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Enhancing Digital Financial Literacy and Inclusion of Consumers: Strategic Insights for Policy and Business Practices

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ABSTRACT

This study examined whether digital financial literacy helps improve digital financial inclusion. It focused on a key gap: even when people have digital financial knowledge and skills, they may still face barriers in using digital financial services. Guided by the Unified Theory of Acceptance and Use of Technology and the Financial Literacy Theory of Financial Inclusion, the study also explored how socio-demographic factors relate to digital financial literacy and digital financial inclusion. Using a descriptive-correlational design, data were gathered from 624 adults aged 18 to 79 with internet access through a modified OECD/INFE Digital Financial Literacy Survey Instrument (2024). The study measured digital financial literacy in terms of knowledge, behavior, and attitudes, and digital financial inclusion in terms of product holding and usage. Results showed that respondents had high digital financial literacy but low digital financial inclusion, suggesting that literacy alone does not guarantee access to or use of digital financial services. Gender, income, education, and geographical location were significantly associated with inclusion, whereas age was not. Female respondents showed higher digital financial literacy but lower digital financial inclusion, pointing to possible gender-based access barriers. Limited awareness, low trust in fintech platforms, cybersecurity concerns, weak infrastructure, and transaction costs were identified as major challenges. The study concludes that stronger digital financial literacy must be matched with inclusive systems, better access, and stronger consumer protection to achieve equitable digital financial inclusion.

Keywords: *Digital financial literacy; Digital financial inclusion; Socio-demographic factors.*

INTRODUCTION

Digital financial inclusion refers to access to and use of formal financial products and services through digital means, especially among unserved and underserved groups (Bangko Sentral ng Pilipinas [BSP], 2018). These products and services include savings, credit, payments, remittances, insurance, and investments. In today's digital environment, inclusion is not only about making these services available. It is also about making sure that people can use them safely, confidently, and meaningfully. For this reason, digital financial literacy has become an important concern. Digital financial literacy encompasses the knowledge, attitudes, and behaviors that help people understand and use digital financial products and technologies to improve their financial well-being (OECD, 2024).

Digital financial literacy matters because access to technology alone does not guarantee inclusion. People may have mobile phones, internet access, or digital payment apps, yet still be unable or unwilling to use formal financial services well. Without enough knowledge and skill, consumers may struggle to manage their money, compare financial options, or protect themselves from scams, fraud, and data risks

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(Bushra & Mir, 2024). In this sense, digital financial literacy helps people make informed decisions and take better control of their financial lives. It also supports stronger trust in digital financial systems.

Digital financial inclusion has also been linked to broader development goals. Past studies show that it can support economic participation, reduce exclusion, improve resilience, and contribute to sustainable development (Pandey et al., 2022; Tay et al., 2022; World Bank, n.d.). Digital financial tools can lower transaction costs, widen access to services, and help vulnerable groups join the formal economy. For developing countries, this creates important opportunities. However, the benefits of digital finance are not shared equally. Differences in literacy, skills, income, education, and location continue to shape who can truly benefit from digital financial services.

This concern is especially important in the Philippines. The BSP's 2021 Financial Inclusion Survey showed weak financial literacy outcomes among Filipinos. Only two per cent answered all six basic financial literacy questions correctly. Correct responses on inflation and interest rate questions also declined from 2019 to 2021. Likewise, the OECD and INFE 2023 international survey reported that the Philippines scored 58 out of 100 in overall financial literacy, which is 12 points below the minimum target score of 70. These findings suggest that many Filipinos still face difficulty understanding financial concepts, even before facing the added demands of digital finance.

At the same time, financial exclusion remains a serious issue in the country. In 2024, the United Nations Secretary-General's Special Advocate for Financial Health reported that about 37.6 million Filipinos were still unbanked. Global Findex 2025 data further showed that only 50.2 per cent of Filipinos aged 15 and older had accounts with banks or other regulated financial institutions. This falls short of the BSP's goal of bringing at least 70 per cent of Filipino adults into the formal financial system by 2023 (Cigaral, 2025). The BSP also reported that only 31 per cent of adult Filipinos had savings in a bank, while 57 per cent borrowed from informal sources. These figures show that access to formal finance remains limited for many adults and that stronger inclusion efforts are still needed.

Recent studies have shown that digital financial literacy and digital financial inclusion are closely connected. Research suggests that people with stronger financial knowledge, attitudes, and behaviors are more likely to access and use digital financial services effectively (Khan et al., 2022; Koomson et al., 2020; Lyons & Kass-Hanna, 2021; Morgan & Long, 2020; Peter, 2025). Studies also show that digital financial inclusion can improve welfare, support growth, and increase participation in economic life (OECD, 2020; Widyastuti et al., 2024; Yaqin & Safuan, 2023). At the same time, past research consistently points to the role of socio-demographic factors such as age, gender, education, income, and location in shaping differences in literacy and inclusion (Setiawan et al., 2022; Khan et al., 2022; NP et al., 2022; Nandru et al., 2021; Ljumović et al., 2021).

Although these studies are helpful, they also show important differences. Some studies focus on financial literacy in general, while others examine the more specific area of digital financial literacy. Some focus on access to financial products, while others examine actual use. Many studies also use different tools and indicators, which makes findings harder to compare across settings. In addition, many existing studies focus on selected groups, such as entrepreneurs, workers, or small business owners, rather than the broader adult consumer population. Because of these differences, there is still a need for studies that use a more focused, up-to-date approach to measure both digital financial literacy and digital financial inclusion simultaneously.

One important development in this area is the OECD/INFE Digital Financial Literacy survey instrument. Unlike older tools that mainly measure traditional financial knowledge, this instrument focuses directly on the digital side of finance. It measures knowledge, attitudes, and behaviors related to digital financial products and services. This is important because online banking, digital payments, e-wallets, and other digital tools now play a growing role in daily financial life. A tool designed for digital finance can therefore provide a more accurate view of people's actual capabilities in today's financial environment. It also supports better comparison with international findings.

Despite growing global interest in this topic, studies on digital financial literacy and digital financial inclusion among adult consumers in the Philippines remain limited. There is still a lack of local research that examines both concepts within a single framework, relates them to socio-demographic

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factors, and uses a measure clearly suited to the digital financial setting. There is also limited local evidence that can guide practical policy and business action based on empirical findings. This gap is important because improving inclusion requires more than access to digital tools. It requires a clear understanding of who is being left behind, in what ways, and why.

In response to these gaps, this study examined the digital financial literacy and digital financial inclusion of adult consumers and analyzed their relationship with selected socio-demographic factors, including age, gender, educational attainment, employment status, income, and geographical location. It also explored the challenges respondents faced in these areas. The study is significant because its findings may help policymakers, educators, and financial service providers design better programs, policies, and services that are more responsive to consumers' needs. By providing local evidence on literacy, inclusion, and their possible determinants, the study seeks to support more inclusive, safe, and effective participation in the digital financial system.

METHODS

Research Design

This study used a descriptive-correlational research design. The descriptive part described the respondents' socio-demographic characteristics, levels of digital financial literacy and digital financial inclusion, and the challenges they experienced when using digital financial services. The correlational part examined whether socio-demographic variables were related to digital financial literacy and digital financial inclusion. This design was appropriate because the study aimed to observe patterns and relationships among variables without manipulating them or claiming cause-and-effect.

Research Participants

The participants in the study were adult consumers in the Province of Albay, aged 18 to 79, with internet access. Internet access was required because the study focused on digital financial literacy and the use of digital financial services, and the survey was conducted online. The age range was aligned with the adopted Digital Financial Literacy Survey Instrument. Albay was chosen due to practical time and budget constraints. For sample planning, the province's 3 cities and 15 municipalities were treated as 18 location groups to ensure representation across different areas.

The reference population was based on the 2024 Census of Population released by the Philippine Statistics Authority, which reported a total population of 1,379,398 for Albay as of July 1, 2024. An a priori power analysis was conducted using G*Power 3.1.9.7 to estimate the minimum sample size. For group comparison using one-way ANOVA with 18 groups, a medium effect size of $f = 0.25$, an alpha level of 0.05, and a power of 0.95 produced a minimum sample of 486. For correlation analysis using a bivariate normal model with a two-tailed test, a medium effect size of $\rho = 0.30$, an alpha level of 0.05, and a power of 0.95 produced a minimum sample of 138. The larger required sample of 486 was adopted. The final dataset included 624 respondents, which exceeded the required minimum sample size.

Participant recruitment was done through online voluntary response sampling. The survey link was shared via Facebook groups, Messenger group chats, and direct messages with potential respondents across the 18 cities and municipalities of Albay. Only respondents who met the age and internet access criteria and who gave informed consent were included in the study.

Research Instruments

The study used the Digital Financial Literacy (DFL) Survey Instrument developed by the Organization for Economic Co-operation and Development and the International Network on Financial Education (OECD/INFE), published on May 14, 2024. This instrument was designed to measure digital financial literacy and to generate information on how people engage with digital financial services. It covered three domains of digital financial literacy: knowledge, attitudes, and behaviors. It also included

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indicators of digital financial inclusion, particularly digital financial product holding and usage, as well as socio-demographic items.

The researcher obtained formal permission from the OECD Secretariat to use the instrument. The request was submitted on November 10, 2025, and permission was granted on December 8, 2025. To align with the study's objectives, the questionnaire was supplemented with additional items on the challenges respondents experienced related to digital financial literacy and digital financial inclusion. Some examples of financial products and services were also adapted to the Philippine context to improve relevance and understanding while preserving the instrument's original meaning. The final questionnaire was administered online via Google Forms.

Data Gathering Procedure

Data were gathered through an online survey using Google Forms. Data collection was conducted over a three-week period in January 2026. This mode of data collection was appropriate because the study covered respondents from different parts of Albay and required participants to have internet access. At the beginning of the online questionnaire, an informed consent statement explained the purpose of the study, the voluntary nature of participation, the confidentiality of responses, and participants' right to withdraw at any time before submitting the form. Only those who agreed to the consent statement were allowed to proceed to the survey.

The survey link was distributed through Facebook groups, Messenger group chats, and direct online outreach to potential respondents. The researcher monitored the incoming responses throughout the data collection period to track whether the target sample size had been reached. After data collection, the responses were downloaded from Google Forms, checked, organized, and prepared for statistical analysis.

Data Analysis

The collected data were analyzed using descriptive and inferential statistics in IBM SPSS Statistics Version 31. Frequency and percentage were used to describe the respondents' socio-demographic characteristics, including age, gender, educational attainment, employment status, monthly income, and geographical location. Frequency and percentage were also used to summarize the challenges respondents encountered in digital financial literacy and digital financial inclusion.

Mean and standard deviation were used to describe the level of digital financial literacy across the domains of knowledge, attitudes, and behaviors, and the level of digital financial inclusion across the domains of digital financial product holding and digital financial product usage. For inferential analysis, Pearson's r was used to assess the relationship between age and digital financial literacy and inclusion, treating age as a continuous variable. Point-biserial correlation was used to assess the relationship between gender and digital financial literacy and inclusion, given that gender was coded as a dichotomous variable. Spearman's rank correlation was used for educational attainment and monthly income because these variables were ordinal. Differences in digital financial literacy and inclusion across employment status were tested using one-way ANOVA, while differences across geographical location were tested using the Kruskal-Wallis H test. Effect sizes were reported using eta-squared (η^2) for ANOVA and epsilon-squared (ε^2) for Kruskal-Wallis.

Ethical Considerations

This study followed ethical standards for research involving human participants. Informed consent was obtained from all participants before they answered the questionnaire. The consent form explained the purpose of the study, the voluntary nature of participation, the expected time needed to complete the survey, the use of the data, and the participants' right to stop or withdraw before submission without penalty. To protect privacy, no personally identifiable information, such as names, phone numbers, or home addresses, was collected. Responses were treated confidentially and used only for research purposes. Because the questionnaire included questions related to financial practices, digital behavior, and possible experiences with online fraud, extra care was taken to protect participants' privacy and confidentiality. Data were stored securely and were accessed only by the researcher.

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RESULTS AND DISCUSSION

Socio-Demographic Profile of the Respondents

Table 1 summarizes the socio-demographic profile of the 624 respondents, including age, gender, educational attainment, employment status, and income. The sample was largely composed of young, female, and relatively educated participants. Most respondents were 20–29 years old, with a mean age of 27.08, suggesting that the findings mainly reflect the perspectives of young adults, who are generally more familiar with digital tools and more likely to participate in online surveys. Females comprised the majority of the sample, indicating that the results were shaped more by women's perspectives. Most respondents held bachelor's degrees, followed by senior high school graduates, indicating that the sample was dominated by individuals with at least secondary to tertiary education. This educational profile may have influenced the results, as those with higher educational attainment are often better able to understand and use digital financial services.

In terms of socioeconomic characteristics, nearly half of the respondents were out of the labor force, a little over two-fifths were employed, and only a small proportion were unemployed. The largest income group was classified as poor, followed by lower-middle-income earners, indicating that many respondents came from economically disadvantaged backgrounds. These patterns suggest that the study primarily reflects the experiences of younger, lower-income individuals, many of whom may face barriers to technology, financial services, and educational resources. Although some aspects of the sample, such as age distribution, appear reasonably aligned with the population of Albay, the gender and employment patterns limit the generalizability of the findings.

Table 2 shows that most respondents came from more urbanized areas, particularly Legazpi City, followed by Daraga, Tabaco City, and Bacacay. This suggests that the study mainly reflects the experiences of people living in areas with better access to banks, internet services, and digital financial platforms. As a result, the findings may be more representative of urban residents than rural populations. This geographic pattern is important because rural communities often face greater barriers to digital financial inclusion, such as weaker internet connectivity, fewer financial service outlets, and lower exposure to digital tools. Thus, the study may not fully capture the realities of rural populations. While the findings remain useful, they should be interpreted with caution when applied to the whole province. Future studies should include a more balanced mix of urban and rural respondents to produce findings that are more representative and useful for inclusive policy and program development.

Table 1. *Socio-demographic profile of the respondents*

Variables	Frequency (*n*)	Percentage (%)
Age		
17-19 years old	56	9.00
20-29 years old	415	66.5
30-39 years old	87	13.9
40-49 years old	36	5.80
50-59 years old	19	3.00
60-69 years old	11	1.80
Gender		
Male	234	37.5
Female	390	62.5
Educational Attainment		
No formal education	3	0.50
Primary/Elementary Education	4	0.60
Senior High School	203	32.5
Bachelor's Degree	349	55.9
Post-Graduate	65	10.4
Employment Status		
Employed	264	42.3
Unemployed	64	10.3

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Out of the labor force	296	47.4
Monthly Income		
Less than P10,957.00 (Poor)	332	53.2
P9,520.00 to P21,194.00 (Low income, but not poor)	94	15.1
P21,194.00 to P43,828.00 (Lower middle class)	131	21.0
P43,828.00 to P76,669.00 (Middle class)	42	6.70
P76,669.00 to P131,484.00 (Upper middle class)	14	2.2
P131,484.00 to P219,140.00 (High income, but not rich)	7	1.1
At least P219,140.00 and up (Rich)	4	.6

Table 2. *Geographical distribution of the respondents*

Area	Frequency (*n*)	Percentage (%)
Bacacay	44	7.10
Camalig	13	2.10
City of Legazpi	252	40.4
City of Ligao	30	4.80
City of Tabaco	48	7.70
Daraga	99	15.9
Guinobatan	24	3.80
Jovellar	4	0.60
Libon	16	2.60
Malilipot	14	2.20
Malinao	5	0.80
Manito	8	1.30
Oas	10	1.60
Pio Duran	2	0.30
Polangui	9	1.40
Rapu-Rapu	7	1.10
Sto. Domingo	22	3.50
Tiwi	17	2.70

Level of Digital Financial Literacy of the Respondents

The respondents' digital financial literacy was assessed by computing their digital financial literacy (DFL) scores across three domains: knowledge, behavior, and attitude. As shown in Table 3, the respondents obtained mean scores of 4.02 (SD = 1.12) for behavior, 2.02 (SD = 0.95) for attitude, and 4.22 (SD = 1.17) for knowledge. These findings indicate generally favorable levels of digital financial literacy across all three domains.

Table 3. *Level of digital financial literacy of the respondents across domains*

DFL Domains	*N*	Min	Max	Mean	*SD*
Behavior	624	0	6	4.02	1.12
Attitude	624	0	3	2.02	0.95
Knowledge	624	0	7	4.22	1.17

The results suggest that digital financial literacy among the respondents goes beyond knowledge and also includes favorable behavioral and attitudinal tendencies. This supports the view that digital financial literacy is a multidimensional construct involving what individuals know, how they feel, and how they act in relation to digital finance (Gumbo, 2025; Neo & Nurfarah'ain, 2025). However, the standard deviations indicate that differences remain among respondents, suggesting that not all are equally prepared to use digital financial services safely and effectively.

The findings also support the argument that knowledge alone is not enough to ensure sound financial action. Prior studies show that individuals may understand financial concepts but still struggle to

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apply them in practice, especially in digital environments that require confidence, trust, and risk awareness (Choung et al., 2023; Morgan & Long, 2020). In this context, the respondents' favorable behavior and attitude scores suggest a certain level of readiness to engage with digital financial tools beyond basic understanding.

Moreover, digital financial literacy today requires not only financial knowledge but also the ability to manage risks linked to digital transactions, such as fraud, privacy threats, and cybersecurity concerns (Engels et al., 2022). As argued by Módosné Szalai et al. (2025), financial knowledge becomes more meaningful when individuals are willing and able to apply it in real-life digital contexts. Likewise, Dewi (2025) emphasizes that positive attitudes, confidence, and sustained engagement are necessary for the secure and sustained use of digital financial platforms.

Table 4 presents respondents' digital financial literacy levels based on their DFL scores. The results show that most respondents had a high level of digital financial literacy (67.0%), followed by those with a low level (18.3%) and a very high level (14.4%). Only 0.3% were classified as having a very low level. Overall, this distribution indicates that respondents' digital financial literacy was concentrated in the higher categories.

Table 4. *Distribution of the level of digital financial literacy of the respondents*

DFL Score	DFL Level	*n*	*%*	Overall		
				Mean	*SD*	Interpretation
0-4	Very Low	2	0.30	10.26	2.08	High
5-8	Low	114	18.3			
9-12	High	418	67.0			
13-16	Very High	90	14.4			

The respondents obtained a mean DFL score of 10.26 (SD = 2.082), which is interpreted as high based on the OECD/INFE DFL Survey Instrument scoring. This suggests that, in general, the respondents demonstrated a favorable level of digital financial literacy in terms of the knowledge, attitudes, and behaviors needed to engage in digital financial activities. As emphasized in the OECD/INFE framework, digital financial literacy includes the competencies needed for safe and effective participation in digital financial environments (OECD, 2023). Thus, the findings may reflect not only familiarity with digital financial products and services but also a degree of readiness to make informed decisions and practice online safety (OECD, 2023; G20/OECD INFE, 2020).

In a broader context, the results appear relatively strong. The OECD/INFE 2023 international survey reported an average adult proficiency rate of 53%, with only 29% meeting minimum benchmark thresholds (OECD, 2023). Compared with these figures, the present findings appear more favorable, possibly suggesting that the respondents benefit from greater digital exposure, access to fintech platforms, or other contextual factors that support digital financial competence.

This pattern is consistent with regional evidence. Bacolod (2024) reported relatively high levels of digital financial literacy among higher education students, particularly in the use of e-wallets, although gaps in risk awareness remained. Likewise, Jalagat and Paggao (2023) found medium-to-high digital financial literacy in Malaysia and linked it to positive financial attitudes and knowledge. These studies suggest that digitally exposed populations in Asian contexts may demonstrate stronger digital financial literacy, especially where digital payment systems are already part of daily life.

However, the results should still be interpreted with caution. Although most respondents fell in the high category, a considerable proportion remained in the low and very low categories, indicating that digital financial literacy was not evenly distributed across the sample. Overall, the findings suggest a generally strong level of preparedness for digital financial inclusion, consistent with evidence linking higher digital financial literacy to improved inclusion and more informed decision-making in developing economies (Otor & Udeagha, 2024). Still, future interventions may be more effective if they focus not only on basic knowledge but also on advanced competencies such as digital risk management, cybersecurity awareness, and critical evaluation of emerging financial technologies.

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Level of Digital Financial Inclusion of the Respondents

The level of digital financial inclusion was assessed using the Digital Financial Services (DFS) access and use score, measured across two domains: digital financial product holding and usage. As shown in Table 5, respondents obtained a mean score of 5.30 (SD = 3.122; range = 0–15) for product holding and 4.19 (SD = 2.739; range = 0–10) for product usage. Based on the OECD/INFE DFL Survey Instrument, the overall DFS score—computed by summing both domains—yielded a mean of 9.49 (SD = 4.870; range = 0–25).

Table 5. *Level of digital financial inclusion across domains*

DFS Domains	*N*	Min	Max	Mean	*SD*
Digital Financial Product Holding	624	0	15	5.30	3.12
Digital Financial Product Usage	624	0	10	4.19	2.74

Digital financial inclusion extends beyond access to financial services and requires adequate literacy, trust in digital platforms, and reliable technological and institutional support (Riha Parvin et al., 2022; Widyastuti et al., 2024; Zins & Weill, 2020). Thus, access alone is insufficient, as individuals may own digital financial products yet remain functionally excluded due to limited knowledge, confidence, or enabling conditions. This perspective is supported by Ketaren (2026), who found that digital financial service use is often constrained by low literacy and limited trust in online platforms, particularly in developing contexts where digital exposure is uneven and concerns about fraud and data privacy persist. These barriers help explain the observed gap between product holding and usage scores. While respondents demonstrate access to digital financial products, their relatively lower usage suggests underutilization, consistent with OECD (2020), which notes that ownership does not necessarily lead to active use.

The findings contrast with prior studies indicating that higher financial literacy is associated with greater financial inclusion (Kakinuma, 2022; Lyons & Kass-Hanna, 2021; Morgan & Long, 2020). Despite respondents exhibiting high digital financial literacy, their relatively low DFS scores suggest a disconnect between literacy and inclusion, challenging the Financial Literacy Theory of Financial Inclusion (Ozili, 2025).

This disparity has important implications. First, reliance on access-based indicators may overestimate inclusion by overlooking behavioral and structural constraints. Second, underutilization may limit the benefits of digital finance—such as improved savings, risk management, and economic resilience—because they depend on active and informed use. Addressing this gap requires strengthening financial literacy and building trust in digital platforms (Aker & Mbiti, 2021). Financial education should move beyond awareness toward practical, skills-based training that enhances users' confidence in navigating digital systems, understanding costs, and protecting personal data. Simultaneously, institutions must ensure transparency, cybersecurity, and consumer protection to reinforce trust. Ultimately, meaningful digital financial inclusion requires not only access but also the capacity and confidence to use digital financial services effectively. Achieving this demands an integrated approach that combines infrastructure development, literacy enhancement, and trust-building measures to translate access into sustained financial well-being (Sarma & Pais, 2021).

Table 6 presents the respondents' level of digital financial inclusion based on their DFS scores. The results show that most respondents had a low level of digital financial inclusion (43.6%). This was followed by those with a very low level (28.5%) and those with a high level (24.7%). Meanwhile, only 3.2% of the respondents were classified as having a very high level of digital financial inclusion. Overall, the respondents obtained a mean score of 9.49 (SD = 4.87), interpreted as low digital financial inclusion. This suggests that, in general, the respondents had limited access to and use of digital financial services based on the OECD/INFE DFL Survey Instrument scoring.

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Table 6. *Distribution of the level of digital financial inclusion*

DFS Score	DFS Level	*n*	*%*	Overall		
				Mean	*SD*	Interpretation
0-6	Very Low	178	28.5	9.49	4.87	Low
7-12	Low	272	43.6			
13-18	High	154	24.7			
19-25	Very High	20	3.20			

The respondents' low level of digital financial inclusion is reflected in the mean DFS score of 9.49, which falls within the low category. Notably, 43.6% of participants were classified as low, and 28.5% as very low, indicating that more than two-thirds of the sample had limited engagement with digital financial services. This pattern is consistent with structural and behavioral challenges commonly observed in emerging markets such as the Philippines.

Studies across Southeast Asia have reported similarly modest levels of DFS adoption, often linked to infrastructure gaps, limited digital literacy, affordability constraints, and uneven internet access. For example, Antonio and Magante (2023) and the Tech For Good Institute (2025) emphasized that technological readiness and user capability strongly influence DFS uptake in developing economies. These findings support the present results and suggest that systemic barriers continue to limit participation in digital financial services.

National data further support these findings. Surveys show that as of 2021, around 68% of Filipino adults remained unbanked, with marked rural–urban disparities affecting access to formal and digital financial channels (Velez, 2025). The rural digital divide, characterized by weaker infrastructure, lower device ownership, and limited digital skills, further reduces the use of services such as e-wallets and mobile banking. Thus, although digital platforms continue to expand, structural inequalities still hinder meaningful inclusion.

The OECD/INFE toolkit provides additional context. Globally, average digital financial literacy scores are 53 out of 100, and only 29% of respondents reach proficiency thresholds (OECD, 2023). The small proportion of respondents classified as very high (3.2%) reflects this broader pattern and highlights the gap between access to digital tools and their effective use. Limited proficiency may restrict not only adoption but also continued and confident use of DFS.

Comparable findings from other developing contexts strengthen this interpretation. Tshuma et al. (2023), for instance, reported similarly low DFS engagement in Zimbabwe (32.4%) and attributed this to financial illiteracy, trust issues, and macroeconomic instability. These cross-country similarities suggest that low DFS scores are often shaped by interconnected barriers, including limited financial knowledge, concerns about data security and fraud, unstable regulatory environments, and weak consumer protection systems.

In the Philippine context, policy initiatives led by the Bangko Sentral ng Pilipinas (BSP) have aimed to expand digital payments and financial access. However, adoption rates for mobile transactions and e-money remain relatively modest compared with those of regional peers (Gantès et al., 2023). This suggests that policy expansion alone is not enough without parallel investments in digital infrastructure, financial education, and trust-building measures.

Relationship Between Socio-Demographic Profiles and Digital Financial Literacy and Inclusion Age

Table 7 presents the correlations between age and digital financial literacy and digital financial inclusion. Pearson correlation showed that age was positively but very weakly correlated with digital financial literacy ($r = .060$, $p = .134$), and this relationship was not statistically significant because the p-value exceeded the 0.05 significance level. This indicates that age is not associated with changes in digital financial literacy in this sample. Thus, the null hypothesis is not rejected. Likewise, age was very weakly and negatively correlated with digital financial inclusion ($r = -.051$, $p = .200$), but this relationship was also not statistically significant, indicating that age is not associated with changes in digital financial inclusion in this sample

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Table 7. *Correlation: Age × Digital Financial Literacy and Inclusion*

Independent	Dependent	Pearson's *r*	*p*-value	Decision	Interpretation
Age	Digital Financial Literacy	.060	.134	Fail to reject H_0	Not significant
	Digital Financial Inclusion	-.051	.200	Fail to reject H_0	Not significant

These findings are consistent with Irman and Fadrul (2020), who reported that age does not significantly influence financial literacy. Although some studies suggest that age may shape digital financial outcomes, with younger individuals often exhibiting higher digital financial literacy (Pattnayak & Sahoo, 2024), the present results suggest that such generational differences may not hold across all contexts. Dewi (2022), Nandru et al. (2021), and NP et al. (2022b) noted that millennials, especially in urban areas, tend to engage more with digital financial services because of greater technological fluency and better access to digital infrastructure. However, these differences appear to reflect variations in exposure and access rather than the direct effect of age.

Recent studies further suggest that digital capability, education, and access to financial technology are stronger predictors of digital financial literacy and inclusion than chronological age. Kamble et al. (2024) found that digital financial literacy improves financial well-being, while the direct effect of age weakens when socio-economic and educational factors are controlled. Similarly, Amnas et al. (2024) showed that digital financial literacy mediates the relationship between fintech adoption and financial inclusion, while demographic variables, including age, have limited direct influence. Tulcanaza-Prieto et al. (2025) also found that digital literacy moderates the relationship between financial literacy and inclusion outcomes, highlighting the importance of skills over age cohorts.

Evidence from diverse settings also supports the limited explanatory power of age once digital competencies are considered. Bongomin and Malinga (2025) found that digital literacy significantly improves financial inclusion in rural areas, while age does not consistently predict inclusion when digital skills are taken into account. Liu et al. (2024) reported that digital financial inclusion reduces household financial vulnerability across demographic groups, with age showing mainly indirect effects. Systematic reviews by Rehman and Mia (2024) and Yadav and Banerji (2024) likewise concluded that age is often examined, but its influence is inconsistent and frequently mediated by education, income, and access to technology.

The finding that age does not significantly influence digital financial literacy and inclusion has important theoretical and practical implications. Theoretically, it supports technology acceptance models that emphasize capability, perceived usefulness, and digital competence over demographic characteristics. In practice, the results suggest that policymakers and financial institutions should focus on improving digital infrastructure, strengthening financial and technological education, and developing inclusive fintech platforms for users at different skill levels. Rather than relying mainly on age-based interventions, broader digital literacy efforts and equitable access to technology may be more effective in promoting sustainable financial inclusion. Overall, the findings point to a more capability-driven digital financial ecosystem in which access, skills, and engagement matter more than age differences.

Gender

Table 8 shows that the correlation between gender and digital financial literacy, rpb = .125, p = .002, was positive, very weak, but statistically significant because the p-value was below the .05 significance level. This suggests that, in this sample, being female (1) was associated with higher digital financial literacy than being male. Similarly, the correlation between gender and digital financial inclusion, rpb = −.079, p = .048, was very weak but statistically significant, indicating that being female (1) was associated with lower digital financial inclusion than being male in this sample.

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Table 8. *Correlation: Gender × Digital Financial Literacy and Inclusion*

Independent	Dependent	r_{pb}	*p*-value	Decision	Interpretation
Gender	Digital Financial Literacy	.125	.002	Reject H_0	Significant
	Digital Financial Inclusion	-.079	.048	Reject H_0	Significant

Gender differences in financial literacy have been widely reported in the literature. Many studies suggest that men have higher digital financial literacy than women, which contrasts with the present findings. In India, males typically show higher levels of digital financial literacy than females. Buhlal et al. (2024) explained that in rural areas, women are often disadvantaged because of sociocultural barriers and limited access to education and technology. NP et al. (2022b) reported similar findings, showing that many female respondents fell under the poor category of digital financial literacy. Dewi (2022) found somewhat similar results, noting that males were more knowledgeable than females in solving financial problems. However, the same study also reported that females had higher financial skills scores than males. In contrast, Antonio-Anderson et al. (2020) found that women, particularly adult Mexican women, had higher financial literacy levels than men, which is consistent with the present study.

The present results also contradict some existing literature. Pattnayak and Sahoo (2024) reported that gender had only minimal influence on digital financial literacy. Their study suggested that literacy levels in digital transaction platforms did not differ by gender in either rural or urban areas, indicating that digital financial literacy may be gender-neutral. Similarly, Irman and Fadrul (2020) found no association between gender and financial literacy.

Educational Attainment

Table 9 shows that the correlation between educational attainment and digital financial literacy was very weak and not statistically significant, $\rho = .077$, $p = .054$, since the p-value exceeded the .05 significance level. This suggests that educational attainment was not associated with digital financial literacy in this sample. In contrast, the correlation between educational attainment and digital financial inclusion was weak, positive, and statistically significant ($\rho = .218$, $p < .001$), indicating that higher educational attainment was associated with greater digital financial inclusion.

Table 9. *Correlation: Educational Attainment × Digital Financial Literacy and Inclusion*

Independent	Dependent	rho (ρ)	*p*-value	Decision	Interpretation
Educational Attainment	Digital Financial Literacy	.077	.054	Fail to reject H_0	Not significant
	Digital Financial Inclusion	.218	< .001	Reject H_0	Significant

The finding that educational attainment was not significantly related to digital financial literacy (DFL) but was significantly related to digital financial inclusion (DFI) is consistent with emerging evidence that distinguishes financial knowledge from actual participation in the financial system. While traditional financial literacy has often been linked to formal education, recent studies suggest that digital financial literacy depends more on technological exposure, digital ecosystems, and experiential learning than on schooling alone (Rehman & Mia, 2024). For example, Adel (2024) found that digital literacy and technology adoption, rather than years of education, were stronger predictors of effective use of digital financial tools. Likewise, Abdallah et al. (2025) reported that demographic factors, including education, do not consistently lead to higher digital financial capability when technology familiarity is controlled. This may explain why respondents' DFL did not differ significantly by educational attainment.

By contrast, the significant relationship between educational attainment and digital financial inclusion is well supported in the literature. Higher levels of education are associated with greater access to formal financial services, stronger trust in financial institutions, and higher engagement with digital platforms (Amnas et al., 2024; Hashemizadeh et al., 2023). Education also improves cognitive skills, income potential, and financial awareness, which help reduce barriers to adopting digital financial services (Oanh & Dinh, 2024). Kamble et al. (2024) further showed that financial inclusion and well-being tend to improve as individuals' socioeconomic and educational profiles strengthen. Thus, education

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appears to serve as a structural enabler of participation in digital financial systems, even if it does not directly determine digital financial literacy.

The difference between the DFL and DFI results suggests that digital financial ecosystems may be making knowledge more accessible through intuitive applications, embedded tutorials, and mobile-based tools that reduce reliance on formal education. FinTech platforms increasingly use user-friendly interfaces and automated decision aids that can offset lower educational attainment (Amnas et al., 2024). However, structural advantages linked to education, such as income stability, formal employment, and access to digital infrastructure, still shape financial inclusion (Hashemizadeh et al., 2023). Thus, education remains an important driver of access and use, even when it is not a direct determinant of digital financial knowledge.

These findings suggest that policymakers should not assume that digital financial literacy automatically improves with higher formal education. Targeted digital skills training, community-based workshops, and mobile-integrated microlearning tools may be more effective than traditional classroom-based financial education (Rehman & Mia, 2024). At the same time, improving educational attainment remains important for expanding digital financial inclusion because it strengthens structural readiness for financial participation. Policymakers should therefore adopt a dual strategy: strengthen formal education to widen inclusion while also implementing technology-centered literacy interventions that reach people across all educational levels. This approach may better support equitable and sustainable digital financial development.

Employment Status

Table 10 presents the relationship between employment status and digital financial literacy and inclusion. The analysis showed a statistically significant difference in digital financial literacy across employment status, $F(2) = 5.901$, $p = .003$, with Welch correction applied due to unequal variances across groups. Since the p-value is below 0.05, the null hypothesis is rejected. The effect size was small ($\eta^2 = .021$), indicating that employment status explains only a small portion of the variance in digital financial literacy. Likewise, the difference in digital financial inclusion across employment status was statistically significant, $F(2) = 12.078$, $p < .001$, with a small effect size ($\eta^2 = .037$). This suggests that employment status also explains only a small portion of the variance in digital financial inclusion.

Table 10. *Correlation: Employment Status × Digital Financial Literacy and Inclusion*

Independent	Dependent	F	df	p-value	η^2	Decision	Interpretation
Employment Status	Digital Financial Literacy	5.90[a]	2	.003[a]	.021	Reject H_0	Significant
	Digital Financial Inclusion	12.07	2	< .001	.037	Reject H_0	Significant

Note. Effect size (η^2): 0.01 = small, 0.06 = medium, and 0.14 = large (Cohen, 1988).
a. Welch correction was applied due to unequal variances across groups.

Employment status is increasingly recognized as an important factor in digital financial literacy (DFL) and digital financial inclusion (DFI). Individuals who are formally employed or in stable work environments usually have greater access to digital financial tools, learning opportunities, and professional networks that support the development of financial knowledge. Recent studies show that employment not only provides the means to engage with digital platforms but also helps build the skills needed to use digital financial services effectively. Zaimovic et al. (2025) found that employment status is positively associated with both the adoption of digital banking solutions and broader financial inclusion, with this relationship mediated by digital financial attitudes and behaviors.

Studies on demographic factors further support the role of employment in promoting financial literacy and inclusion. Widyastuti et al. (2024), in a study conducted in Indonesia, found that occupation, along with gender, age, and income, significantly influences engagement with digital financial services and, in turn, inclusion outcomes. Similarly, studies in developing economies show that unemployed and informally employed populations often face structural barriers, such as limited access to digital tools, which hinder financial literacy and inclusion (Hasan et al., 2023; George & Pathanamthitta, 2020).

Empirical evidence also suggests that employment improves not only financial knowledge but also the quality of financial decision-making through the use of digital tools. Ma and Cao (2025) reported

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that higher DFL among employed urban residents in China is linked to better employment quality, suggesting a feedback loop in which employment supports literacy, which then strengthens economic empowerment. Likewise, Kanungo (2025) found in India that DFL mediates the relationship between employment and digital financial inclusion, highlighting the role of occupation in reducing gaps in financial access.

Overall, the literature shows that employment status is not only a socioeconomic indicator but also a functional determinant of digital financial literacy and inclusion. Employed individuals are generally in a better position to develop the knowledge and skills needed to navigate digital financial systems, which supports both personal financial well-being and broader economic inclusion. Thus, policies and programs that aim to improve financial literacy should address employment disparities, especially among vulnerable and informal labor groups, to promote more equitable digital financial inclusion (Tay et al., 2022; Okello Candiya Bongomin & Akol Malinga, 2025).

Monthly Income

Table 11 presents the correlation of monthly income with digital financial literacy and digital financial inclusion. Spearman's rank correlation showed a positive, very weak, but statistically significant relationship between monthly income and digital financial literacy ($\rho = .147$, $p < .001$), since the p-value is lower than the 0.05 significance level. This indicates that higher monthly income is associated with higher digital financial literacy in this sample. Likewise, monthly income was positively and significantly correlated with digital financial inclusion ($\rho = .231$, $p < .001$). The relationship was weak, suggesting that higher monthly income is also associated with higher digital financial inclusion in this sample.

Table 11. *Correlation: Monthly Income × Digital Financial Literacy and Inclusion*

Independent	Dependent	rho (ρ)	*p*-value	Decision	Interpretation
Monthly Income	Digital Financial Literacy	.147	< .001	Reject H_0	Significant
	Digital Financial Inclusion	.231	< .001	Reject H_0	Significant

Recent studies show that monthly income is an important determinant of both digital financial literacy and digital financial inclusion. Individuals with higher income are more likely to have the devices, internet connectivity, and financial stability needed to use digital financial tools such as mobile banking and fintech platforms. Evidence from India, Ecuador, Uganda, and SADC countries suggests that income not only improves access to financial technology but also strengthens familiarity, confidence, and competence in using digital financial services (Bhat et al., 2025; Tulcanaza-Prieto et al., 2025; Bongomin & Malinga, 2025).

Income also plays a key role in promoting digital financial inclusion. Higher-income individuals and households are more likely to adopt digital financial services and translate literacy into actual use, thereby supporting financial well-being and economic growth (Kamble et al., 2024; Zhang et al., 2025). In contrast, lower-income groups often face barriers such as limited affordability, reduced access to technology, and lower trust in digital financial systems, which restrict their participation in the digital economy (Jena, 2025; Al-Okaily et al., 2023).

Geographical Location

Table 12 presents the relationship between geographical location and digital financial literacy and inclusion. The analysis showed that differences in digital financial literacy across geographical location, $H(17) = 21.126$, $p = .221$, were not statistically significant because the p-value was greater than the .05 significance level. The $\varepsilon^2 = .007$ indicates a very small effect size, suggesting that geographical location explains only a minimal portion of the variance in digital financial literacy. Thus, the null hypothesis was not rejected. In contrast, differences in digital financial inclusion across geographical location, $H(17) = 34.091$, $p = .008$, were statistically significant because the p-value was less than .05. The $\varepsilon^2 = .028$ indicates a small effect size, suggesting that geographical location explains a small portion of the variance in digital financial inclusion. Thus, the null hypothesis was rejected.

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Table 12. *Correlation: Geographical Location × Digital Financial Literacy and Inclusion*

Independent	Dependent	*H*	df	*p*-value	ε²	Decision	Interpretation
Geographical Location	Digital Financial Literacy	21.126	17	.221	.007	Fail to reject H_0	Not significant
	Digital Financial Inclusion	34.091	17	.008	.028	Reject H_0	Significant

Note. Effect size (ε²): 0.01 = small, 0.06 = medium, and 0.14 = large (Cohen, 1988).

Recent studies suggest that geographic differences in digital financial literacy tend to weaken when individual characteristics are controlled. Widyastuti et al. (2024) found that digital financial literacy is better explained by education, age, and digital exposure than by regional residence. Similarly, Kamble et al. (2024) reported that although digital financial literacy significantly contributes to financial well-being, geographic indicators lose explanatory power once socioeconomic factors are considered. Amnas et al. (2024) further showed that digital financial literacy mediates the relationship between FinTech adoption and financial inclusion, suggesting that literacy is more strongly shaped by digital engagement than by physical location. Al-Okaily et al. (2023) likewise emphasized financial awareness and behavioral readiness over structural geography in predicting digital finance acceptance.

These studies support the findings of the present study. As digital resources become more accessible through online information, mobile connectivity, and digital platforms, opportunities to acquire financial knowledge also expand. As a result, differences in digital financial literacy across locations may lessen, especially in areas with wider internet access.

In contrast, the significant geographic variation in digital financial inclusion found in this study is supported by prior research. Wang and Zhang (2025) reported regional inequalities in digital financial inclusion in China due to differences in infrastructure and economic capacity. Becha et al. (2025) also found geographic variation in the contribution of digital financial inclusion to regional growth, highlighting its link to local development conditions. Cross-national studies further confirm these disparities. Song et al. (2024) identified geographic clustering of financial inclusion across Belt and Road countries, while Adel (2024) found that digital infrastructure shapes financial inclusion outcomes across Africa, Asia, and Latin America. Hashemizadeh et al. (2023) similarly documented differences in digital financial inclusion across OECD countries based on national digital readiness and financial development.

Challenges Encountered in Digital Financial Literacy and Inclusion

The challenges encountered by the respondents in digital financial literacy and inclusion were identified using a frequency-percentage distribution, based on data from a total of 624 respondents. Since the respondents were allowed to select multiple response, the total frequency and percentage exceeds total number of respondents.

Table 13 presents the challenges encountered in digital financial literacy. The results show that the most commonly identified challenge was limited awareness and understanding of digital financial products and services (64.7%). This was followed by distrust in digital financial infrastructure (52.9%), limited knowledge in recognizing and preventing digital fraud and scams (49.7%), limited or ineffective digital financial literacy education (45.7%), and difficulty navigating fintech platforms (45.4%). Only 33.2% of the respondents identified socio-demographic disparities in digital access and proficiency as a challenge.

Table 13. *Challenges encountered in digital financial literacy (n = 624)*

Challenges	*n*	%	Rank
a. Limited awareness and understanding of digital financial products and services	404	64.7	1
b. Challenges in navigating fintech platforms	283	45.4	5
c. Distrust in digital financial infrastructure	330	52.9	2
d. Limited knowledge in recognizing and mitigating digital fraud and scams	310	49.7	3
e. Disparities in digital access and proficiency based on socio-demographic factors	207	33.2	6
f. Limited or ineffective digital financial literacy education	285	45.7	4

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Note. Multiple Response

The findings suggest that limited awareness and understanding of digital financial products and services remain the most significant challenge. This highlights the importance of digital financial literacy, which combines financial knowledge and digital skills needed to use digital financial services effectively (Pak et al., 2026). Based on the Unified Theory of Acceptance and Use of Technology (UTAUT), limited awareness reduces performance expectancy because users are less likely to see digital financial tools as useful when they do not understand how they work. It also lowers effort expectancy, as unfamiliarity with digital platforms makes them seem harder to use. When technological changes outpace users' ability to learn, confusion and hesitation may reduce engagement with digital financial services (Khatri et al., 2025).

Distrust in digital financial infrastructure was also a major concern. Studies show that risks related to data security, privacy, and system reliability weaken trust in digital platforms (Banna et al., 2025). In the UTAUT framework, this weakens the facilitating conditions because users may feel that support systems are insufficient to protect their financial activities. Related to this is limited knowledge of digital fraud and scams, which increases the vulnerability of users with lower financial and digital literacy (Umar & Dalimunthe, 2025). Ozili's (2025) Financial Literacy Theory of Financial Inclusion supports this view, emphasizing that without basic literacy, individuals cannot properly assess risks or participate confidently in digital financial services.

Limited or ineffective financial literacy education was also identified as an important challenge. Weak educational support can slow progress toward financial inclusion because it does not adequately prepare users to function in digital financial environments (OECD, 2023). From the UTAUT perspective, poor educational support lowers effort expectancy and behavioral intention, as users may lack the knowledge and confidence needed for adoption. Similarly, Ozili's (2025) theory highlights the need for continuous and structured learning to help individuals make informed financial decisions.

Difficulty in navigating fintech platforms also emerged as a notable challenge. Complicated interfaces and limited guidance can discourage use, especially among individuals with lower digital skills (Pak et al., 2026). In UTAUT terms, poor usability lowers effort expectancy and may prevent continued use. This suggests the need for simpler platform design and more user-friendly support systems.

Although only 33.2% of respondents identified socio-demographic disparities in digital access and proficiency as a challenge, these differences still matter. The findings suggest that more immediate barriers relate to trust, literacy, and usability rather than to access alone. However, reducing socio-demographic inequalities remains important to ensure inclusive participation in digital financial services (OECD, 2023).

Addressing these concerns requires more than expanding technology infrastructure. Guided by the UTAUT framework and Ozili's Financial Literacy Theory of Financial Inclusion, efforts should focus on strengthening educational programs, building trust, and designing user-centered platforms. These are essential for improving confidence, encouraging participation, and supporting the inclusive use of digital financial services.

Table 14 presents the challenges encountered in digital financial inclusion. The most commonly reported challenge was lack of trust in fintech platforms due to security concerns (66.2%). This was followed by limited access to digital devices and reliable internet connection (49.4%), increased costs associated with digital transactions (42.8%), low digital financial literacy (35.7%), regulatory barriers such as stringent KYC (Know Your Customer) requirements and adaptive regulations (33.0%), and income gaps in the use of digital financial services (30.6%).

Table 14. *Challenges encountered in digital financial inclusion (n = 624)*

Challenges	*n*	%	Rank
a. Access to digital devices and dependable internet connection	308	49.4	2
b. Lack of trust in fintech platforms due to security concerns	413	66.2	1
c. Increased costs associated with digital transactions	267	42.8	3
d. Low digital financial literacy	223	35.7	4
e. Income gaps in digital financial service usage	191	30.6	6

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f.	Regulatory barriers such as stringent KYC (Know Your Customer) policies and adaptive regulations	206	33.0	5

Note. Multiple Response

The findings show that digital financial inclusion is affected by several interconnected barriers. The most pressing challenge was lack of trust in fintech platforms due to security concerns, reported by 66.2% of respondents. This is consistent with previous studies showing that fear of fraud, data breaches, and cyberattacks discourages the use of digital financial services. In emerging markets, where institutional safeguards may be seen as weak, privacy and security concerns can reduce user confidence. Mgiba and Shukla (2024) found that privacy concerns and perceived invasiveness negatively affect users' views of usefulness and their intention to adopt mobile banking technologies in an emerging economy. Likewise, Ha et al. (2025) emphasized that strong and context-specific cybersecurity regulations can support financial stability. These findings suggest that a regulatory environment that promotes innovation while ensuring security is important for digital financial inclusion.

From the perspective of the Unified Theory of Acceptance and Use of Technology (UTAUT), trust and security concerns affect performance expectancy and facilitating conditions. When users see fintech platforms as unsafe, they are less likely to believe these technologies will improve their financial activities. Weak cybersecurity protections and unclear regulations may also reduce users' sense of support and protection. Thus, addressing security concerns is essential not only for reducing risk but also for encouraging adoption and continued use of digital financial services.

Another major challenge was limited access to digital devices and reliable internet connection, identified by 49.4% of respondents. Studies show that digital financial inclusion remains limited when people do not have the tools or infrastructure needed to access digital systems. Aziz and Naima (2021) found that although digital financial services were available in rural Bangladesh, they were underused because of poor connectivity and limited digital infrastructure. Similarly, Cnaan et al. (2023) observed that rural Indian communities declared "cashless" still showed low engagement with digital banking due to poor online access and limited digital literacy. Research summarized in the International Journal on Science and Technology (2025) also noted that many underserved groups in emerging markets face weak internet coverage and unaffordable connectivity. In UTAUT, this relates to facilitating conditions. Even when users see digital financial services as useful, adoption is unlikely without sufficient infrastructure such as devices, internet access, and system compatibility.

The increased costs associated with digital transactions, cited by 42.8% of respondents, were also a major barrier. High transaction fees can discourage low-income users from regularly using mobile money and digital payment systems. Demirgüç-Kunt et al. (2018) noted that high remittance and transaction costs place a heavier burden on poorer populations, reducing affordability and frequency of use. Ozili (2021) further argued that while fintech regulations help ensure stability and consumer protection, compliance costs are often passed on to users through higher service fees. Within the UTAUT framework, high costs may reduce performance expectancy because users may feel that the benefits of digital financial services do not outweigh the expenses.

Low digital financial literacy, identified by 35.7% of respondents, also limits adoption. People with limited knowledge of digital financial products are less likely to trust and use these services, especially where learning resources are scarce. Yang et al. (2026) found that higher digital financial literacy increases the likelihood of adopting and benefiting from mobile banking and online financial products, as it reduces information barriers and improves user confidence (Pak, 2026). Similarly, Yang et al. (2023) showed that financial literacy significantly increases the use of digital finance services among Chinese households, especially among disadvantaged groups. In UTAUT, digital financial literacy is linked to effort expectancy and facilitating conditions because it helps users see digital services as easier to use and strengthens their ability to make use of available systems.

Regulatory barriers, including stringent KYC requirements, were identified by 33.0% of respondents. Although KYC regulations are important for fraud prevention and compliance, strict documentation requirements may exclude marginalized groups. Demirgüç-Kunt et al. (2018) highlighted

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that complex identification procedures remain a major barrier to account ownership among low-income populations. Likewise, Ozili and Arun (2020) argued that rigid compliance systems create entry barriers for people who lack formal identification. Kohli et al. (2023) stressed the need for a balanced, risk-based regulatory approach that promotes both security and accessibility. In UTAUT terms, strict KYC requirements weaken facilitating conditions by creating institutional barriers to access.

Lastly, income gaps, reported by 30.6% of respondents, reflect broader socioeconomic inequalities that limit digital financial inclusion. Economic disadvantage affects access to devices, internet services, and reliable connectivity. Caron (2022) found that wealth, education, and unequal digital infrastructure strongly influence access to digital financial services, especially among women in low-income regions. Hunter (2025) likewise showed that low-income households in low- and middle-income countries continue to face access barriers because of high costs and weak infrastructure. In UTAUT, income disparities affect facilitating conditions and may also reduce performance expectancy, as financially constrained individuals may see digital financial services as inaccessible or too costly.

Implications for Policy

The following policy insights highlight the need for inclusive regulatory frameworks, stronger digital infrastructure, and targeted financial education to help vulnerable groups safely access and use digital financial services. These findings support collaboration, consumer protection, and evidence-based policies for a safe and accessible digital financial ecosystem.

Prioritize Gender-Responsive Digital Financial Inclusion Frameworks

Gender gaps in digital financial access and use persist despite gains in digital financial literacy. Women are still less likely than men to own mobile phones, access the internet, or use digital financial services, especially in low- and middle-income countries (World Bank, 2022). Although account ownership has improved globally, gaps in digital usage and account activity remain, particularly among poor and rural populations (World Bank, 2022). Cainglet et al. (2024) emphasized the importance of gender-responsive financial literacy programs and inclusive policies that address the needs of people regardless of sexual orientation, gender identity, or sex characteristics. Family, schools, and media can help promote this approach. A gender-responsive framework should also include sex-disaggregated data, targeted interventions, and accountability mechanisms. The Alliance for Financial Inclusion (2021) stressed that sex-disaggregated reporting helps policymakers identify usage gaps and design better interventions. Without such data, policies may fail to address the specific barriers women face. Regulatory frameworks should also include consumer protection, access to digital identification, and simplified onboarding procedures that reflect women's socioeconomic realities. Inclusive policies, together with gender-specific initiatives, can significantly improve women's participation in digital finance (Demirgüç-Kunt et al., 2022).

Integrate Digital Financial Literacy into Social Protection and Local Governance Systems

Digital financial literacy is important, but it is more effective when integrated into broader public systems. Many social protection programs, such as cash transfers, unemployment support, and emergency subsidies, now use digital channels. Integrating digital financial education into these systems can improve beneficiaries' confidence and long-term use of digital platforms (United Nations Development Programme, 2021). Local governments also play an important role. By helping with onboarding, grievance redress, and hands-on demonstrations, they can reduce fear and confusion around digital tools. Practical and community-based digital financial education is more effective than stand-alone training in improving retention and long-term behavior change (Organisation for Economic Co-operation and Development, 2022). This approach is especially important where digital literacy appears high but actual usage remains low due to limited trust or perceived complexity. Linking financial education to real-world transactions in social protection programs can help translate knowledge into digital engagement.

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Strengthen Rural Digital Financial Infrastructure Through Public–Private Partnerships

Geographic barriers remain a major challenge to digital financial inclusion. Rural communities often face poor internet connectivity, limited agent networks, and higher transaction costs. Rural broadband access still lags behind that in urban areas, limiting the use of digital financial services (International Telecommunication Union, 2023). Public–private partnerships are essential for expanding last-mile connectivity, improving mobile network coverage, and building efficient payment systems. Investments in digital public infrastructure, such as digital identification and real-time payment systems, have been shown to improve financial inclusion (World Bank, 2022). Without these investments, gains in digital financial literacy may not lead to equitable access. Rural agent networks should also be supported to ensure reliable service and proper liquidity management. Stronger infrastructure helps reduce systemic barriers and creates the conditions needed for an inclusive digital financial ecosystem.

Implications for Business Practices

Business strategies should strengthen cybersecurity and consumer protection, improve user-centered design, and integrate financial education into digital platforms. These measures can build trust, increase engagement, and promote digital financial inclusion while helping consumers become more digitally and financially capable.

Enhancing Trust through Cybersecurity and Consumer Protection Mechanisms

Trust is a key factor in sustained digital financial engagement. Even when users have adequate digital knowledge, concerns about fraud, scams, and data privacy may discourage use. The Bank for International Settlements (2021) emphasized that strong cybersecurity standards and transparent consumer protection frameworks are essential for digital financial stability and trust-building. Clear dispute-resolution processes, transaction transparency, and proactive fraud detection can reduce perceived risk. Public awareness campaigns on consumer rights can further strengthen confidence in digital platforms. These trust-building measures complement literacy efforts by addressing psychological and institutional barriers to adoption.

Promoting Human-Centered Product Design to Address Accessibility Barriers

Digital financial services should reflect the everyday realities of users. Human-centered design involves creating simple and intuitive interfaces, offering multilingual options, ensuring functionality in low-connectivity areas, and providing clear onboarding processes. According to the Consultative Group to Assist the Poor (2020), financial products developed with target users tend to achieve higher adoption and retention rates. However, many accessibility barriers remain, including complex interfaces, strict authentication procedures, and limited support for persons with disabilities. Designing services that account for different literacy levels and varying levels of technological familiarity can improve usability across diverse populations. By grounding innovation in user experience research, fintech firms can make digital literacy more practical and achievable.

Developing Inclusive Pricing Strategies to Improve Affordability

Affordability remains a major concern for low-income groups. High transaction fees, data costs, and minimum balance requirements can discourage regular use. The World Economic Forum (2022) noted that tiered pricing structures, low-value transaction fee waivers, and interoperable payment systems can improve affordability and increase usage among underserved populations. Inclusive pricing models help balance financial sustainability and social impact. By lowering cost barriers and making fees more transparent, financial institutions can promote equitable access while expanding their customer base. Pricing strategies should therefore reflect the economic realities of diverse consumers.

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CONCLUSION

Overall, the study shows that while the respondents—mostly young, female, educated, low-income adults from Legazpi City—have high digital financial literacy, this does not necessarily translate into high digital financial inclusion. A clear gap remains between knowledge and actual use of digital financial services, shaped by gender, education, income, and geographic location rather than age. Limited awareness, weak trust in digital systems, fraud concerns, access barriers, transaction costs, and regulatory issues continue to restrict inclusion. These findings suggest that improving digital financial inclusion requires not only stronger digital financial literacy but also consumer-centered policies and business practices that address real barriers to access, trust, affordability, and usability. Future research may use a larger and more diverse sample and examine other factors, such as digital infrastructure, internet access, technology skills, financial education, government support, and fintech innovation, to better explain how digital financial literacy can lead to more equitable digital financial inclusion.

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