

Digital Knowledge and Financial Resilience as Determinants of Financial Behavior: Evidence from Indonesia

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Abstract

Financial resilience (FR) and digital knowledge (DK) are two significant things that affect how people behave with money in the digital financial ecosystem, especially in developing nations like Indonesia. This study seeks to examine the mediating function of FR in the correlation between DK and FB among digital financial users in Medan City. This research employs a quantitative methodology, gathering data via an online survey of 230 participants who are active users of digital financial platforms, including e-wallets, mobile banking, and fintech lending. The Partial Least Squares–Structural Equation Modeling (PLS-SEM) method was used to investigate the association between the postulated variables. The findings indicate that DK exerts a favorable and significant influence on both FR and FB, while FR similarly impacts FB positively. Furthermore, FR has been shown to partially moderate the link between DK and FB. This suggests that people who know more about digital technology tend to be better at handling money, which indicates that they are more responsible and healthy with their money. These results corroborate that digital competence enhances access to financial services and fortifies individuals' capacity to manage financial stress and make judicious financial decisions. This work theoretically enhances the behavioral finance literature by emphasizing the significance of incorporating digital literacy and financial resilience as essential factors influencing prudent financial behavior in the digital era. In practice, the findings of this study suggest that governments and financial institutions should develop complete digital financial education programs that emphasize both technical competencies and psychological preparedness to confront contemporary financial difficulties.

Keywords: Financial Resilience, Digital Knowledge, Financial Behavior

Introduction

In the modern economy, digital financial technology has made a big difference in how people handle, spend, and invest their money (Harianto et al., 2024). In the past decade, Indonesia has experienced a rapid increase in the adoption of digital financial services such as mobile banking, e-wallets, and peer-to-peer lending, which have now become an important part of people's daily financial activities (Sri Andini et al., 2025). A survey by We Are Social and Hootsuite (2024) found that Indonesia has more than 221 million internet users, which is 79% of the country's total population. About 68% of these users regularly use digital banking apps for different transactions (Susanto et al., 2025). According to Bank Indonesia (2024), the value of digital payment transactions rose from IDR 47 trillion in 2017 to more than IDR 495 trillion in 2023. This development shows that the national digital financial ecosystem is growing quickly and that people are becoming more reliant on technology to manage their money (Djohan et al., 2025).

However, easy access to digital financial services does not always equate to healthy financial behavior (Hardiansyah et al., 2025). Quick access to online loans and ease of transactions often encourage consumer behavior, excessive spending, and poor long-term financial planning (Pakpahan et al., 2024). This condition gives rise to the phenomenon of financial stress, which is psychological pressure due to economic instability or the inability to meet financial obligations (Ayuni et al., 2024). Individuals experiencing financial stress tend to make irrational financial decisions, such as going into debt without calculation, not saving, or spending uncontrollably. This phenomenon poses a serious

challenge in building healthy financial behavior amidst the dynamic development of the digital economy (Eugenio et al., 2023).

Financial resilience is very important for keeping a person's economic stability in the face of ever-changing economic circumstances (Zou et al., 2024). This idea talks about how well a person can deal with and adjust to unforeseen financial problems, such as losing their job, inflation, or an economic crisis (Alam et al., 2024). People that are financially resilient usually know how to manage their money well, can see hazards coming, save money regularly, and don't spend too much (Katnic et al., 2024). They also think more clearly when it comes to money and don't get scared easily when the economy is bad (Alvi et al., 2024). The factors that affect financial resilience are not only how much money someone makes. They also include their financial literacy, budgeting skills, and social and emotional support [(Afshan et al., 2024). So, making financial resilience stronger is a smart way to reach long-term economic well-being (Mohd Daud et al., 2024).

Digital knowledge, on the other hand, has a big impact on how people today spend their money (Vomberg et al., 2024). People who are good in digital literacy tend to be more thoughtful and logical when they use technology-based financial services (Cabrilo et al., 2024). They know how digital financial platforms function, can tell how safe their personal data is, and can use technology to help them make better financial decisions (Badrudin et al., 2025). Digital literacy also helps people spot possible hazards, tell the difference between safe and harmful financial services, and keep up with the rapid changes in financial technology (Ferreira et al., 2024). So, improving digital literacy not only makes transactions easier and more efficient, but it also lays the groundwork for adopting smart, safe, and long-term financial habits in a digital economy that is changing quickly (Chen et al., 2024).

Moreover, prior studies, such as (Fazira Lubis et al., 2024), have predominantly been executed in rich nations or areas characterized by advanced digital financial infrastructure. However, places that are still growing, like Medan, have different social and economic traits and levels of digital literacy, which leads to different ways that people respond to financial risks and choices. So far, there hasn't been much empirical study that looks at both financial resilience and digital knowledge at the same time to figure out how urban residents in Indonesia would handle their money, especially now that digital financial transformation is happening.

The urgency of this research stems from the growing reliance of Medan inhabitants on digital financial services, including e-wallets, mobile banking, and online loan applications. This approach makes transactions more efficient, but it also creates new financial hazards because people aren't very adaptable and don't know how to handle financial stress. People need to be financially strong and have enough digital expertise to handle their money well because the economy is constantly changing, especially after the epidemic. This research is significant as it offers theoretical advancements by enhancing the financial behavior model through the incorporation of psychological factors (resilience) and technological elements (digital knowledge). Additionally, it provides practical benefits for financial institutions, local governments, and educational entities in formulating digital financial literacy programs tailored to the economic resilience of urban communities. This study addresses an academic deficiency while also being socially and economically significant in promoting equitable and sustainable financial growth in Medan City.

Theoretical Review

Financial Behavior

Financial behavior reflects a person's tendencies, awareness, and consistency in managing their financial activities, such as earning income, managing expenses, saving, and investing (Chaniago, 2024). This aspect shows an individual's ability to make logical and responsible financial decisions based on their level of knowledge, attitude, and financial goals (Pakpahan et al., 2024). According to (Hardiansyah et al., 2025), healthy financial behavior is evident from disciplined saving habits, effective budgeting, controlled spending management, and the implementation of mature investment strategies to achieve long-term financial stability. In the digital age we live in now, the idea of financial conduct has changed from old ways to new ways of using technology (Eugenio et al., 2023). People today use many digital financial platforms, like e-wallets, mobile banking, and online investments, to make handling their money faster and safer (Tambunan et al., 2024). People who are successful with

money and technology are more likely to be financially stable, able to handle changes in the economy, and make better financial choices (Silalahi et al., 2024). Positive money habits not only make people happier, but they also help the economy expand in a way that will last as society becomes more digital (Hou, 2023).

Financial Resilience

Financial resilience is the ability of a person to survive, adapt, and recover from economic stresses and sudden changes in their financial situation (Alam et al., 2024). (Zou et al., 2024) says that financial resilience is not only about being able to handle income and expenses but also about being ready to confront hazards by making meticulous plans, setting up emergency accounts, and getting money from several sources. People who are financially resilient may keep their economic stability even when things are unclear. This is because they tend to have good self-control over their spending and can make smart choices when things go wrong (Moazezi et al., 2025). Therefore, financial resilience is the ability to endure short-term stress and make plans for long-term financial security (Katnic et al., 2024). In today's digital age, financial resilience is more and more affected by how well someone understands money and how to use digital technology (digital knowledge) (Alvi et al., 2024). Using different digital financial services, such as mobile banking, e-wallets, and online investment apps, makes it easier for people to handle financial risks (Mohd Daud et al., 2024). People can plan, keep an eye on, and change their financial strategy as the economy changes when they have access to financial technology. In addition, disciplined and wise financial behavior also strengthens financial resilience because it helps individuals build sustainable economic stability (Razi et al., 2024). Consequently, financial resilience constitutes the primary foundation for sustaining individual economic well-being and fostering socio-economic resilience within society in the face of escalating global uncertainty (Mahesh et al., 2025).

Digital Knowledge

Digital knowledge is the capacity to understand, use, and operate digital technology to help with different aspects of life, such as managing money and making economic decisions (Sri Andini et al., 2025). According to (Susanto et al., 2025), digital knowledge encompasses not only the ability to use devices or apps but also includes critical thinking, awareness of digital ethics, and data protection skills. Digital literacy is an important skill to have in today's world of rapid digital change. It helps people adapt to new technologies and make the most of them to be more productive and efficient (Djohan et al., 2025). People that know a lot about digital technology can use digital financial services like mobile banking and e-wallets to handle their money, spending, and investments in a smarter and safer way (Lorés, 2024). Furthermore, digital knowledge plays a significant role in shaping positive financial behavior and strengthening financial resilience (Berlinski & Morales, 2024). Individuals with high levels of digital knowledge are better prepared to face economic uncertainty and are able to adapt to changes in technology-based financial systems (Chen et al., 2024). Digital knowledge also plays a role in improving financial literacy through the ability to access information, assess the risks of online transactions, and make rational financial decisions (Su et al., 2024). Digital knowledge not only functions as a technological skill but also as an intellectual asset that supports financial well-being, individual competitiveness, and economic sustainability amidst the development of the global digital era (Badrudin et al., 2025).

Methodology

This study employs a quantitative framework utilizing an explanatory survey method to examine the function of financial resilience in mediating the impact of digital knowledge on the financial behavior of digital finance users in Medan City. This methodology was selected in accordance with the research purpose, which is to empirically elucidate the causal link between variables. The study population comprises citizens of Medan City who actively utilize digital financial services, including mobile banking, e-wallets, and fintech lending. The sampling method included purposive sampling, selecting respondents aged 18 to 50 years, residing in Medan City, and having

utilized digital banking applications for a minimum of six months. The Slovin formula with a 5% margin of error was used to determine the number of samples, which was 230 respondents. An online questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = agree) was used to collect primary data. Secondary data came from recent scientific papers and official Bank Indonesia reports on digital money.

The Partial Least Squares–Structural Equation Modeling (PLS-SEM) method and SmartPLS 4.0 software were used to analyze the data. This method was chosen because it can look at both direct and indirect correlations between hidden variables, such as examining mediation effects. There are four basic ways to test digital knowledge: the capacity to utilize digital financial apps, knowing security aspects, the ability to analyze online financial information, and managing digital transactions. You can tell how financially strong someone is by how well they can handle stress, how ready they are to use their emergency fund, how flexible their income is, and how sure they are of their capacity to handle risks. Financial behavior is how you save, spend, manage debt, and prepare for investments. To confirm that the concept is consistent, validity and reliability tests are done by looking at the loading factor value, Average Variance Extracted (AVE), Composite Reliability, and Cronbach's Alpha. These values must all exceed 0.70. The path coefficient value, t-statistics, and p-value are used to evaluate the structural model and see how strong the association is between the variables. Bootstrapping analysis is used to determine how important financial resilience is as a mediator in the research model.

Results and Discussions

Results

Measurement Model Test (Outer Model)

We used outer model testing to check for concept validity and reliability. We used factor loading values (>0.70) and Average Variance Extracted ($AVE > 0.50$) to check for convergent validity. We used Composite Reliability ($CR > 0.70$) and Cronbach's Alpha ($CA > 0.70$) to evaluate for construct reliability.

Table 1. Outer Model Test Results

Variables	Kode	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Digital Knowledge (DK)	DK1	0.812	0.874	0.908	0.666
	DK2	0.826			
	DK3	0.843			
	DK4	0.792			
Financial Resilience (FR)	FR1	0.818	0.887	0.919	0.694
	FR2	0.842			
	FR3	0.856			
	FR4	0.813			
Financial Behavior (FB)	FB1	0.834	0.901	0.931	0.731
	FB2	0.853			
	FB3	0.868			
	FB4	0.854			

The outer model test results in Table 1 show that all of the indicators have outer loading values above 0.70. This means that each indicator can accurately show the latent construct. The Average Variance Extracted (AVE) value for all variables is likewise greater than 0.50, which means that more than 50% of the variance in the indicators can be explained by their structures. Also, the Cronbach's Alpha and Composite Reliability values for all of the variables are higher than 0.70, which means that the measurement model is reliable and consistent. Consequently, all constructs (digital knowledge, financial resilience, and financial behavior) are affirmed as valid and reliable, facilitating the structural model testing (inner model) phase.

Structural Model Test (Inner Model)

The structural model was tested to determine the relationship between latent variables using path coefficients, t-statistics, and p-values. A t-statistic value > 1.96 and a p-value < 0.05 indicate a significant relationship between the variables.

Table 2. Inner Model Test Results (Bootstrapping)

	Path Coefficient	t- statistics	p-value	Information
Digital Knowledge → Financial Resilience	0,512	9,034	0,000	Significant
Digital Knowledge → Financial Behavior	0,328	5,716	0,000	Significant
Financial Resilience → Financial Behavior	0,421	7,283	0,000	Significant
Digital Knowledge → Financial Behavior melalui Financial Resilience	0,216	4,512	0,001	Significant

Discussions

The Influence of Digital Knowledge on Financial Resilience

The hypothesis testing results demonstrate that digital knowledge exerts a favorable and significant influence on financial resilience among financial customers in Medan City ($\beta = 0.512$; $p < 0.001$). The findings of this study align with those of (L. Wang et al., 2023), which elucidate that digital knowledge significantly enhances an individual's capacity to acquire, comprehend, and handle financial information across diverse technological platforms. Digital technology helps people make financial decisions faster, more accurately, and more logically (Zhang et al., 2024). Digital knowledge also helps people learn more about money, make fewer mistakes when they do business, and be better able to cope with changes in the economy (Badrudin et al., 2025). Additionally, this study's results are consistent with those of (Vomberg et al., 2024), which indicate that individuals possessing a high degree of digital competence exhibit enhanced financial resilience due to their ability to leverage various digital financial applications (fintech) for budget management, risk mitigation, and online income diversification. These skills help people deal with quick changes in the economy and keep their finances stable. In line with this, another study (Cabrilo et al., 2024) stressed that digital knowledge is an important part of financial literacy because it helps people understand data security, make transactions more efficiently, and make flexible financial plans in the face of the challenges and uncertainty of the digital age.

This study offers strategic public policy guidance for local governments, financial institutions, and educational entities to enhance public financial awareness and resilience in the digital age. First, the government of Medan City needs to create a digital financial inclusion program that is anchored in the community and focuses on helping vulnerable groups, like MSMEs, informal workers, and low- and middle-income households, become more digitally literate. Second, the Financial Services Authority (OJK) and Bank Indonesia should make rules and policies for teaching and watching over digital financial services so that people know how safe and risky online transactions are. Third, government, universities, and tech businesses need to work together more across sectors by setting up digital financial literacy hubs in cities to train, advise, and mentor people in the community. These regulations will help close the digital literacy gap, make households more financially stable, and make cities like Medan's financial ecosystem more open and long-lasting.

The Influence Of Digital Knowledge On Financial Behavior

Moreover, the study's findings demonstrate that digital information exerts a favorable and significant influence on the financial behavior of consumers in Medan City ($\beta = 0.328$; $p < 0.001$).

The results of this study align with the findings of (W. Wang et al., 2024), which indicate that digital literacy significantly contributes to enhancing financial awareness and cultivating rational economic conduct. As the digital economy grows, knowing how to use and understand financial technology helps people get economic information more quickly, thoroughly weigh their options, and make decisions based on objective data analysis (Ferreira et al., 2024). Digital literacy also helps people make fewer rash judgments, manage their money more accurately, and develop more directed economic behavior that is focused on long-term well-being (Capestro et al., 2024). The results of this study reinforce the perspective (Han et al., 2024) that digital literacy plays a crucial role in cultivating sustainable financial behavior by enhancing transaction efficiency, risk management capabilities, and the capacity to make more logical financial decisions. People that are digitally literate tend to use current financial tools like automated payment options, apps for tracking expenses, and digital financial planning systems to keep their spending and saving in check (Li et al., 2024). Digital literacy also helps people see financial hazards, stay away from online scams, and develop disciplined and monitored financial habits. So, digital skills not only make transactions easier and safer, but they also help people develop smart, flexible financial habits that are good for the economy in the long run in the digital age (Su et al., 2024).

The findings of this study serve as a foundation for formulating public policies designed to enhance digital literacy and financial conduct among the populace in Medan City. To improve people's understanding of money, the local government needs to work with the Communication and Information Agency (Diskominfo) and the Cooperatives and MSMEs Agency to create community-based digital financial education programs. These programs should teach people how to use banking apps, make online purchases, and protect their personal information. Second, the Financial Services Authority (OJK) and Bank Indonesia (BI) for the North Sumatra Region can work with colleges and training centers to assure that more people can use technology-based financial services. Third, the government should promote public-private partnerships (PPPs) to improve the infrastructure for digital literacy and close the gaps between areas. This joint approach aims to promote intelligent, adaptive, and sustainable financial behavior by enhancing digital literacy.

The Influence of Financial Resilience on Financial Behavior

In addition, the results of the study indicate that financial resilience has a positive and significant effect on financial behavior among financial consumers in Medan City ($\beta = 0.421$; $p < 0.001$). This research finding is in line with the view (Moazezi et al., 2025), which states that financial resilience acts as a psychological buffer that protects individuals from the negative impacts of economic pressure while maintaining the stability of their financial behavior. Individuals who have emergency savings, a positive view of risk, and adaptive abilities in managing financial resources tend to be calmer and more rational when facing difficult economic situations (Katnic et al., 2024). They do not easily react emotionally but are able to assess conditions realistically and adjust their financial decisions based on their priorities and capacities (Alvi et al., 2024). Financial resilience serves as an important foundation in forming stable, wise, and long-term welfare-oriented financial behavior (Mohd Daud et al., 2024).

This finding aligns with previous research (Afshan et al., 2024) indicating that financial resilience improves financial self-efficacy, which is defined as an individual's confidence in their ability to manage funds successfully and responsibly. People who are financially self-sufficient are more likely to be able to manage their money well, save money, and avoid spending too much and using debt in ways that don't help them (Razi et al., 2024). Additionally, financially self-sufficient individuals are more mindful of their investments, considering both risks and long-term goals (Lorés, 2024).

The findings of this study offer significant insights for policymakers at both regional and national levels to enhance the community's financial resilience and foster sound financial behavior. First, the Medan City government needs to start an integrated digital-based financial literacy program through the Cooperatives and MSMEs Office and the Communications and Informatics Office. This program should focus on managing financial risks, planning household finances, and using digital financial services wisely. Second, the Financial Services Authority (OJK) and Bank Indonesia (BI) North Sumatra Region need to improve their policies for financial inclusion by adding lessons on

how to be financially strong to the national financial education program. Third, the government can work with schools, banks, and fintech companies to make the infrastructure for financial education stronger by promoting public-private partnerships (PPPs). With policies that are both collaborative and sustainable, the community is projected to become more financially resilient, which will lead to smarter, more flexible financial behavior that will help Medan City grow economically over the long term.

The Influence of Digital Knowledge on Financial Behavior Through Financial Resilience

The mediation test results show that financial resilience is a partial mediator between digital knowledge and financial behavior among financial customers in Medan City ($\beta = 0.216$; $p = 0.001$). The results of this study corroborate the findings of (Sun, 2024), which indicate that financial resilience significantly enhances the relationship between financial literacy and financial behavior by augmenting an individual's capacity to manage economic stress (financial coping skills). People who are financially resilient can handle stress better, think more clearly, and change how they handle their money when the economy changes (Chen et al., 2024). In line with this, (Rezai et al., 2024) stressed that being very proficient with computers has a long-term effect on a person's ability to bounce back from financial problems. Digital literacy allows a person to gain access to and understand important financial information, know the risks of digital transactions, and handle their money more cautiously and strategically (Berlinski & Morales, 2024).

The management consequence is that enhancing digital literacy alone cannot fully cultivate excellent financial behavior without the influence of financial resilience as a supportive factor. So, banks and fintech companies in Medan City need to come up with plans to teach people how to use technology and how to be financially strong at the same time. These kinds of programs should not just teach people how to use financial apps but also how to manage risk, build an emergency fund, and plan for the future. Also, financial institutions should provide instructive digital tools, like automated financial analysis and data-driven recommendations for managing money. These efforts are meant to help people adjust to changes in the digital economy and promote smart, disciplined, and long-lasting financial conduct.

Conclusions

This study's findings demonstrate that digital literacy and financial resilience substantially affect the financial behavior of digital finance consumers in Medan City. These two variables are linked in a beneficial way: digital knowledge makes people more financially resilient, which in turn makes them more responsible and healthy with their money. Furthermore, research demonstrates that financial resilience serves as a partially mediating factor, clarifying the connection between digital knowledge and financial behavior. This means that people who know a lot about digital technology are not only better able to use digital financial services, but they are also better able to handle economic stress and make smart financial choices.

These findings emphasize the importance of improving digital literacy and strengthening financial resilience as strategies for developing sustainable financial behavior in the digital economy. This research contributes theoretically to the development of behavioral finance studies by explaining the psychological and cognitive mechanisms linking digital skills and financial behavior. Practically, the results provide recommendations for policymakers, financial institutions, and educational institutions to develop digital financial literacy programs that emphasize not only the technical aspects of using financial applications but also mental preparedness and adaptation to economic risks.

A disadvantage of this study is the reliance on self-reported questionnaire data, which may induce subjective bias among respondents. Consequently, subsequent research should aim to augment the sample size, incorporate additional geographic regions, and employ qualitative methodologies, such as in-depth interviews, to thoroughly investigate individuals' financial experiences and behaviors in navigating the complexities of a dynamic digital economy.

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