

Digital Financial Literacy and Financial Competence: A Women Prospect

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ARTICLE INFO

Article History:

Received 15 July 2026

Accepted 02 August 2026

Available online 02 September 2026

Keywords:

Digital Financial Literacy

Financial Knowledge

Financial Services

financial competence

ABSTRACT

This study examined the effect of five dimensions of Digital Financial Literacy; Digital Financial Knowledge, Awareness of Digital Financial Services, Digital Financial Tool Usage, Online Financial Security and Risk Control, and Digital Financial Attitude and Behavior on the financial competence of female bank employees in Faisalabad, Pakistan. Using a quantitative cross-sectional design, primary data were collected through a structured 38-item Likert-scale questionnaire adapted from validated instruments. A purposive sample of 344 respondents was obtained from 360 distributed questionnaires, yielding a 95.6% response rate. Data were analyzed using descriptive statistics, Pearson correlation, multiple regression (IBM SPSS 26), and Partial Least Squares Structural Equation Modeling (SmartPLS 4). Reliability analysis demonstrated excellent internal consistency across all constructs (Cronbach's $\alpha = 0.93-0.95$). The regression model explained 77.6% of the variance in financial competence ($R^2 = 0.776$, $p < 0.001$). Digital Financial Attitude and Behavior emerged as the strongest predictor ($\beta = 0.496$, $p < 0.001$), followed by Digital Financial Knowledge ($\beta = 0.194$, $p < 0.001$) and Online Financial Security and Risk Control ($\beta = 0.147$, $p = 0.013$). Awareness of Digital Financial Services and Digital Financial Tool Usage were not significant in the multivariate model. The findings suggest that financial competence depends primarily on knowledge, cybersecurity awareness, and positive financial behavior, highlighting the need for behavior-focused and security-oriented digital financial literacy programs to strengthen women's financial empowerment in Pakistan.

Introduction

The rapid advancement of digital technologies has fundamentally transformed the global financial landscape, changing the way individuals access, manage, and utilize financial services. The emergence of digital banking, mobile payment systems, electronic wallets, online investment platforms, peer-to-peer lending, and financial technology (FinTech) applications has made financial transactions faster, more convenient, and increasingly accessible. Digital financial services have become an integral component of modern economies, enabling individuals to perform banking activities without visiting physical branches and improving financial inclusion across diverse populations. However, while digital transformation has created numerous opportunities, it has also introduced new challenges related to financial knowledge, cybersecurity, digital skills, and responsible financial decision-making. Consequently, the concept of Digital Financial Literacy (DFL) has emerged as an essential competency for individuals seeking to participate effectively and safely in the digital financial ecosystem.

Digital Financial Literacy extends beyond traditional financial literacy by integrating financial knowledge with digital competencies required to operate in technology-driven financial environments. Unlike conventional financial literacy, which primarily focuses on budgeting, saving, investing, and debt management, DFL encompasses knowledge of digital financial products, awareness of digital financial services, the ability to use digital financial tools, understanding of online financial security and risk management, and positive financial attitudes and behaviours in digital environments. As financial transactions increasingly shift toward digital platforms, individuals who lack these competencies become more vulnerable to cyber fraud, financial scams, identity theft, misinformation, and poor financial decision-making. Therefore, digital financial literacy has become a critical determinant of individual financial well-being and sustainable economic participation.

Globally, governments and financial institutions are investing heavily in digital financial infrastructure to promote financial inclusion and economic growth. Despite these developments, significant disparities remain in digital financial participation, particularly among women. Numerous studies have highlighted that women generally exhibit lower levels of digital financial literacy, digital confidence, and financial inclusion than men, particularly in developing countries. These disparities are influenced by socioeconomic inequalities, educational limitations, restricted access to technology, cultural norms, and lower participation in formal financial systems. Consequently, although digital finance has expanded rapidly, many women continue to face barriers that prevent them from fully benefiting from digital financial services. Addressing these inequalities has therefore become a priority for policymakers, financial institutions, and international development organizations seeking inclusive economic growth.

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Pakistan presents a particularly important context for examining digital financial literacy and women's financial competence. Despite considerable progress in digital banking and financial technology, Pakistan continues to experience relatively low levels of financial inclusion compared with many other developing economies. According to recent national and international reports, women remain substantially underrepresented in formal financial systems, with significantly lower ownership of bank accounts and digital financial services than men. To address these challenges, the Government of Pakistan has introduced initiatives such as the National Financial Inclusion Strategy (NFIS), branchless banking regulations, and digital banking reforms designed to expand financial access and encourage digital transactions. However, the effectiveness of these initiatives depends not only on the availability of digital financial services but also on individuals' ability to understand, evaluate, and safely utilize these services. Without adequate digital financial literacy, increased access to technology alone may not translate into improved financial competence or economic empowerment.

Faisalabad, one of Pakistan's largest industrial and commercial cities, provides an appropriate setting for investigating this issue. The city hosts a substantial banking and financial services sector employing a growing number of women who regularly interact with digital financial technologies in their professional environments. Nevertheless, professional exposure to digital banking systems does not necessarily imply personal competence in managing digital financial products, protecting financial information, or making informed financial decisions. Female bank employees therefore represent an important population for understanding whether occupational exposure to digital finance translates into enhanced personal financial competence. Investigating this relationship offers valuable insights into the extent to which digital financial literacy contributes to women's financial empowerment within a rapidly evolving digital economy.

Financial competence represents an individual's ability to apply financial knowledge, skills, and judgment to make informed financial decisions that improve personal financial well-being. Rather than simply possessing financial knowledge, financially competent individuals demonstrate the capability to manage budgets, save consistently, evaluate financial alternatives, control debt, manage financial risks, and make responsible investment decisions. In digital environments, financial competence also requires individuals to recognize online security threats, protect personal financial information, evaluate digital financial products critically, and utilize digital platforms responsibly. Therefore, financial competence reflects the practical application of knowledge through appropriate financial behaviour rather than knowledge alone.

The present study conceptualizes Digital Financial Literacy as a multidimensional construct comprising five key dimensions: Digital Financial Knowledge, Awareness of Digital Financial Services, Digital Financial Tool Usage, Online Financial Security and Risk Control, and Digital Financial Attitude and Behaviour. Digital Financial Knowledge refers to an individual's understanding of digital financial concepts, products, and regulations. Awareness of Digital Financial Services represents familiarity with available digital financial products and service providers. Digital Financial Tool Usage reflects the ability to effectively utilize online banking applications, mobile payment systems, and digital financial platforms. Online Financial Security and Risk Control measures individuals' capability to identify cyber threats, maintain digital security, and manage online financial risks. Finally, Digital Financial Attitude and Behaviour captures individuals' confidence, discipline, and willingness to adopt responsible financial practices while using digital financial technologies. Collectively, these dimensions provide a comprehensive assessment of digital financial literacy in contemporary financial environments.

The theoretical foundation of this study integrates Human Capital Theory, the Theory of Planned Behaviour, and Financial Socialisation Theory. Human Capital Theory suggests that investments in knowledge and skills improve individual productivity and economic outcomes, implying that enhanced digital financial literacy should strengthen financial competence. The Theory of Planned Behaviour explains how attitudes, perceived behavioural control, and behavioural intentions influence financial decision-making, emphasizing the importance of positive financial attitudes and confidence in adopting digital financial technologies. Financial Socialisation Theory further argues that financial behaviours are shaped by social interactions, institutional influences, and cultural experiences. Together, these theoretical perspectives provide a comprehensive framework for explaining how cognitive, behavioural, psychological, and social dimensions of digital financial literacy contribute to financial competence among women.

Although previous studies have examined financial literacy, digital literacy, and financial inclusion separately, limited empirical research has investigated the multidimensional impact of digital financial literacy on financial competence among female bank employees in Pakistan. Existing studies have largely focused on students, entrepreneurs, rural populations, or the general public, while overlooking women working within the banking sector who interact extensively with digital financial systems. Furthermore, relatively few studies have simultaneously examined the combined influence of digital financial knowledge, awareness, technology usage, cybersecurity awareness, and behavioural factors within a single empirical model. Addressing these gaps is important for developing evidence-based policies aimed at strengthening women's financial empowerment and promoting inclusive digital financial ecosystems.

Accordingly, this study investigates the influence of five dimensions of Digital Financial Literacy on the financial competence of women employed in commercial banks in Faisalabad, Pakistan. By examining the relative contribution of knowledge, awareness, technology usage, online security, and behavioural factors, the study contributes to the growing body of literature on digital finance, financial inclusion, and women's economic empowerment. The findings are expected to provide practical guidance for policymakers, financial institutions, educators, and training organizations in designing targeted digital financial literacy initiatives that enhance women's financial competence and support sustainable economic development in Pakistan.

Review of Literature

Digital Financial Literacy (DFL) has emerged as one of the most significant determinants of financial inclusion, financial capability, and economic empowerment in the digital era. As financial services increasingly migrate to digital platforms, individuals require not only traditional financial knowledge but also the ability to use digital technologies safely and effectively. Consequently, researchers have expanded the concept of financial literacy to include digital competencies, cybersecurity awareness, behavioural attitudes, and technological skills. The present study builds upon this growing body of literature by examining how the five dimensions of Digital Financial Literacy influence the financial competence of female bank employees in Faisalabad, Pakistan. The discussion below synthesizes previous theoretical and empirical studies and identifies the research gap addressed by this study.

Traditional financial literacy was initially conceptualized as the ability to understand financial concepts and apply them to personal financial decision-making. Huston (2010) argued that financial literacy consists of both financial knowledge and the ability to apply that knowledge in real-life situations. Similarly, Lusardi and Mitchell (2017) demonstrated that financially literate individuals exhibit better saving behaviour, retirement planning, investment diversification, and debt management than financially illiterate individuals. These studies established financial literacy as a critical predictor of financial well-being. However, the rapid digitalization of financial services has fundamentally changed the competencies required for effective financial management, necessitating an expanded concept that incorporates digital skills alongside traditional financial knowledge.

Recent literature defines Digital Financial Literacy as the combination of financial knowledge, digital competencies, behavioural capabilities, and security awareness required to effectively use digital financial services. Morgan and Trinh (2020, 2024) distinguished digital financial literacy from conventional financial literacy by emphasizing the ability to access, evaluate, and utilize digital financial products such as mobile banking, digital wallets, online investment platforms, and electronic payment systems. Similarly, Panos and Wilson (2024) argued that digital finance requires individuals to understand digital financial products, evaluate online financial risks, protect personal financial information, and make informed financial decisions in technology-driven environments. These studies collectively demonstrate that digital financial literacy is a multidimensional construct that extends beyond financial knowledge alone.

One of the fundamental dimensions of Digital Financial Literacy is Digital Financial Knowledge (DFK), which refers to an individual's understanding of digital financial concepts, digital banking services, electronic payment systems, interest calculations, investment products, and financial regulations. Research consistently demonstrates that greater financial knowledge improves decision-making quality and reduces costly financial mistakes. Laibson et al. (2015) found that individuals with higher financial knowledge committed significantly fewer financial errors throughout their lives. Similarly, Liu (2025) reported that financial knowledge positively influences borrowing decisions, savings behaviour, insurance choices, and financial planning. However, previous studies also emphasize that knowledge alone cannot guarantee financially competent behaviour unless individuals possess the confidence and behavioural skills necessary to apply that knowledge effectively.

Awareness of Digital Financial Services (DAW) represents another important component of Digital Financial Literacy. This dimension reflects individuals' familiarity with available digital financial products, banking applications, mobile payment services, online investment platforms, and fintech innovations. Awareness enables individuals to recognize available financial opportunities and increases their willingness to adopt formal financial services. Morgan and Trinh (2024) argued that basic awareness facilitates initial adoption of digital financial services, while advanced awareness enables users to evaluate financial products critically. Similarly, Sadaf (2025) found that women entrepreneurs in Punjab with greater awareness of digital financial services were significantly more likely to participate in formal financial systems than women with limited awareness. Nevertheless, several studies suggest that awareness alone may not directly improve financial competence unless accompanied by practical experience and behavioural engagement.

Digital Financial Tool Usage (DTU) focuses on the practical ability to operate digital banking applications, mobile wallets, online payment platforms, internet banking, and other financial technologies. Practical experience strengthens users' confidence and facilitates more effective financial management. Wang and Yang (2023) reported that financially literate individuals demonstrated significantly greater adoption of digital financial technologies, particularly among women and rural populations. Similarly, Peter et al. (2024) observed that digital financial skills significantly improved financial decision-making among women entrepreneurs. However, some empirical evidence indicates that frequent use of digital financial tools alone does not necessarily improve financial competence. Yuneline and Rosanti (2023) found that digital finance usage did not significantly influence financial competence after controlling for financial literacy and lifestyle factors. These findings suggest that technology usage may require complementary knowledge and behavioural competencies to generate meaningful financial outcomes.

With increasing cyber threats accompanying digital financial expansion, Online Financial Security and Risk Control (SEC) has become an indispensable dimension of Digital Financial Literacy. Individuals increasingly encounter phishing attacks, identity theft, financial fraud, and online scams that threaten financial security. Accordingly, cybersecurity awareness has become essential for maintaining financial competence in digital environments. Al Doghan and Mirzaliev (2024) demonstrated that cybersecurity awareness significantly strengthened the relationship between digital literacy and digital banking adoption. Likewise, Zheng and Hu (2025) reported that online security awareness enhanced trust in digital financial platforms and significantly increased financial inclusion, particularly among women. These findings indicate that digital financial competence depends not only on technology adoption but also on individuals' ability to recognize and manage digital financial risks effectively.

Among all dimensions of Digital Financial Literacy, Digital Financial Attitude and Behaviour (DAB) has consistently emerged as one of the strongest predictors of financial competence. This dimension captures individuals' confidence, discipline, motivation, and willingness to engage responsibly with digital financial technologies. Behavioural theories emphasize that knowledge influences financial outcomes only when translated into appropriate financial behaviour. Atkinson and Messy (2015) found that behavioural and attitudinal factors explained financial behaviour more effectively than financial knowledge across multiple countries. Similarly, Mishra et al. (2024) demonstrated that positive attitudes significantly predicted women's financial decision-making quality within the Theory of Planned Behaviour framework. Rahayu et al. (2024) further concluded that behavioural dimensions of Digital Financial Literacy significantly improved women's saving behaviour and long-term financial well-being. These findings suggest that positive attitudes and disciplined financial behaviours are critical mechanisms through which digital financial literacy enhances financial competence.

Financial competence itself represents the practical application of financial knowledge, digital skills, and behavioural capabilities to manage personal finances effectively. Unlike financial literacy, which primarily reflects knowledge acquisition, financial competence emphasizes the ability to make informed financial decisions, manage risks, plan expenditures, save consistently, and utilize financial products appropriately. Potrich et al. (2015) conceptualized financial competence as a multidimensional behavioural construct comprising knowledge, attitudes, and financial behaviour. Similarly, Gosal et al. (2023) reported that Digital Financial Literacy significantly improved financial competence among Indonesian SMEs, which subsequently enhanced organizational performance and financial well-being. These findings indicate that financial competence functions as the behavioural outcome of effective Digital Financial Literacy.

The literature also consistently highlights substantial gender disparities in digital financial literacy and financial inclusion. Hasler and Lusardi (2017) found that women exhibit lower financial literacy than men across more than 140 countries, with particularly pronounced differences in developing economies. Chamboko (2022) similarly reported that women were significantly less likely than men to utilize digital financial services even after controlling for education, income, and smartphone ownership. In Pakistan, Ali (2019) identified financial literacy as one of the strongest determinants of women's formal financial participation, while Rizvi et al. (2024) found that Digital Financial Literacy strengthened financial inclusion among working women through workplace exposure and financial awareness. These findings demonstrate that improving women's Digital Financial Literacy represents an effective strategy for reducing financial exclusion and promoting economic empowerment.

Despite extensive international research, important gaps remain within the existing literature. Most previous studies have focused on students, entrepreneurs, rural households, or the general population, while relatively few investigations have examined female employees working within the banking sector. Moreover, many earlier studies have treated financial literacy as a unidimensional construct, neglecting the combined influence of digital financial knowledge, service awareness, technology usage, cybersecurity awareness, and behavioural attitudes within a comprehensive analytical framework. Evidence from Pakistan, particularly within industrial cities such as Faisalabad, remains limited. This study addresses these gaps by investigating the multidimensional effects of Digital Financial Literacy on the financial competence of female bank employees, thereby contributing both theoretical and practical insights to the literature on women's financial empowerment, digital financial inclusion, and sustainable economic development.

Material and Method

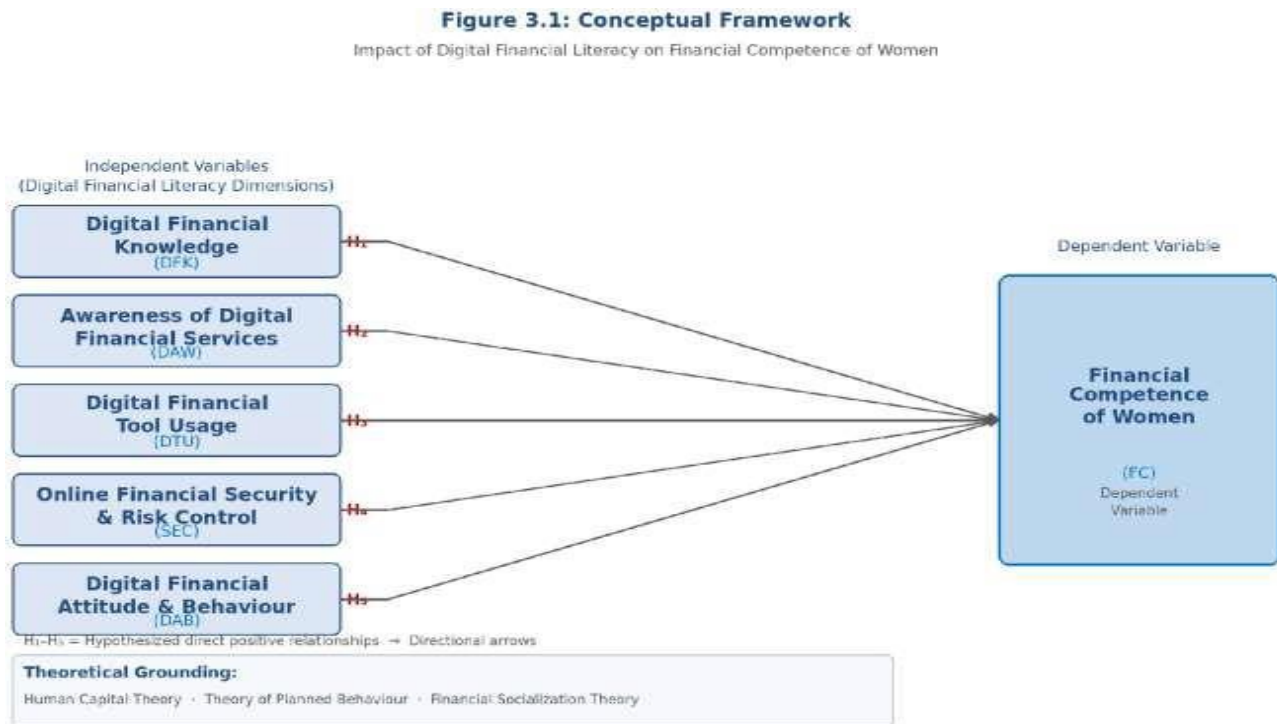
Conceptual Framework

The conceptual framework of this study proposes that Digital Financial Literacy (DFL) positively influences the Financial Competence of women employed in the banking sector of Faisalabad, Pakistan. The framework is grounded in previous theoretical and empirical studies, which consistently demonstrate that higher levels of digital financial literacy enhance individuals' ability to make informed financial decisions, manage financial resources effectively, and achieve greater financial well-being (Abdallah et al., 2025; Rahayu et al., 2024; Gosal & Nainggolan, 2023). The model assumes that improvements in any dimension of DFL contribute positively to financial competence.

Digital Financial Literacy is conceptualized as a multidimensional construct comprising five independent variables. Digital Financial Knowledge (DFK) refers to respondents' understanding of digital financial concepts, products, and services, including digital banking, savings products, interest calculations, and financial planning. Awareness of Digital Financial Services (DAW) measures familiarity with available digital financial platforms, government financial inclusion initiatives, digital lending services, and electronic payment systems. Digital Financial Tool Usage (DTU) assesses the extent to which respondents actively use

digital banking applications, internet banking, mobile wallets, and online payment systems in their daily financial activities. Online Financial Security and Risk Control (SEC) evaluates respondents' ability to recognize online financial risks, protect personal financial information, identify fraudulent activities, and practice secure digital financial behaviours. Finally, Digital Financial Attitude and Behaviour (DAB) captures individuals' confidence, willingness, self-discipline, and positive behavioural orientation toward adopting and responsibly using digital financial technologies. These dimensions were adapted from internationally validated measurement scales developed by Abdallah et al. (2025), Liu (2025), Sadaf (2025), Barus et al. (2024), Zheng and Hu (2025), and Mishra et al. (2024). The dependent variable, Financial Competence, refers to an individual's ability to apply financial knowledge and digital skills in making effective financial decisions. It encompasses budgeting behaviour, saving practices, spending control, effective use of digital financial tools, and informed financial decision-making (Kumar et al., 2023; Rahayu et al., 2024). In this study, financial competence is measured using eight Likert-scale items adapted from previous validated instruments. The framework therefore hypothesizes that each dimension of Digital Financial Literacy exerts a positive and significant influence on women's financial competence, providing a comprehensive model for examining the determinants of financial empowerment among female bank employees in Faisalabad.

Figure 3.1: Conceptual Framework



The data analysis was conducted using a systematic and sequential approach, progressing from descriptive to inferential statistical analyses. Initially, descriptive statistics were employed to summarize respondents' demographic characteristics and examine response patterns for all study variables. Measures including frequencies, percentages, means, standard deviations, skewness, and kurtosis were calculated to provide an overall understanding of the data distribution (Hair et al., 2019). These analyses also facilitated preliminary data screening and identification of missing values or inconsistencies.

Prior to hypothesis testing, data were examined for normality using the Shapiro–Wilk and Kolmogorov–Smirnov tests. Given the relatively large sample size ($N = 344$), the Central Limit Theorem supported the use of parametric statistical techniques despite minor deviations from normality (Field, 2018). Reliability of the measurement scales was evaluated using Cronbach's alpha, with values above 0.70 considered acceptable (Nunnally, 1978). Item-total correlations and alpha-if-item-deleted statistics were also examined to ensure internal consistency of each construct.

Pearson product-moment correlation analysis was performed to determine the strength and direction of relationships among the study variables. Subsequently, simple linear regression analyses were conducted to assess the individual effect of each Digital Financial Literacy (DFL) dimension on financial competence. Multiple linear regression using the Enter method was then applied to evaluate the combined influence of the five DFL dimensions on the dependent variable while controlling for the interrelationships among predictors. Diagnostic tests, including the Variance Inflation Factor (VIF), tolerance values, Durbin-Watson statistic, and heteroscedasticity assessment, were performed to verify that regression assumptions were satisfied. Statistical significance was evaluated at the 5% level ($\alpha = 0.05$).

Data management, descriptive statistics, reliability analysis, correlation analysis, normality testing, and regression analyses were conducted using IBM SPSS Statistics Version 26. Microsoft Excel 2019 was used for preliminary data coding, cleaning, and organization before importing the dataset into SPSS. To further validate the proposed conceptual framework, SmartPLS 4 was employed to perform Partial Least Squares Structural Equation Modelling (PLS-SEM). SmartPLS was used to assess the measurement model through Composite Reliability (CR), Average Variance Extracted (AVE), discriminant validity, and structural model relationships. PLS-SEM was selected because it is well suited for complex models and performs effectively with relatively small samples and data that may not fully satisfy multivariate normality assumptions (Hair et al., 2019; Ringle et al., 2022).

The validity of the research instrument was established through multiple procedures. Content validity was ensured by adapting measurement items from previously validated studies and obtaining expert review from specialists in financial literacy, digital banking, and quantitative research. Face validity was confirmed through pilot testing, where respondents indicated that the questionnaire was clear, relevant, and appropriate for the Pakistani banking context. Construct validity was assessed using factor loadings, Composite Reliability, Average Variance Extracted, and discriminant validity measures within SmartPLS, confirming that the constructs were both reliable and conceptually distinct. Despite these methodological strengths, several limitations should be acknowledged. The cross-sectional design limits causal inference, while purposive sampling restricts the generalizability of findings beyond female bank employees in Faisalabad. Furthermore, the use of self-reported data introduces the possibility of common method variance and social desirability bias. Harman's single-factor test indicated potential common method bias; therefore, the observed relationships should be interpreted with appropriate caution. Future research should employ longitudinal or experimental designs, probability sampling techniques, and multiple data sources to strengthen causal interpretation and improve external validity. Additionally, future studies may examine informal financial practices alongside formal digital financial behaviours to provide a more comprehensive understanding of women's financial competence in Pakistan.

Results and Analysis

Table: 4.1 Demographic Profile

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age	20–30 years	269	78.2
	31–40 years	32	9.3
	41–50 years	38	11.0
	Above 50 years	5	1.5
Educational Qualification	Intermediate	51	14.8
	Bachelor's	201	58.4
	Master's	54	15.7
	MPhil/PhD	38	11.0
Work Experience in Banking	< 1 year	250	72.7
	1–3 years	27	7.8
	4–6 years	32	9.3
	7–10 years	32	9.3
	> 10 years	3	0.9
Monthly Income (PKR)	< 30,000	201	58.4
	30,001–50,000	38	11.0
	50,001–70,000	44	12.8
	70,001–100,000	50	14.5
	> 100,000	11	3.2

The findings are presented through a systematic, multi-stage data analysis examining the relationship between Digital Financial Literacy and the Financial

Competence of women employed in the banking sector in Faisalabad. The chapter begins with respondents' demographic profiles, followed by descriptive statistics and normality testing. Reliability analysis, Pearson correlation, simple and multiple regression analyses are then conducted. Regression assumptions are assessed before testing the proposed hypotheses. Finally, the results are interpreted and discussed in light of existing theoretical and empirical literature. Table 4.1 presents the demographic characteristics of the 344 respondents. Most participants were aged **20–30 years (78.2%)**, indicating a predominantly young workforce in the banking sector. The majority held a **Bachelor's degree (58.4%)**, while **72.7%** had less than one year of work experience, reflecting an early-career profile. Most respondents (**58.4%**) earned **below PKR 30,000** per month, consistent with entry-level banking positions. Furthermore, **94.5%** owned a smartphone with internet access, demonstrating widespread digital connectivity and providing the necessary infrastructure for adopting and using digital financial services effectively.

Table 2: Likert Response Frequency Distribution and Item-Level Descriptive Statistics All Constructs (N = 344)

Code	Item Statement (Abbreviated)	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mea n	Md n	SD	Skew	Kurt
IV1: Digital Financial Knowledge (DFK)											
DFK1	Understand basic concepts of digital finance	13 (3.8%)	24 (7.0%)	83 (24.1%)	157 (45.6%)	67 (19.5%)	3.70	4	0.98	-0.77	0.43
DFK2	Correctly interpret digital banking statements	9 (2.6%)	23 (6.7%)	87 (25.3%)	142 (41.3%)	83 (24.1%)	3.77	4	0.97	-0.65	0.17
DFK3	Understand differences in digital savings products	12 (3.5%)	23 (6.7%)	80 (23.3%)	155 (45.1%)	74 (21.5%)	3.74	4	0.98	-0.77	0.44
DFK4	Calculate interest rates on digital loans	10 (2.9%)	42 (12.2%)	90 (26.2%)	129 (37.5%)	73 (21.2%)	3.61	4	1.04	-0.46	-0.40

Construct-Level Descriptive Statistics (N = 344)

Table 3 shows that the construct mean scores ranged from **3.726 (DFK)** to **3.907 (SEC)**, all exceeding the scale midpoint of 3.0, indicating generally high levels of digital financial literacy and financial competence. Online Financial Security and Risk Control recorded the highest mean, reflecting respondents' strong awareness of financial security, while Digital Financial Knowledge had the lowest mean due to relatively complex knowledge items. Financial Competence was also high (M = 3.854, SD = 0.773). Negative skewness across all constructs indicates responses were generally concentrated toward the positive end of the scale.

Table 3 Construct-Level Descriptive Statistics (N = 344)

Construct	N	Mean	Std Dev	Median	Min	Max	Skewness
DFK — Digital Financial Knowledge	344	3.726	0.855	3.833	1.000	5.000	-0.704
DAW — Awareness of Digital Fin. Services	344	3.773	0.833	4.000	1.000	5.000	-0.720
DTU — Digital Financial Tool Usage	344	3.866	0.815	4.000	1.000	5.000	-0.825
SEC — Online Financial Security & Risk	344	3.907	0.804	4.000	1.000	5.000	-0.770
DAB — Digital Financial Attitude & Behav.	344	3.876	0.774	4.000	1.000	5.000	-0.697
FC — Financial Competence (DV)	344	3.854	0.773	4.000	1.000	5.000	-0.690

Reliability Analysis

Internal consistency reliability was assessed for each construct using Cronbach's alpha (α) coefficient. All item-total correlations (corrected) and alpha-if-item-deleted values were computed to verify item quality. The minimum acceptable threshold for Cronbach's alpha is 0.70 (Nunnally, 1978), and values above 0.90 are classified as excellent (George and Mallery, 2003).

Table 4 presents the reliability results for all six constructs.

Construct	Variable	Items	α	Min ITC	Reliability Level
Digital Financial Knowledge	DFK	6	0.9391	0.7647	Excellent
Awareness of Digital Fin. Services	DAW	6	0.9324	0.7198	Excellent
Digital Financial Tool Usage	DTU	6	0.9316	0.7722	Excellent

Pearson Correlation Analysis

All the constructs were correlated using Pearson product-moment correlation to study the bivariate linear relationship between the constructs. All correlation values are shown in the full correlation matrix with significance levels in Table 5. Table 5 shows that all five independent variables are positively and significantly correlated with Financial Competence (FC) at $p < 0.001$. The Pearson correlation coefficients are as follows: DAB showed the strongest relationship with FC ($r = 0.862$), followed by SEC ($r = 0.817$), DTU ($r = 0.804$), DFK ($r = 0.756$), and DAW ($r = 0.750$). All five coefficients meet Cohen's (1988) criteria of being classified as large effects ($r > 0.50$), thus corroborating the theoretical argument that dimensions of digital financial

competency are substantively rather than trivially related to financial competence. The rank order of predictor-outcome correlations (DAB at the top) is consistent with those of earlier studies by Gosal and Nainggolan (2023), Kumar et al. (2023) and Mishra et al. (202,4) who found that attitudinal and behavioral dimensions of DFL are the most potent predictors of financial outcomes.

Table 5 correlation matrix

	DFK	DAW	DTU	SEC	DAB	FC
DFK	1.000	0.875***	0.749***	0.724***	0.753***	0.756***
DAW	0.875***	1.000	0.775***	0.750***	0.782***	0.750***
DTU	0.749***	0.775***	1.000	0.854***	0.880***	0.804***
SEC	0.724***	0.750***	0.854***	1.000	0.895***	0.817***
DAB	0.753***	0.782***	0.880***	0.895***	1.000	0.862***
FC	0.756***	0.750***	0.804***	0.817***	0.862***	1.000

Note. *** $p < 0.001$ (two-tailed). DFK = Digital Financial Knowledge; DAW = Awareness of Digital Financial Services; DTU = Digital Financial Tool Usage; SEC = Online Financial Security & Risk Control; DAB = Digital Financial Attitude & Behaviour; FC = Financial Competence (DV).

The inter-construct correlations of independent variables are between $r = 0.724$ (DFK–SEC) and $r = 0.895$ (DAB–SEC). The higher correlations suggest that the five dimensions of DFL should be conceptually related as one would expect in a multidimensional construct but they also suggest the possibility of multicollinearity in the multiple regression model. In particular, DFK and DAW have a high correlation of $r = 0.875$, and DTU and DAB have a high correlation of $r = 0.880$, indicating that there is quite a bit of common variance between these two pairs of constructs.

Table 6 summarizes the regression analysis examining the influence of the five dimensions of Digital Financial Literacy on Financial Competence. The simple regression results indicate that all five predictors individually have significant positive relationships with financial competence, with standardized beta coefficients ranging from 0.750 to 0.862 and explained variance (R^2) between 56.2% and 74.3%. Digital Financial Attitude and Behaviour (DAB) demonstrated the strongest individual predictive power ($\beta = 0.862$, $R^2 = 0.743$).

The multiple regression model explained 77.6% of the variance in financial competence ($R^2 = 0.776$; Adjusted $R^2 = 0.773$; $F = 234.513$, $p < 0.001$), indicating excellent model fit. Among the five predictors, Digital Financial Attitude and Behaviour ($\beta = 0.497$, $p < 0.001$) emerged as the strongest predictor, followed by Digital Financial Knowledge ($\beta = 0.215$, $p < 0.001$) and Online Financial Security and Risk Control ($\beta = 0.153$, $p = 0.013$). Awareness of Digital Financial Services and Digital Financial Tool Usage were not significant after controlling for the remaining variables. Diagnostic statistics confirmed that multicollinearity was within acceptable limits ($VIF < 10$), no autocorrelation was detected (Durbin-Watson = 2.028), and heteroscedasticity was addressed using robust standard errors, supporting the robustness of the regression model.

Table 6 Regression Analysis

Predictor	Simple Regression β	Simple R^2	Multiple Regression β	t-value	p-value	VIF	Decision
DFK	0.756	0.572	0.215	3.915	<0.001***	4.561	Supported
DAW	0.750	0.562	-0.001	-0.022	0.982	5.150	Not Supported
DTU	0.804	0.647	0.077	1.297	0.196	5.283	Not Supported
SEC	0.817	0.668	0.153	2.506	0.013*	5.615	Supported
DAB	0.862	0.743	0.497	7.263	<0.001***	7.063	Supported

Conclusions and Implications

This study examined the influence of five dimensions of Digital Financial Literacy (DFL)—Digital Financial Knowledge (DFK), Awareness of Digital Financial Services (DAW), Digital Financial Tool Usage (DTU), Online Financial Security and Risk Control (SEC), and Digital Financial Attitude and Behaviour (DAB)—on the financial competence of women employed in commercial banks in Faisalabad, Pakistan. The findings provide strong empirical evidence that Digital Financial Literacy is a significant determinant of financial competence, explaining 77.6% of the variation in financial competence. The study therefore confirms that digital financial literacy extends beyond access to digital technologies and encompasses knowledge, security awareness, and behavioural competencies that enable individuals to make informed financial decisions.

Among the five dimensions, Digital Financial Attitude and Behaviour emerged as the strongest predictor of financial competence, demonstrating that positive financial attitudes, self-discipline, confidence, and responsible digital financial behaviour are more influential than simple awareness or technology usage. Digital Financial Knowledge also made a significant independent contribution, highlighting the importance of understanding digital financial products, services, and financial concepts in improving financial decision-making. Furthermore, Online Financial Security and Risk Control showed a positive influence on financial competence, emphasizing that cybersecurity awareness and risk management have become essential skills in today's digital financial environment. Although Awareness of Digital Financial Services and Digital Financial Tool Usage showed significant individual relationships with financial competence, they were not

significant in the multivariate model due to shared variance with the other DFL dimensions. This suggests that awareness and technology usage alone are insufficient unless accompanied by adequate knowledge, security awareness, and positive financial behaviours.

The findings have important practical implications for financial institutions, policymakers, educators, and training organizations. Commercial banks should redesign employee development programmes by moving beyond traditional financial information sessions toward behaviour-oriented digital financial literacy training. Training initiatives should focus on strengthening financial discipline, goal setting, responsible digital financial behaviour, and cybersecurity awareness alongside technical knowledge of digital financial products. Such interventions are particularly important for newly recruited female employees who represent the majority of the banking workforce in Faisalabad.

For policymakers, the findings support the integration of behaviour-based Digital Financial Literacy initiatives into Pakistan's National Financial Inclusion Strategy. Public awareness campaigns should not only promote access to digital financial services but also develop digital financial knowledge, cybersecurity competencies, and positive financial behaviours among women. Educational institutions should similarly incorporate Digital Financial Literacy into business, finance, and economics curricula by introducing practical modules on digital banking, financial planning, cybersecurity, digital payments, and responsible financial decision-making. These initiatives will better prepare graduates for participation in an increasingly digital financial system.

Overall, this study contributes to the growing literature on digital financial literacy by providing empirical evidence from Pakistan's banking sector and demonstrating that women's financial competence depends primarily on behavioural orientation, financial knowledge, and digital security awareness rather than technology access alone. The findings provide a valuable foundation for developing evidence-based policies and educational interventions that strengthen women's financial capability, promote digital financial inclusion, and contribute to sustainable economic development. Future studies should extend this research using longitudinal designs, probability sampling, and broader geographical coverage to validate and generalize these findings across different sectors and regions of Pakistan.

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