

Financial Literacy, Digital Financial Literacy, and Financial Inclusion: An Empirical Analysis

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ABSTRACT

This study examines the relationship between financial literacy, digital financial literacy, and financial inclusion in rural Punjab. Primary data were collected from 500 respondents across three districts using a multistage random sampling technique. For analytical purposes, dimension indices were constructed for all three variables. The study evaluates the influence of gender, education, and employment status on financial literacy, digital financial literacy, and financial inclusion. The findings reveal that financial literacy plays a critical role in enhancing both digital financial literacy and financial inclusion. Significant gender disparities are observed across all dimensions. Furthermore, the results underscore the importance of improving educational attainment and expanding employment opportunities to achieve higher levels of financial and digital literacy, as well as financial inclusion. The study suggests that practical and skill-oriented education can serve as an effective strategy to enhance educational outcomes and promote employability among both men and women.

Keywords: Financial Literacy, Financial Inclusion, Employability, Gender, Education.

Introduction

India has emerged as one of the rapidly growing major economies in the world. In terms of nominal GDP, it ranks among the top global economies, following the United States, China, and Germany. The **Indian economy has a significant growth potential** driven by its demographic dividend, large size of market, rapid digitalisation, and ongoing structural reforms. Despite these developments, India continues to face a critical challenge to achieve inclusive growth. A large segment of the population, particularly rural people, marginalised communities and women, *remains less participative in the growth process.* As a result, they do not get the full benefits of economic progress. They still lack adequate availability of basic financial services such as savings accounts, credit and insurance. Issues like poverty, financial illiteracy, digital divide, and insufficient institutional infrastructure hinder inclusive and equitable economic development.

In this context, financial inclusion has become a key policy objective for developing economies, including India. It plays a crucial role in reducing poverty, narrowing socio-economic disparities, and strengthening overall economic stability. The Government of India has undertaken several initiatives to enhance financial inclusion by improving the access, affordability, and awareness of financial services.

The methods to increase access to financial services include strengthening banking infrastructure and promoting digital financial platforms, such as online banking and the Unified Payments Interface (UPI). Schemes like Pradhan Mantri Jan Dhan Yojana have significantly increased the number of bank account holders. Affordability has been addressed through measures such as zero-balance

accounts and low-cost insurance schemes. Additionally, access to credit has been improved through collateral-free lending initiatives and subsidised interest rates. The government and its associated institutions have been promoting financial awareness by disseminating information on financial schemes, running financial literacy campaigns, and launching digital training initiatives. These efforts aim to empower individuals to use financial services effectively and to actively participate in economic development. Recently, the Reserve Bank of India has introduced the National Strategy for Financial Inclusion (2025-2030), based on five key pillars, known as Panch-Jyoti. This strategy emphasises different aspects of access, usage, quality, financial literacy and consumer protection to achieve inclusive and sustainable financial development.

Financial inclusion is significantly determined by the level of financial literacy and digital financial literacy. A financially literate individual develops a better understanding of financial concepts, remains aware of financial opportunities, makes sound financial decisions and can also easily adapt to digitalisation. Studies of developed and emerging economies have revealed a crucial role of financial literacy in the use of digital financial tools, both in rural and urban areas (Kaul & Mathur, 2017; Basar et al., 2025). The digital financial literacy provides the skills to use digital platforms, which have become an integral part of the modern financial system. Together, these forms of literacy enhance access to and usage of financial services, thereby playing a crucial role in deepening financial inclusion. Studies have shown that financial literacy significantly affects the access, usage, and quality dimensions of financial inclusion (Berry & Chandan, 2019; Chatterjee & Das, 2019; Reddy et al., 2025), whereas digital financial literacy promotes digital financial inclusion, reduces economic and social inequalities, and supports financial well-being (Gumilar et al., 2024; Choung et al., 2023). Digital financial literacy focuses on improving digital awareness, skills and attitude that play a significant role in enhancing financial inclusion (Ozili, 2018; Azeez & Akhtar, 2021). However, significant gender differences prevail in the level of financial and digital literacy, with women's limited financial involvement (Minhas, 2017; Saini, 2019). Various studies have reported that education and employment opportunities are key factors in improving financial awareness and the use of financial technologies (Azeez & Akhtar, 2021; RaviKumar et al., 2022). The primary objective of this study is to analyze the relationship between financial literacy, digital financial literacy and financial inclusion. The study also explores the role of gender, education and level of employment in enhancing the level of financial literacy, digital financial literacy and financial inclusion.

Research Methodology

This is a primary data-based study of rural areas of Punjab state. Data was collected from 500 respondents in the year 2021-22 using a multistage proportional random sampling method. Three districts of Punjab, Amritsar, Mansa and Mohali, were selected for the purpose of the study. A structured questionnaire covering different dimensions of all the variables was developed, and data were collected through personal interviews. Financial Literacy (FL), Digital Financial Literacy (DFL) and Financial Inclusion (FI) indices were developed. For normalising these three different indexes, dimension indexes were formulated with values ranging from 0 and 1. Dimension index scores were further used to form three categories of all these variables including limited, moderate and advanced levels of achievements. Karl Pearson coefficient of correlation is calculated to find out the mutual relationship among these variables.

Results and Discussion

Primary data was collected from almost equal number of male and female respondents. The education level of the respondents revealed that 68% were educated up to senior secondary level. 10% of the respondents were illiterate, however 22% were at least graduates. 45% of the respondents of this study were unemployed. 55% of respondents were engaged in agricultural, business, and service sector activities.

Level of Financial Literacy, Digital Financial Literacy and Financial Inclusion

Dimension Index Scores were used to determine the number of respondents across FL, DFL, and FI categories. The scores were divided equally among three categories, indicating limited, moderate, and advanced levels of literacy and inclusion. The results are presented in Table 1.

Table 1: Level of FL, DFL and FI as per Dimension Index Score

Level of Achievement	Number and Percentage of Respondents		
	FL	DFL	FI
Limited	90 (18)	169 (33.8)	223 (44.6)
Moderate	342 (68.4)	223 (44.6)	204 (40.8)
Advanced	68 (13.6)	108 (21.6)	73 (14.6)

Source: Primary Data

Table 1 reveals that 18%, 33.8%, and 44.6% of the total respondents are in the lowest categories of the FL, DFL, and FI indexes, respectively. In the FL and DFL indexes, the largest proportions of respondents are in the moderate category, i.e., 68.4% and 44.6%, respectively. A very limited number of respondents have attained high scores to approach the advanced categories of all indexes.

Figure 1 represents the trend lines for all three variables over different score categories. The peak in all the indices is visible at the moderate level. The percentage of financially literate respondents, i.e. 68.4% is highest at this peak, followed by DFL (44.6%) and FI (40.8%) respondents. 21.6%, 14.6%, and 13.6% of the respondents have attained an advanced level in DFL, FI, and FL, respectively. Overall, the figure shows that the level of financial inclusion is lowest compared to the other two variables.

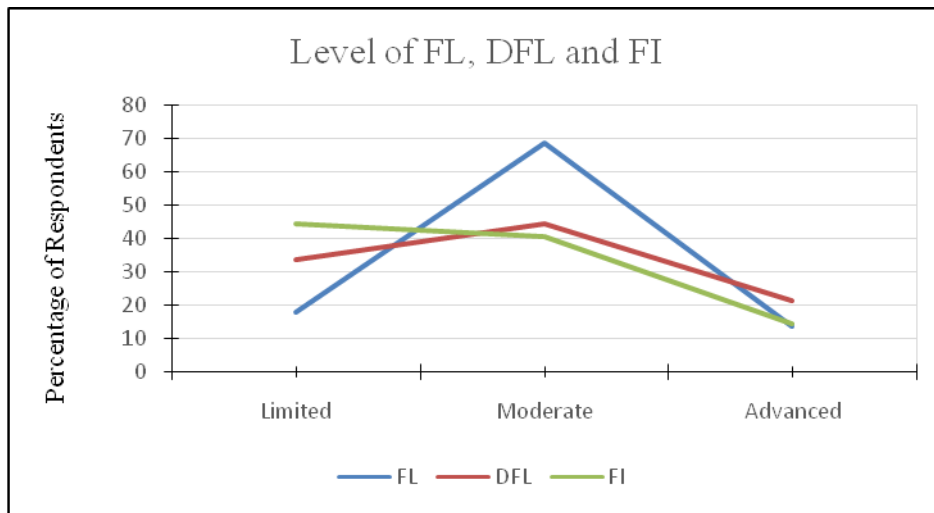


Figure 1: Level of FL,DFL and FI

Relationship of FL with DFL and FI

The relationship between financial literacy, digital financial literacy, and financial inclusion is explored using dimension index scores, and the results are presented in Table 2. Perusal of the table revealed that 18% of the total respondents are limited financially literate and out of these respondents, 90% are limited digitally financial literate and 95.6% are limited financially included. The majority of respondents, i.e., 68.4%, are moderately financially literate. Maximum number of these moderate financially literate respondents are also in the moderate category of digital literacy and financial inclusion. However, 39.2% and 25.4% of the moderately financially literate respondents are still in the limited financial inclusion and limited digital literacy categories. 82.4% of the advanced financially literate have attained the advanced level of DFL also. However, just 55.9% of advanced FL are in the top financially included level and 39.7% are still in the moderate category of financial inclusion. These findings revealed that FL is a prominent factor that leads to improved DFL as well as financial inclusion, but with a lag. The pattern of changes highlights that financial literacy leads to improved DFL, as a result, FI gets improved. Therefore, financial literacy could be considered as the cornerstone for achieving the objectives of digital literacy and financial inclusion.

Table 2: Relationship between FL, DFL and FI on the basis of Dimension Index Scores

Level of Achievement		Total Number	Limited		Moderate		Advanced	
			DFL	FI	DFL	FI	DFL	FI
FL	Limited	90 (18)	81 (90)	86 (95.6)	9 (10)	4 (4.4)	0	0
	Moderate	342 (68.4)	87 (25.4)	134 (39.2)	203 (59.4)	173 (50.6)	52 (15.2)	35 (10.2)
	Advanced	68 (13.6)	1 (1.5)	3 (4.4)	11 (16.2)	27 (39.7)	56 (82.4)	38 (55.9)

Source: Primary Data

Dimension index scores were used to calculate Karl Pearson coefficient of correlation among these variables and the results are given in Table 3.

Table 3: Coefficient of Correlation between FL, DFL and FI

Variable	FL	DFL	FI
FL	1.000	0.743*	0.753*
DFL	0.743*	1.000	0.853*
FI	0.753*	0.853*	1.000

*Significant at 1% level of significance

The values of correlation coefficients show a strong positive association among financial literacy, digital financial literacy, and financial inclusion. The correlation between FL and DFL scores is 0.743, which indicates that respondents with higher financial literacy are likely to possess higher digital financial literacy also. The correlation between FL and FI is 0.753, suggests that financially literate individuals are more likely to be financially included. The highest correlation is observed between DFL and FI i.e. 0.853, indicating that individuals who are using digital financial tools and services are also participating effectively in the formal financial system. All these correlation coefficients are statistically significant. Overall, the results reveal that both financial literacy and digital financial literacy are important determinants of financial inclusion. Based on the findings the study suggests the following directional path among the variables.

Financial Literacy → Digital Financial Literacy → Financial Inclusion

The path explains that FL is pivotal in achieving FI and DFL plays an intermediary role.

Impact of Gender, Education and Employment Level

The study also explored the impact of gender, education and level of employment on financial and digital literacy, as well as on financial inclusion.

• Impact of Gender on FL, DFL and FI

The impact of gender is analysed to explore whether both males and females are equally participative in household finance-related matters, aware of digital financial and banking activities, and benefiting from formal financial services. The results regarding these findings are given in Table 4.

Table 4: Impact of Gender on FL, DFL and FI Scores

Dimension Index Score Categories	Male			Female		
	FL	DFL	FI	FL	DFL	FI
Limited	15 (5.9)	57 (22.4)	73 (28.7)	75 (30.5)	112 (45.5)	150 (61)
Moderate	182 (71.7)	115 (45.3)	126 (49.6)	160 (65)	108 (43.9)	78 (31.7)
Advanced	57 (22.4)	82 (32.3)	55 (21.7)	11 (4.5)	26 (10.6)	18 (7.3)
Total	254 (50.8)			246 (49.2)		

Source: Primary Data

Table 4 reveals that men outperformed women in all aspects of FL, DFL and FI. Only 5.9% and 22.4% and 28.7% of males are in the limited FL, DFL and FI categories as compared to 30.5%, 45.5% and 61% of females, respectively. However, the majority of male and female respondents fall into the moderate category across all three indexes. 22.4%, 32.3% and 21.7% of the males were in the advanced

categories of FL, DFL and FI in comparison to just 4.5%, 10.6% and 7.3% females, respectively. This represents a huge gender difference in these financial aspects and highlights the need for improved female participation in financial matters.

- **Impact of Education on FL, DFL and FI**

The study also revealed the impact of formal education in improving the FL, DFL and FI. The respondents of the study are divided into two categories: Uneducated and Educated. The results regarding the impact of education are given in Table 5.

Table 5: Impact of education on FL, DFL and FI Scores

Dimension Index Score categories	Uneducated			Educated		
	FL	DFL	FI	FL	DFL	FI
Limited	22 (43.1)	37 (72.5)	33 (64.7)	68 (15.1)	132 (29.4)	190 (42.3)
Moderate	29 (56.9)	10 (19.6)	18 (35.3)	313 (69.7)	213 (47.4)	186 (41.4)
Advanced	0	4 (7.8)	-	68 (15.1)	104 (23.2)	73 (16.3)
Total	51	51	51	449	449	449

Source: Primary Data

Table 5 shows that out of the total 500 respondents, 449 were educated. Data reveal that education has played a significant role in achieving moderate to advanced levels of FL, DFL and FI. 15.1%, 29.4% and 42.3% of the educated respondents are in the limited categories of FL, DFL and FI, compared with 43.1%, 72.5% and 64.7% of uneducated respondents, respectively. None of the uneducated respondents could achieve the advanced level of FL and FI. However, 7.8% of the uneducated respondents have attained advanced DFL level, which may be due to the low cost of smartphones, low-cost high-speed internet connectivity and dedicated government initiatives towards digital India. Use of UPI and digital wallets is very common for financial transactions. The analysis also revealed that as the level of education improved from matriculation to senior secondary, graduation and post-graduation, the levels of FL, DFL, and FI all enhanced significantly. The results underscore the importance of education and the need to expand educational institutions to achieve the ultimate objective of financial inclusion.

- **Impact of Employment on FL, DFL and FI**

The study analysed the role of employment in enhancing FL, DFL and FI. The respondents of the study are divided into two categories: Employed and Unemployed. Employed respondents included daily wagers, agriculturists, contract workers and self-employed. The results regarding the impact of employment are given in Table 6.

Table 6: Impact of Employment Status on FL, DFL and FI Scores

Dimension Index Score Categories	Unemployed			Employed		
	FL	DFL	FI	FL	DFL	FI
Limited	67 (29.9)	104 (46.4)	142 (63.4)	23 (8.3)	65 (23.6)	81 (29.4)
Moderate	148 (66.1)	103 (46)	72 (32.1)	194 (70.3)	120 (43.5)	132 (47.8)
Advanced	9 (4)	17 (7.6)	10 (4.5)	59 (21.4)	91 (32.9)	63 (22.8)
Total	224	224	224	276	276	276

Source: Primary Data

Table 6 revealed that large number of respondents i.e. 224 out of 500 were unemployed. This represents the gloomy picture as 45% of the respondents in the working age group of 18-60 years are not involved in any kind of income generating activity. The table shows that level of FL, DFL and FI improves significantly among the employed respondents. 21.4%, 32.9% and 22.8% of the total employed respondents are in the advanced category of FL, DFL and FI as compared to just 4%, 7.6% and 4.5% of unemployed respondents respectively. 29.9%, 46.4% and 63.4% of the unemployed respondents are in the category of limited FL, DFL and FL categories as compared to 8.3%, 23.6% and 29.45 of employed

respondents. The results present a huge gap in these two categories and signify the need to generate more employment opportunities in rural Punjab.

Findings and Conclusions

The primary objective of this study is to analyse the interrelationships among financial literacy, digital financial literacy, and financial inclusion. The study also explores the role of gender, education and level of employment in enhancing the level of financial literacy, digital financial literacy and financial inclusion. The results of the study revealed that the majority of the respondents are at a limited to moderate level of FL, DFL, and FI. However, financial literacy plays an important role in enhancing the level of digital financial literacy and financial inclusion. The values of correlation coefficients show a strong positive and significant association among financial literacy, digital financial literacy, and financial inclusion. Gender disparities are found in all these dimensions, with males being more financially and digitally literate and financially included. The study highlights important role of education and employment opportunities in achieving financial and digital literacy, as well as financial inclusion. Therefore, the study suggests to make efforts to improve educational enrollment, mainly at higher education institutions. The results revealed that 45% of the respondents in the working age group of 18-60 years were not involved in any kind of income-generating activity. The problem must be resolved seriously to reap the demographic advantage. Practical and skills-oriented education can be a better solution that will enhance the education level as well as promote employability among both males and females.

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