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Enhancing Financial Resilience of Women Entrepreneurs through Strengthened Digital Financial Literacy

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Abstract

This study investigates the impact of digital financial literacy (DFL) on the financial resilience of women entrepreneurs. The research adopts an explanatory approach, drawing on data from 208 women entrepreneurs based in Yogyakarta and Central Java, Indonesia. To test the proposed hypotheses, partial least squares structural equation modeling (PLS-SEM) was employed. The findings indicate that DFL significantly influences financial behavior, with these effects extending to future financial decisions. Enhancing DFL among women entrepreneurs positively affects their financial behavior, ultimately contributing to greater financial resilience. A key contribution of this research lies in its focus on women entrepreneurs, a demographic often overlooked in studies on financial literacy. Additionally, the study distinguishes between spending and saving behaviors by separating current financial actions from those intended for the future. This distinction enables a more nuanced analysis of how different financial behaviors, facilitated by digital financial technologies, affect financial resilience.

Keywords: digital financial literacy, financial resilience, woman entrepreneur

Introduction

Technological advancements have driven the rapid expansion of digital financial services (DFS), including digital payments, digital banking, peer-to-peer (P2P) lending, and crowdfunding. Despite this rapid growth, Indonesia faces challenges due to low levels of consumer regulation and protection (Setiawan et al., 2020), as well as limited digital financial literacy (OJK, 2019). This combination increases vulnerability to financial cybercrime, exacerbating financial risks. Vulnerability stems from greater exposure to risk and limited access to appropriate resources (Moore et al., 2019; Morrow, 2008; Norris, 2010; Salignac et al., 2019). In this context, financial resilience and vulnerability are intrinsically linked, as building financial resilience begins with understanding vulnerability. Economically vulnerable populations, such as the poor, rural inhabitants, and women, encounter significant barriers to financial inclusion (Gash & Gray., 2016; Kass-Hanna et al., 2022). Financial inclusion, in turn, is essential for mitigating risk and enhancing coping mechanisms (Hussain et al., 2019), ultimately strengthening financial resilience.

Although digital financial innovation has enhanced financial inclusion in Indonesia (OECD, 2017; Tony & Desai, 2020), DFS can expose consumers to greater risks compared to traditional financial services. In 2020, Indonesia recorded 952 cybercrime incidents, including online fraud (649 cases), illegal access (138), data theft (39), hacking (18), illegal interception (24), website alteration (9), system disruptions (4), and data manipulation (71). These threats highlight the need for stronger financial education, consumer protection, and financial inclusion to empower individuals and promote financial stability (Tony & Desai, 2020).

However, challenges remain in the era of digital financial innovation, particularly concerning low levels of digital financial literacy (DFL) (OECD, 2017). DFL is a combination of financial literacy and financial technology. Financial literacy refers to the ability to effectively manage financial resources through knowledge and skills, leading to financial well-being (Mandell, 2008). Financial technology, on the other hand, involves the use of digital systems, such as smartphones, computers, and the internet, to access digital investment and payment platforms (Setiawan et al., 2020). DFL thus represents a digital adaptation of traditional financial literacy (Prasad et al., 2018).

According to (Morgan & Trinh, 2019b, 2019a; Prasad et al., 2018), DFL encompasses four key dimensions: knowledge of digital financial products and services, experience in using these products, awareness of digital financial risks, and the skills to control and manage digital financial activities. Moreover, DFL is closely related to knowledge about online purchases, online payments, and online banking systems (Prasad et al., 2018).

Low DFL impacts not only the use of digital platforms but also affects savings and spending decisions. Previous studies have shown that financial literacy significantly influences financial behavior (Allgood & Walstad, 2016; Ameliawati & Setiyani, 2018; Ariadi et al., 2015; Harli et al., 2015; Hsiao et al., 2016; Sivaramakrishnan et al., 2017; Zulaihati et al., 2020), including saving and spending habits. Despite these findings, research focusing on the role of DFL in shaping financial technology usage remains relatively scarce. The OECD (2017) has emphasized the urgency of improving DFL, given the unique characteristics, benefits, and risks associated with financial technology.

Previous studies have predominantly focused on financial literacy, with limited attention to the specific dynamics of digital financial literacy (DFL). Research examining DFL remains scarce, particularly in relation to its distinct effects. For instance, studies by (Tony & Desai, 2020; Yang et al., 2023) have only explored the general link between DFL and financial inclusion, while (Koskelainen et al., 2023) have focused on mapping DFL at the household level and its impact on saving and spending behaviors. Koskelainen et al. further identified DFL's influence on financial literacy and financial capability.

Research on the intersection of DFL and financial resilience is especially crucial for Indonesian women, as empirical studies on this topic are rare. Indonesian women face unique challenges related to low DFL due to insufficient education, limited opportunities, and the persistence of patriarchal societal structures (Suwana & Lily, 2020). Social and cultural barriers further contribute to the digital gender gap, particularly in developing countries where traditional gender roles often dictate that women focus on household responsibilities while men take charge of economic activities (Antonio & Tuffley, 2014; Rahayu et al., 2023) Indonesia, with its potential to become Southeast Asia's largest e-commerce market (Google & Temasek, 2019), is notable for its high level of digital

technology use (McKinsey, 2018). Women account for 35% of online retail sales, yet they remain a vulnerable demographic. Between 2015 and 2020, cyber police reports indicated that 59.5% of cybercrime victims were men, while 40.5% were women (Data Indonesia, 2021). The disparity may be due in part to women's lower digital participation and reluctance to report incidents, as noted in the same study. Additionally, research suggests that femininity, combined with a lack of digital skills and competencies, contributes to women's vulnerability to cybercrime (Bada et al., 2021).

This study seeks to address the gap in the literature by examining whether digital financial services (DFS) impact the financial resilience of women entrepreneurs, particularly within the context of Indonesia.

Digital financial literacy (DFL) is defined as the integration of financial literacy and digital literacy. It encompasses not only the knowledge and skills related to financial matters but also the ability to apply them effectively in a digital context (Setiawan et al., 2020). Numerous studies have explored the impact of financial literacy on financial behavior, such as saving, spending, and investment decisions (Henager & Cude, 2016). These studies suggest that individuals make financial decisions based on the information, knowledge, and skills they possess. Therefore, it can be inferred that greater financial literacy leads to more informed and effective financial decisions.

Most research has found a significant positive relationship between financial literacy and financial behaviors, including saving, spending, and investment. For example Azlan et al. (2015) found that financial literacy was the second most influential factor in shaping the saving behavior of Malaysian university students, second only to family involvement. Similarly, Widyastuti et al. (2020) identified a positive causal link between financial literacy and saving behavior. Henager & Cude (2016) extended these findings by demonstrating that financial literacy positively influences both short- and long-term financial behaviors, including saving, spending, and investment. However, few studies have specifically examined the role of DFL in shaping saving and spending behaviors (Setiawan et al., 2020).

The relationship between financial literacy and financial behavior can be analyzed through the lens of the Theory of Planned Behavior (TPB). According to TPB, an individual's intention to perform a behavior is influenced by their attitudes toward the behavior, subjective norms, and perceived behavioral control. Individuals with higher financial literacy are likely to have more positive attitudes toward financial management, including saving and spending behaviors (Fessler et al., 2020). Additionally, higher financial literacy enhances individuals' confidence in making financial decisions, improving their perceived control over saving and spending.

Since DFL integrates both digital and financial literacy, it can be expected to influence saving and spending behavior in a similar manner. Studies on digital literacy have found parallels with financial literacy, as digital literacy and technology-based literacy positively influence attitudes toward digital behaviors (Yeşilyurt & Vezne, 2023). Individuals with higher DFL are more likely to have positive attitudes toward digital financial platforms, which can influence how they use these platforms to save or spend. With the proliferation of digital financial platforms offering convenience in spending and saving, individuals with high DFL are more likely to trust and adopt these platforms, resulting in different financial behaviors than those with low DFL, who may be more skeptical and prefer traditional financial services.

Several studies have also highlighted the positive influence of digital financial technology on saving and spending behavior. Varlamova et al. (2020) found that digital technology encourages short-term saving behavior among adults, while Selda & Nyhus (2022) identified distinct differences in financial behaviors between users and non-users of financial technology.

In conclusion, both financial literacy and the use of digital financial technology significantly affect saving and spending behaviors. While prior studies have largely treated these factors separately, this study hypothesizes that DFL, as a combination of financial literacy and digital literacy, also impacts saving and spending behaviors. The limited studies that have directly examined this relationship support this notion. For instance, Setiawan et al. (2020) found that DFL positively influenced saving and spending behaviors among Indonesian millennials. Similarly, Rahayu et al. (2023) reported that DFL positively affects saving, spending, and investment behaviors. Yudhiyati et al. (2021) also found that small business owners with both financial and digital skills made different investment and spending decisions compared to those without such skills.

Henager & Cude (2016) uncovered an interesting distinction between short- and long-term financial behavior. Their study found that financial literacy had a different impact on short-term behaviors, such as spending and emergency saving, compared to long-term behaviors like retirement saving and investing. Among older individuals, objective financial knowledge was more strongly related to long-term financial behavior, whereas for younger individuals, subjective financial knowledge and confidence were more closely related to both short- and long-term financial behaviors. These findings suggest that current and future financial behaviors may be influenced differently, which could explain the varied results in studies examining the relationship between financial literacy and financial behavior (Henager & Cude, 2016). Varlamova et al. (2020) also adopted this approach, focusing specifically on current saving behavior.

Given that financial literacy may affect current and future financial behaviors differently, this study aims to extend previous research by investigating whether DFL correlates with current saving and spending behaviors.

H_1: Digital financial literacy affects current saving behavior.
H_2: Digital financial literacy affects current spending behavior.

Current saving and spending behavior refers to an individual's ongoing habits and patterns in managing their finances. This includes daily saving and spending practices, the ability to allocate income across various financial commitments, the selection of appropriate financial instruments for future needs, the capacity to live within one's means, and tendencies toward overspending or impulsive spending. Previous research suggests that current financial behavior has a lasting influence on future financial decisions, particularly in terms of saving and spending (Setiawan et al., 2020). Hung et al. (2009) further emphasize that poor current decisions regarding savings and investments, while not immediately evident, can significantly impact long-term financial security, as seen in large segments of the U.S. population.

Financial literacy and a person's existing financial management experience play a crucial role in determining the allocation of funds for future investments, savings, and expenditures (Setiawan et al., 2020). For instance, individuals who have established sound financial management practices—such as saving for retirement or a child's education—are likely to continue these habits into the future. These individuals plan for the future by

considering their lifetime resources. (Lusardi, 2008) explains that each period's consumption and asset accumulation is determined by optimizing utility within an intertemporal budget constraint, which is adjusted according to the present discounted value of future resources, such as earnings, social security, and retirement funds.

Charness & Gneezy (2012) argue that psychological factors often make women more risk-averse and less likely to plan effectively for long-term investments. However, Hayat & Anwar (2016) challenge this view, finding no significant gender differences in financial literacy and asserting that both men and women have equal opportunities to develop sound financial behaviors for the future, based on their current decisions.

For women entrepreneurs, present-day financial decisions related to business management serve as a foundation for future financial planning. If current decisions regarding saving and spending prove successful, they are likely to be maintained. Conversely, if these decisions do not meet established targets, they will need to be reevaluated to avoid future missteps. Consequently, it is hypothesized that current saving and spending behaviors will influence future financial behavior.

H_3: Current saving behavior influences future saving behavior.
H_4: Current spending behavior influences future spending behavior.

Resilience is broadly defined as the process by which individuals overcome significant adversities. Financial resilience, therefore, refers to an individual's ability to overcome financial challenges or upheavals. Individuals with greater access to financial services are generally considered to have higher financial resilience compared to those with limited or no access. Kass-Hanna et al. (2022) identified four key mechanisms through which financial inclusion enhances financial resilience. First, access to financial services, such as savings accounts, loans, and insurance, enables households to make more strategic and, at times, riskier investments. Second, financial inclusion allows households to diversify their investment portfolios or take preventive measures to reduce the impact of potential financial shocks. Third, households with access to savings accounts or low-cost insurance can build financial buffers, enabling them to smooth consumption during emergencies. Lastly, when faced with financial shocks, households with access to formal financial services can seek loans or other financial products to recover.

Numerous studies have examined the factors contributing to financial resilience. Setiyani & Solichatun (2019) found that individuals who consistently pay bills on time and manage their purchases effectively tend to have higher financial well-being, making them more resilient in the face of financial shocks. Similarly, Chavali et al. (2021) highlighted that financial behaviors—such as planning for future security, saving and investing, maintaining financial discipline, and exercising financial consciousness—significantly impact an individual's financial well-being. Gutter, M. & Copur (2011) also demonstrated that budgeting, saving habits, compulsive buying, and credit card management are closely linked to financial well-being.

Hussain et al. (2018) emphasized that individuals who maintain a regular savings pattern are more likely to strengthen their financial resilience. Importantly, this study explored not only the amount of savings individuals held but also their saving behaviors over recent weeks and anticipated future saving habits. As mentioned in previous sections, existing research suggests that current saving behavior influences future saving behavior. However, while many studies focus on the impact of saving habits on financial resilience, they often do not differentiate between current and future saving behaviors.

This distinction is crucial, as future saving behavior may influence financial resilience in unique ways.

H_5: Future saving foresight influences financial resilience.

In studies on financial behavior, researchers have distinguished between various behaviors such as compulsive buying, investing, and budgeting (Chavali et al., 2021; Gutter, M. & Copur, 2011). These classifications indicate the need to distinguish between current and future spending behaviors. Individuals who manage their current spending effectively are more likely to allocate funds for necessities, savings, or future investments, positioning them to better withstand financial shocks.

Conversely, future spending foresight involves the ability to anticipate and plan for future expenses. While improving current spending behavior helps individuals live within their means and avoid debt, enhancing future spending foresight enables them to plan for upcoming expenses, ultimately strengthening their long-term financial resilience. Consequently, individuals with sound current spending habits are better equipped to plan for future expenses, which in turn improves their financial resilience. This study hypothesizes that future spending foresight, rather than current spending behavior, directly influences financial resilience.

H_6: Future spending foresight influences financial resilience.

Based on prior research, there is substantial evidence to hypothesize that digital financial literacy (DFL) may influence financial resilience through both current spending and saving behaviors, as well as through future spending and saving foresight. Entrepreneurs with higher levels of financial literacy are more likely to adopt a positive attitude toward financial management. They tend to have greater confidence in managing their funds and feel more in control of their financial decisions. This increased financial competence fosters a desire to make well-informed saving and spending choices, which contributes to enhanced financial resilience. This is particularly critical for vulnerable groups, such as women entrepreneurs, who may face greater exposure to financial shocks.

Research Method

This study employed an explanatory approach to examine the relationships between various individual variables. The independent variables included digital financial literacy, spending behavior, saving behavior, financial saving, and financial spending, while the dependent variable was financial resilience. Primary data were collected through questionnaires distributed to participants.

Digital financial literacy (DFL) pertains to individuals' knowledge of online systems for spending and saving, including online payments and banking (Prasad et al., 2018). Morgan & Trinh (2019a, 2019b), along with Prasad et al. (2018), identified four key dimensions of DFL: knowledge of digital financial products and services, experience in using these products, awareness of digital financial risks, and the ability to manage and control digital financial activities.

Saving behavior refers to the portion of income that is not consumed but is instead invested or saved for future use through digital financial products. Spending behavior describes the use of money for consumption via digital platforms. Future saving foresight is defined as an individual's ability to plan for future investments, savings, and

retirement using digital financial products, while future spending foresight reflects an individual's capacity to plan for future consumption, lifestyle, and convenience using digital platforms. The instruments used to measure saving and spending behavior were adapted from (Pan et al., 2019; Setiawan et al., 2020; Watson, 2003).

Financial resilience refers to the behaviors and financial practices that contribute to an individual's financial security (J. Hussain et al., 2018; Salignac et al., 2019). It is measured based on respondents' data regarding their saving and borrowing decisions, as well as their risk management strategies, using a modified instrument from (Kass-Hanna et al., 2022).

This study adopts a reflective construct approach, as suggested by (Agapito & Sigala, 2024), which views behavior as episodic and static. This perspective is suitable for measuring personal behavior across multiple variables, including digital financial literacy, saving and spending behavior, and financial resilience.

Table 1. Operational Definition

Variable	Operational Definition		
	Conceptual Definition	Indicator	Measurement
Digital financial literacy	knowledge about the online systems for spending and saving through online payments and banking (Prasad et al., 2018).	including knowledge of digital financial products and services, experience in using digital financial products and services, awareness of digital financial risk, and skill in controlling and managing digital financial activities (Morgan & Trinh, 2019a, 2019b; Prasad et al., 2018).	
Spending behavior	using the money for consumption using a digital platform.		measure of saving and spending behavior was modified from the one used by Pan et al. (2019), Setiawan et al. (2020), and Watson (2003)
Savings behavior	use of income for a period that is not consumed, but instead invested (or saved) for future consumption using a digital financial product.		
Financial resilience	individual behavior and individual financial practices lead to financial security (A. H. M. B. Hussain et al., 2019; Salignac et al., 2019)	measured from the respondents' data on their saving and borrowing decisions, and risk management strategies	modified instrument from Kass-Hanna et al., (2021)

The population for this study consisted of female entrepreneurs who were members of women's entrepreneur communities in Yogyakarta and Central Java,

Indonesia. Entrepreneurship is often associated with economic growth stimulation (Van Praag et al., 2007), and many women entrepreneurs have traditionally operated with conservative business models, while now seeking to transition to digital business models (Ge, et al., 2022). A purposive sampling method was employed, with the criteria for respondents being that they were owners or managers of small and medium enterprises (SMEs) and willing to complete the full questionnaire. The questionnaires were distributed during a training session for SMEs organized by Universitas Negeri Yogyakarta and UPN Veteran Yogyakarta. To test the hypotheses, partial least squares structural equation modeling (PLS-SEM) was conducted using SmartPLS 4 software.

Result and Discussion

The participants were women entrepreneurs in Yogyakarta and Central Java, Indonesia. All the respondents received written and verbal information before their participation, explaining the purpose of the study. Table 2 below shows the frequency distribution of demographic variables. The majority of respondents were under 25 years old (54.3%), highly educated (92.3%), married (60.6%), and had an income < $2.26 (44.2%).

Table 2. Frequency distribution of demographic variables

Respondent Profile		Percentage (%)
Age	< 25 years	54.3
	25 - 34 years	15.9
	35 - 44 years	2.4
	45 - 54 years	23.1
	55 > years	4.3
Education	Senior High School	7.7
	Higher Education	92.3
Status	Married	39.4
	Single	60.6
Income per month	< $2.26	44.2
	$2.26	9.1
	$4.52	13.5
	$6.46	6.3
	> $9.04	26.9

Note: n = 208 samples

Based on Table 3, the highest average financial resilience score was for participants aged 25-34 years old (6.07), those with higher education (5.67), and an income between $ 4.52 - $ 6.45 (6.07). Based on the survey results, women entrepreneurs have good saving behavior, but a poor understanding of, and practices for, risk management.

Based on the digital financial literacy (DFL) measurements, women entrepreneurs scored highest in their knowledge and experience with financial technology products and services related to digital payments. In contrast, they had the lowest scores for experience with investment-related fintech products and services.

At this stage, confirmatory factor analysis was conducted to assess the validity and reliability of the constructs. Reliability reflects the internal consistency of the measurements. As shown in the table, all Cronbach's alpha values exceeded 0.7, and the

minimum composite reliability (CR) was also above 0.7, confirming the reliability of the items used to represent the constructs (Hair et al., 2017). The normality test is provided in Appendix 1.

Table 3. Summary of descriptive statistics for financial resilience in each category

Category	Sub Category	Max	Min	Mean of Financial Resilience
Age	55 > years	189	135	5.00
	45 - 54 years	1,008	782	5.43
	35 - 44 years	105	75	5.00
	25 - 34 Years	693	601	6.07
	< 25 Years	2,373	1,919	5.66
Education	Higher Education	4,032	3,267	5.67
	Senior High School	336	245	5.10
Income	< $2.26	1,176	976	5.81
	$2.26 - $4.51	273	191	4.90
	$4.52 - $6.45	588	510	6.07
	$6.46 - $9.03	399	324	5.68
	> $9.04	1,932	1,511	5.47

Convergent validity measures the extent to which an indicator correlates with alternative indicators of the same construct. For reflective constructs, indicators should demonstrate high convergence. Convergent validity was assessed using average variance extracted (AVE). According to (Hair et al., 2017), AVE values must exceed 0.5 to establish convergent validity. In this study, all constructs had AVE values above 0.5, indicating strong convergent validity. Therefore, the constructs demonstrated adequate reliability and convergent validity, as shown in Table 4.

Table 4. The mean of digital financial literacy indicator

Digital financial literacy	Mean
Understanding of digital payment products	5.96
Understanding of digital asset management products	4.44
Understanding alternative financing (loans)	4.52
Good understanding of digital insurance	3.89
Understanding of customer rights and protection as well as procedures for complaints about services from digital financial service providers	4.72
Experience using financial technology products and services for digital payments	6.00
Experience using investment fintech products and services	3.34
Experience using financial technology products and services for asset management	3.72
Awareness of potential financial risks in using digital financial providers	5.21
Ability to manage financial activities through digital platforms	5.16
Have control over financial activities using digital platforms	4.99

Table 5. Result of the measurement model, reliability, and validity

Constructs	Items	*Factor loadings*	α	CR	AVE
Digital Financial Literacy	DFL_1	0.680	0.905	0.919	0.510
	DFL_2	0.703			
	DFL_3	0.646			
	DFL_4	0.684			
	DFL_5	0.759			
	DFL_6	0.661			
	DFL_7	0.525			
	DFL_8	0.687			
	DFL_9	0.775			
	DFL_10	0.867			
	DFL_11	0.810			
Financial Resilience	Fres_1	0.854	0.722	0.844	0.644
	Fres_2	0.819			
	Fres_3	0.729			
Future Saving Foresight	Fsav_1	0.824	0.919	0.933	0.637
	Fsav_2	0.811			
	Fsav_3	0.808			
	Fsav_4	0.838			
	Fsav_5	0.829			
	Fsav_6	0.778			
	Fsav_7	0.765			
	Fsav_8	0.726			
Future Spending Foresight	Fspen_1	0.778	0.840	0.893	0.676
	Fspen_2	0.811			
	Fspen_3	0.829			
	Fspen_4	0.869			
Saving Behavior	Sav_1	0.820	0.927	0.935	0.621
	Sav_2	0.688			
	Sav_3	0.795			
	Sav_4	0.639			
	Sav_5	0.544			
	Sav_6	0.894			
	Sav_7	0.903			
	Sav_8	0.915			
	Sav_9	0.811			
Spending Behavior	Spen_1	0.646	0.838	0.880	0.552
	Spen_2	0.785			
	Spen_3	0.781			
	Spen_4	0.808			
	Spen_5	0.681			
	Spen_6	0.744			

Note: DFL = Digital Financial Literacy; Sav = Saving Behavior; Spending Behavior; Fspen = Future Spending Foresight; Fsav = Future Saving Foresight; Financial Resilience; Psychometric, α = Cronbach's alpha, CR = *Composite Reliability*, AVE = *Average Variance Extracted*

Table 6. Discriminant validity

Variable	1	2	3	4	5	6
1. Digital Financial Literacy	**0.714**					
2. Financial Resilience	0.262	**0.802**				
3. Future Saving Foresight	0.320	0.455	**0.798**			
4. Future Spending Foresight	0.194	0.272	0.484	**0.822**		
5. Saving Behavior	0.366	0.166	0.362	0.246	**0.795**	
6. Spending Behavior	0.252	0.184	0.332	0.562	0.189	**0.745**

Note: the diagonal line (**bold**) is the square root of the AVE of each construct. The correlations among constructs are smaller than the square root of the AVE of each construct.

Discriminant validity assesses the degree to which a latent variable or construct differs from other constructs, as demonstrated by empirical research findings. The discriminant validity of all latent constructs was confirmed by comparing the square root of the AVE with the correlation coefficients of the other variables. As shown in Table 5, the square root of the AVE in the diagonal column was higher than the correlation coefficients between variables in the same column, indicating that the criterion for discriminant validity was satisfied. Overall, the results of the measurement model confirmed that the criteria for reliability, convergent validity, and discriminant validity were all met.

Structural modeling involves testing the relationships between constructs and evaluating the predictive capabilities of the model. Validating the structural model allows researchers to systematically assess whether the data supports the hypotheses proposed by the model (Hair et al., 2017). The results of the PLS-SEM analysis for the structural model are presented in Figure 1.
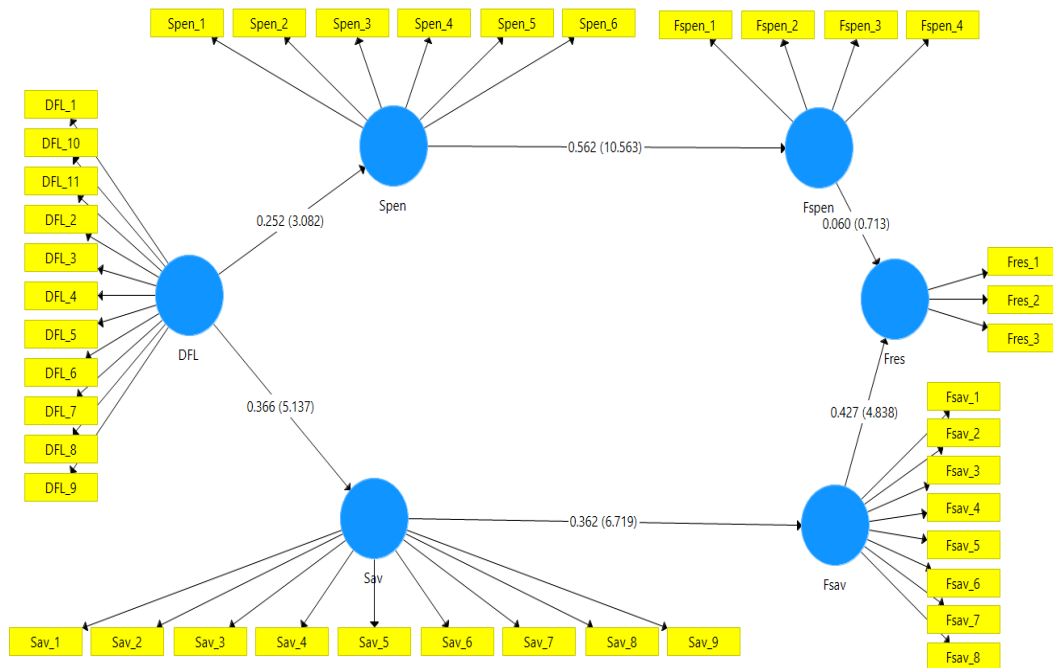
Figure 1. Structural Model Estimates

Table 7. Structural model results

Hypotheses	β	T Statistics	p Values	Result
Digital Financial Literacy -> Saving Behavior	0.366	5.137	0.000	Supported
Digital Financial Literacy ->Spending Behavior	0.252	3.082	0.002	Supported
Saving Behavior ->Future Saving Foresight	0.362	6.719	0.000	Supported
Spending Behavior ->Future Spending Foresight	0.562	10.563	0.000	Supported
Future Saving Foresight ->Financial Resilience	0.427	4.838	0.000	Supported
Future Spending Foresight ->Financial Resilience	0.060	0.713	0.476	Not supported

Notes: Significance of estimates; ***p< 0,001, **p< 0,01, *p< 0,05

The structural model results are presented in Table 6. Digital financial literacy (DFL) was found to have a positive effect on both saving behavior (β = 0.366, p < 0.000) and spending behavior (β = 0.252, p < 0.002), supporting hypotheses H1 and H2. These findings align with the work of (Henager & Cude, 2016; Setiawan et al., 2020), who demonstrated that financial knowledge significantly influences both long- and short-term financial behaviors, including saving and spending.

Saving behavior positively influenced future saving foresight (β = 0.362, p < 0.000), and spending behavior positively influenced future spending foresight (β = 0.562, p < 0.000), supporting hypotheses H3 and H4. This is consistent with research by (Lusardi, 2008; Ozili, 2018; Setiawan et al., 2020), which found a relationship between current financial behaviors and future saving and spending patterns. These results suggest that the current financial habits of women entrepreneurs will likely persist in their future financial behavior.

Future saving foresight had a positive impact on financial resilience (β = 0.427, p < 0.000), supporting H5. This finding indicates that future-oriented saving behavior, particularly through digital financial platforms, enhances financial resilience by increasing financial inclusion. Individuals who prioritize future savings contribute to their personal financial stability (Han & Melecky, 2013; Ozili, 2018). Digital financial inclusion provides opportunities for individuals, including those from disadvantaged communities, to save, invest, and access credit. It also helps individuals better cope with income shocks caused by unexpected emergencies, such as illness or job loss (Collins et al., 2009).

Contrary to expectations, future spending foresight was not found to affect financial resilience. This may be because digital financial inclusion can have both positive and negative effects (Ozili, 2018). On the positive side, digital finance increases access to financial services, particularly for rural and low-income populations that may not have access to traditional banking. However, the ease and convenience of using digital financial platforms can also have negative consequences. The ability to quickly and comfortably manage financial transactions, such as paying utility bills, transferring money, or shopping online, may encourage more consumptive behavior, potentially reducing individuals' ability to maintain emergency funds for dealing with economic shocks.

Furthermore, despite the significant challenges women face in male-dominated societies, the proportion of women engaged in entrepreneurship in developing countries has significantly increased in recent decades (Braunerhjelm, 2014; Bullough et al., 2022; Yousuf Danish & Lawton Smith, 2012). Women entrepreneurs have become key drivers of economic development through their entrepreneurial activities (Hechavarria et al., 2019; Simba et al., 2023).

Conclusion

New technological innovations have significantly transformed the way financial services are accessed and how financial behavior is conducted. Indonesia leads Southeast Asia in e-commerce transactions, a trend that is projected to grow. To strengthen the financial resilience of women entrepreneurs, it is crucial to possess sufficient digital financial literacy in this era of digital financial technology.

The results of this study provide empirical evidence that digital financial literacy plays a key role in enhancing the financial resilience of women entrepreneurs, primarily through current saving behavior and future saving foresight. First, women entrepreneurs with higher digital financial literacy exhibit different saving and spending behaviors compared to those with lower literacy levels. Second, their current saving and spending habits directly influence their future financial planning. Third, women entrepreneurs' future saving intentions contribute significantly to their financial resilience. However, the study found that future spending behavior does not have a significant impact on financial resilience.

This study makes several important academic and practical contributions. Academically, it addresses a critical gap in the literature by focusing on women entrepreneurs, a group often underrepresented in financial literacy research. Another notable contribution is the differentiation between current and future saving and spending behaviors, allowing for a more nuanced analysis of their distinct impacts on financial resilience.

From a practical standpoint, the study highlights the need to enhance digital financial literacy, particularly for women entrepreneurs. Improving digital financial literacy will influence both current and future financial behaviors related to the use of digital financial technology, ultimately strengthening financial resilience. The findings suggest that policymakers, educators, and other stakeholders should prioritize women's future saving plans as a key factor contributing to their financial resilience, rather than focusing solely on spending behavior. This underscores the importance of saving and maintaining a long-term saving plan, as these practices increase women entrepreneurs' ability to weather potential financial shocks.

As a result, the study urges policymakers to develop targeted policies or services that encourage women entrepreneurs to save, such as specialized savings accounts or financial services designed for them. Educators should also integrate practical advice on saving into training programs for women entrepreneurs.

The data for this study were drawn from participants in a training program for female-owned or managed SMEs. Future research could adopt a more representative sampling method to increase generalizability. Numerous factors influence the financial resilience of women entrepreneurs beyond digital financial literacy, such as social networks (Muzaffar, 2023), technology and e-commerce adoption (Euphrasie et al., 2023), flexible work hours, remote work, and online collaboration (González & Macias-Alonso, 2023), and family involvement in business activities (Kajtazi, 2021). Future studies could incorporate these variables into their research models to further enrich the understanding of financial resilience in this context.

Acknowledgments

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Appendix

Appendix 1. Results of the Normality Test

Variables	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
DFL_1	-0.463	0.169	3,343	0.336
DFL_2	-0.198	0.169	-0.116	0.336
DFL_3	-0.167	0.169	-0.181	0.336
DFL_4	0.156	0.169	-0.155	0.336
DFL_5	0.037	0.169	-0.686	0.336
DFL_6	-0.319	0.169	0.103	0.336
DFL_7	0.317	0.169	-0.831	0.336
DFL_8	0.134	0.169	-0.802	0.336
DFL_9	-0.700	0.169	0.146	0.336
DFL_10	-0.663	0.169	-0.019	0.336
DFL_11	-0.460	0.169	-0.530	0.336
Sav_1	-0.697	0.169	-0.654	0.336
Sav_2	0.062	0.169	-0.983	0.336
Sav_3	-0.165	0.169	-0.878	0.336
Sav_4	0.285	0.169	-0.776	0.336
Sav_5	0.403	0.169	-0.583	0.336
Sav_6	-0.458	0.169	-0.428	0.336
Sav_7	-0.493	0.169	-0.385	0.336
Sav_8	-0.477	0.169	-0.493	0.336
Sav_9	0.035	0.169	-0.963	0.336
Spen_1	-0.347	0.169	-0.885	0.336
Spen_2	-0.514	0.169	-0.180	0.336
Spen_3	-0.718	0.169	0.486	0.336
Spen_4	-0.889	0.169	0.493	0.336
Spen_5	-0.424	0.169	-0.469	0.336
Spen_6	-1,746	0.169	3,823	0.336
Finlit_1	-0.255	0.169	-1,432	0.336
Finlit_2	0.245	0.169	-1,563	0.336
Fspen_1	-1,098	0.169	0.803	0.336
Fspen_2	-1,109	0.169	0.976	0.336
Fspen_3	-0.635	0.169	-0.001	0.336
Fspen_4	-0.944	0.169	0.621	0.336
Fsav_1	-1,156	0.169	1,619	0.336
Fsav_2	-0.725	0.169	0.039	0.336
Fsav_3	-0.835	0.169	0.485	0.336
Fsav_4	-1,015	0.169	1,115	0.336
Fsav_5	-0.951	0.169	0.774	0.336
Fsav_6	-0.673	0.169	0.032	0.336
Fsav_7	-0.538	0.169	-0.414	0.336
Fsav_8	-0.433	0.169	-0.578	0.336
Fres_1	-0.580	0.169	0.989	0.336
Fres_2	-0.655	0.169	-1,000	0.336

Fres_3	-0.400	0.169	-0.465	0.336
Psy_1	-0.583	0.169	-0.273	0.336
Psy_2	-0.433	0.169	0.300	0.336
Psy_3	-0.839	0.169	0.171	0.336
Diglit_1	-0.835	0.169	0.720	0.336
Diglit_2	-0.754	0.169	0.288	0.336
Diglit_3	-1,195	0.169	0.329	0.336
Diglit_4	0.013	0.169	-1,023	0.336
Diglit_5	-1,927	0.169	3,868	0.336
Gender	0.078	0.169	-2,013	0.336
Age	0.820	0.169	-0.973	0.336
Education	-0.991	0.169	0.310	0.336
Status	-0.436	0.169	-0.828	0.336
Famstats	0.275	0.169	-0.487	0.336
Income	0.387	0.169	-0.554	0.336
Occupation	0.323	0.169	0.154	0.336
SOI	0.320	0.169	-0.893	0.336
Residence	-0.097	0.169	-0.010	0.336

This study assessed normality as an important step in structural equation modeling (SEM). Normality is usually assessed for variables included in SEM to ensure parametric statistical assumptions are met. The analysis results in Appendix 1 show that skewness values between -1 and +1 indicate a more or less symmetrical distribution, and kurtosis values around 0 indicate a normal distribution (Saunders et al., 2007).