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FINANCIAL LITERACY AND ITS VARIABLES: THE EVIDENCE FROM INDONESIA

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ABSTRACT. The purpose of this study is to investigate and measure the level of financial literacy and its variables within the academic community in Indonesia. The strength of this study is that it extends the concept of financial literacy and its variables. This study explains how members of Indonesian academic community understood their financial literacy levels and the ways in which it can be improved. The study sample comprised 889 lecturers in Indonesia. The survey method was used to measure financial literacy and its variables which include subjective financial knowledge, financial behavior, financial experience, financial awareness, financial skills, financial capability, financial goal, and financial decisions, as reflected in individuals' financial behavior. The research data were collected using a quantitative survey and were analyzed using structural equation modeling (SEM). The results confirm the relationships between financial literacy and its variables of financial awareness, financial behavior, financial experience, financial skills, subjective financial knowledge, financial capability, financial goals, and financial decisions. This study fills the gap in the literature related to the multi-variables of financial literacy. It provides information to assist policy-makers in developing strategies to increase financial literacy in society.

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Introduction

Numerous studies show that research on financial literacy is increasing, both in importance and concern. With the recent shift to digital finance, the crisis of trust in financial institutions and financial fraud practices, individuals are now seeking to obtain more information before deciding whether to buy financial products, taking responsibility for their own decisions, and knowing the consequences of having inadequate knowledge while dealing with financial matters. Research on the concept of financial literacy has, to date, been increasingly diverse in its explanation of the multi-variables behind financial literacy. It has covered not only financial knowledge, but also other variables, such as financial awareness, financial attitude, financial skills, financial experience, financial decisions, etc. Furthermore, Knoll and Houts (2012) conducted a study measuring financial literacy and stated that exploring multi-variables other than knowledge is a significant development in the financial literacy studies.

It has been over a decade since the 2008 global financial crisis (GFC). This crisis, driven by subprime mortgage problems in the financial sector, was the trigger for policy makers around the world to express concern about the lack of financial literacy among the people worldwide. Lack of financial literacy affects financial decisions: ultimately, it caused the GFC and disrupted financial stability. This is a global matter that must be addressed (Tschache, 2009; Lusardi & Mitchell, 2014; Priyadharsini, 2017). Financial decisions relate to how people spend, save, and invest money. Knowing how to better manage one's personal finances plays an important role in the digital economic era. Financial literacy is linked to financial stability which, in turn, leads us to a more efficient economy (Singh, 2014).

Lack of financial literacy allows a person to unconsciously make inappropriate financial decisions and be less able to deal with sudden economic shocks (Hung et al., 2009). In line with this finding, Lusardi (2012a) provided evidence that financial literacy and numeracy are linked to many financial decisions, such as those related to saving, spending, investing, and borrowing. Grohmann (2018) revealed that higher financial literacy led to improved financial decision making. This is also consistent with the findings of Chen and Volpe (1998) and Lusardi (2012b) stating that low level of financial literacy and knowledge would restrict the ability to make decisions. Chijwani (2014) strengthened previous studies' results, indicating that low level of financial literacy may lead to financial decisions that can have adverse effects on personal financial conditions. From the previous studies above, evidence shows that people who are more financially literate are more capable of making financial decisions. Furthermore, strengthening financial literacy also helps people to achieve their financial goals, with these goals relating to how people establish a plan to save and to spend money. Garg and Singh (2018) indicated that financial literacy among most young people worldwide is still low and is a cause for concern. This finding is in line with the study by Yakoboski et al. (2019) which provided evidence that individuals with high levels of financial literacy are more likely to have the capacity to handle financial shocks, are more likely to regularly save for retirement, and are less likely to be in debt. Evidence on the lack of financial literacy has also been found among children (Te'eni-Harari, 2016).

Prior studies, carried out during the 1990s, conducted on financial literacy have focused on the individual understanding of financial concepts, the ability to correctly interpret financial data, general financial knowledge, and money management (Bakken, 1966; Chen & Volpe, 1998; Danes & Hira, 1987). In the 2000s, financial literacy is now measured not only as financial knowledge (Hilgert et al., 2003; Lusardi & Mitchell, 2011), but also with other variables added, such as financial skills, financial behavior, and perceived knowledge (Hung et al., 2009). Other models of financial literacy are conceptualized into three dimensions, namely, financial knowledge, financial attitude, and financial behavior (Atkinson and Messy,

2011). The concept of financial literacy through knowledge, skills, attitude, and financial behavior is also supported by (Atkinson & Messy, 2012; Lusardi & Mitchell, 2013; Xiao et al., 2014; Khan et al., 2017). Priyadharshini (2017) provided evidence that financial literacy and its variables, such as financial attitudes and behavior, financial skills, financial knowledge, financial capability, financial awareness, financial goals, and financial decisions, are interlinked and interdependent.

In addition, previous studies have investigated different aspects of financial literacy, such as that among students (Akben-Selcuk, 2015; Belás et al., 2016; Cole et al., 2012; Gavurova et al., 2017; Hagedorn et al., 2012; Nidar & Bestari, 2012; Wright, 2016; Sozou, 2016; Sarigül, 2014); among employees (Agarwalla et al., 2013; Bhushan and Medury, 2013; Bhushan, 2014; Volpe et al., 2006; Yildirim et al., 2017); and entrepreneurs (Oseifuah, 2010; Fatoki, 2014) but studies on lecturers in the academic community are limited (Lucey et al., 2014; Priyadharshini, 2017; Setyawati & Suroso, 2016). Lecturers recognize the importance of increasing financial literacy in their profession owing to their role as educators. Financial education has been found to significantly affect financial literacy (Kaiser & Menkhoff, 2017).

Why should we be financially literate? The reason is that anyone can fall victim to financial fraud: it is not only the young but also older people who, in particular, are frequently targeted by certain types of fraud. New fraud schemes emerge constantly, aiming to trick people into taking actions that result in losing their money. It is important to know financial products and services before deciding to buy or to join. Enhanced financial literacy will have a profound impact on people's well-being, helping them to avoid the pitfalls of debt and investment fraud. It is never too early or too late to improve own financial literacy. By taking steps involving decisions such as setting up a spending plan, controlling consumptive borrowing, and preparing emergency and retirement funds, financial insecurity can be reduced and financial goals can become attainable. Strengthening financial literacy is based on the objectives of this study which are: (1) conceptualizing a financial literacy model comprising subjective financial knowledge, financial skills, financial goals, financial awareness, financial experience, financial capabilities, financial behavior, and financial decisions; (2) measuring the level of financial literacy among the lecturers; (3) verifying the financial literacy model through its objectives among the academic community in Indonesia, a developing country; and (4) establishing the interdependence between the financial literacy variables.

1. Literature review

Financial literacy is described using various concepts that continue to be studied and developed over time. Previous studies have conceptualized financial literacy using multi-variables (Atkinson and Messy, 2012; Huston, 2010; Hung et al., 2009; Khan et al., 2017; Lusardi and Mitchell, 2013; Xiao et al., 2014; Priyadharshini, 2017; Dewi et al., 2020). In recent years, the conceptualization of financial literacy has increasingly evolved along with the development of dynamic financial issues. Prior studies have shown and provided evidence of the relationships among financial literacy variables. The current study further developed the concept of financial literacy from the work in previous research studies, as found in the literature and empirical data. The following sections explain the concept of financial literacy from the perspectives of various empirical and theoretical studies identified by the current study's authors in the literature review process.

1.1. Subjective financial knowledge

Financial knowledge is a form of literacy in financial matters. Huston (2010); Hilgert et al. (2003) defined financial literacy as financial knowledge, with this also seen as the basis of appropriate financial decision-making (Lusardi, 2012b). Previous studies have shown that financial knowledge affects both financial behavior (Babiarz and Robb, 2014; Woodyard et al., 2017), financial goal (Priyadharshini, 2017) and financial decisions (Asaad, 2015; Parker et al., 2012). To measure the level of financial knowledge, subjective financial knowledge or perceived knowledge and objective financial knowledge have been used. Subjective financial knowledge is how people perceive themselves in terms of what they know and how they would assess their level of financial knowledge (Allgood and Walstad, 2013; Babiarz and Robb, 2014; Khan et al., 2017; Mishra and Kumar, 2011). Objective financial knowledge is what is actually stored in memory and is measured by assessing people's levels of understanding of various components of financial markets and products, such as numeracy, assets, debts, savings and investments, value of money, inflation, compounding interest, and risk diversification (Lusardi et al., 2010; Lusardi and Mitchell, 2014).

Previous studies have revealed that subjective financial knowledge has a positive relationship with financial well-being (Riitsalu and Murakas, 2019; Woodyard, 2013); financial behavior (Allgood and Walstad, 2013; Deenanath et al., 2019; Hilgert et al., 2003; Robb and Woodyard, 2011; Sivaramakrishnan et al., 2017; Seay and Robb, 2013; Tang and Baker, 2016; Xiao et al., 2014); and financial decisions (Khan et al., 2017). Even though previous studies have indicated that both objective and subjective financial knowledge are important to financial behavior to which they contribute different roles, several studies have revealed that subjective financial knowledge is more adequate for explaining financial decisions and behaviors than objective financial knowledge (Robb and Woodyard, 2011). Based on the previous research, in the current research, the measure of financial knowledge used is subjective financial knowledge.

1.2. Financial awareness

In increasingly global economic development, financial awareness is one of the elements needed to create financial stability. Financial awareness is part of financial literacy and is an important factor that influences perceived knowledge which ultimately influences decision-making (Khan, 2015; Mason and Wilson, 2000; Priyadharshini, 2017). Nga et al. (2010) provided evidence that financial awareness, that is, both general awareness and product awareness are affected by demographic factors. Khan (2015) indicated that financial awareness of financial products influences the financial decision. This emphasis is consistent with the finding of Priyadharshini (2017) which stated that financial awareness impacts on financial decisions through financial knowledge and financial capability. In their study on financial awareness, Guiso and Jappelli (2005) stated that lack of financial awareness has important implications for understanding financial knowledge matters that relate to financial products and services which, in turn, impact on decisions and investment in financial markets.

1.3. Financial experience

The experience of owning a financial product or sharing experiences of financial product ownership with others is another factor in addition to financial education that improves financial literacy. Frijns et al. (2014) found a positive and significant causal effect of financial experience on financial literacy. Someone with good financial experience also has good financial knowledge. Even so, the existing literature is unable to determine the causal

effect of financial experience on financial literacy or vice versa due to methodological issues. Hogarth and Hilgert (2002) revealed that knowledge is worthless without applied experience, and that financially literate people had experience to bridge between knowledge and skills. Moore (2003) found a relationship between financial knowledge, financial experience, and financial behavior. Financial experience and behaviors affect a person's level of financial knowledge and their gains in competency.

1.4. Financial skills

Hung et al. (2009) suggested in their conceptual model of financial literacy that financial behavior depends on three variables: actual knowledge, perceived knowledge, and financial skills. Furthermore, Khan et al. (2017); Lusardi and Mitchell (2013); and Xiao et al. (2014) revealed that financial skills, financial knowledge, and financial attitude affect financial behavior. Atkinson and Messy (2012) strengthened the results of previous studies, extending this model by adding financial well-being which is affected by knowledge, skills, and attitude through to financial behavior. Priyadharshini (2017) stated that financial skills relate to an individual's ability to make decisions based on information to minimize the possibility of becoming entangled in financial problems. Lusardi and Mitchell (2011) observed that people lack the basic financial skills needed to create and manage budgets, understand credit, understand investment instruments, or utilize the existing banking system, with many ultimately becoming trapped in financial problems. This was one of the causes of the GFC which occurred under conditions where people were not financially literate. Improving the ability of individuals to manage finances can be done by improving their basic financial skills, such as preparing budgets and gathering information (Elbogen et al., 2011). Cramer et al. (2004) promoted a measurement tool for assessing financial skills using the Measure of Awareness of Financial Skills (MAFS). Remund (2010) suggested that the four most common operational definitions of financial literacy are budgeting, saving, borrowing, and investing, all of which emphasize the importance of the ability to use knowledge and skills to manage money. This definition strengthened the Jump\$tartCoalition for Personal Financial Literacy that defines financial literacy as the ability to use knowledge and skills to effectively manage financial resources for a lifetime of financial well-being.

1.5. Financial capability

Financial capability has recently been introduced within the financial literacy concept. Lusardi (2011) measured financial capability using terminology such as: how well people make ends meet, plan the future, choose and manage financial products and services, and develop their own skills and knowledge to make financial decisions. Financial capability includes a person's knowledge, their skills to understand their own financial situation, and their motivation to take action (Priyadharshini, 2017). Kempson et al. (2006) and the organisation for economic co-operation and development (OECD) (2009) developed a financial capability model that emphasizes the behavioral, knowledge, and attitude components, with six components measured in financial capability, namely, the ability to meet needs, the ability to track, the ability to choose the appropriate product, the ability to plan ahead, the ability to obtain and use information, and the ability to obtain assistance, such as advice that can be understood so people can act to overcome the financial problems they face. This model was then used by Robson (2013) to study the financial literacy of Canadian society. According to the OECD (2013), financial capability is the ability to manage finances day to day and the ability to plan for the future. Meanwhile, according to Cohen and Nelson

(2011), financial capability is the ability to take advantage of opportunities by using knowledge and skills in one's existing financial literacy by applying what he/she learns from time to time. Financial capability is also defined as financial capacity based on a combination of knowledge, skills, and appropriate access to financial products and services (Despard & Chowa, 2014; Birkenmaier et al., 2013). Xiao (2016) used the following indicators: objective financial literacy, subjective financial literacy, desirable financial behavior, perceived financial capability, and a financial capability index to measure financial capability. Kempson et al. (2006) indicated three elements of financial capability: (1) financial knowledge and understanding; (2) financial skills and competence; and (3) financial responsibility. The Financial Service Authority (2005) mentioned four important elements that helped people learn to improve their financial capability, namely: (1) managing money; (2) planning ahead (budgeting, retirement planning, and insurance); (3) the ability to make choices such as comparing costs and identifying products with risk; and (4) independence to obtain help through third parties. Previous research measuring financial literacy through financial capability variables has included studies by Ajzerle et al. (2013); Atkinson et al. (2007); Cohen and Nelson (2011); Collard et al. (2006); Kempson et al. (2006); Leskinen and Rajas (2006); Mandigma (2013); Priyadharshini (2017); Remund (2010); Xiao et al. (2014); and Xiao and Porto (2017).

1.6. Financial goals

Financial goals play an important role in measuring a person's financial literacy. Without specific and measurable financial goals, a person will not have a road map to guide him/her towards financial freedom (Priyadharshini, 2017). Clearly defining financial goals can help a person to make wise decisions to avoid accepting offers of tempting but misleading financial products. Determining effective financial goals is the key to success in achieving financial freedom. Having a healthy money situation should be the goal of every individual but, without this goal, a person's financial health can be affected by poor decision-making. Of course, with good financial literacy, one can make decisions based on the right information. Creating financial goals can be done by setting goals based on time, for example, short, medium, and long term. In addition to setting goals, we also need to think about how to achieve these goals, whether by saving or choosing a step forward to address debt. Previous studies that have measured financial literacy through financial goal variables are by Hogarth et al. (2002); Robb and Woodyard (2011); Woodyard (2013); and Priyadharshini (2017).

1.7. Financial decisions

Well-informed, well-educated individuals should make better decisions on financial matters for their well-being and to help the community to foster economic development (Hogarth, 2002). Lack of financial literacy can lead to making poor financial decisions that can have adverse effects on an individual's financial wealth. Previous studies have investigated the effect of financial literacy on financial decisions both in developed countries (Klapper et al., 2011) and developing countries (Priyadharshini, 2017). Financially literate people can make decisions on their use of financial products, and services. Financial products are very diverse and complex, complicating decision-making about choices. It is easy to measure financial knowledge, but it is difficult to explore how someone processes the financial information obtained and makes financial decisions. People who are more financially literate will better understand financial instruments and their terms, so they can

more prudently make financial decisions (Khan, 2015). Furthermore, Grohmann (2018) found that that higher financial literacy leads to improved financial decision-making.

1.8. Financial behavior

Lack of financial literacy has been shown in behavioral evidence from individuals in many countries. Responsible behavior is essential. The economic and financial setbacks in recent decades have been the subject of studies by world financial institutions and researchers. The need for financial literacy has become urgent as financially responsible behavior is needed to shape the future. Previous studies on financial behavior, contributing to the development of financial behavior measurements, were conducted from the 1970s through to the 1990s (Fitzsimmons et al., 1993). Furthermore, Xiao (2008) developed the theory of financial behavior, with the two behavioral theories that underlie the theory of financial behavior being the theory of planned behavior (TPB) to predict and understand human behavior (Ajzen, 1991) and the trans-theoretical model of behavior change (TTM) to help people achieve positive behavior and change negative behavior (Prochaska et al., 1992). Moreover, Hilgert et al. (2003) studied the correlation between knowledge and behavior, focusing on four financial management activities: cash-flow management, credit management, saving, and investment. Some studies have provided evidence that financial literacy has a significant effect on financial behavior, for example, on investment behavior (Bhushan, 2014; Hastings and Mitchell, 2020; van Rooij et al., 2012); on saving and spending behavior (Babiarz and Robb, 2014; Hung et al., 2009; Nye and Hillyard, 2013; Sabri and MacDonald, 2010; Zaimah et al., 2013); and on debt behavior (Bhushan and Medury, 2013; Robb, 2011).

1.9. Hypothesis

Based on the theories and previous research findings, and for the purpose of the current study, the following conceptual model, as shown in Figure 1, and the hypothesis below were proposed:

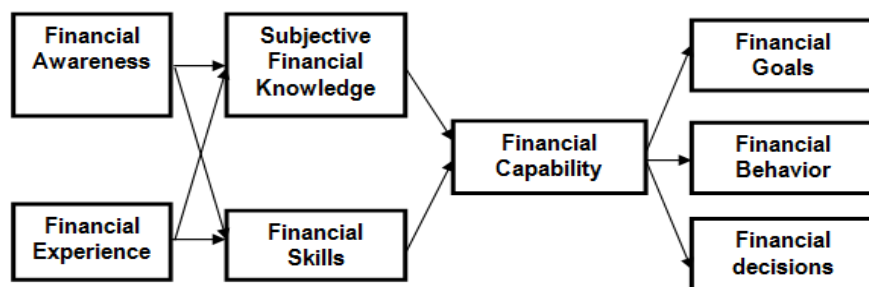


Figure 1. Conceptual model of financial literacy

The proposed hypothesis is:

H1: There is a relationship between financial literacy and its variables: financial awareness, financial experience, financial skills, subjective financial knowledge, financial capability, financial goals, financial decisions, and financial behavior.

2. Methodological approach

2.1. Data

This study focused on measuring the levels of financial literacy among the academic community and was conducted in the developing country, Indonesia. The population of this study was lecturers. This study used online and offline survey methods. About 1,000 questionnaires were distributed but only 935 respondents filling out the questionnaire. After validating the data, the number of valid questionnaires that could be used was 889: this complied with the minimum sample requirement, according to Hair et al. (2014). Table 1 (Annex) describes the respondents' demographics.

Table 1 shows that the gender profile of respondents is distributed as 52.8% female and 47.2% male. Most respondents hold a Master's degree (75.8%) and are assistant professors (65.3%), while the remainder of the sample comprises holders of a doctoral degree (24.2%) and lecturers (20.4%), associate professors (13.2%), and full professors (1.2%). Most respondents (62.8%) were in the outcome range of 3 million to 10 million Indonesian rupiahs. About 64% of respondents lectured in private colleges and universities (82.9%). The fields of study of about 52.8% of respondents were economics and business. The remainder of the sample (48.6%) were in fields that were non-economics and non-business. Most respondents planned to spend their money on education and vacations. About 43.2% of respondents saved their money in a conventional bank, about 21.8% of respondents had insurance and only 10.2% of respondents invested in mutual funds. About 64.6% of respondents had good savings habits, routinely saving every month. Surprisingly, when rating financial information sources and partners with whom to discuss financial issues, the lowest percentage of respondents (16.4%) was for broker/financial consultant, while family members had the highest percentage of respondents (56.1%).

2.2. Questionnaire design

Each questionnaire contained 34 questions of financial literacy indicators and 13 demographic questions. Table 2 (Annex) shows the 34 measurement variables used in the model estimation, identifying the associated latent variables as financial awareness, financial experience, subjective financial knowledge, financial skills, financial capability, financial goals, financial decisions, and financial behavior, with these constructed as the arithmetic total of responses to statements on 5-point Likert scales ranging from 1 = strongly disagree to 5 = strongly agree.

3. Conducting research and results

Structural equation modeling was the analysis technique used to investigate the relationships between financial literacy and its variables: financial awareness, financial experience, financial skills, subjective financial knowledge, financial capability, financial goals, financial decisions, and financial behavior. Tables 3 and 4 show the confirmatory factor analysis (CFA) and construct validity (CR) used to assess the measurement model's validity and reliability.

Table 3. CFA-loading factor for each measurement variable

Latent Variables	Measurement variable	Code	<i>t</i> -Value	Loading Factors	Variance Error	Result
Financial Awareness (FA)	Evaluate spending regularly	FA1	16.21	0.69	0.52	valid
	Make a list before shopping	FA2	13.7	0.71	0.50	valid
	Comparing some financial products before making a decision	FA3	15.09	0.61	0.63	valid
	Documenting bills	FA4	10.65	0.57	0.68	valid
	Gathering information related to financial issues	FA5	14.04	0.69	0.52	valid
	Willingness to discuss financial issues	FA6	14.69	0.59	0.65	valid
Financial Experience (FE)	Holding emergency savings	FE1	15.02	0.54	0.71	valid
	Doing financial records	FE2	18.73	0.67	0.55	valid
	Having experience in managing personal assets	FE3	22.92	0.81	0.34	valid
	Having investing experience on stock market	FE4	18.99	0.69	0.52	valid
	Have savings experience in non-bank financial institution	FE5	16.01	0.57	0.68	valid
Subjective Financial Knowledge (FK)	Write down where money is spent	FK1	20.16	0.69	0.52	valid
	Knowledge of risk and return	FK2	24.64	0.85	0.28	valid
	Discussion of economic and financial issues	FK3	19.60	0.67	0.55	valid
Financial Skills (FS)	Keep bills and receipts where they are easy to find	FS1	16.51	0.61	0.63	valid
	Evaluate savings financial statement on a regular basis	FS2	17.05	0.64	0.59	valid
	Managing risks through purchasing insurance	FS3	18.06	0.73	0.47	valid
	Evaluate debt on a regular basis	FS4	16.71	0.68	0.74	valid
Financial Capability (FC)	Pay bills	FC1	13.53	0.51	0.71	valid
	Money in cash	FC2	15.44	0.54	0.31	valid
	Buy things when need to be bought	FC3	22.57	0.83	0.42	valid
	Gathering information before deciding to buy	FC4	21.03	0.76	0.74	valid
Financial Goals (FG)	Make plans on how to use your money	FG1	19.93	0.73	0.47	valid
	Planning for long-term goals such as retirement	FG2	20.89	0.78	0.39	valid
	Saving money to buy items with cash rather than credit	FG3	16.55	0.59	0.65	valid
Financial Decisions (FD)	Make decisions without planning	FD1	20.78	0.67	0.55	valid
	Am sorry for buying something after being easily persuaded	FD2	21.59	0.71	0.50	valid
	Am sorry for buying something without consideration	FD3	24.28	0.74	0.45	valid
	Buy on impulse	FD4	29.19	0.86	0.26	valid
	Buy something after pressure from others	FD5	24.62	0.76	0.42	valid
Financial Behavior (FB)	Pay bills on time	FB1	15.88	0.68	0.54	valid
	Charitable behavior	FB2	15.05	0.62	0.62	valid
	Investment diversification	FB3	14.22	0.57	0.68	valid
	Retirement investment	FB4	13.07	0.65	0.58	valid

Data processing result using Lisrel 8.80

Table 4. Construct reliability (CR)

Variables	CR	Result
Financial awareness	0.81	Reliable
Financial experience	0.79	Reliable
Financial behavior	0.73	Reliable
Subjective financial knowledge	0.78	Reliable
Financial skills	0.76	Reliable
Financial capability	0.76	Reliable
Financial goals	0.74	Reliable
Financial decisions	0.87	Reliable

Data processing result using Lisrel 8.80

Table 3 provides the estimations of the loading factor for each indicator on each latent variable. As can be seen in Table 5, all the indicator variables have a loading factor estimate of more than 0.5. Each indicator also has a significant effect on each variable based on the *t*-test (*t*-value > 1.96, significance level = 5%). These loading factors are statistically significant, thus indicating good-quality items, based on Hair et al. (2014, p. 623). As shown in Table 4, the construct reliability for all latent variables is higher than 0.7; thus, it adequate convergence, or internal consistency, is indicated. Table 4 thus shows that the measurement of each latent variable is reliable.

Table 5. Goodness-of-fit measurement model

Variable	Chi-square	df	<i>p</i> -value (criteria > 0.05)	Goodness of fit	RMSEA (criteria < 0.05)	Goodness of fit
Financial Awareness	0.00	0	1.00000	Perfect fit	0.000	Perfect fit
Financial Experience	1.03	1	0.31116	Perfect fit	0.005	Perfect fit
Subjective Financial Knowledge	0.00	0	1.00000	Perfect fit	0.000	Perfect fit
Financial Skills	2.92	1	0.08751	Good fit	0.046	Good fit
Financial Capability	0.00	0	1.00000	Perfect fit	0.000	Perfect fit
Financial Goals	0.00	0	1.00000	Perfect fit	0.000	Perfect fit
Financial Decisions	1.62	2	0.44469	Good fit	0.000	Perfect fit
Financial Behavior	0.00	0	1.00000	Perfect fit	0.000	Perfect fit

Data processing result using Lisrel 8.80

Table 5 provides the goodness of fit for the measurement model using the criteria of chi-square, *p*-value, and root mean square error of approximation (RMSEA). Based on the chi-square criteria, the *p*-value of the chi-square for each latent variable is larger than 0.05, thus categorizing the latent variables as a good fit or perfect fit. Based on the RMSEA criteria, each latent variable is less than 0.05 and is categorized as a good fit or perfect fit.

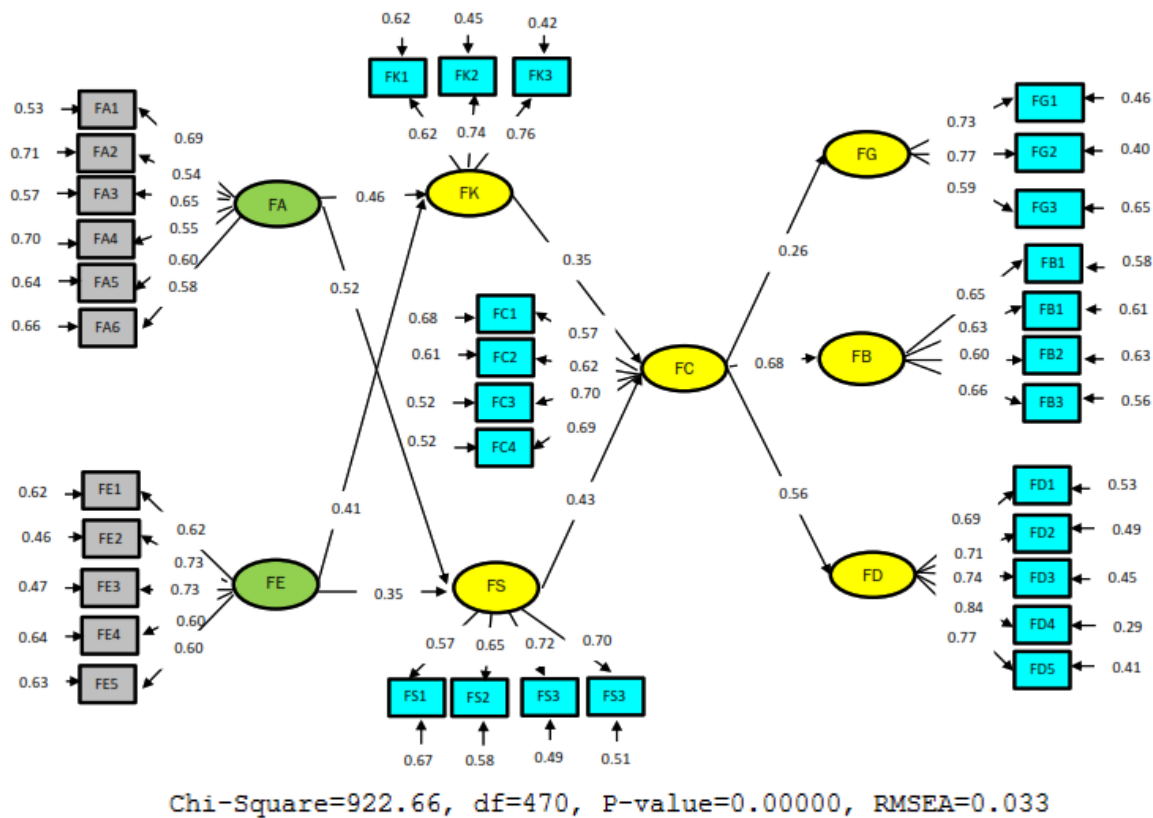


Figure 2: Structural measurement model – standardized solution
Source: Data processing result using Lisrel 8.80

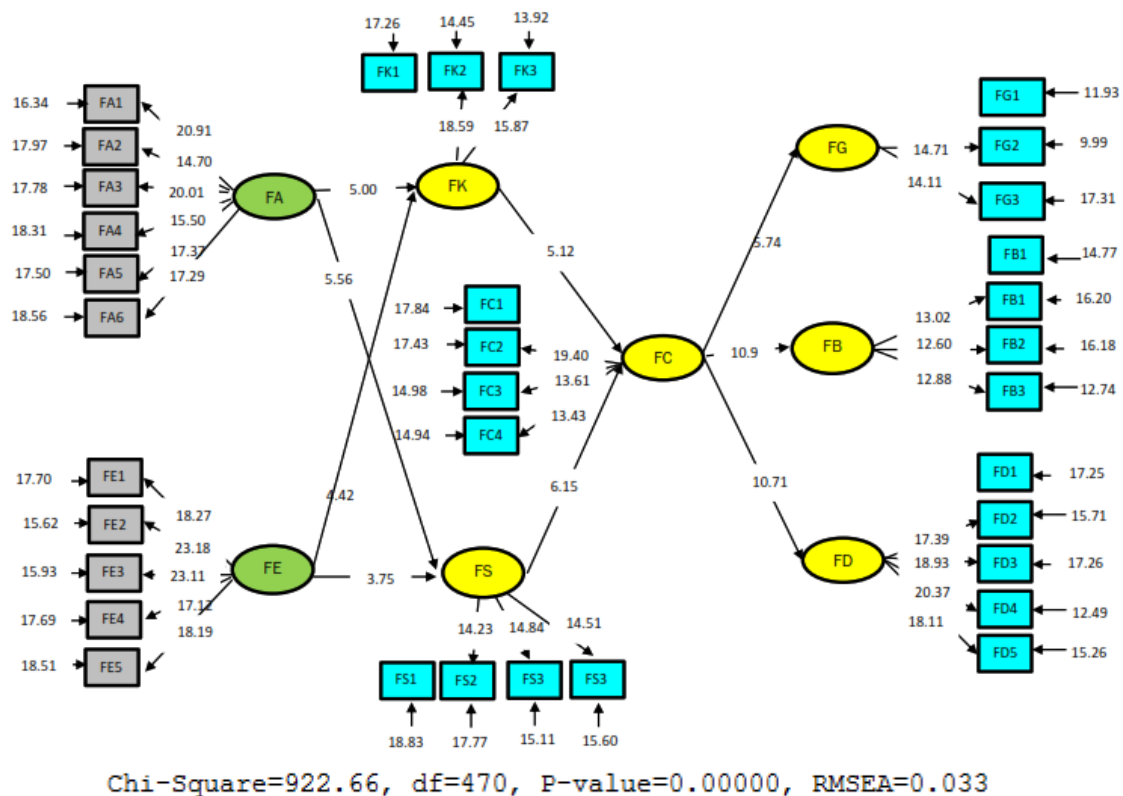


Figure 3: Structural measurement model – *t*-values
Source: Data processing result using Lisrel 8.80

As shown in Figure 2, financial literacy has eight multi-variables, with their relationships explained on the relationship path coefficients between financial literacy and its variables. Figure 3 explains the *t*-test of each independent variable. As shown by these values, the *t*-values exceeded the critical value of 1.96 (significance level = 5%), thus indicating that the latent constructs are significantly correlated with each other. The fit of the structural model was assessed, with the results shown in Table 6 below.

Table 6. Goodness-of-fit measurement

No	Statistics	Criteria Indicator of Fit	Value	Result
1	RMSEA	RMSEA < 0.05 (Joreskog & Sorbom, 1996)	0.033	Good fit
2	Chi-square/df	Chi-square/df ≤ 5	1.96	Good fit
3	ECVI	ECVI	1.32	Good fit
		ECVI Saturated	1.34	
		ECVI Independence	44.42	
4	AIC	AIC	1172.66	Good fit
		AIC Saturated	1190.00	
		AIC Independence	39640.66	
5	NFI	NFI ≥ 0.90	0.98	Good fit
6	CFI	CFI ≥ 0.90	0.99	Good fit
7	NNFI	NNFI ≥ 0.90	0.99	Good fit
8	IFI	IFI ≥ 0.90	0.99	Good fit
9	RFI	RFI ≥ 0.90	0.97	Good fit
10	GFI	GFI ≥ 0.90	0.94	Good fit
11	AGFI	AGFI ≥ 0.90	0.93	Good fit
12	PGFI	PGFI ≥ 0.60	0.74	Good fit
13	PNFI	PNFI ≥ 0.090	0.82	Good fit

Source: Data Processing Result using Lisrel 8.80

Notes: AGFI = Adjusted Goodness of Fit Index; AIC = Akaike's Information Criterion; CFI =Comparative Fit Index ; ECVI =Expected Cross-Validation Index ; GFI =Goodness of Fit Index ; IFI =Incremental Fit Index ; NFI =Normed Fit Index ; NNFI =Non-Normed Fit Index ; PGFI = Parsimony Goodness of Fit Index; PNFI =Parsimony Normed Fit Index ; RFI = Relative Fit Index

Table 6 shows that the structural equation model estimations are valid, based on the criteria for goodness-of-fit measurement. These results show that the model is appropriate as a measurement model for the data set. The results are also written below in Equation 1 to Equation 6. From the model, the hypotheses have been answered and were shown to have a significant positive effect.

Structural equations:

$$\begin{array}{l} \text{FK} = 0.46 \cdot \text{FA} + 0.41 \cdot \text{FE}, \text{Errorvar.} = 0.31, R^2 = 0.69 \\ \quad (0.092) \quad (0.092) \quad (0.046) \\ \quad 5.00 \quad 4.42 \quad 6.65 \end{array} \quad (1)$$

$$\begin{array}{l} \text{FS} = 0.52 \cdot \text{FA} + 0.35 \cdot \text{FE}, \text{Errorvar.} = 0.30, R^2 = 0.70 \\ \quad (0.094) \quad (0.093) \quad (0.045) \\ \quad 5.56 \quad 3.75 \quad 6.57 \end{array} \quad (2)$$

$$\begin{array}{l} \text{FC} = 0.35 \cdot \text{FK} + 0.43 \cdot \text{FS}, \text{Errorvar.} = 0.49, R^2 = 0.51 \\ \quad (0.067) \quad (0.069) \quad (0.068) \end{array} \quad (3)$$

5.12	6.15	7.25	
$FG = 0.26*FC, \text{ Errorvar.} = 0.93, R^2 = 0.070 \quad (4)$			
(0.046)	(0.093)		
5.74	10.03		
$FD = 0.56*FC, \text{ Errorvar.} = 0.69, R^2 = 0.31 \quad (5)$			
(0.052)	(0.068)		
10.71	10.14		
$FB = 0.68*FC, \text{ Errorvar.} = 0.54, R^2 = 0.46 \quad (6)$			
(0.062)	(0.073)		
10.95	7.36		

Equations 1 and 2 show that financial awareness and financial experience have a positive effect on subjective financial knowledge (FK) and financial skills (FS). Financial skills were measured by two dimensions: (1) financial skills in cash management and (2) financial skills in credit and risk management. People who had financial experience applied their knowledge to financial products, with this affected by their perceived knowledge and skills. Financial awareness and experience together contributed to financial knowledge and skills and gains in competency. Equation 3 shows that financial skills and financial knowledge had positive effects on financial capability (FC). Furthermore, Equations 4 to 6 provide the estimations that financial capability had positive effects on financial goals (FG), financial decisions (FD), and financial behavior (FB). Financial capability was operationalized through two survey dimensions: ability to deal with financial problems and ability to gather information. In line with this finding, Moore (2003) provided evidence that people who had attained higher levels of financial knowledge, higher levels of financial experience, and higher levels of positive protective behaviors would be more financially literate and more effective in their financial management. Moreover, these results are consistent with findings in previous studies by Hilgert et al. (2003); Moore (2003); Robb and Woodyard (2011); Priyadharshini (2017); Woodyard (2013).

Conclusion

From this study, it can be concluded that financial literacy is an individual's process of perceiving the financial knowledge that is to be used in financial decision-making. This is supported by skills, experience, awareness, and positive financial management skills to form positive financial behavior in order to achieve financial goals and freedom. The study's empirical evidence shows that lecturers in the academic community need to improve their perceived knowledge, skills, and awareness on managing their money and on how they make decisions related to investment and loans. This study also provides evidence that awareness and experience influence the individual's decisions and behavior through perceived knowledge, skills, and capability. The more financially literate an individual is, the more rational they are in financial decision-making. This study shows that members of the academic community regularly saved money in financial institutions. Moreover, individuals were found to routinely save and to donate to charity. All these conditions are found to be significantly influenced by financial literacy. The application of financial awareness and experience are important in carrying out financial decisions, thus forming positive financial

behavior to achieve financial goals. Our results should interest policy-makers involved in determining how to better shape financial literacy.

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Annexes

Table 1. Demographics of respondents

Demographic	Frequency	Percentage
Category of Higher Education Institution:		
Private	575	64.0%
Public	314	34.9%
Types of Higher Education Institution:		
Universities	745	82.9%
Schools of Higher Learning	86	9.6%
Institutes	37	4.1%
Polytechnics	17	1.9%
Academies	4	0.4%
Field of Study:		
Economics and business	457	51.4%
Non-economics and non-business	432	48.6%
Gender:		
Female	469	52.8%
Male	420	47.2%
Age (years old):		
≤ 25	15	1.7%
26–35	311	35.0%
36–45	383	43.1%
46–55	170	19.1%
≥ 51	10	1.1%
Outcomes (in Indonesian rupiahs [1 million rupiahs = US\$75]):		
Less than 3 million	111	12.3%
3 million to 5 million	259	28.8%
More than 5 million to 10 million	306	34.0%
More than 10 million to 15 million	131	14.6%
More than 15 million	82	9.1%
Education:		
Master's	674	75.8%
PhD	215	24.2%
Academic Ranks:		
Lecturer	181	20.4%
Assistant Professor – Lower	309	34.8%
Assistant Professor – Upper	271	30.5%
Associate Professor	117	13.2%
Full Professor	11	1.2%
Financial Information Sources: (more than one answer)		
Wife/husband, family, friends	504	56.1%
Academic education	396	44.0%
TV, radio, internet, magazines, books	299	33.3%
Training, workshops, and courses	268	29.8%
Broker/financial institution agent	147	16.4%
Partner to Discuss Financial Issue: (more than one answer)		
Wife/husband	612	68.1%
Family	400	44.5%
Colleague	244	27.1%
Parent	172	19.1%
Financial consultant	68	7.6%

Expenses Planned for the Next Year: (more than one answer)		
Education	597	66.4%
Vacation	434	48.3%
Buy gadget/electronics	282	31.4%
Buy property (land, apartment, house)	41	4.6%
Religious tourism : Hajj and Umrah	15	1.7%
Buy financial asset (insurance, mutual fund, stock, retirement funds)	14	1.6%
Maintenance (house, motorcycle)	12	1.3%
Marriage	8	0.9%
Buy vehicle (car, motorcycle)	7	0.8%
Pay obligations (debt, rent for house, tax on motorcycle)	6	0.7%
Charity	2	0.2%
Saving Habits:		
Yes, routine monthly	581	64.6%
No, routine monthly	318	35.4%
Financial Products and Services Owned: (more than one answer)		
Conventional bank	388	43.2%
Cooperative	235	26.1%
Insurance	196	21.8%
Private pension fund	135	15.0%
Syariah bank	143	15.9%
Mutual fund	92	10.2%
Baitul Maal wat Tamwil (BMT)	56	6.2%
Investment company	48	5.3%
Pawnshop	34	3.8%
Micro-finance institution	20	2.2%
Fintech	15	1.7%
Cryptocurrency	10	1.1%
Rural Bank (Bank Perkreditan Rakyat/BPR)	3	0.3%

Source: own survey, 2018

Table 2. Measurement variables used in the financial literacy model

Question Topic
Financial Awareness (Nga et al., 2010; Woodyard, 2013)
1. Evaluate spending regularly
2. Make a list before shopping
3. Comparing some financial products before making a decision
4. Documenting bills
5. Gathering information related to financial issues
6. Willingness to discuss financial issues
Financial Experience (Hogarth and Hilgert, 2002; Woodyard, 2013)
1. Holding emergency savings
2. Doing financial records
3. Having experience in managing personal assets
4. Having investing experience on stock market
5. Have savings experience in non-bank financial institution
Subjective Financial Knowledge (Priyadharshini, 2017; Robb and Woodyard, 2011; Woodyard, 2013)
1. Write down where money is spent
2. Knowledge of risk and return
3. Discussion of economic and financial issues
Financial Skills (Priyadharshini, 2017)
1. Keep bills and receipts where they are easy to find
2. Evaluate savings financial statement on a regular basis
3. Managing risks through purchasing insurance
4. Evaluate debt on a regular basis
Financial Capability (Leskinen and Raijas, 2006; Priyadharshini, 2017)
1. Pay bills
2. Money in cash
3. Buy things when need to be bought
4. Gathering information before deciding to buy
Financial Goals (Hogarth, 2002; Robb and Woodyard, 2011; Woodyard, 2013).
1. Make plans for how to use your money
2. Planning for long-term goals such as retirement
3. Saving money to buy items with cash rather than with credit
Financial Decisions (Priyadharshini, 2017)
1. Make decisions without planning
2. Am sorry for buying something after being easily persuaded
3. Am sorry for buying something without consideration
4. Buy on impulse
5. Buy something after pressure from others
Financial Behavior (OECD, 2009; Woodyard and Grable, 2014)
1. Pay bills on time
2. Allocate a portion of funds for charitable or social activities
3. Investment diversification
4. Retirement investment