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Does Digital Financial Literacy Matter? An Empirical Assessment of Financial Well-being Among Female Young Adults

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Abstract

The researchers examine the influence of digital financial literacy in terms of digital knowledge, financial knowledge, digital financial services, product suitability, and awareness of digital finance risk and control on the financial well-being of young female adults. Quantitative research methods were employed, and data were collected via an online questionnaire administered to female university students aged 18-26. Data analysis was done using the Statistical Package for the Social Sciences. The results of the hypothesis test indicate that digital financial literacy (digital knowledge, financial knowledge, digital financial services knowledge, awareness of digital finance risks and controls, and product suitability) has a significant positive impact on the financial well-being of young female adults. Therefore, DFL is a key contributor to the financial well-being of young female adults. The ability to manage finances more competently, make sound financial choices, and access digital financial services would help them become more financially secure and stable. The sample was restricted to young female adults, and it analyzed the influence of DFL on young female adults' financial well-being. Improving the digital financial literacy of young female adults can help them become more financially independent, stable, and well-adjusted by making sound financial choices. It provides a new understanding of the connection between the financial health of young female adults and their digital financial literacy.

Keywords: Financial Well-being (FWB), Female Young Adults, Financial Knowledge, Digital Knowledge, Digital Financial Services Knowledge, Digital Finance Risk and Control, Product Suitability, Digital Financial Literacy (DFL).

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Introduction

The ability to make rational decisions and understand basic financial principles makes financial literacy essential in modern society. Online payments are becoming significant in the management of money. To equip youth to adapt to future digital realities, basic digital financial literacy (DFL) is necessary (Goyal & Kumar, 2021; Morgan, 2021). Organization for Economic Co-operation and Development (2018) used DFL as "the ability to access and manage financial accounts, perform transactions, and make well-informed financial decisions online via digital devices, software programs, and networks".

Digital financial literacy, according to Koskelainen et al. (2023), refers to the capacity to use digital technology (i.e., computers, smartphones, and the internet) to access and administer financial services and products safely and efficiently. In addition, Alliance for Financial Inclusion (2021) described DFL as the power to safely utilize digital financial products and services, make well-informed financial choices, and take actions in one's own best financial interest, based on the social and economic situation, which is called digital financial literacy.

The literacy rate of women in Pakistan is low. The World Bank dataset of 2021 indicated that the literacy rate of young female adults was only 48.5%. The overall literacy rate of 2024-25 was 63% (World Bank, 2025). This data indicates a sustainable gender-based difference in Pakistan. The literacy rate impacts their economic empowerment and financial well-being. Financial literacy helps women to become more empowered and financially stable. Therefore, women's financial literacy needs to be explored from the perspective of Pakistani women, with a focus on its relationship to financial well-being.

The awareness of financial concepts varies by children's socioeconomic status, which influences their spending and financial capacity. DFL is essential to helping children make sound financial choices that improve their social and personal lives. The necessity of using digital financial services (DFS) and online fraud and scam prevention for young adults depends on DFL. In this way, DFL enables them to make better financial choices (Morgan et al., 2019) and to avoid costly mistakes (Gallego-Losoda et al., 2021; Morgan et al., 2019). The DFL refers to the ability to employ digital technologies and manage financial services, yet the existing studies on this concept (Bushra and Mir, 2024; Choung et al., 2023) do not provide much information about its relationship with financial well-being.

Chepkutwo (2025) reported that adolescence is a crucial stage for developing digital financial skills, as students begin to form habits that often continue into adult life and rely increasingly on smartphones. However, much of the financial education offered in schools still focuses on basic budgeting and saving in cash-based settings. This approach does not fully reflect the realities of today's digital financial environment. As a result, students who are not introduced early to mobile and digital financial tools may enter adulthood insufficiently prepared to engage in the modern digital economy. Achieving financial well-being increasingly requires financial knowledge and digital skills to manage finances on digital platforms due to the changing fintech landscape (Lyons & Kass-Hanna, 2021).

The literature explored DFL in relation to financial well-being from multiple perspectives, such as households, students, women, employees, business faculty, and digital customers (Jose & Ghosh, 2024; Lone & Bhat, 2024; Mitra & De, 2024; Obenza et al., 2024; Sajid, 2024). However, the authors did not find any study that explored female students' digital financial literacy specifically

from the Pakistani perspective. Therefore, additional studies are needed to fill this gap, especially from the girls' point of view in Pakistan as a developing nation.

Significance of the Study

This study contributes to the growing body of literature on financial literacy by making a meaningful contribution towards better understanding digital financial literacy (DFL) among young female adults, a demographic that is underrepresented in financial research, particularly from developing countries. Whereas access to digital financial services is growing, female students in academic institutions remain financially dependent on their families, which restricts the extent of independent financial decision-making. This study fills that gap by exploring the relationship between DFL and FWB of female young adults in Pakistan.

The results of the study support girls in managing their finances and enhance their financial skills to become independent in the future. The results are of practical value for several stakeholders, such as educators and academic institutions. The study highlights the need to integrate digital financial literacy into curricula, equipping young women with the knowledge and skills to navigate digital financial tools confidently.

For parents and teachers, the findings provide evidence-based guidance on how to foster these young female adults' financial development in a household or classroom setting. For policymakers, the study validates the requirement of organizing seminars, workshops, and debates on DFL by the financial institutions to improve DFL and FWB of girls and encourage them to make wise financial decisions.

In summary, this study's findings enhance the understanding that improving the DFL of young female adults leads to wider financial inclusion and gender equality in economic participation. This research offers practical implications for developing more targeted financial literacy programs tailored to the unique needs of young women by identifying specific aspects of DFL, such as digital knowledge, financial knowledge, digital financial services knowledge, awareness of the risks and controls associated with digital financial products, and products that most strongly drive FWB.

Literature Review

The literature established that financial literacy is insufficient to keep up with the increasing technological aspects of the financial sector. It is believed that obtaining financial literacy is necessary for endorsing financial inclusion and advancement, which in turn leads to total financial stability (Ramakrishnan, 2011). For people to learn how to use digital financial skills and to become aware of them, they need to be digitally literate. According to the Museum and Library Services Act of 2010, digital literacy is the capacity to use technology to make it easier for people to find, assess, organize, create, and share information. It includes the advancement of responsible technology use and digital citizenship (Authenticated U.S. Government Information, 2010).

Digital financial literacy of young female adults

DFL makes women more confident and aware of digital fraud and cybercrime associated with the digital financial environment. DFL empowers women to make better financial decisions, protect their privacy, and achieve financial autonomy (Mishra et al., 2024). DFL improves women's financial knowledge, confidence in using a mobile wallet, and enhances digital financial behavior. Andlib (2025) found that DFL training enhanced women's financial knowledge, confidence, and

financial self-efficacy. They are more active in financial decision-making, financial autonomy, and digital transactions after training. Tyagi and Singh (2025) highlighted that women who have DFL have more financial knowledge, economic empowerment, and financial autonomy. They outlined some challenges that are impacting women's financial empowerment and DFL, like limited access to technology, limitations on education, and cultural values. Lack of DFL skills has become a challenge for women to make financial decisions, use digital platforms, and achieve empowerment.

Moreover, digital financial competencies, digital financial knowledge (DFK), digital financial skills (DFS), and digital financial experience (DFE) have a strong connection with behavioral financial outcomes. Increasing amounts of DFK, DFE, and DFS have been reported to decrease impulsivity while increasing self-control. Additionally, impulsivity has a negative impact on financial well-being, and self-control plays a beneficial role in the same. The fact that educational institutions have shown little concern regarding long-term financial planning is also evidence that students are not paying much attention to it (Bhat et al., 2025).

Financial well-being of young female adults

Financial well-being is defined as "the belief that one can maintain desirable living standards and financial independence both now and in the future" (Brüggen et al., 2017). The Consumer Financial Protection Bureau (CFPB, 2015) defined financial well-being as "a condition in which an individual may make decisions that allow him to enjoy life, feel confident about their financial future, and fulfill all of his/her present and future financial commitments".

The following definition by Rea et al. (2019, p. 261) is more related to the current study as "the ability of young adults to strike a balance between feeling unrestricted by their financial situation and managing their money for stability and the flexibility to live apart from their parents." Moreover, Salignac et al. (2020) explained financial well-being as "a person who feels financially secure both now and, in the future, is in charge of his finances, and can pay his bills and has some money left over" (p. 1596).

Financial well-being and digital financial literacy are linked, mostly because of financial literacy and the capacity to guard against digital fraud. DFL had a higher effect on FWB than financial knowledge and had far-reaching effects on demographic groups (Choung et al., 2023).

According to the literature, financially literate individuals have more financial well-being, financial services, and financial practices (Utkarsh et al., 2020). Also, it seems that digital financial literacy is linked with higher usage and sensitivity to mobile financial services (Long et al., 2023; Yoshino et al., 2020), which will ultimately result in an improvement in financial well-being (Jhonson et al., 2023; Rahayu et al., 2022). Further on, it was found in the literature that financial self-efficacy (FSE) and DFL affect financial well-being in a great and positive direct manner. Although the hypothesized moderating effect of FSE on the connection between financial well-being and DFL was not accepted, it is indicated that an increased level of FSE may positively affect the relationship between DFL and financial well-being. Quite to the contrary, it can be decreased by a decrease in FSE. The results also highlight that financial institutions, such as banks and fintech firms, should roll out specific training and awareness programs to help young adults use digital financial platforms efficiently. The financial independence and improved stability and well-being of young adults by increasing DFL and FSE are achieved by initiating informed financial decision-making alongside reducing the levels of financial stress (Sajid, 2024). She et al. (2023) delved into the contextual factors, including fluctuations in the macroeconomic

environment, technological changes, market changes, and financial social comparisons. Moreover, individual factors, such as personality traits and values, skills and attitudes, socio-demographics, financial socialization, financial practices, lifestyles, early life experiences, mental health, and subjective financial situations, also influence the financial well-being of young adults. Isaga (2025) demonstrates that financial literacy is a very powerful and positive contributor to financial well-being, which determines its importance in the construction of sound economic decisions. It is also revealed in this study that financial literacy has an association with financial behaviour as well and is a partial mediating variable between financial literacy and financial well-being. This implies that, though financial knowledge is the basis of informed financial behavior, what actually leads to the improvements in the financial performance of individuals is the practical implementation of financial knowledge, which includes budgeting, saving, and effectively using debt. This finding was demonstrated by Rakhimov (2026), who reported that teenagers with higher digital financial literacy scores tend to make more positive entrepreneurial choices and show greater confidence and interest in initiating entrepreneurial actions.

The current study seeks to answer the following research question: What is the effect of digital knowledge, financial knowledge, digital financial services knowledge, product suitability, awareness of digital financial risks, and controls on the financial well-being of young female adults?

Proposed Hypotheses:

This investigation leads to the following hypotheses:

H_1: Digital knowledge has a significant and positive influence on the financial well-being of young female adults.

H_2: Financial knowledge has a significant and positive influence on the financial well-being of young female adults.

H_3: Knowledge of digital financial services has a significant and positive effect on their financial well-being.

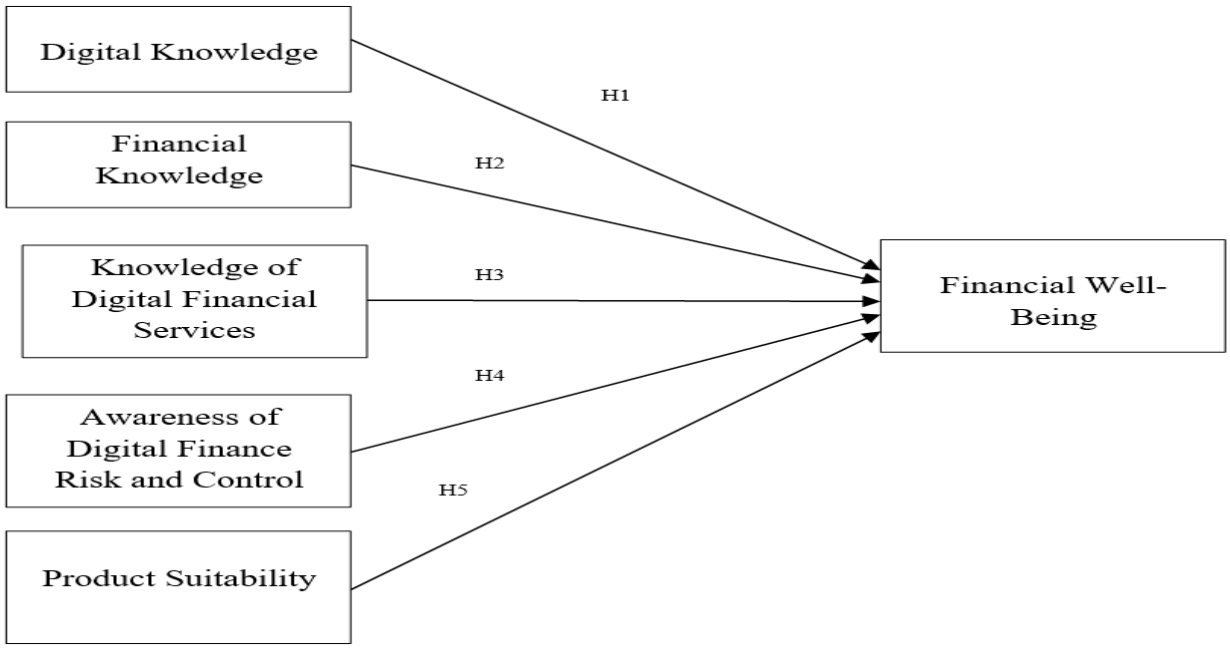
H_4: Awareness of digital finance risk and control has a significant and positive effect on their financial well-being.

H_5: Product suitability has a significant and positive effect on their financial well-being.

Proposed Research Model

The literature is the basis for the conceptual model's development of digital financial literacy and financial well-being (Lone & Bhat, 2024; Ravikumar et al., 2022). Figure 1 presents the proposed research model and illustrates the relationship among the constructs. This study proposes two variables: digital financial literacy (DFL), comprising five constructs that serve as independent variables. Financial well-being (FWB) is the dependent variable.

Figure 1: *Proposed Research Model*



Research Design and Methodology

This quantitative study used a survey questionnaire to collect data from female university students (18-26) from Pakistan. A convenience sampling technique was used to select a sample population from the University of the Punjab (PU), the largest multidisciplinary university in terms of students in the region. An online Google Form was sent to the students' WhatsApp groups of different classes to collect instant responses.

The total number of female undergraduate students in PU was around 25000 between the ages of 18 and 26. The calculated sample size of the study was 384, based on a 95% confidence level (implying a Z-score of 1.96) with a 5% (0.05) margin of error. After extensive efforts and multiple reminders, 288 usable questionnaires were received from the target respondents, with a 75% response rate. As the distribution through multiple WhatsApp groups did not provide a verifiable count of unique eligible individuals who received the invitation, a conventional response rate could not be established.

The questionnaire consisted of two variables: digital financial literacy and financial well-being. The scale for DFL was adopted from Ravikumar et al.'s (2022) study, and items measuring the FWB dimension were adopted from Lone and Bhat (2024). Digital financial literacy has sub-constructs, including 'digital knowledge,' 'financial knowledge,' 'knowledge of digital financial services,' 'awareness of digital finance risk and control,' and 'product suitability.' The reliability analysis indicated acceptable internal consistency for the Digital Financial Literacy scale (Cronbach's $\alpha = 0.877$) and Financial well-being ($\alpha=0.766$).

Data Analysis and Interpretation

Statistical Package for the Social Sciences (SPSS) was used to analyze the demographic data, and the hypothesis was tested (by applying simple linear regression). Descriptive statistics were

applied to measure the demographics of the participants, and simple linear regression was applied to examine the relationships among the variables.

Demographics of Participants

The descriptive statistics indicate that the majority of participants belong to urban areas (187, 65%), and almost one third (101, 35%) belong to rural areas. Statistics show that 117 participants (40.62%) were in the age group 22 to 24, whereas 111 (38.54%) were 19 to 21 in age. Only 14 participants (4.84%) were 18 years old. The findings show that a majority of respondents (202, 70.13%) used laptops /personal computers or smartphones for >3 years, and 40 (13.88%) had used them for three years. Data show that 218 participants (75.68%) had been spending time using the internet (>3 years), whereas only 34 participants (11.80%) had up to two years of experience using the internet.

Table 1: *Demographic Characteristics N=288*

Demographics	**Frequency**	**Percentage**
Belong to		
Rural	101	35.0
Urban	187	65.0
Age		
18 years	14	4.84
19 to 21	111	38.54
22 to 24	117	40.62
25 to 26	46	15.97
Using a laptop/ personal computer or smartphone		
Up to 2 years	46	15.97
3 years	40	13.88
>3 years	202	70.13
How long have you been using the internet		
Up to 2 years	34	11.80
3 years	36	12.50
>3 years	218	75.69

Hypotheses Testing:

H_1: *Digital knowledge has a significant and positive influence on financial well-being.*

Table 2 provides the results of H_1 about the influence of digital knowledge on the financial well-being of young female adults. The β value of 0.116 shows a positive impact on the outcome variable. The results revealed (β= 0.116, t=2.101, p=0.036) that there was a positive and significant influence of digital knowledge on financial well-being. Therefore, H_1: Digital knowledge has a significant influence on the financial well-being of young female adults was accepted.

Table 2: *Effect of Digital Knowledge on Financial Well-being*

Construct	β	t	P
Digital Knowledge	0.116	2.101	.036

Note: *Dependent Variable: Financial Well-Being.* $R^2 = .014$

H_2: *Financial knowledge has a significant and positive impact on financial well-being.*

Table 3 shows the results of H_2 on financial well-being, which was measured using simple linear regression. The findings of the regression model (β= 0.341, t=6.512, p=.000 imply that there was a significant influence of financial knowledge on financial well-being. As a result, H_2 was proven and accepted.

Table 3: *Impact of Financial Knowledge on Financial Well-Being*

Construct	β	t	P
Financial knowledge	.341	6.512	.000

Note: *Dependent Variable: Financial Well-Being.* $R^2 = 0.116$

H_3: *Knowledge of digital financial services has a significant and positive impact on financial well-being.*

The results in Table 4 showed a significant and positive influence of knowledge of digital financial services on financial well-being (β= .369, t=7.116, p=.000). Consequently, H_3 (Knowledge of digital financial services) has a statistically significant effect on financial well-being. Therefore, the relationship of H_3 was accepted.

Table 4: *Effect of Knowledge of Digital Financial Services on Financial Well-being*

Construct	β	t	P
Knowledge of digital financial services	.369	7.116	.000

Note: *Dependent Variable: Financial Well-Being.* $R^2 = 0.136$

H4: *Awareness of digital finance risk and control has a significant and positive impact on financial well-being.*

Findings show the influence of awareness of digital finance risk and control on financial well-being (Table 5). The findings indicated that awareness of digital finance risk and control has a statistically significant and positive effect on financial well-being. Based on these results, H_4 was also proven (β=.232, t= 5.726, p= .000).

Table 5: *Effect of Awareness of Digital Finance Risk and Control on Financial Well-Being.*

Construct	β	t	P
Awareness of digital finance risk and control	.232	5.726	.000

Note: *Dependent Variable: Financial Well-Being* $R^2 = 0.092$

H_5: *Product suitability has a significant and positive impact on financial well-being.*

Table 6 has an R-squared (0.178), which illustrates the effect of product suitability on financial well-being. The results (β= .422, t=8.355, p= .000) indicate a significant and positive effect of product suitability on financial well- being. Hence, H_5 is accepted.

Table 6: *Effect of Product Suitability on Financial Well-Being*

Construct	β	t	P
Product suitability	.422	8.355	.000

Note: *Dependent Variable: Financial Well-Being.* $R^2 = 0.178$

Impact of Digital Financial Literacy on Financial Well-Being

Table 7 shows the regression analysis of the independent variable DFL and the dependent variable FWB. The study's findings display that DFL (five constructs) has a statistically significant positive impact on FWB. There is a statistically significant (p =.000) and positive effect of DFL on FWB.

Table 7: *Relationship between Digital Financial Literacy and Financial Well-Being*

Construct	β	t	P
Digital Financial Literacy	.420	8.316	.000

Note: *Dependent Variable: Financial Well-Being.* $R^2 = 0.420$

In conclusion, the statistically significant and positive effect of DFL shows that it is a solid predictor of financial well-being. The model suggests that an increased level of DFL among young female adults may improve their financial well-being.

Discussion

This article aimed to evaluate the effect of DFL on FWB among young female adults. The researchers discovered that DFL has a statistically significant effect on the FWB of Pakistani young female adults. It indicates that more digitally financially literate individuals have a higher chance of having better financial well-being. This could be corroborated by the existing literature indicating that digital financial literacy is positively linked to financial well-being. These results are consistent with the outcomes of the previous study (Chaity et al., 2024; Jumady et al., 2024). Nevertheless, Choung et al. (2023) have discovered that the DFL was by far more influential on financial well-being. The finding confirms previous studies (Kass-Hanna et al., 2022; Rahayu et al., 2022), which demonstrate that digital literacy is an indicator of financial behavior and financial well-being on its own. It also highlights the importance of digital skills as it is applied to digital finance. DFL is a broad term comprising technological capability to guard against cyber threats, skills, knowledge, and ability to employ digital financial tools. Although it still matters, traditional financial literacy possibly is not a single factor of the financial well-being of an individual in the digital economy. Thus, to make people use their financial expertise in a safe and effective way on digital platforms, they should supplement their knowledge with digital skills (Choung et al., 2023). Similarly, Respati et al. (2023) also substantiated the results and discovered that DFL and financial confidence were the determinants that had a significant influence on the financial conduct and FWB of students. Digitally literate individuals can use digital platforms to efficiently access and manage their financial resources. This ensures a seamless link to banking services and presents chances for informed budgeting, investing, and decision-making (Frimpong et al., 2022). However, Dewi et al. (2024) found that DFL has no significant impact on financial well-being. According to the findings of the research by Dote (2026), financial literacy would greatly improve the economic performance of women, which boosts their entrepreneurship, access to credit, and investment behavior, and minimizes psychological constraints such as low retirement planning and risk tolerance. Online financial awareness, specifically, is found to be a major facilitator, particularly in rural and low-income settings. However, there are still obstacles, including the

inability to use culturally sensitive methods and unified measures of financial literacy. Concurrently, studies uncover gender discrepancies in accessing and using financial services. The situation can be assessed on a global scale by suggesting that a limited number of women have their own financial accounts and are involved in leading and owning digital finance (IMF, 2022). Even though the overall adoption rates of digital financial services are increasing, a significant portion of women remain deprived of the advantages of such change. Poor access to digital gadgets, the lack of financial confidence, and social constructs that limit women's role in making financial decisions remain serious obstacles (Tyagi & Singh, 2025). As Rahayu et al. (2023) explored, both DFL and financial literacy positively and significantly influenced women's empowerment. Moreover, financial literacy does not show a noticeable impact, which means that financial literacy is not enough to make careful financial decisions, and additional knowledge needs to be obtained, especially when it comes to digital literacy.

Table 8: *Hypotheses Testing Results*

Hypothesis	Direction	β	t	P	Result
***H₁*:** Digital knowledge--->FWB	+	.116	2.101	.036	**Supported**
***H₂*:** Financial knowledge ---> FWB	+	.341	6.512	.000	**Supported**
***H₃*:** Knowledge of digital financial services ---> FWB	+	.369	7.116	.000	**Supported**
***H₄*:** Awareness of digital finance risk and control ---> FWB	+	.232	5.726	.000	**Supported**
***H₅*:** Product suitability--->FWB	+	.422	8.355	.000	**Supported**

Note. *Financial well-being (FWB). Significance level: P < 0.05, P < 0.01*

The findings of all five hypotheses are summarized in Table 8. It clearly shows the study's overall findings and variables are positively connected. However, extreme dependence on mobile fintech may adversely influence financial behavior (Bushra & Mir, 2024). Besides, the studies targeted the population of higher learning institutions and showed that the relationship between DFL and FWB may be moderated by gender. Indicatively, Lone et al. (2025) discovered that this relationship was stronger amongst male students than female students, meaning that sociocultural phenomena such as gender norms and religious beliefs interplay with digital literacy to influence financial results. It may indicate that it is not possible to improve DFL without focusing on gender situations where financial behavior is developed. This indicates that young female adults' general ability to achieve financial aims and financial fulfilment and stability increases as they increase their knowledge of digital financial devices, which could lead to better financial self-efficacy.

Conclusion

This paper has revealed a strong relationship between digital financial literacy and the financial well-being of young female adults. The relevance of the proposed research model in validating the fact that the five constructs of digital financial literacy determine the financial well-being of young female adults is also justified. Young women more adept in the digital world regarding their financial skills are more likely to navigate their financial products, to handle their debts responsibly, and make decisions in a digital financial world. The sample used in the study was restricted to only young female adults who were aged 18 to 26 years old and were familiar with digital financial facilities, for instance, mobile banking, internet banking, digital banking,

JazzCash, SadaPay, and EasyPesa in Pakistan. The distribution of the online questionnaire through class-based WhatsApp groups may have introduced self-selection bias, potentially limiting the generalizability of the findings due to respondents' varying levels of digital engagement and the inability to establish a verified response rate.

In the present research, the influence of DFL on FWB was assessed. The study may have overlooked a few aspects that may affect financial well-being, including financial behaviours, personality, income level, or financial access. These issues have to be taken into consideration in future research. Moreover, future studies ought to pay closer attention to the effects of traditional financial literacy and digital capabilities on financial behavior and well-being. Even though this is a quantitative study, there is a need to conduct more studies that embrace a variety of research methodologies, such as mixed-methods research, to get the complete picture of the dynamics of DFL and FWB. The results might not be as universally applicable as they could be because of particularities of the sample and possible discrepancies in the factors that impact the financial situation of young female individuals.

Theoretical and Practical implication

The published literature is supported by the present study, as it presents evidence that DFL affects FWB. DFL should be treated as a key indicator of financial performance in the future, especially among young female adults whose reliance on the Internet continues to grow. Additionally, in the present digital economy, the research study endorses the idea that financial stability depends on digital competency. Schools, community groups, and lawmakers should develop targeted financial literacy programs that will enhance digital financial literacy among young adults. This would make them more comfortable using digital financial instruments and eventually result in improved financial performance. Fintech organizations and banks can also hold campaigns and seminars to educate young women on how to use online financial services. This will result in them making smart financial decisions. The results can be useful hints to the creators of financial applications and online banking services to consider introducing educational content that can enhance the digital financial literacy of users.

Conflict of Interest

The authors showed no conflict of interest.

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