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Analysis of Digital Financial Literacy Factors of Students at SMA Negeri 4 Jakarta

Renova Sitorus^{1*}, Suparno², Ari Saptono³

^{1,2,3}Universitas Negeri Jakarta, Jakarta, Indonesia

Correspondence: renovasitorus27@gmail.com¹

Abstract

This study aims to analyze the influence of financial knowledge (FK), financial behavior (FB), and digital skills (DS) on digital financial literacy (DFL) among high school students at SMA Negeri 4 Jakarta. Using a quantitative approach with a cross-sectional survey, the study tested four hypotheses through Partial Least Squares Structural Equation Modeling (PLS-SEM). The results revealed that financial knowledge significantly affects digital financial literacy directly and has an indirect impact through digital skills. However, financial behavior did not have a statistically significant effect on students' digital financial literacy. Digital skills were found to have a significant positive effect on digital financial literacy. The study emphasizes the importance of digital skills in enhancing financial literacy within the context of the digital economy. This study offers a novel empirical contribution by proposing a digital financial literacy model for high school students in Indonesia that highlights digital skills as a key mechanism while revealing the limited role of financial behavior at this educational level.

KEYWORDS

digital financial literacy, financial knowledge, financial behavior, digital skills.

Introduction

In recent years, financial technology, or better known as *fintech*, has become a driver of significant change in various sectors, including the financial industry. This transformation is significantly affecting the banking, investment, and payment sectors. These technological changes have brought positive effects such as increasing the effectiveness and efficiency of financial services that are more user-friendly digitally. Improved financial services that are able to adapt to developments in digital technology have brought changes in the way individuals make financial decisions. Adequate financial knowledge is crucial for wise decision-making (Contreras et al., 2021). Therefore, a good understanding of finance is key to making wise financial decisions, which is reflected in responsible financial behavior (Lusardi, 2019).

Many research have explored how digital technologies are being adopted within the financial sector. Several research endeavors investigate the link between digital financial technologies and individual saving and consumption behaviors. For example, research by (Cobla & Osei-Assibey, 2018) shows that the use of *e-payments* contributes to increased spending behavior. This aligns with the findings of Agarwal et al. (2019), which stated that digital payments, or *e-payments*, can lead to overspending in India. Meanwhile, (Rahayu et al., 2022) found that the level of digital financial literacy significantly influences the financial behavior of millennials in Indonesia. It was revealed that an elevated level of digital financial literacy among millennials correlates positively with improved financial practices, encompassing saving, expenditure, and investment activities.

Despite numerous studies discussing financial literacy, the results of the Otoritas Jasa Keuangan (2024) released by the Financial Services Authority (OJK) and the Central Statistics Agency (BPS) show that the financial literacy rate of the Indonesian population, particularly among the 15-17 age group, only reached 51.70%. This figure is relatively low compared to other age groups, such as 18-25 years old at 70.19%, 26-35 years old at 74.82%, and 36-50 years old at 71.72%. Moreover,

the swift evolution of digital financial products has not been paralleled by a corresponding enhancement in digital financial literacy across the community. Consequently, digital financial literacy is deemed imperative and essential for assessing an individual's comprehension of various aspects pertaining to financial literacy through digital technology.

Acquiring a comprehensive understanding of digital finance is of paramount importance. Innovations in technology within the financial sector not only afford users advantages related to convenience, speed, and efficiency but also encompass inherent risks, including data breaches, financial losses, and other detriments. This poses a significant concern for the Ministry of Women's Empowerment and Child Protection, which is endeavoring to furnish financial literacy education to the youth throughout Indonesia. The aim of this education is to increase awareness of the dangers of online loans (pinjol) and illegal investments, which often lure young people with promises of high returns without understanding the risks. This is a response to the high percentage of online loan borrowers aged 19-34 and the increasing number of young people caught up in online gambling.

This research contributes two main aspects. First, it offers a model for developing digital financial literacy in public high school students. There is still a gap in the literature regarding the variables in this study and the relationships between them, which this study attempts to fill by integrating digital skills as a mediator to stimulate digital financial literacy. Second, this research seeks to investigate the determinants of digital financial literacy through a case study involving students from Public High School 4 Jakarta. This study will provide recommendations regarding an effective model for improving financial knowledge, financial behavior, and digital skills as consideration and input in efforts to improve learning about digital financial literacy through a *structural equation modeling approach*. Therefore, this study investigates the determinants of digital financial literacy among students at SMA Negeri 4 Jakarta, addressing the limited empirical evidence on digital financial literacy at the senior high school level in developing-country contexts.

literature review and hypotheses development

Digital Financial Literacy

Digital financial literacy is conceptualized as an individual's proficiency in comprehending online transactions, digital payment mechanisms, and online banking systems (Prasad et al., 2018). (Morgan et al., 2019) states that DFL is appraised through four distinct dimensions: familiarity with digital financial products and services, awareness of the associated risks inherent in these offerings, knowledge pertaining to the management of digital financial risks, and consumer awareness concerning rights and the processes for dispute resolution. Although digitalization has permeated nearly various dimensions of daily living, further research is needed to clarify how technological exposure shapes financial behaviors and how these behaviors, in turn, relate to financial awareness and understanding (Koskelainen et al., 2023).

Digital financial literacy, according to (Kumar et al., 2023), is inextricably linked to a person's understanding and ability to carry out online financial transactions, such as making purchases online, using a range of online payment methods, and skillfully navigating online banking systems. This understanding includes the ability to use digital tools and platforms to successfully manage personal finances in the digital environment and make well-informed financial decisions.

Therefore, it can be concluded that digital financial literacy encompasses the level of knowledge and proficiency people have when using digital tools and platforms to

manage personal finances, facilitate online financial transactions, understand digital financial products and services, identify and reduce digital financial risks, and comprehend consumer rights and dispute resolution procedures, all of which promote prudent financial decision-making in the digital age (Hudaefi, 2020).

Financial Knowledge

Financial knowledge is the ability to comprehend fundamental financial principles, encompassing not only numeracy and compound interest but also the intricacies of risk diversification (Lusardi & Mitchell, 2014; Lyons & Kass-Hanna, 2021). Both objective and subjective approaches can be used to assess financial literacy. The method that researchers typically select is the objective measurement tools, including structured test items with predetermined responses. In contrast, subjective measurement emphasizes self-perception, framing financial literacy as an individual's perceived grasp of financial principles and risk awareness, as well as the capacity to implement such knowledge into informed and effective financial choices (Abdallah et al., 2024). According to (Valaskova et al., 2019) people need to have basic financial competencies and knowledge. In order to carry out prudent financial activities, people must have basic financial competence and knowledge (Lind et al., 2020).

In order to enable prudent financial decision-making to achieve both individual and societal financial well-being, it can be concluded that financial knowledge encompasses the understanding and application of fundamental financial concepts, such as numeracy, compound interest, inflation, and risk diversification. These concepts are assessed through objective knowledge-based assessments or subjective self-evaluations.

Financial Knowledge (FK) and Digital Financial Literacy (DFL)

Financial knowledge significantly influences key financial decisions, including borrowing, saving, and investment choices. Individuals possessing a higher degree of fundamental financial knowledge are predisposed to making more judicious financial decisions (Lusardi & Mitchell, 2014). Prior empirical investigations have demonstrated that individuals equipped with sufficient financial knowledge tend to achieve superior savings rates compared to those with diminished financial understanding (Respati et al., 2023). The relevance of financial literacy, encompassing both foundational and digital dimensions, is progressively accentuated as individuals assume greater accountability for their long-term fiscal health (Zaimovic et al., 2024).

Individuals possessing financial literacy demonstrate a high degree of proficiency in the administration of their financial resources, enabling them to make wise investment choices, embrace a savings-focused mindset, and successfully utilize contemporary financial services and products (Lontchi et al., 2023). This research is concentrated on elucidating the critical importance of financial literacy with regard to market-based financial assets, including shares, debt securities and collective investment schemes. Moreover, enhanced financial literacy also augments an individual's capacity to identify fraudulent activities and mitigate the risk of fraud (Engels et al., 2021). Therefore, financial literacy assumes an indispensable role in cultivating robust digital financial literacy to facilitate prudent financial decision-making. To realize this aim, this study posits the following hypothesis:

H1: FK has an effect on DFL among students at SMAN 4 Jakarta

Financial Behavior

The Theory of Planned Behavior (TPB) has been empirically validated as a robust framework for forecasting behavioral outcomes predicated upon individual intentions and

perceptions concerning behavioral regulation. An individual's conduct is significantly shaped by their intentions, which are constituted by components including subjective norms, attitudes, and perceived behavioral control (Ajzen, 1991). Research by (Rahayu et al., 2022) and Dewi et al. (2020) elucidate a positive relationship between constructive behavior and financial decision-making outcomes.

Financial behavior is any human activity pertaining to the management of financial resources. Financial behavior is described by (Rahayu et al., 2022) particularly among Indonesia's Millennial Generation, using three main dimensions: saving behavior, spending behavior, and investing behavior. Saving behavior epitomizes individuals' endeavors to designate a segment of their income for prospective necessities. Spending behavior relates to the discipline of managing daily expenditures and avoiding impulsive purchases. Investment behavior requires acquiring assets with the expectation of generating future value.

An individual's proclivity towards making prudent financial decisions related to saving and budgeting is profoundly contingent upon their capacity to make wise financial decisions about budgeting and saving (Liu et al., 2021). Four aspects of financial behavior were examined from the pedagogical standpoint of Indonesian educators: saving behavior (improving net worth through expenditure management), spending behavior (reducing impulsive purchases and searching for discounts), long-term planning (reaching goals that take one to two years to attain), and short-term planning (planning a budget and achieving goals within a year) (Zulaihati et al., 2020).

In the next sections, each of the four previously described aspects of financial behavior will be studied independently to enable a more sophisticated comprehension of each aspect separately. The dimensions of financial behavior selected are grounded in antecedent studies on financial behavior (Rahayu et al., 2022; Stofkova et al., 2022; Zulaihati et al., 2020). Since these four variables match the elements of the Theory of Planned Behavior (TPB) framework, the reasoning behind their selection is supported by the application of the previously explained TPB.

In summary, it can be asserted that financial behavior encompasses all varieties of individual actions associated with monetary management, including saving, purchasing, investing, and both short-term and long-term financial planning, which are modulated by attitudes, subjective norms, and perceptions of behavioral control, in alignment with the framework of the Theory of Planned Behavior, thereby fostering judicious and purposeful financial decision-choice.

Financial Behavior (FB) and Digital Financial Literacy (DFL)

(Dogra et al., 2023) emphasize that insufficient financial literacy not only undermines an individual's financial security but also slows down a nation's economic progress and overall prosperity. Prior studies further show that those who believe they are financially capable and have higher levels of digital financial literacy are more likely to act responsibly. These behaviors subsequently improve financial outcomes, particularly through more deliberate decision-making related to saving and investing (Alkhalaf et al., 2023; Liu et al., 2021; Rai & Sharma, 2019).

(Lusardi & Mitchell, 2014) argue that a lack of financial literacy is a major factor in people's inability to properly manage their resources. In addition, (Panos & Wilson, 2020) highlight that the convenience of online buying and the accessibility of digital credit facilities can promote impulsive spending and increase debt levels. Conversely, (Morgan et al., 2019) emphasize how digital financial literacy helps people avoid taking on too much debt.

Digital financial literacy is essential for enabling users to

take full advantage of digital financial services while guarding against risks such as fraud, phishing and other cyber-threats. This requires a proper understanding of how to navigate digital financial platforms safely (Koskelainen et al., 2023). Since risks embedded in digital finance tend to be more complex and less visible than those found in traditional financial systems, individuals need to adopt adequate self-protection strategies to mitigate such risks (Morgan et al., 2019). Improving one's financial literacy also lessens the risk when using digital financial services (Koskelainen et al., 2023). Based on this theoretical foundation, the present study proposes the following hypothesis:

H2: FB has an effect on DFL among students at SMAN 4 Jakarta

Digital Skills

Digital skill is closely associated with fundamental knowledge and basic technical abilities, including the capacity to organize, store, and manage information on digital devices such as computers, tablets, and smartphones as well as the ability to navigate software applications, create and access user profiles, and configure security settings (Lyons & Kass-Hanna, 2021). A shortage of competence in operating and utilizing Information and Communication Technology remains one of the most substantial barriers to the development of digital literacy (Lee, 2014).

Digital skills essentially refer to an individual's aptitude for understanding and using digital tools, which includes managing information across multiple devices, employing software for account creation and authentication, and maintaining appropriate privacy controls. Consequently, digital skills can be understood as the capacity to operate digital hardware and software effectively—ranging from organizing data and managing information to creating and securing online accounts. These competencies are crucial for enhancing digital literacy and mitigating challenges associated with the effective use of Information and Communication Technology.

Digital Skills (DS) and Digital Financial Literacy (DFL)

Digital financial literacy equips individuals with the capability to utilize various digital financial services, including online banking, mobile payment systems, digital investment platforms, and online financial tools. With these competencies, millennials are better able to manage bank accounts, apply for loans, and complete a wide range of financial transactions with greater ease, thereby fostering financial inclusion. Digital applications—such as budgeting platforms, online financial calculators, and expense-tracking tools—further enable individuals to monitor income and spending more effectively. Many digital platforms even allow users to automate financial activities, such as recurring transfers and systematic savings contributions (Aryan et al., 2024).

Additionally, research shows that increased engagement in saving behaviors is linked to higher levels of digital literacy (Rahayu et al., 2022; Setiawan et al., 2022). Digital literacy has been found to enhance perceived usefulness, a key factor influencing intentions to engage in online shopping (Nazzal et al., 2021). Furthermore, (Kahawandala et al., 2020) show that digital literacy shapes purchasing decisions and spending habits among Generation Z. In order to develop both short-term and long-term financial prosperity, people need sufficient assistance in navigating the increasingly complex array of digital financial services in order to become digitally literate (Lyons & Kass-Hanna, 2021). Based on this theoretical overview, the present study formulates the following hypothesis:

H3: DS has an effect on DFL among students at SMAN 4 Jakarta

Financial Knowledge (FK), Digital Skills (DS) and Digital

Financial Literacy (DFL)

The purpose of this study is to analyze whether financial knowledge (FK) affects digital financial literacy (DFL), with digital skills functioning as a mediating variable. An individual's comprehension of risk and investment choices, financial planning, and money management is referred to as financial knowledge. The capacity to use digital technology in financial operations, such as online transactions, digital investing processes, and mobile banking applications, is known as digital financial literacy. The degree to which people are able to convert their financial knowledge into efficient use of digital financial services is determined by their digital abilities, according to the parameters of this study. Individuals may possess strong financial knowledge, yet without sufficient digital skills they may face difficulties in maximizing the available digital financial platforms. Conversely, individuals with strong digital skills will more easily access, understand, and apply their financial knowledge in the digital world (Zaimovic et al., 2024). This is supported by other research that suggests that individuals with high financial literacy, those with digital skills, may be better able to apply their knowledge in the digital economy, thereby increasing their chances of entrepreneurial success (Oggero et al., 2020). Thus, the following hypothesis is put out by this study: H4: FK has an effect on DFL through DS among students at SMAN 4 Jakarta.

Methods

Research Design

Figure 1 presents the proposed research model framework.

H1: FK affects DFL

H2: FB affects DFL

H3: DS affects DFL

H4: FK affects DFL through DS

This study used a quantitative method to assess the hypotheses using structural equation modeling based on partial least squares (PLS-SEM) and a cross-sectional survey design. The use of PLS-SEM was considered appropriate because it enables the simultaneous estimation of multiple relationships among constructs and is well-established in contemporary empirical research. In this study, the model examines the effects of financial knowledge (FK), financial behavior (FB), and digital skills (DS) on digital financial literacy (DFL) (see Figure 1).

Data collection

This research was conducted at SMA Negeri 4 Jakarta using the Taroyamane formula sampling technique (Yamane, 1973), with a sample size of 102 respondents. Respondents were high school students who had taken digital economics and financial literacy courses and had used digital finance-related applications. The respondents were selected voluntarily, and their identities will be kept confidential. This study employed *convenience sampling*, a technique often used in financial research (Liu et al., 2021). Data were collected using an online survey method via *Google Forms*, with questionnaires distributed to participants via a *WhatsApp group* in December 2024.

Measurement and Data Analysis

Abdallah et al. (2024), Lusardi & Mitchell (2014) and Lyons & Kass-Hanna (2021) used a questionnaire to measure financial knowledge (FK), financial behavior (FB), digital skills (DS), and digital financial literacy (DFL). These established sources provided the constructs and questionnaire items used in this study. Respondents' responses were represented in this study using a Likert scale that went from 1 (strongly disagree) to 5 (strongly agree). The collected data were subsequently evaluated through several stages—namely, the assessment of the measurement model, the structural model, and hypothesis testing—using partial least squares structural equation modeling (PLS-SEM) in accordance with the procedures recommended by (Hair et al., 2013) and Chin in (Marcoulides, 1998). Factor analysis is expected to meet CR (Composite Reliability) and AVE (Average Variance Extracted) standards and have a loading factor value above 0.5. This test aims to ensure that the measurement model is valid and reliable, and that the overall model is in accordance with the data and theory used.

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Digital Financial Literacy (DFL)

Conceptual Definition

Digital financial literacy is the ability to manage personal finances and financial risks in the digital environment, as well as to execute online financial transactions like purchasing and using different payment methods.

Operational Definition

Digital financial literacy is measured based on the capacity to do online financial tasks, such as purchasing, using different digital payment methods, and maintaining accounts and transactions through digital banking. This literacy also includes awareness of the risks associated with digital financial transactions. The digital financial literacy (DFL) instrument items are shown in Table 1.

Financial Knowledge (FK)

Conceptual Definition

Financial knowledge is a person's comprehension of fundamental financial concepts, such as risk diversification, inflation, interest, and numeracy.

Operational Definition

Financial knowledge is measured based on a person's comprehension of fundamental financial concepts, such as compound interest, inflation, and risk diversification, as well as their capacity to use this information to make wise and practical financial decisions.

The financial knowledge instrument (FK) items are in table 2.

Financial Behavior (FB)

Conceptual Definition

Financial behavior encompasses the set of actions related to the management of personal finances, such as budgeting, saving, and handling loans.

Operational Definition

Financial behavior is measured based on individual actions related to financial management, such as decisions to save, manage expenses, and borrow money (see table 3).

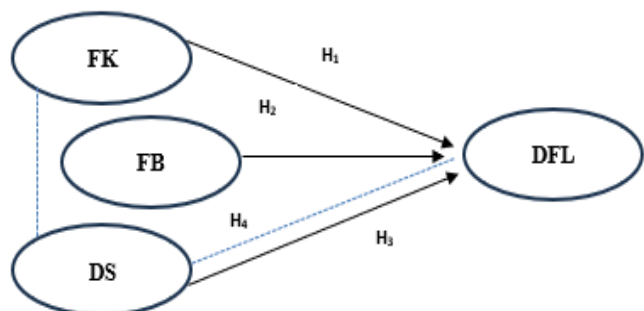


Figure 1. Research Design

Variables	Dimensions	Indicator	Instruments/items	
Digital Financial Literacy (DFL)	Understanding Digital Service Products	Knowledge of various financial applications and services/platforms;	(1) I use at least 1 digital financial application (ewallet, mobile banking, etc.) (2) I know that digital financial applications can be used for payment transactions, savings/top ups, or loans.	
		Awareness of security and risks in using digital services	(3) I aware the risks of online financial transactions, such as scamming, fraud or identity theft. (4) I know where to get information on complaints or reporting digital financial risks.	
	Behavior in budgeting and borrowing digital	Recording income		(5) I am skilled in creating digital financial budgets (6) I record the amount of money I receive
			Expenditure control	(7) I keep a daily expense log (8) Spending money according to my plan
		Credit/debt management		(9) I pay my obligations on time (10) I understand that using the <i>paylater</i> /pinjol facility is only for truly important needs or productive goods

Source: (Abdallah et al., 2024; Lusardi & Mitchell, 2014; Lyons & Kass-Hanna, 2021)

Table 2. Financial Knowledge Variables

Variables	Dimensions	Indicator	Instruments/items
Financial Knowledge (FK)	Understanding Basic Concepts and Financial Products	Knowledge of basic numeracy and financial calculations	(11) I understand how interest affects savings (12) I know how inflation affects the value of money.
		Knowledge of financial products	(13) I know how to open a savings account at a bank (14) My parents have education insurance for their children
		Investment risk	(15) I know the concept of " <i>high return high risk</i> " in investment. (16) If I had a lot of money, I would allocate it to various places.
	Diversification of risk and investment		

Source: (Abdallah et al., 2024; Lusardi & Mitchell, 2014; Lyons & Kass-Hanna, 2021)

Table 3. Financial Behavior Variables

Financial Behavior (FB)	Saving Behavior	Ability to save	(17) I set aside money to save (18) I maintain an emergency fund for unexpected expenses
		Money saving skills	(19) I bring provisions so I can save more pocket money. (20) I save money to buy my dream item
		Decision to seek information about purchased goods	(21) I compare prices from different places (22) I wait for a discount or promotion before buying.
	Shopping Behavior	Buy according to your needs	(23) I avoid buying things impulsively or following the crowd. (24) I only buy things I need

Source: (Abdallah et al., 2024; Lusardi & Mitchell, 2014; Lyons & Kass-Hanna, 2021)

Table 4. Digital Skills Variables

Digital Skills (DS)	Basic Digital Skills	Ability to use digital devices	(25) I am proficient with digital tools, including cell phones. (26) I understand how to download digital applications (such as mobile banking or online shopping)
		Ability managing information digital	(27) I am able to register for an account on a digital platform such as mobile banking or ewallet. (28) I understand how to make online transactions such as paying or canceling transactions.
		Ability to set Privacy for Digital Security	(29) I know how to set privacy on digital applications. (30) I understand how to enable security features like two-factor authentication.

Source: (Abdallah et al., 2024; Lusardi & Mitchell, 2014; Lyons & Kass-Hanna, 2021)

Digital Skills (DS)
Conceptual Definition

Digital skills are skills in understanding and using digital devices such as managing information on computers, tablets,

and mobile phones, as well as using software to create accounts, log in, and manage privacy settings.

Operational Definition

Digital skills are measured based on an individual's ability

to manage basic hardware and software, such as organizing and storing information on digital devices, creating and managing digital accounts, and understanding how to manage privacy settings (see [table 4](#)).

Result and Discussion

Respondents

[Table 5](#) shows that male made up the majority of respondents, with a percentage of 52.94%. By age, 78.43% of respondents were between the ages of 17 and 18, while 3.92% were between the ages of 15 and 16. Furthermore, respondents whose parents were private employees (32.36%), while the smallest number were civil servants (5.88%). The majority of respondents received income from their parents (77.45%), while income from parents and their

own businesses amounted to 21.57%. Respondents who owned *e-wallet financial applications* were 56.86%, followed by *e-wallet* and *mobile banking ownership* at 33.33%, while those who only had *mobile banking* were 4.49% and finally those who owned *e-wallets*. *mobile banking* and investment applications only 1 respondent (0.98%).

Outer Model (Measurement Model)

Structural Equation Modeling (SEM) requires a process and a series of procedures to process data ([Hair et al., 2013](#)). The first procedure in the measurement model is to test convergent validity. Convergent validity can be met if the loading factor value is higher than 0.50 Chin in ([Marcoulides, 1998](#)) which means the variable meets the convergent validity criteria, as illustrated in [Figure 2](#). Instrument items that are <0.5 are *dropped* or removed from the research model.

Table 5. Respondent Characteristics

Characteristics	Number of Samples N = 102	Percentage
Gender		
Man	54	52.94
Woman	48	47.06
Age		
15 - 16	4	3.92
17 - 18	80	78.43
19 - 20	14	13.73
Parents' job		
Civil Servants/Police/TNI	6	5.88
Private sector employee	33	32.36
Businessman	28	27.45
Retired	7	6.86
Other	28	27.45
Source of income		
Parents/Guardians	79	77.45
Results of own efforts & parents	22	21.57
Other	1	0.98
Types of Financial Applications		
E-wallet	58	56.86
Mobile banking	5	4.90
Mobile banking & Ewallet	34	33.33
Mobile banking, Ewallet & Investment	1	0.98

Source: Researcher (2024)

Table 6. Digital Financial Literacy Measurement Instruments

Variables	Instrument (test items)	Factor Loading
Digital Financial Literacy (DFL)		
DFL1	I use at least 1 digital financial application (ewallet, mobile banking, etc.)	0.685
DFL2	I know that digital financial applications can be used for payment transactions, savings/top ups, or loans	0.677
DFL3	I aware the risks of online financial transactions, such as scamming, fraud or identity theft	0.816
DFL4	I know where to get information on complaints or reporting digital financial risks.	0.212*
DFL5	I am skilled in making financial budgets	0.517
DFL6	I record the amount of money I receive	0.815
DFL7	I keep a daily expense log	0.456*
DFL8	Spending money according to my plan	0.481*
DFL9	I pay my obligations on time	0.469*
DFL10	I understand that using the paylater/pinjol facility is only for truly important needs or productive goods	0.245*
Financial Knowledge (FK)		
FK1	I understand how interest affects savings	0.643
FK2	I know how inflation affects the value of money.	0.667
FK3	I know how to open a savings account at a bank	0.463*

Variables	Instrument (test items)	Factor Loading
FK4	My parents have education insurance for their children	0.540
FK5	I know the concept of "high return high risk" in investment.	0.817
FK6	If I had a lot of money, I would allocate it to various places.	0.829
Financial Behavior (FB)		
FB1	I set aside money to save	0.625
FB2	I maintain an emergency fund for unexpected expenses	0.326*
FB3	I bring provisions so I can save more pocket money.	0.824
FB4	I save money to buy my dream item	0.831
FB5	I compare prices from different places	0.231*
FB6	I wait for a discount or promotion before buying.	0.423*
FB7	I avoid buying things impulsively or following the crowd.	0.773
FB8	I only buy things I need	0.766
Digital Skills (DS)		
DS1	I am proficient with digital tools, including cell phones	0.774
DS2	I understand how to download digital applications (such as mobile banking or online shopping)	0.885
DS3	I am able to register for an an account on a digital platform such as mobile banking or ewallet.	0.786
DS4	I understand how to make online transactions such as paying or canceling transactions.	0.759
DS5	I know how to set privacy on digital applications.	0.874
DS6	I understand how to enable security features like two-factor authentication.	0.768

Source: (Researcher, 2024)

Note. *Loading Factor below 0.5/drop.

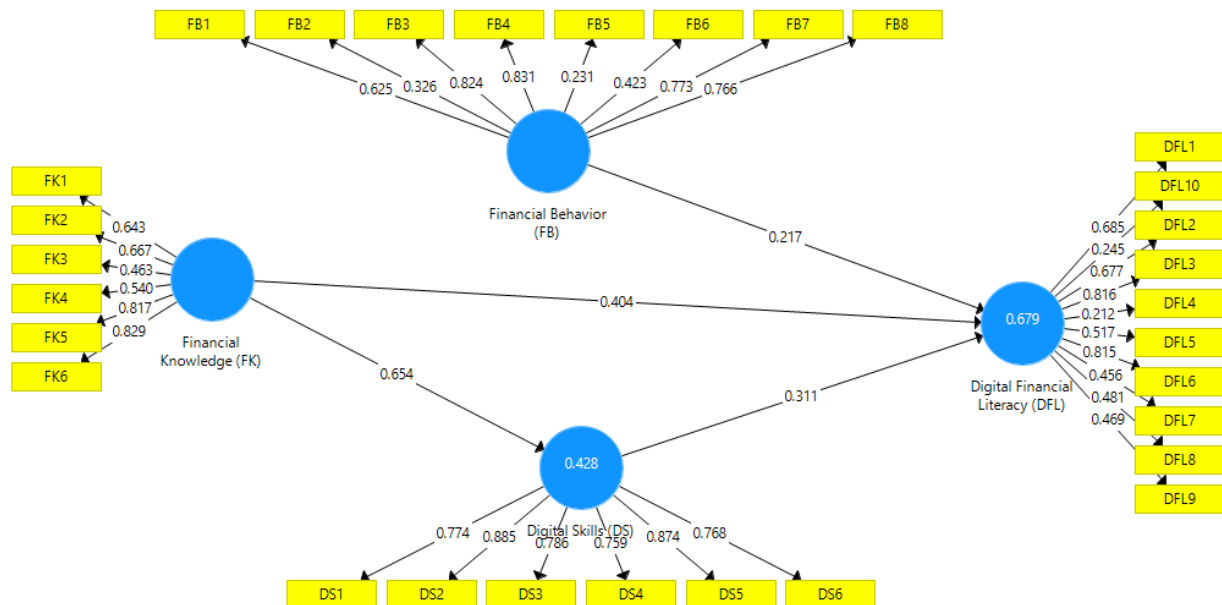


Figure 2. Research Results

Table 7. Discriminant Validity (Fornell-Larcker Criterion)

Variables	DS	DFL	FK	FB
DS	0.809			
DFL	0.708	0.759		
FK	0.598	0.654	0.726	
FB	0.714	0.586	0.561	0.785

Source: (Researcher, 2024)

Table 8. Discriminant Validity (Heterotrait-Monotrait Ratio-HTMT)

Variables	DS	DFL	FK	FB
DS				
DFL	0.802			
FK	0.718	0.841		
FB	0.778	0.654	0.709	

Source: (Researcher, 2024)

Based on Table 6, Digital Financial Literacy (DFL) has a

loading factor value between 0.440 (<0.50) indicating convergent validity is achieved to 0.835 (>0.50), DFL > 0.5 indicates convergent validity is achieved, then <0.50 is removed from the research model. Financial Knowledge (FK) has a loading factor value between 0.463 (<0.50) to 0.829 (>0.50), all of which meet convergent validity except FK3 which is removed from the research model. Financial Behavior (FB) has a loading factor value between 0.3231 (<0.50) to 0.824 (>0.50), so the FB item <0.6 is removed from the research model. Digital Skills (DS) has a loading factor value between 0.759 (<0.50) to 0.885 (>0.60), all of which meet convergent validity. After all instrument items <0.50 were removed, remodeling was carried out with the following results (see table 7 and Table 8).

Based on the HTMT test, the ratio value of the variables DFL (Digital Financial Literacy), FK (Financial Knowledge), FB (Financial Behavior) and DS (Digital Finance) is below 0.90, meaning that it meets the requirements for discriminant validity.

Inner Model (Structural Model)

The model can be tested in the following stage since the tests carried out using the outer model have satisfied the primary requirements. Researchers used a number of techniques to test the inner model, such as (1) collinearity tests, (2) R-squared tests, and (3) F-squared tests. Determining whether or not there is strong collinearity between the variables is the first step in the collinearity test. The method is to look at the VIF value, where the VIF value must be less than 5.00. Based on statistical estimates, it was found that the constellation of variables tested by the researchers did not have collinearity and could proceed to the next inner model analysis, as presented in Table 9.

The R-Square (R²) test is the next phase in the internal model and is used to assess how well the research model predicts endogenous latent variables. The Digital Financial Literacy (DFL) variable's R² value is 0.586, which indicates that the FK, FB, and DS variables in the moderate category account for 58.6% of the DFL variance, with other factors outside the model accounting for the remaining 41.4%. At the 35.8% level, the DS variable can account for the impact of FK on DFL, as presented in Table 10.

The next step is to calculate the effect size (f²) to measure how much the independent latent variable affects the dependent variable. It is known that DS has a medium effect size, with a f² value of 0.301 against the DFL variable. Additionally, the medium impact size is indicated by the f² value of 0.174 for FK vs DFL. Then, there is no effect size, as indicated by the f² value of FB against DFL of 0.005. Lastly, a medium impact size is indicated by the f² value of 0.215 for FK against DFL through DS, as presented in Table 11.

Furthermore, the measurement and structural models met the required reliability and validity criteria based on the PLS-SEM analysis results. Composite reliability (CR) > 0.70, average variance extracted (AVE) > 0.50, and Cronbach's alpha test requirements > 0.70 are all satisfied. With a Cronbach's Alpha value of 0.7 satisfied by the DFL, DS, FK, and FB variables, the findings of the research data generated in Table 12 demonstrate the applicability of the model in this study in accordance with the model presented by the researcher.

Hypothesis Testing

Researchers used the SEM-PLS Bootstrap resampling approach to test the hypothesis based on the model results. With the exception of the effect of financial knowledge on digital financial literacy, all hypothesized relationships were statistically significant, with t-values greater than 1.96 and p-values below 0.05 (two-tailed test). The test results showed that the p-values ranged from 0.000 (<0.050) to 0.224 (>0.050) and the t-value ranged from 1.167 to 9.130. These findings indicate that the influence of DS on DFL has the highest t-value (9.130), whilst the effect of FK on DFL has the lowest t-value (1.167). SmartPLS software version 3.0 was used for structural modeling, and the hypothesis testing results are presented in Table 13.

The results of the measurement model and hypothesis testing indicate a positive and significant influence between FK through DS, FK, and DS on DFL. Meanwhile, FB on DFL did not have a significant effect. These results indicate that the

Table 13. Hypothesis Test Results

Variable Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Values	P Values	Keputusan
H1 FK -> DFL	0.616	0.609	0.101	6.068	0.000	Accepted
H2 FB -> DFL	0.069	0.082	0.122	0.565	0.572	Rejected
H3 DS -> DFL	0.453	0.444	0.117	3.862	0.000	Accepted
H4 FK ->DS -> DFL	0.598	0.604	0.062	9,593	0.000	Accepted

Source: (Researcher, 2024)

three proposed hypotheses, namely Hypotheses 1, 3, and 4, have met the criteria and significantly influence DFL. Meanwhile, Hypothesis 2 is rejected, which means that financial behavior has not been able to prove its significant influence on digital financial literacy.

The purpose of this study is to examine the degree to which digital financial literacy is influenced by financial behavior, financial knowledge, and digital skills, as well as the indirect impact of financial knowledge on digital financial literacy through digital skills. Three of the four proposed hypotheses were supported, while one hypothesis was not supported. The following is a description of the research results discussion:

The first finding demonstrates that digital financial literacy is significantly impacted by financial knowledge. This result is contradicts with the study conducted by Munthasar et al. (2021), which found no significant relationship between knowledge and digital financial literacy. When making digital financial decisions, financial knowledge is essential. This result supports three previous studies by (Baranidharan et al., 2023), which stated that digital financial literacy—which includes the capacity to comprehend digital financial risks, manage risks, and apply practical financial skills to use digital financial services effectively—is influenced by financial knowledge. Furthermore, financial knowledge is a primary mediator of greater financial

Table 9. Variance Inflation Factor (VIF) Results

Variables	DS	DFL	FK	FB
DFL				
FK	1,000	1,652		
FB		2,164		
DS		2,309		

Source: (Researcher, 2024)

Table 10. R-Square Results

Variables	R Square	R Square Adjusted
DS	0.358	0.351
DFL	0.586	0.574

Source: (Researcher, 2024)

Table 11. f-Square Results

Variables	DS	DFL	FK	FB
DFL				
FK	0.557	0.174		
FB		0.005		
DS		0.215		

Source: (Researcher, 2024)

Table 12. Goodness of Fit Results

Variables	Cronbach's Alpha	CR	AVE
DFL	0.804	0.859	0.866
FK	0.765	0.783	0.844
FB	0.846	0.887	0.888
DS	0.894	0.898	0.919

Source: (Researcher, 2024)

Inclusion (Liu et al., 2021). Therefore, using digital financial services can present difficulties due to a lack of financial knowledge, including transaction errors, the possibility of losing money, and privacy violations (Ravikumar et al., 2022). In conclusion, financial knowledge should be helpful in managing digital finance, but for some respondents, it may not be influential in making wise financial decisions.

Enhancing digital financial literacy is largely dependent on financial behavior. These results, however, contradict earlier research that indicates sound financial practices play a significant mediating role in enhancing the connection between digital financial literacy and financial well-being (Nurkholik, 2024). This suggests that mastering digital financial behavior not only aids in sound financial decision-making but also improves overall digital financial literacy. Previous research also suggests that financial behavior, specifically saving, spending, and investing, positively impacts digital financial literacy (DFL) among millennials in Indonesia. This implies that better financial behavior in terms of controlling spending, savings, and investments can be achieved with increased levels of digital financial literacy (Rahayu et al., 2022). The non-significant findings may be attributed to several limitations, including the focus on a single school (SMAN 4 Jakarta) and a relatively small sample size of 102 students.

Additionally, digital financial literacy is greatly enhanced by digital skills. This research confirms and validates several studies. Digital skills acquired through training and motivation can help small entrepreneurs develop adequate digital financial literacy skills, which are crucial as business and technological changes occur after the pandemic. Therefore, acquiring the necessary digital skills will improve digital financial literacy and make it easier for small business owners to use digital financial services like online loan applications (Uthaileang & Kiattisin, 2023). Other studies also show that digital skills play a significant role in improving individuals' ability to make informed financial decisions, ultimately contributing to better financial well-being (Kumar et al., 2023). Therefore, developing sound digital skills is an essential element in supporting good digital financial literacy.

As previously mentioned, this study also determines how financial knowledge affects digital financial literacy through digital skills. Digital skills help individuals understand and utilize financial technology effectively, ultimately improving their digital financial literacy capabilities. The results of this study align with research by (Zaimovic et al., 2024) which shows that digital skills not only improve digital financial

knowledge but also open wider access to digital financial services. Furthermore, research by Oggero et al. (2020) reveals that the ability to integrate financial knowledge with digital skills helps individuals, especially women, become more financially independent in the context of small firms. In conclusion, financial knowledge serves as a foundation for developing digital financial literacy, but digital skills are a determining factor that strengthens this relationship. These results highlight the need of developing digital skills as a crucial component of raising digital financial literacy.

Conclusion

This study examines how students at SMA Negeri 4 Jakarta's financial knowledge, financial behavior, and digital skills affect their digital financial literacy. Four hypotheses were developed: (1) financial knowledge has a significant impact on digital financial literacy, (2) financial behavior has a significant impact on digital financial literacy, (3) digital skills have a significant impact on digital financial literacy, and (4) financial knowledge has an indirect impact on digital financial literacy through digital skills as a mediating variable. Based on the results, one hypothesis—stating that financial behavior influences digital financial literacy—was not supported, while the remaining three hypotheses were supported.

Limitations of this study include the limited coverage of a single school, SMA Negeri 4 Jakarta, and the limited number of respondents, which was 102 students. Consequently, the generalizability of the findings may be limited to students with similar educational, regional, and socioeconomic characteristics. Furthermore, this study used a quantitative method with a cross-sectional approach, which cannot capture the dynamics of changes in digital financial literacy over the long term. Other factors such as cultural influences, technology access, and family support were also not measured in depth.

Recommendations for future researchers include expanding the scope and increasing the number of respondents to ensure more representative results. Furthermore, it is advised to use mixed-method designs, which include quantitative and qualitative techniques, to enhance the analysis and offer more profound insights into students' viewpoints on digital financial literacy.

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