Behavioral finance is the most crucial element of financial literacy (OECD, 2013). In addition to recent research findings, behavioral finance. Dimensions are determinants of financial literacy (Lusardi & Mitchell, 2014). Several studies have shown the relationship between financial knowledge and behavior (Jappelli & Padula, 2013; Lusardi, Michaud & Mitchell, 2014; Serido et al. 2013; Willis, 2008). However, the relationship between financial knowledge and financial behavior is not always proven to be a causal relationship (Batty et al., 2015). Serido et al.'s research. (2013) showed a significant influence of financial knowledge on financial behavior and concluded that if knowledge of financial matters is internalized, it can result in acceptable financial behavior. Similarly, recent research reveals that higher financial knowledge results in higher standards of financial behavior (Hilgert et al., 2003; Loke, 2015; Potrich et al., 2016; Servon & Kaestner, 2008).

In a financial context, an attitude refers to the psychological tendency to decide what is best and second-best after considering the good and the bad when making specific investment decisions which, in other words, supports some behavior (Eagly & Chaiken, 1993). Individual financial behavior is mainly seen if knowledge of financial issues has been internalized (Serido et al., 2013). Such internalization can be better captured and explained through the financial attitude component in a model. Financial attitudes and intrinsic behavior are also necessary for financial literacy (Loke, 2015). Only a few studies have considered the influence of financial attitudes on financial practices and behavior. For example, Agarwalla, Barua, Jacob and Varma (2015); Atkinson and Messy (2012); Potrich et al. (2016) consider knowledge, attitudes and behavior as components of financial literacy. Financial behavior can be changed with better financial knowledge and attitudes (Hayhoe et al., 2005) and in turn, positive financial attitudes result in better financial management practices (Beer, 2016). Furthermore, Bir (2016) concludes that financial attitudes significantly influence financial knowledge in financial management practices among fresh graduates. Serido et al. (2013) found that subjective financial knowledge was significantly related to financial attitudes in the context of financial confidence.

Financial behavior is a significant determinant of financial literacy (Fernandes et al., 2014; Lusardi & Mitchell, 2014; Potrich et al., 2016), and financial knowledge and attitudes precede financial behavior (Hayhoe et al., 2005; Potrich et al., 2016). A longitudinal study proves that financial knowledge affects financial confidence (including financial attitudes), which affects financial behavior and ultimately affects individual finances and overall well-being (Serido et al., 2013). The relationship between financial attitudes and financial behavior can be understood in research related to credit cardholders. This study noted a positive relationship between attitudes and behavior of credit card holders (Rutherford & DeVaney, 2009). Experimental studies support financial knowledge through financial education programs influencing financial attitudes that impact financial behavior. For example, it was found that students who received financial education had improved financial attitudes and improved financial behavior a year later compared to the control group (Batty et al., 2015).

3. Research Method and Materials

3.1. Materials and Measurement

This type of research is survey research with a quantitative approach. Survey research is defined as collecting information from a sample through respondents' responses to questions or statements (Check & Schutt, 2012; Uma Sekaran, 2014). In this study, the researcher used some parameters as one of the criteria for determining adequate sample size in SEM analysis. The sample size can be determined based on the indicator number used to measure the variable (Hoogland & Boomsma 1998). If there are 27 indicators in this study, the sample required is 405. Then when using a ratio of 1: 10 (Hoogland & Boomsma 1998), the sample is 270. The minimum number of samples recommended by experts for structural equation model analysis is 200 (Hair, Babin & Anderson, 2009). So the researchers took a sample of 2 times that is 400. The sampling technique was done by random sampling.

This study consisted of exogenous and endogenous variables. The exogenous variables in this study are financial literacy skills, financial literacy knowledge. In contrast, the endogenous variable is financial literacy behavior. Based on the researcher's knowledge, there is no operationally valid instrument to measure overall financial literacy. Therefore, the proxies were selected according to the procedure adopted by many previous studies (Knoll & Houts, 2012; Atkinson & Messy, 2012), which evaluated literacy by various factors. In this study, financial literacy refers to the definition recommended by the OECD (2012), Atkinson & Messy (2012), Agarwalla et al. (2013) that financial literacy is defined as financial behavior, financial knowledge, and financial attitudes. To model financial behavior, several questions developed by Chen and Volpe (1998), Johnson & Sherraden (2007) and Shockey (2002) have been used and adapted to fit the Indonesian context consisting of 20 questions using a five-point Likert scale (1 = no never up to 5 = always) is used to evaluate student behavior regarding financial management, as it relates to the use of personal credit, planned consumption, investment and savings. High scores on the scale indicate good financial behavior. To evaluate the level of academic, financial knowledge, the mean of the two groups of multiple-choice questions was adapted from Rooij et al. (2011). The first group (basic knowledge) consists of three questions and aims to measure essential financial ability with questions related to inflation, tax rates, and money value in time. The second group (advanced knowledge) consists of five questions that explore the level of knowledge with complex financial instruments, such as stocks, public bonds, and risk diversification.

The classification of questions between basic and advanced knowledge was inspired by a study by Rooij et al. (2011), which considers the level of difficulty of the questions. Furthermore, at the instrument validation stage, content validation is carried out by experts. Each correct answer from the primary knowledge group was given a score of 1.0, while each correct answer from the advanced knowledge group was given a score of 2.0. According to this scale, the higher the score, the better is the level of financial knowledge. To model financial attitudes, use the scale developed by Shockey (2002). The scale is formed using nine questions based on a five-point Likert scale (1 strongly disagree and 5 strongly agree). The purpose of this scale is to identify how individuals evaluate student financial management. Thus, the higher the score, the better the individual's financial attitude. The choice of this scale has been considered to be best adapted to the Student context. Based on Churchill's (1979) model, the scale was validated by two experts and tested on 112 students to improve and improve measures through the item response theory (IRT) Rasch Model.

The data collected were then analyzed using descriptive and multivariate statistical analysis techniques. Statistical analysis used in this study is the average, standard deviation, frequency, and percentage. At the same time, the multivariate data analysis technique used confirmatory factor analysis (CFA). We utilized computer software to assist in data analysis, namely Winstep, SPSS Version 23, and Analysis of Moment Structures (AMOS) version 23. Specifically, the data analysis used in this study used Structural Equation Modeling (SEM) data analysis techniques. To ensure the suitability of the SEM model statistically, the value of the sample covariance matrix must not differ significantly from the population covariance matrix value. According to Hair et al. (2009) and Kline (2016) to ensure the suitability of the data model with the research model, there are two forms of model suitability index, namely the overall fit index and the component fit index. Furthermore, according to Hair et al. (2010) and Kline (2016), the overall conformity index measured was the statistical test scores of chi-square, degree of freedom, probability (p), and RMSEA (Root Mean Square Error of Approximation). The chi-square value should not be statistically significant for rejected null hypothesis fail, the df value is positive, and the p-value exceeds 0.05. The null hypothesis states that the sample covariance is not significantly different from the population covariance. However, the chi-square value is sensitive to the sample size. The number of variables, and the normality of the overall variables, so the researcher uses other alternatives in determining the suitability of the model, namely GFI (Goodness of fit index), CFI (Comparative Fit Index), TLI (Tucker Lewis Index). PCLOSE and AIC (Byrne 2010; Hair et al., 2010; Kline 2016).

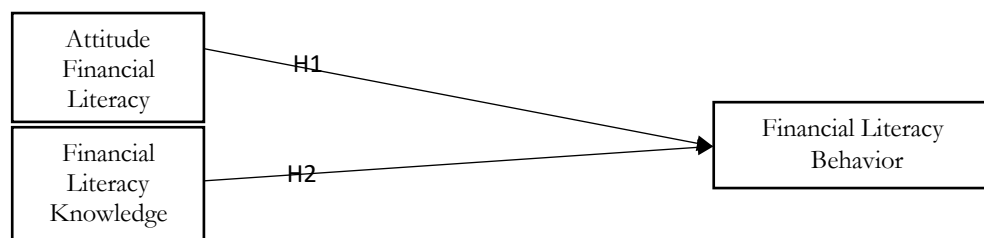


Figure 1: Conceptual Framework

4. Results and Discussion

4.1. Statistics Analysis

Normality test is one of the requirements in model testing for path analysis. Determination of the normal distribution can be determined using the value of skewness and kurtosis (Tabachnick & Fidell, 2013). Even in psychological research or other social research, it is impossible to get a perfectly normal distribution. There are several opinions about the acceptable value of skewness and kurtosis in determining a normal distribution or not. According to Tabachnick & Fidell (2013), the interval of skewness and kurtosis values between -1.0 to 1.0 can be categorized as customarily distributed data. Meanwhile, according to Kline (2016) the value of skewness and kurtosis with an interval value of -2 to +2 data is still categorized as usual. There are even experts who argue more loosely by stating that only if the skewness value exceeds 3.0 is it considered as extreme (Bentler & Chou, 1987) and the kurtosis value exceeds 10.0 is considered problematic (Kline, 2016).

According to Kline (2016), the kurtosis score < 8.0 and skewness < 3.0 indicates that the data is usually distributed. Meanwhile, West and Finch (1997) limit the normal data, namely the kurtosis

value < 7.0. Bentler and Chou (1987) put forward a stricter view that the value of skewness and kurtosis > 3.0 is thought to be data that is not normally distributed. Anderson & Gerbing (1988) opinion requires the data to be generally distributed on univariate variables between + 2 to -2. This opinion follows Anderson & Gerbing (1988) opinion, which is relatively loose and straightforward for checking the normality of each variable. Based on table 1, all data variables have skewness and kurtosis values between values of -1 to +1. Therefore, all data variables are typically distributed and meet the requirements of path analysis.

Table 1: Normal Distribution

Variable	min	max	skew	c.r.	kurtosis	c.r.	Decision
PDK	-3.340	1.990	-.114	-1.039	-.585	-2.670	Data is normally distributed
SK	-1.050	6.530	.268	2.449	.224	1.025	Data is normally distributed
PK	-2.870	1.960	.438	4.001	.287	1.311	Data is normally distributed
Multivariate					-.166	-.340	

In addition to checking the normality of the data, researchers need to also check for linearity. It is done as part of another requirement for conducting path analysis. Linearity research was done by examining the Normality Probability Plot (PP) and Scatterplot (Pallant, 2016; Tabachnick & Fidell, 2013; Hair et al., 2015), as shown in figure 2:

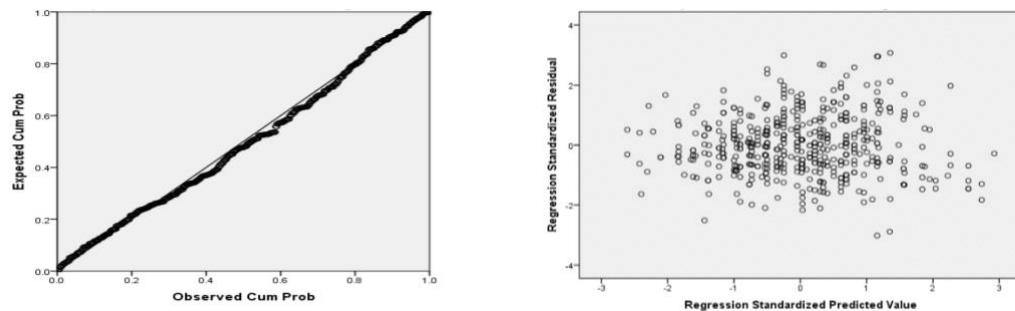


Figure 2: Scatter Plot and Normal P-P Endogenous and Exogenous Variables

Multicollinearity is a strong relationship between independent variables (Tabachnick & Fidell, 2013; Hair et al., 2015). Multicollinearity can interfere with the analysis, especially for models that are not correct in the regression equation. Multicollinearity can also add to the deviation error in the parameter design. The most commonly used way to check for multicollinearity is to examine the correlation matrix between variables. If the correlation is robust, especially between variables ($r = .90$ and above), it is said that there is a multicollinearity problem (Pallant, 2016). According to Tabachnick and Fidell (2013), the correlation value between independent variables should not exceed 0.7. In this study, the Pearson correlation test between research variables can be seen in table 2:

Table 2. Multicollinearity Test With Pearson Correlation Test

		Financial Attitude	Basic Knowledge of Finance
Financial Attitude	Pearson Correlation	1	.006
	Sig. (2-tailed)		.892
	N	500	500
Basic Knowledge of Finance	Pearson Correlation	.006	1
	Sig. (2-tailed)	.892	
	N	500	500

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows the correlation value between variables, namely 0.006. It shows that there is no multicollinearity problem. Another method to determine the singularity and multicollinearity is the tolerance value and the variance inflation factor (VIF). According to Tabachnick and Fidell (2013), if the tolerance value for each variable is below 0.40 or the variance inflation factor (VIF) value exceeds 2.50, it is sufficient for researchers to say that there is a multicollinearity problem. The characteristics of multicollinearity are also determined through the value of the Tolerance and Variance Inflation Factor (Pallant, 2007). The tolerance value indicates how many stages of change (variability) in variables are not explained by other variables in the model. The tolerance value is less than 0.10, or

VIF exceeds. Through SPSS software, tolerance and VIF values can be tested using collinearity diagnostics together with regression analysis. In the multicollinearity test, it can be seen in table 3.

Table 3: Multicollinearity Test with Tolerance Test and VIF

Exogenous Variable	Endogenous Variables (Financial Literacy Behavior)	
	Tolerance	VIF
1 (Constant)		
Financial Literacy Attitude	1.000	1.000
Financial Literacy Knowledge	1.000	1.000

Based on table 3, the decision analysis shows the tolerance value exceeds 0.4 and the VIF value does not exceed 2.5. Therefore, the results state that there is no multicollinearity problem.

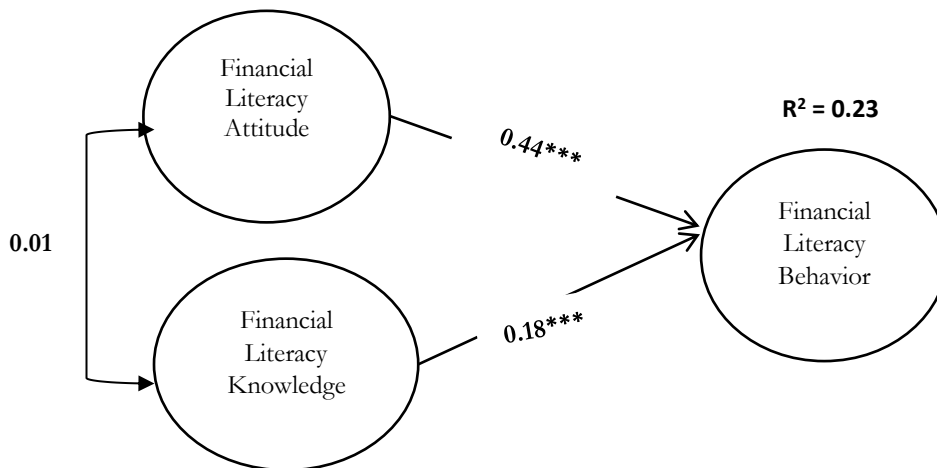


Figure 3: The results of the research model test

Table 4: Model Fit (ANOVA)^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	68.558	2	34.279	74.280	.000b
Residual	229.358	497	.461		
Total	297.916	499			

a. Dependent Variable: Financial Behavior

b. Predictors: (Constant), Financial Attitude, Basic Financial Knowledge

The model's suitability shows that the financial literacy behavior equation model or path coefficient test is in Table 4. The comprehensive test or F test on the sub-structure with an F value Count is 74,280 with a significance value (p) of 0.000. It means that there is a suitability of the equation model to continue on the influence test between variables (p < 0.05). After testing the model, hypothesis testing was conducted to determine the direct effect between variables. The hypothesis that the researcher has proposed is tested by calculating the path coefficient and significance for each path studied.

Table 5: Test of Effects Between Variables

	Construct		Estimate	S.E.	C.R.	P-Value	Result
PK	<---	SK	0.444	.022	11.310	***	Significant= p <0.001
PK	<---	PDK	0.178	.023	4.540	***	Significant= p <0.001

Information:

PK = Financial Literacy Behavior

SK = Financial Literacy Attitude

PDK = Basic Knowledge of Financial Literacy

Financial Literacy Attitudes have a direct effect on Financial Literacy Behavior. The submission of this hypothesis is to prove that Financial Literacy Attitudes directly affect Financial Literacy Behavior. The calculation results in Table 5, the path coefficient value β_1 is 0.44 with t count or Critical Ratio (CR) = 11.310 with Sig = 0.000. Therefore, it can be interpreted that Financial Literacy

Attitude) has a direct effect on Financial Literacy Behavior ($\beta = 0.44$; $p < 0.001$). The results of this study strengthen several researchers, including the research of Bir (2016) which concludes that financial attitudes have a greater influence on financial knowledge in financial management practices among new graduates. Serido et al. (2013) found that subjective financial knowledge is significantly related to financial attitudes in the context of financial confidence.

Basic Knowledge of Financial Literacy has a direct effect on Financial Literacy Behavior. The submission of this hypothesis is to prove that the Basic Knowledge of Financial Literacy (X2) directly affects Financial Literacy Behavior. The calculation results in Table 5, the path coefficient value β_2 is 0.18 with t count or Critical Ratio (CR) = 4,540 with Sig = 0.000. Therefore, it can be interpreted that basic knowledge of Financial Literacy directly affects Financial Literacy Behavior ($\beta = 0.18$; $p < 0.001$). It shows a relationship between financial knowledge and behavior (Jappelli & Padula, 2013; Lusardi, Michaud & Mitchell, 2014; Willis, 2008. Serido et al., (2013) research shows a significant influence of financial knowledge on financial behavior and concludes that if knowledge of financial matters is internalized can result in acceptable financial behavior. Similarly, recent research reveals that higher financial knowledge results in higher standards of financial behavior (Hilgert et al., 2003; Loke, 2015; Potrich et al., 2016; Servon & Kaestner, 2008).

To compare the results of path analysis using AMOS and SPSS software, the researcher uses Winstep to analyze the variables that influence financial literacy behavior, as shown in Figure 4.

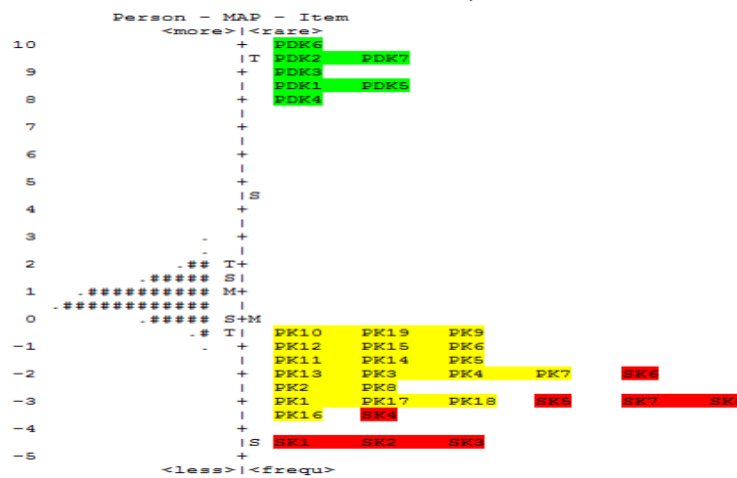


Figure 4. Variable Item Map

Figure 4 shows the agreement with the results of the Path that the Financial Literacy Attitude variable contributes the most to the financial literacy factor. The results of this study are similar to the research of Bir (2016) which concludes that financial attitudes have a more significant influence on financial knowledge in financial management practices among new graduates. The contribution or contribution to see the percentage contribution of financial literacy attitudes and basic knowledge of financial literacy to financial literacy behavior is shown as shown in table 6.

Table 6. Correlation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.480a	.230	.227	.67933

a. Predictors: (Constant), Financial Attitude, Basic Financial Knowledge

Based on table 6, the correlation value (r) between the contribution of financial literacy attitudes and basic knowledge of financial literacy to financial literacy behavior is 0.480. This relationship shows a strong relationship. It also shows that 23% of financial literacy behavior is determined by financial literacy attitudes and basic financial literacy knowledge.

5. Conclusion

Several studies have considered the influence of financial attitudes on financial practices and behavior. For example, Agarwalla, Barua, Jacob and Varma (2015); Atkinson and Messy (2012); Potrich et al. (2016); Shockey (2002) considers knowledge, attitudes and behavior as components of financial literacy. Financial behavior can be changed with better financial knowledge and attitudes (Hayhoe et al., 2005) and in turn, positive financial attitudes result in better financial management

practices (Beer, 2016). Financial Literacy Attitudes contributed the most to financial literacy factors in line with Bir (2016)'s research, which concluded that financial attitudes greatly influenced financial knowledge in financial management practices.

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