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Financial Literacy Among Digital Lending Borrowers: Knowledge, Attitude and Behavior

VERA INTANIE DEWI[1] (Corresponding author), NURY EFFENDI[2], ICA RIKA CANDRANINGRAT[3], FEBY ASTRID KESAULYA[4] and YEREMIAS BUDI IRAWAN[5]

[1]Associate Professor, Faculty of Economics, Universitas Katolik Parahyangan, Indonesia.
[2]Professor, Faculty of Economics and Business, Universitas Padjadjaran, Indonesia.
[3]Associate Professor, Faculty of Economics and Business, Universitas Udayana, Indonesia.
[4]Assistant Professor, Faculty of Business and Accounting, Universitas Katolik Musi Charitas, Indonesia.
[5]Student of Magister Management, Faculty of Economics, Universitas Katolik Parahyangan, Indonesia.

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ABSTRACT

This study examines the interrelationship between financial literacy factors, including financial knowledge, choosing and using digital financial products and services, planning and managing finance, and financial attitude and behavior. This study used the OECD/INFE Toolkit for Measuring Financial Literacy and Financial Inclusion 2022 for digital borrowers. The sampling technique used is purposive sampling of Individuals who have used online loan applications and have a loan. The questionnaire was distributed via an online survey platform. It employed the survey method with data from 201 responses and was analyzed using partial least squares-based structural equation modeling (PLS-SEM). This study revealed that financial knowledge positively affected individuals' decisions on choosing and using digital financial products and services, then affected financial planning and management, which, in turn, affected attitude and behavior. This study can capture financial behaviors, attitudes, and knowledge, as well as a number of financial outcomes, to assess levels of financial literacy, financial inclusion, financial resilience, and financial well-being. This study contributes new insights by providing evidence from the empirical study of the financial literacy of digital lending borrowers on how to increase financial well-being. This study's findings offer valuable theoretical and practical insights into the development of financial literacy in a developing country.

INTRODUCTION

Across the globe, households are experiencing increasing financial pressure due to rising living costs, higher interest rates, and greater volatility in financial markets. This trend is evident in countries such as the United Kingdom (FPC, 2024) and Japan (Kihara, 2025). Additionally, the challenges many countries face globally are caused by economic downturns and rising inflation pressures, including in emerging market economies (OECD, 2022a). This indicates that the financial strain on households globally, particularly those with high levels of debt, is due to rising inflation and uncertain economic conditions. The rise of household debt and credit risk, coupled with the slowdown of the economy and tightening of monetary conditions, may lead to increases in non-performing loans (NPLs) and credit risk for banks. This is particularly concerning for households with high debt-service ratios, as they may struggle with lending repayments amidst the weakening economic outlook and higher interest rates (OECD, 2022a). To respond to this situation, governments and institutions should prioritize financial education as a strategy to enhance individuals' capabilities in planning, saving, and managing money.

Simultaneously, innovations in the financial sector have led to the emergence of digital lending platforms, representing a transformative shift in financial technology (Asamani and Majumdar, 2024). Although Ali et al.(2023) reported a relatively low adoption of peer-to-peer (P2P) lending in Indonesia, recent developments paint a contrasting picture. With the widespread adoption of smartphones and mobility technology, P2P platforms have flourished (Yulisman, 2024). This trend aligns with findings by Suryono et al. (2021), citing data from the Financial Service Authority (OJK), a significant increase in fintech loan disbursements and the number of lender accounts in 2019 was noted. More recently, outstanding financing from P2P lending and Buy Now, Pay Later (BNPL) schemes in Indonesia increased by 31.06% and 59.1% year-on-year, respectively, as of February 2025 (Indonesia Financial Services Authority (OJK), 2025).

However, the rapid expansion of digital lending has also raised several concerns, particularly regarding the rise of illegal lenders and the limited financial literacy among borrowers. Many individuals in developing countries, such as Indonesia, remain unaware of the responsibilities associated with borrowing, such as timely repayment, which often leads to financial distress (Yulisman, 2024). The increasing use of online lending underscores the importance of sound financial planning. Defined as a strategic process to achieve life goals such as education, homeownership, and retirement, financial planning enables individuals to align their income, expenses, savings, and investments with their long-term objectives.

Financial literacy has thus become a vital life skill in navigating these modern financial challenges. It is not merely about knowledge but encompasses skills, attitudes, and behaviors that collectively promote financial well-being, economic resilience, and social inclusion. Scholars emphasize that financial literacy includes behavioral and attitudinal elements, such as financial planning, attitude toward money, and money management practices (Atkinson and Messy, 2012). Kumar et al. (2019) Further, it is asserted that financial literacy is a key determinant of financial planning. In this regard, the OECD's framework identifies three core dimensions of financial literacy: financial knowledge, financial attitude, and financial behavior (Goyal et al., 2021).

Most of the studies reviewed used the terms financial literacy and financial knowledge interchangeably. Financial knowledge influences how individuals perceive and make financial decisions, while attitudes toward money shape their orientation toward saving, spending, and investing (She et al., 2024). These attitudes, in turn, affect financial behavior, including budgeting, saving, and long-term planning. Moreover, money management has been identified as a crucial mediating factor that translates financial knowledge and attitudes into effective financial planning behavior (Mien and Thao, 2015). Alhenawi and Elkhal (2013) Investigate the relationship between financial knowledge and long-term financial planning behavior, and found that their relationship remains low.

Although recent studies highlight these interrelationships, there remains a lack of comprehensive empirical models integrating the financial literacy aspect into financial knowledge, financial attitude and behavior, and planning and managing, especially within the context of developing economies. This study addresses this gap by proposing a structural model of financial literacy. Specifically, it investigates how financial knowledge, digital finance adoption, planning, and managing finance interact to influence financial attitudes and behavior among digital lending borrowers and, ultimately, their financial well-being. The main research question guiding this study is how financial knowledge of digital financial borrowers affects the decision of digital finance adoption, and how planning and managing finance interact to influence financial attitude and behavior and ultimately enhance financial well-being in a developing country.stock markets.

1. LITERATURE REVIEW

1.1 Financial Literacy and Financial Well-being

Financial literacy is essential in individuals' capacity to make sound financial decisions (Rehman and Mia, 2024) and is increasingly recognized as a key determinant of personal financial well-being. Financial literacy refers to the aptitude and knowledge required to manage one's financial resources to enhance future well-being effectively (Wahyuni *et al.*, 2023). Potrich *et al.*(2016) financial literacy is the awareness, knowledge, skills, attitudes, and behaviors needed to make sound financial decisions and achieve personal financial well-being. It serves as a fundamental necessity to help individuals avoid financial problems and make informed financial decisions in both personal and business contexts (Rehman and Mia, 2024). Financial literacy is defined as a combination of financial knowledge, attitudes, behaviors, and confidence that enables individuals to manage their financial resources effectively (OECD, 2023). As financial markets become more complex and digital financial services continue to expand, individuals face increasingly sophisticated financial products and services. This growing complexity underscores the need for higher levels of financial literacy and proactive financial planning to achieve financial resilience, long-term financial security, and overall well-being.

Financial well-being is often conceptualized as the outcome of effective financial management and decision-making. It reflects a state where individuals can meet their current financial obligations, feel secure about their financial future, and be free to make financial choices that allow them to enjoy life. Brüggen *et al.* (2017) Defined financial well-being as the perception of having the ability to maintain current and future desired living standards and financial freedom. Moreover, Brüggen *et al.*(2017) Stated that many studies have used subjective and objective approaches to define and measure financial well-being. Objective indicators, such as income levels, debt levels, or debt-to-income ratios, while subjective measures focus on individual perceptions of their financial situation, their satisfaction with their financial status, and their perceived satisfaction with their standard of living, also include an individual or household's ability to manage and increase liquidity. Key contributors to financial well-being include financial knowledge, financial attitudes, money management, and financial planning, interlinked components that form the foundation of financial literacy. Financial behavior, alongside knowledge and attitudes, constitutes the core dimensions of financial literacy (OECD, 2023). Individuals who demonstrate positive financial behaviors, such as budgeting, saving regularly, and avoiding excessive debt, are more likely to experience higher levels of financial well-being. These behaviors are influenced by financial knowledge and underlying attitudes toward money and the ability to manage resources effectively.

1.2 Financial Knowledge

OECD (2023) emphasizes that financial knowledge is a key component of financial literacy. It involves understanding fundamental financial concepts and applying numeracy skills in financial situations (Drábeková *et al.*, 2022). Gusniarti and Pahlevi (2024) define "Financial knowledge is an understanding that a person possesses in relation to financial concepts that include financial planning, management, and decision-making". Financial knowledge enables individuals to manage their finances effectively, compare financial products and services to make informed choices, and respond to events that may impact their financial well-being. Some previous studies around the world have developed and measured the level of financial knowledge by using indicators of subjective and objective (Alhenawi and Elkhal, 2013);(Bien and Gębski, 2024);(Dewi *et al.*, 2020);(Lusardi, 2019);(OECD, 2022b);(Lee et al., 2025);(Tan et al., 2024). This study uses objective financial knowledge adopted from (OECD, 2022b) to measure basic financial knowledge and advanced financial knowledge.

1.3 Choosing and using financial products and services

Choosing and using financial products and services is part of financial literacy, which is crucial in shaping an individual's financial well-being (OECD, 2022b). Financial knowledge equips individuals to understand various financial products and services available, especially in the current context, along with the digitalization of financial services. With high individual knowledge, especially in numeracy as basic knowledge, individuals are better positioned to evaluate each product's features, benefits, and risks. The ability to make financial choices based on basic knowledge of financial concepts is, therefore, an important life skill (Drábeková *et al.*, 2022). Financial knowledge influences an individual's ability to choose and use financial products and services effectively. It empowers individuals to make informed decisions, manage risks, avoid costly mistakes, and ultimately improve their financial well-being. Conversely, a lack of financial knowledge can lead to poor decisions, unnecessary financial strain, and missed opportunities for growth and security. Therefore, improving financial literacy is essential for successfully navigating the complex world of financial products and services. This study adopts the measurement of choosing and using financial products and services from (OECD, 2022b), Which has also been used in an empirical study conducted in China by Tan *et al.*(2024).

1.4 Planning and Managing Finance

Planning and managing finances are part of money management activities. Money management refers to an individual's ability to manage their personal financial activities, such as spending, saving, investing, and budgeting, to attain financial well-being (Atkinson and Messy, 2012). It also involves addressing issues of excessive spending, avoiding financial mistakes, and managing debt. Money management is the ability of individuals to manage financial activities to ensure financial well-being (Nawang and Shukor, 2023). Financial literacy and money management are closely tied; the better a person manages their finances, the better their level of financial literacy will be (Wahyuni *et al.*, 2023). The basics of financial management are reflected in how money is managed by individuals in daily transactions and payments, and how efforts are made to make ends meet. So, money management is an important task for an individual or household. Various aspects of money management, including credit and cash management, and saving money for future use (Mahdzan *et al.*, 2023). Referring to OECD (2022b), the measurement of planning and managing finance consists of several aspects, including budgeting, making ends meet, retirement planning, and active saving and financial shocks, which have also been used in an empirical study conducted in China by Tan *et al.* (2024).

1.5. Attitudes and Behavior

Attitudes are considered to be an important element of financial literacy, and behavior is an essential element and the most important of financial literacy (Atkinson and Messy, 2012). Individuals with a rather negative attitude toward saving for their future will probably be less inclined to engage in such behavior. The relationship between attitudes, behavior, and financial knowledge and decisions on choosing and using financial products and services is interconnected. Positive financial attitudes, fueled by financial knowledge and decisions, often lead to positive financial behaviors that support financial satisfaction and well-being. On the other hand, negative attitudes and low levels of financial knowledge can result in poor financial decisions and behaviors, contributing to financial distress. This study refers to the measurement of attitude and behavior from OECD (2022b), which has also been used in an empirical study conducted in China by Tan *et al*.(2024).

1.6 Hypothesis Development

Lyons and Kass-Hanna (2021); Hasan et al. (2021) found that financial knowledge will influence financial inclusion, as economically vulnerable populations are considerably less likely to be included in the financial systems. On the other hand, persons with higher levels of financial knowledge are more likely to be able to evaluate various financial products and services and choose the best ones that suit their financial goals. The higher financial knowledge is also believed will increase the motivation of the persons to do a better planning for their financial condition.

Individuals with greater monetary knowledge (e.g: understanding of fundamental financial concepts) are more inclined to do better at planning and managing especially in the term of personal finance. It relates to their ability to make well-informed choices about proficient financial planning habits, such as regular saving, cautious investing, and adequate retirement preparation. In the other term if the person will be able to manage both income and expenditure not only on a day-to-day basis but also planning for the future (European Union/OECD, 2022). Achieving financial well-being means that the individual should look beyond short-term considerations and take into account long-term financial needs. In particular, people with a better understanding of interest will be able to make more informed decisions regarding their investments and savings.

Previous studies suggested that financial information acquired at an early age may affect later financial behaviors as adults who exposed with personal financial education exhibit more responsible financial behaviors during their peak earnings period (35-49 years old) than adults who do not have education (Mutlu and Özer, 2022). In relation to that, there is also a notion that as the level of financial knowledge of students increases, their spending behaviors are balanced and their interest in financial matters increases (Mutlu and Özer, 2022). Financial experience and strong financial knowledge can lead to more complex financial perspectives, encouraging individuals to actively assess their financial condition and develop positive financial attitudes (Atmaningrum *et al.,* 2021). A good financial attitude is formed by a belief based on their financial knowledge. Productive age employees are individuals with learning related to very complex financial aspects, so that with this knowledge, employees are expected to be able to form a positive attitude towards finance. As this attitude is formed from the conceptualization of ideas related to the knowledge they have.

H1: Financial Knowledge affect the decision of choosing and using financial products and services

H2: The decision of choosing and using financial products and services affect the ability to plan and manage finance

H3: The decision of choosing and using financial products and services affect financial attitudes and behavior

H4: The ability to plan and manage finance affect the financial attitudes and behavior

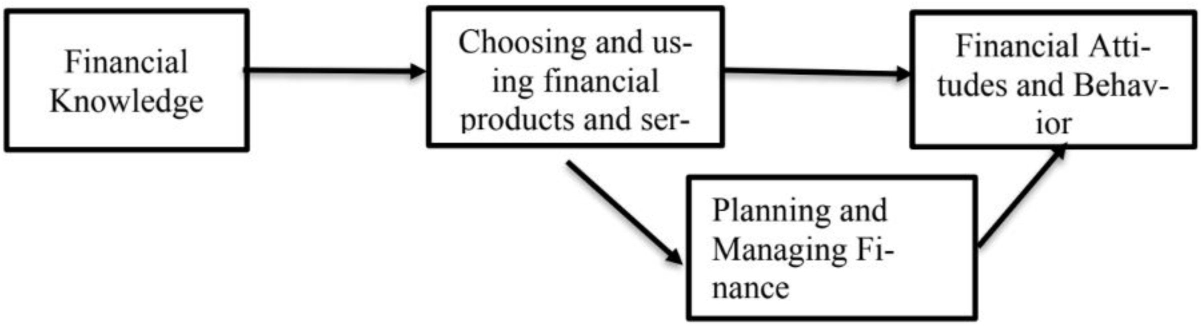

Figure 1. Conceptual Model

2. RESEARCH METHODOLOGY

This study uses a quantitative research approach to test the hypotheses of the conceptual framework of financial literacy and financial planning. The research design uses a cross-sectional study and survey method. The population for this study is digital lending borrowers who live in Java, Indonesia. Digital lending borrowers include P2P Lending, Buy Now, Pay Later (BNPL), and Online Cash Loans. The sample size was determined using (Lemeshow *et al.*, 1990)- The Lemeshow formula for sample size estimation:

$$n = \frac{(Z^2_{\frac{\alpha}{2}}.p(1-p))}{d^2} = \frac{1.96\ X\ 0.5(1-0.5)}{0.05^2} = \frac{0.45}{0.0025} = 180 \qquad (1)$$

n= required sample size
$Z_{\alpha/2}$= critical value for a given significance level (typically 1.96 for a 95% confidence level)
P = estimated proportion of the outcome (if unknown, use 0.5 for maximum sample size estimation)
d= desired margin of error (often 0.05)

The sampling technique used is purposive sampling with screening questions: Individuals who have used online loan applications and have a loan. The questionnaire was distributed via an online survey platform called a t-survey, and 201 valid responses were collected, meeting the sample size minimum (formula 1). The questionnaire consists of several sets of questions/statements: individuals' socio-demographic characteristics, financial knowledge, Planning and managing finances, choosing and using financial products and services, Attitudes and behavior. Each set of questions includes a set of diverse questions. By answering these questions, respondents can assess the level of financial knowledge, financial behavior, and financial attitude. Each question is evaluated on an appropriate scale. The indicators are adopted from the OECD/INFE Toolkit for Measuring Financial Literacy and Financial Inclusion 2022 (OECD, 2022b). The analytical tool used in this research is quantitative data analysis, which quantitatively estimates the direct and indirect influence of several independent variables on the dependent variable. All data were processed and tested using Partial Least Squares Structural Equation Modeling (PLS-SEM).

2.1 Results

The socio-demographic characteristics of the respondents show that the sample consists of a majority of males (66%) and the rest are female (34%). This gender distribution may influence financial behavior and literacy levels differently across genders, as various studies suggest gender-specific financial knowledge and decision-making patterns. Most respondents have completed high school (44.80%), followed by a bachelor's degree (36.80%). Education is a strong indicator of financial literacy, as higher levels of education are typically associated with better financial knowledge and behaviors. The relatively high proportion of high school graduates' background suggests that there could be a gap in financial literacy and a need for targeted financial education programs, especially for those with lower educational attainment.

The age group with the highest proportion of respondents is 25 - 34 (35.80%), followed by those aged 35-44 (29.40%). These age groups are typically at the stage of life where financial decisions, such as investments, savings, and loans, are highly influenced by career development and family responsibilities, which correlate with financial literacy levels and behavior. Most respondents are employed as staff or employees (45%) and self-employed (28.90%); the rest are retired, higher education students, professionals, and others. Employment status often correlates with financial stability and behavior, with self-employed individuals potentially facing more variability in income and a greater need for effective financial planning. On the other hand, staff and employees have more regular income streams, potentially influencing their financial literacy and decision-making. Respondents spend an average of $125 to $312 monthly.

Most respondents (73%) have used more than one type of online lending, including Buy Now, Pay Later (BNPL), Online Cash Loans, and P2P Lending. The prevalence of BNPL (60.1%) highlights a growing trend in digital finance, particularly among young and tech-savvy individuals. While this indicates a certain level of financial literacy in terms of understanding and utilizing new financial products, it also raises concerns about impulsive spending and debt accumulation, especially if users are not fully aware of the long-term financial implications of these lending options.

Tables 1, 2, and 3 show the measurement model (outer model) used to evaluate the validity and reliability. The evaluation of the outer model comprised the assessment of indicator reliability (loading factor value), composite reliability (CR), collinearity statistics (VIF), Cronbach's alpha, and average variance extracted (AVE) (see Table 1), as well as discriminant validity (Heterotrait–monotrait [HTMT] ratio and Fornell–Larcker criterion correlation (see Tables 2 And 3). On the other hand, Tables 4 to 7 show the results of the structural model (inner model), which explains the relationships between financial literacy aspects, including knowledge, decision on choosing and using digital financial products and services, planning & managing finance, and attitude & behavior.

Table 1. Validity and Reliability Test Results

Variable	Item indicator	Loading factor*	Loading factor**	VIF	Composite reliability (CR)	Average variance extracted (AVE)	*t-value*
Criteria		> 0.6	> 0.6	<0.7	> 0.7	> 0.5	> 1.960
Financial Knowledge	FK				0.739	0.588	
	AOF	0.823	0.842	1.034			8.080
	BOF	0.708	0.684	1.034			4.648
Chosing and Using Digital Financial Product and Services	DFA				0.835	0.505	
	DFA1	0.702	0.737	1.674			17.550
	DFA2	0.770	0.804	1.733			26.935
	DFA3	0.649	0.673	1.599			11.077
	DFA4	0.718	0.713	1.589			12.576
	DFA5	0.656	0.613	1.193			8.225
	DFA6	0.544*					
Financial Attitude and Behavior	FAB				0.904	0.824	
	FG	0.871	0.902	1.728			44.849
	FR	0.101*					
	MM	0.885	0.914	1.728			54.895
	PB	0.168*					
	PO	0.418*					
Planning and Managing Finance:	PMF				0.789	0.557	
	ME	0.565*					
	PK	0.671	0.690	1.224			10.571
	PP	0.705	0.707	1.203			10.128
	SB	0.751	0.834	1.220			23.218

AOF = Advanced Objective Knowledge; BOF = Basic Objective Knowledge.
Loading Factor*= First Iteration= * elimate at first iteration. Loading Factor**= Second Iteration
Source: own

Table 2 shows that each variable has a higher value than its correlation with other variables, meeting the Fornell-Larcker criterion. This means the variables in the model are distinct and do not overlap, fulfilling discriminant validity requirements. Table 3 shows that all HTMT ratio matrix values were less than 0.9 (Hair et al., 2022). Thus, all constructs in the model had good convergent consistency. This study uses the Heterotrait–Monotrait Ratio (HTMT) for a more robust discriminant validity assessment.

Table 2. Discriminant Validity: Fornell–Larcker Criterion

	Attitude and Behavior	Choosing and using digital financial products and services	Financial Knowledge	Planning and Managing Finances
Attitude and Behavior	0.908			
Choosing and using digital financial products and services	0.383	0.711		
Financial Knowledge	0.143	0.270	0.767	
Planning and Managing Finances	0.455	0.390	0.100	0.746

Source: own

Table 3. Discriminant Validity: Heterotrait–Monotrait Ratio (HTMT) Matrix

	Attitude and Behavior	Choosing and using digital financial products and services	Financial Knowledge	Planning and Managing Finances
Attitude and Behavior				
Choosing and using digital financial products and services	0.478			
Financial Knowledge	0.290	0.528		
Planning and Managing Finances	0.645	0.527	0.256	

Source: own

Table 4 presents the path coefficients of each independent variable that affected the dependent variable. This revealed that financial knowledge positively affected individuals' decisions on choosing and using digital financial products and services, then affected financial planning and management, which, in turn, affected attitude and behavior at the 5% confidence interval (CI) level.

Table 4. Significance of Path Coefficients (t-statistics)

Hypothesis	Path	Coefficient	Standard Deviation	*t-statistic*	*p-values*	Decision
1	Financial Knowledge -> Choosing and using digital financial products and services	0.270	0.064	4.231	0.000	Significant
2	Choosing and using digital financial products and services -> Attitude and Behavior	0.245	0.077	3.134	0.002	Significant
3	Choosing and using digital financial products and services -> Planning and Managing Finances	0.390	0.066	5.861	0.000	Significant
4	Planning and Managing Finances -> Attitude and Behavior	0.360	0.081	4.477	0.000	Significant

Source: own

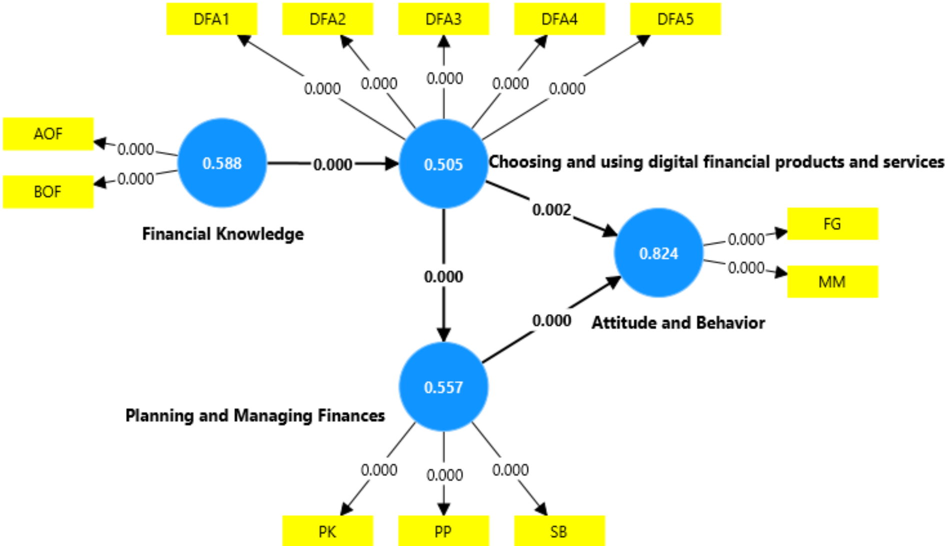

Figure 2. P-value, Average Variance Extracted (AVE)

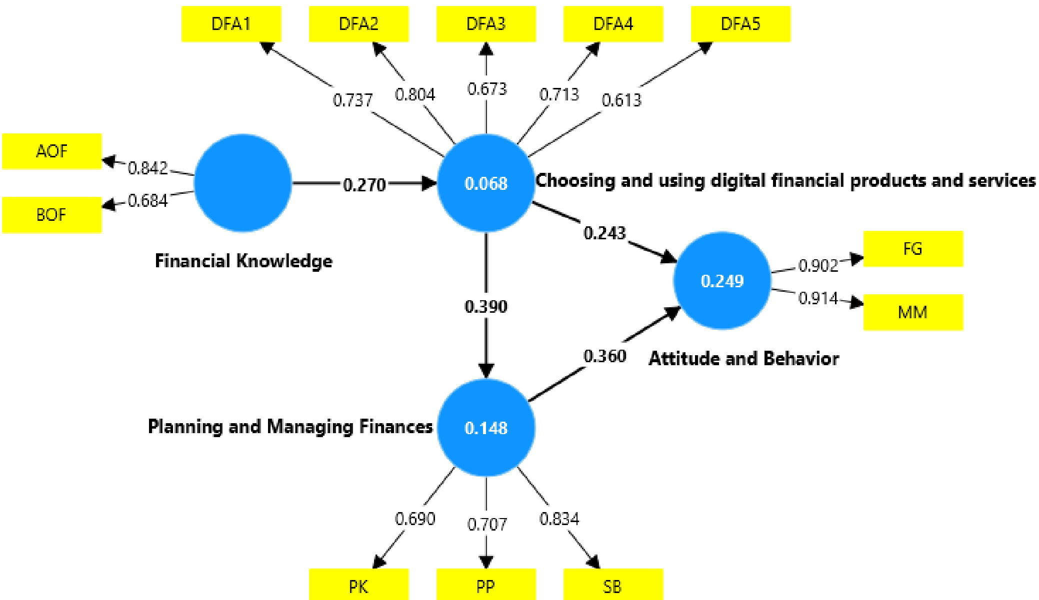

Figure 3. Path Coefficient, Outer Loading, R-Square Adjusted

Table 5 presents the coefficient of Attitude and Behavior of 0.249, which indicates that the direct contribution of Planning and Managing finance of respondents to Attitude and Behavior amounted to approximately 24.9%. The direct contribution of financial knowledge to choosing and using digital financial products and services is 6.8%, and the direct contribution of choosing and using digital financial products and services to Planning and Managing Finances is 14.8%. While the contribution in each aspect remains low, this study revealed that there is an interrelationship between financial literacy aspects: knowledge, attitude, and behavior.

Table 5. Coefficients of Determination (R2)

	R-square	R-square adjusted
Attitude and Behavior	0.257	0.249
Choosing and using digital financial products and services	0.073	0.068
Planning and Managing Finances	0.152	0.148

Source: own

Table 6 shows the model fit; the closer the Normed Fit Index (NFI) value is to 1, the better the fit (Schuberth & Rademaker, 2023). This model's NFI value of 0.487 represents an acceptable fit (Henseler et al., 2014). The standardized root means square residual (SRMR) was introduced as a goodness-of-fit measure for PLS-SEM to avoid model misspecification.

Table 6. Model fit

	Saturated model	Estimated model
SRMR	0.101	0.102
d_ULS	0.801	0.804
d_G	0.265	0.265
Chi-square	320,891	321,193
NFI	0.487	0.487

Source: own

Table 7 shows the prediction evaluation with Q2. The values for the four aspects of financial literacy are 0.015, 0.051, and 0.007. Thus, they are higher than zero, which is the cut-off value. This indicates that the model has predictive relevance.

Table 7. Prediction Model Evaluation

	Q^2predict	RMSE	MAE
Attitude and Behavior	0.015	1.004	0.789
Choosing and using digital financial products and services	0.051	0.982	0.805
Planning and Managing Finances	0.007	1.005	0.789

Note: Predictive relevance criteria: Q squared (Q^2) is more than zero (> 0); root mean square error (RMSE) is less than 1 (< 1); MAE = mean absolute error
Source: own

3. DISCUSSION

This study revealed that all hypotheses highlight a positive and significant relationship between financial literacy aspects. The results imply that borrowers with higher financial knowledge are more capable of making sound decisions on choosing and using digital financial products and services, are more motivated to have a planning and manage finance, and are motivated to have a good attitude and behavior on finance, which aligns with previous studies (Tan *et al.*, 2024).
Decision making is not a static case because it relates to stochastic behavioral factors. Someone who is rational and more confident in financial knowledge has an effect on more profitable financial behavior, such as in choosing better digital financial product and service (Wangi and Baskara, 2021). Higher financial knowledge leads to increased ability to evaluate information and to conduct more effective search, are likely to make better decisions about which service provider to choose, and are likely to form more realistic relationship expectations than less knowledgeable consumers. In addition, Hasan *et al.*(2021); Hasan *et al.*(2020) stated that the combination of financial literacy and internet usage increased the likelihood of using digital financial products and services to improve financial access.

Lyons and Kass-Hanna (2021) found that higher levels of financially literate people are more likely to be engaged in positive financial behavior and understand how to utilise money effectively and efficiently. As well as they are will be more motivated to plan and manage finance. The example of planning and managing finance such as, planning for expenditures, making a budget, using a budget to manage money and avoiding unnecessary spending (Hasan *et al.*, 2021). Furthermore, people with higher financial knowledge or higher comprehension of monetary perceptions will be motivated to have better financial attitude and behaviour. For example, they will have better reaction and solution to their own financial troubles. As well as, having the ability to manage the cash in hand, doing a timely payment of bills, keeping the track of all payments and the planning of all future financial transactions (Banthia and Dey, 2022).

CONCLUSION

The data of respondents suggest that while many respondents are engaging with digital financial products, there is a gap in their financial literacy, particularly regarding the management of debt. The most use of BNPL, this study suggests that a high level of accessibility to credit but could also show a lack of awareness about the potential risks of accumulating debt. Financial education initiatives could be targeted to help individuals better understand the long-term implications of online lending and encourage more responsible borrowing practices. This finding indicates that the respondents demonstrate some level of engagement with modern financial tools of online lending platforms. However, their financial literacy is insufficient to make informed, long-term financial decisions. While the majority have access to financial products, there is a potential risk of poor financial behavior, especially in managing debt and understanding the implications of credit use. This highlights the need for targeted financial literacy programs to improve understanding of debt management, the responsible use of online lending options, and budgeting strategies to promote better financial well-being.

Management Implications

This study underscores the importance of fostering a knowledge that emphasizes financial risks, products and basic numeracy of mathematics to support the basic knowledge among digital lending borrowers, particularly considering the ''digitalization.'' To enhance financial knowledge, we recommend collaborative efforts between regulators, educational institutions and financial institutions to encourage people allocate more time to learning financial knowledge. This collaboration should guide people in accessing diverse channels for acquiring financial knowledge, applying it to develop a financial attitude and behavior.

Limitation

This study has several limitations that should be taken into account. First, the geographic focus of our sample within the Java district, Indonesia, may limit the generalizability of our findings. While this is the first extensive financial literacy survey conducted among digital lending borrowers, including participants from various regions, the results should be interpreted with caution when applied to other contexts. Future research should aim to include a broader demographic to enhance the generalizability of the findings. Second, the correlational research design used in this study does not establish causality. This limitation emphasizes the need for future studies to explore causal relationships, particularly how financial literacy influences individuals' abilities to identify and prevent financial fraud. Third, our participant age range was confined to 18–55 years to align with similar studies in other countries, which resulted in a sample size of 201 participants from Indonesia. This age restriction and varying sample sizes have limited our ability to explore differences across diverse educational backgrounds, which future research should consider. Despite these limitations, the results of this study provide valuable insights into how financial literacy differs across cultural and educational contexts. They underscore the need for more tailored approaches in future financial literacy research to address these nuances effectively.

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APPENDIX

Variable	Code	Indicator
Financial Knowledge	SFK	Could you tell me how you would rate your overall knowledge about financial matters compared with other adults in your country? (1=Very low; 2=Quate Low; 3=About average; 4= Quate high; 5= very high.
	BOF1	You are going to be given a gift of Rp.1 million for an achievement that you have achieved. Now, imagine that if you have to wait for one year to get the Rp.1 million, and inflation stays at 10 percent. In one year's time, will you be able to buy: a) More than I could buy today (Score 0) b) The same amount (Score 0) b) Less than I could buy today (Score 1) d) It depends on the types of things that I want to buy (Score 0)
	BOF2	You lend Rp.1 million to a friend/acquaintance one evening and he gives you Rp.1 million back the next day. How much interest has he paid on this loan? a. 0% (score 1) b. More than 0% (score 0)
	BOF3	A digital financial contract requires the signature of a paper contract to be considered valid (True = score 1/False = score 0)
	BOF4	The personal data that I share publicly online may be used to target me with personalized commercial or financial offers (True = score 1/False = score 0)
	AOF1	What do you do if you are faced with a situation where you need emergency funds? I will borrow to meet emergency fund (score 0) I will not borrow to meet emergency fund, because I have prepared for it (score 1)
	AOF2	An investment with a high return is likely to be high risk (True = score 1/False = score 0)
	AOF3	High inflation means that the cost of living is increasing rapidly (True = score 1/False = score 0)
	AOF4	It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares (True/False)
Choosing and using digital financial products and services	DFA	In the last 12 months, how often have you done the following? (1=Never; 2=Rarely ;3= Sometimes; 4=Often; 5= Always)
	DFA1	Checking bank account balances and transactions online, recharged pre-paid cards, paid bills online, bought goods and services online, and transferred money to others online.
	DFA2	Managing online Financial Products and services (Savings, Investments, Credit, Insurance)
	DFA3	Paid for goods and services in a physical shop with a mobile phone (e.g. using a mobile wallet)
	DFA4	Used a website or app that aggregates several financial accounts
	DFA5	Used an online platform for trading stocks and shares
	DFA6	Consulted an online platform for automated financial advice
Planning and managing Finances:	ME	
	ME1	Ability to cover a large, unexpected expense independently without borrowing money or asking for help from family or friends (yes = 1/No =

Expenditure Shock and Making ends meet (ME) Budgeting (PK) Saving behavior (SB)		0)
	ME2	Having Experience of Income Not Covering Living Costs in the Past 12 Months (yes = 1/No = 0)
	ME3	Actions Taken When Income Was Insufficient to Meet Living Costs a) Reduce spending/spending (Score 1) b) Use existing resources such as: Taking money from savings or selling something you own (Score 0) c) Borrowing from existing credit (top up credit) (Score 0) d) Finding and using additional resources by working overtime, taking on additional jobs, earning extra money (Score 0) e) Applying for government assistance, Asking for help from family, friends, or the community. Accessing additional credit (Score 0)
	ME4	Financial resilience if main source of income was lost a) Six months or more (Score 1) b) least three months, but not more than six months (Score 0) c) At least one month, but not more than three months (Score 0) d) At least a week, but not more than a month (Score 0) e) Less than a week (Score 0)
	PK	Do you do any of the following for yourself or your household? (Yes = Score 1; No = Score 0)
	PK1	Making a plan to manage income and expenses:Make a plan to manage your income and expenses
	PK2	Recording Expenses:Keep a note of your spending
	PK3	Separating Money for Bills and day-to-day spending money:Keep money for bills separate from day-to-day spending money
	PK4	Making a note of upcoming bills to make sure not to miss them:Make a note of upcoming bills to make sure you don't miss them
	PK5	Using Banking Apps or Money Management Tools to keep track of Expenses :Use a banking app or money management tool to keep track of your outgoings
	PK6	Arranging Automatic Payments for Regular Expenses:Arrange automatic payments for regular outgoings
	SB	In the past 12 months have you been [personally] saving money in any of the following ways, whether or not you still have the money? (Yes = Score 1; No = Score 0)
	SB1	Saving Cash at Home or in a Wallet
	SB2	Saving Money in a Savings or a Checking Account
	SB3	Giving Money to Family for Saving on Your Behalf
	SB4	Saving in Informal Groups or Organizations (e.g., Arisan, Office/School Treasurer)
	SB5	Saving Money in Government Bonds and/or Time Deposits
	SB6	Investing in Stocks and/or Long-Term Bonds
	SB7	Saving or Investing for Retirement
	SB8	Investing in High-Risk Financial Products (e.g., Forex, Cryptocurrency)
Attitude and Behavior	MM	Monitor personal finances as strictly=I keep a close personal watch on my financial affairs (1=strongly disagree; 2=disagree;3= netral ; 4=agree; 5= strongly agree)

	FR	The financial situation limits the individual's ability to do the things that are important to them=My financial situation limits my ability to do the things that are important to me (1=strongly disagree; 2=disagree;3= netral; 4=agree; 5= strongly agree)
	FG	Setting and Striving for Long-Term Financial Goals=I set long term financial goals and strive to achieve them (1=strongly disagree; 2=disagree;3= netral; 4=agree; 5= strongly agree)
	PP	How confident are Individuals who have made a good financial plan for their retirement (Pension Plan) (1=not at all confident; 2=Unconfident;3= netral; 4=Confident; 5= Very Confident)