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An Economic Analysis of Digital Financial Literacy and Investment Decisions among Women in Tamil Nadu

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Abstract

Digital financial services are becoming an important part of women's financial lives. This study examines digital financial literacy and investment adoption among women in Tamil Nadu. The study is based on 250 women respondents from selected districts of Tamil Nadu. Primary data were collected through a structured questionnaire.

The study examines the socioeconomic characteristics, access to digital financial services, dimensions of digital financial literacy, levels of digital financial literacy, digital financial behaviour and investment instruments adopted by women. The reliability of the digital financial literacy scale is assessed using Cronbach's Alpha. KMO and Bartlett's Test are used to examine the suitability of the data for factor analysis. Factor analysis is used to identify the major dimensions of digital financial literacy.

The study finds that women use smartphones, UPI and digital payment services widely. However, their use of digital services for investment is comparatively limited. Digital financial literacy is found to have several dimensions, including financial knowledge, digital skills, investment knowledge, risk and security awareness, and financial confidence. Women show greater preference for familiar investment instruments such as bank deposits, fixed deposits, insurance and gold.

The study highlights the importance of digital financial literacy in improving women's financial participation. It also shows that digital access alone is not sufficient. Women need financial knowledge, digital skills, investment awareness and financial confidence to make informed financial decisions. The study concludes that strengthening digital financial literacy can support better investment choices, financial security and women's economic empowerment. Financial education programmes should therefore combine digital skills with investment knowledge, risk awareness and cyber-security awareness.

Introduction

Digital technology has changed the financial system. Women can now use mobile banking, UPI, digital payments and online financial services. These services make financial transactions faster and easier. They can also reduce transaction costs and improve access to formal finance. Financial literacy is important for good financial decisions. It helps people understand saving, interest, inflation, risk and investment.

Lusardi and Mitchell (2014) explained that financial literacy supports better saving and investment decisions. Financial knowledge can also help people plan for their future.

Digital finance needs more than basic financial knowledge. Users also need digital skills. They should know how to use financial applications and protect their personal information.

OECD (2020) stressed the importance of financial knowledge, financial behaviour and financial attitudes in achieving financial well-being. Digital financial services have expanded financial inclusion. The World Bank (2018) reported an increase in account ownership across developing countries. Digital services have also made financial transactions easier for many people. However, having a bank account does not always mean active use of financial services. India has experienced rapid growth in digital finance. Reserve Bank of India (2023) reported continued progress in financial inclusion and digital payment systems. UPI has become an important part of everyday financial transactions. It has reduced the time and cost of many payments.

World Bank (2018) noted that women's financial inclusion has improved, but differences still remain in the use and control of financial resources. Investment is an important part of household financial planning. Women can invest in bank deposits, insurance, gold, mutual funds, shares, bonds and pension schemes. Investment can provide future income and protect household financial security.

Acemoglu and Restrepo (2018) examined automation and employment and showed that technological change can have both displacement and productivity effects. Automation may reduce demand for workers performing particular tasks, while productivity improvements can generate additional economic activity.

Aly (2022) examined the relationship between digital transformation, economic development, labour productivity, and employment in developing countries. The study found a positive relationship between digital transformation and economic development, labour productivity, and employment, highlighting the importance of digital adoption in promoting inclusive economic growth.

Lusardi and Mitchell (2014) showed that financial knowledge is linked with better financial decisions. Women with better financial knowledge may be more able to compare investment products and understand risk and return. Digital financial literacy is broader than traditional financial literacy. It combines financial knowledge with digital skills. It includes knowledge of digital payments, online banking, investment platforms and cyber-security.

The National Centre for Financial Education (2020) emphasised the importance of financial education for informed financial decisions. Digital financial education is especially important because financial services are increasingly delivered through digital platforms. Cyber-security is another important issue. Digital users may face fraud, phishing and unauthorised transactions. Women need knowledge about safe digital practices.

SEBI (2024) has also given importance to investor education and awareness. The economic importance of digital financial literacy is clear. It can help women use their savings more effectively. It can also improve their ability to select suitable investment products. Better financial decisions may increase household wealth over time.

Tamil Nadu provides a useful setting for this study. The state has agriculture, industries, services, trade and small enterprises. Women participate in different economic activities. They also use formal banking and digital financial services. Women in rural, semi-urban and urban areas may have different levels of digital access. Their income, savings, education and employment may also differ. These differences can affect their investment decisions. The present study therefore examines Digital Financial Literacy and Investment Adoption among Women in Tamil Nadu.

Objectives of the Study

1. To study the socioeconomic characteristics of the women respondents.
2. To examine access to digital financial services among the women respondents.
3. To analyse the different dimensions of digital financial literacy among the women respondents.
4. To classify the respondents according to their level of digital financial literacy.
5. To assess the reliability of the digital financial literacy scale using Cronbach's Alpha.
6. To examine the suitability of the data for factor analysis using KMO and Bartlett's Test.
7. To identify the major factors underlying digital financial literacy among the women respondents.
8. To examine the digital financial behaviour of the women respondents.
9. To analyse the investment instruments adopted by the women respondents.

Methodology

The study covers selected districts of Tamil Nadu. Six districts are selected for the study. They are:

1. Thoothukudi – 40 respondents
2. Tirunelveli – 40 respondents
3. Madurai – 40 respondents
4. Coimbatore – 45 respondents
5. Chengalpattu – 45 respondents
6. Tiruchirappalli – 40 respondents

The total sample is 250 women. These districts represent different economic conditions. They also differ in urbanisation, occupation, income and digital financial access. The study includes women from rural, semi-urban and urban areas. The study uses a multistage sampling method. Six districts are selected to represent different economic and geographical conditions. The selected areas are divided into: Rural, Semi-urban and Urban.

Women respondents are selected from these groups. Stratified random sampling is used wherever possible. This helps to include women from different income, education and occupational groups.

The study uses primary and secondary data. Primary data are collected from 250 women through a structured questionnaire. Secondary data are collected from reliable sources. These include: Reserve Bank of India, Government of India, Government of Tamil Nadu, Securities and Exchange Board of India, National Centre for Financial Education, World Bank, OECD, Research journals and books and official reports.

The study uses frequency, percentage, mean and standard deviation. Cronbach's Alpha is used. KMO and Bartlett's tests examine whether the data are suitable for factor analysis. Exploratory Factor Analysis is used to identify the major dimensions of digital financial literacy. Factor analysis is used to examine construct validity. Digital Financial Literacy Index is developed from the identified dimensions.

Analysis and interpretation

Table 1 Socioeconomic Characteristics of the Respondents (N = 250)

Variable	Category	Number of Respondents	Percentage
Age	18–30	38	15.2
	31–40	52	20.8
	41–50	61	24.4
	51–60	57	22.8
	Above 60	42	16.8
	Total	**250**	**100.0**
Education	School level	31	12.4

	Undergraduate	68	27.2
	Postgraduate	97	38.8
	Professional/Other	54	21.6
	Total	**250**	**100.0**
Occupation	Salaried	73	29.2
	Self-employed	44	17.6
	Entrepreneur	39	15.6
	Homemaker	61	24.4
	Other	33	13.2
	Total	**250**	**100.0**
Monthly Income	Below ₹20,000	47	18.8
	₹20,001–₹40,000	69	27.6
	₹40,001–₹60,000	76	30.4
	Above ₹60,000	58	23.2
	Total	**250**	**100.0**
Residence	Rural	73	29.2
	Semi-urban	64	25.6
	Urban	113	45.2
	Total	**250**	**100.0**

Source: Primary Data

Table 1 presents the socioeconomic characteristics of the 250 women respondents. Among the age groups, 41–50 years constitutes the largest group with 61 respondents (24.4%), followed by 51–60 years with 57 respondents (22.8%). Women aged 31–40 years account for 52 respondents (20.8%), while 42 respondents (16.8%) are above 60 years. The youngest group, 18–30 years, comprises 38 respondents (15.2%).

With respect to education, 97 respondents (38.8%) are postgraduates, representing the largest educational category. Undergraduate respondents account for 68 (27.2%), while 54 respondents (21.6%) belong to the professional/other category. School-level educated respondents constitute 31 (12.4%).

In terms of occupation, salaried women form the largest group with 73 respondents (29.2%). Homemakers account for 61 respondents (24.4%), followed by self-employed women with 44 (17.6%) and entrepreneurs with 39 (15.6%). The remaining 33 respondents (13.2%) are engaged in other occupations.

Regarding monthly income, 76 respondents (30.4%) earn ₹40,001–₹60,000, followed by 69 respondents (27.6%) earning ₹20,001–₹40,000. A total of 58 respondents (23.2%) earn above ₹60,000, while 47 respondents (18.8%) earn below ₹20,000.

Regarding residence, 113 respondents (45.2%) are from urban areas, followed by 73 respondents (29.2%) from rural areas and 64

respondents (25.6%) from semi-urban areas. The distribution provides representation of women across different residential settings.

Overall, the sample demonstrates considerable variation in age, educational attainment, occupation, income and residence. This variation is useful for examining whether socioeconomic conditions influence digital financial literacy and investment adoption among women in Tamil Nadu.

Table 2

Access to Digital Financial Services among Women Respondents (N = 250)

Digital Financial Service	Users	Non-users	Percentage of Users
Smartphone	238	12	95.2
Mobile Banking	187	63	74.8
Internet Banking	156	94	62.4
UPI	214	36	85.6
Digital Payments	221	29	88.4
Financial Applications	169	81	67.6
Online Investment Platforms	108	142	43.2

Source: Computed from Primary Data

Table 2 shows that most women have access to digital financial services. Smartphone usage is highest at 95.2%, followed by digital payments (88.4%) and UPI (85.6%). However, only 43.2% use online investment platforms. This indicates a gap between digital financial access and investment participation. Therefore, improving investment knowledge, financial confidence and digital security awareness may encourage women to adopt investment services.

Table 3

Dimension-wise Digital Financial Literacy among Women Respondents (N = 250)

Dimension	Mean Score	Standard Deviation	Rank
Basic Financial Knowledge	3.84	0.71	2
Digital Financial Skills	4.06	0.64	1
Investment Knowledge	3.28	0.83	5
Risk and Return Awareness	3.47	0.78	4
Cyber-security Awareness	3.61	0.76	3
Digital Financial Confidence	3.22	0.87	6
Overall DFLI	**3.58**	**0.77**	—

Source: Computed from Primary Data

Table 3 shows that the overall Digital Financial Literacy Index is 3.58, indicating a moderately high level of literacy. Digital Financial Skills rank first (4.06), followed by

Basic Financial Knowledge (3.84) and Cyber-security Awareness (3.61). Digital Financial Confidence records the lowest mean score (3.22), followed by Investment Knowledge (3.28). The findings indicate that women are more comfortable using digital financial services than making investment decisions. Therefore, improving investment knowledge and financial confidence is essential for better financial decision-making.

Table 4

Classification of Digital Financial Literacy among Women Respondents (N = 250)

Level	Score Range	Frequency	Percentage
Low	1.00–2.49	43	17.2
Moderate	2.50–3.74	96	38.4
High	3.75–5.00	111	44.4
	Total	**250**	**100.0**

Source: Primary Data

Table 4 shows that 111 women (44.4%) have high digital financial literacy, while 96 (38.4%) have moderate literacy. The remaining 43 women (17.2%) have low literacy. Overall, 82.8% of respondents have moderate or high digital financial literacy. However, improved digital financial literacy may not automatically lead to greater investment adoption. Further analysis is needed to examine this relationship.

Table 5

Cronbach's Alpha Reliability Test (N = 250)

Scale	Number of Items	Cronbach's Alpha
Digital Financial Literacy	18	0.884
Digital Financial Behaviour	10	0.821
Investment Decision-Making	12	0.861
Risk Perception	8	0.793
Financial Confidence	8	0.848

Source: Computed from Primary Data

Table 5 shows the reliability of the five scales used in the study. Cronbach's Alpha values range from 0.793 to 0.884. Digital Financial Literacy records the highest value (0.884), while Risk Perception records the lowest (0.793). Since all values are above 0.70, the scales have acceptable reliability. Therefore, the questionnaire items are suitable for further statistical analysis.

Table 6

KMO and Bartlett's Test for Digital Financial Literacy (N = 250)

Test	Value
Kaiser-Meyer-Olkin (KMO) Measure	**0.862**
Bartlett's Test – Chi-square	**1,846.537**
Degrees of Freedom	**153**
Significance	**0.000**

Source: Computed from Primary Data

Table 6 shows that the KMO value is 0.862, indicating that the sample of 250 women is suitable for factor analysis. Bartlett's Test is statistically significant (χ^2 = 1,846.537, df = 153, $p < 0.001$). This indicates that the variables are sufficiently related to each other. Therefore, the data are suitable for Exploratory Factor Analysis (EFA) to identify the main dimensions of digital financial literacy.

Table 7

Factor Structure of Digital Financial Literacy (N = 250)

Factor	Major Indicators	Eigenvalue	Percentage of Variance
Factor 1	Financial Knowledge	4.682	26.011
Factor 2	Digital Skills	3.126	17.367
Factor 3	Investment Knowledge	2.417	13.428
Factor 4	Risk and Security Awareness	1.864	10.356
Factor 5	Digital Financial Confidence	1.329	7.383
	Total	**13.418**	**74.545**

Source: Computed from Primary Data

Table 7 presents the results of the Exploratory Factor Analysis (EFA) conducted to identify the underlying dimensions of digital financial literacy among the 250 women respondents.

The analysis extracted five factors, which together explain 74.545 per cent of the total variance. This indicates that the five-factor structure captures a substantial proportion of the information contained in the original digital financial literacy indicators.

Factor 1: Financial Knowledge has the highest eigenvalue of 4.682 and explains 26.011 per cent of the total variance. This is the most important factor in the structure. It represents women's understanding of basic financial concepts such as saving, interest, inflation, financial planning and money management.

Factor 2: Digital Skills has an eigenvalue of 3.126 and explains 17.367 per cent of the variance. This factor represents the ability of women to use mobile banking, UPI, digital payment systems, internet banking and other digital financial platforms.

Factor 3: Investment Knowledge has an eigenvalue of 2.417 and accounts for 13.428 per cent of the variance. It reflects awareness of investment alternatives, risk-return relationships, investment planning and diversification.

Factor 4: Risk and Security Awareness has an eigenvalue of 1.864 and explains 10.356 per cent of the variance. This factor captures awareness of investment risk, digital fraud, cyber-security, privacy and safe use of digital financial services.

Factor 5: Digital Financial Confidence has an eigenvalue of 1.329 and contributes 7.383 per cent of the total variance. It represents women's confidence in independently using digital financial services, evaluating financial information and making financial decisions through digital platforms.

The results show that Financial Knowledge is the dominant dimension, followed by Digital Skills and Investment Knowledge. This suggests that basic financial understanding forms an important foundation for women's digital financial capability.

The cumulative variance of 74.545 per cent indicates a strong factor structure. From an economic perspective, the findings suggest that digital financial literacy is a multidimensional form of financial capability, rather than a single measure of digital technology usage.

This progression is important to the present study because effective digital financial participation requires more than access to technology. Women must possess financial knowledge, digital skills and investment awareness, while also having the confidence to make informed decisions.

The factor structure therefore provides empirical support for constructing the Digital Financial Literacy Index (DFLI) and for examining its relationship with Investment Adoption in the subsequent analysis.

Conclusion

The study of 250 women highlights the importance of digital financial literacy in investment adoption and financial decision-making. Although women increasingly use digital financial services, their participation in market-linked investments remains comparatively limited. Improving financial knowledge, digital skills, investment awareness, risk management and cyber-security awareness can strengthen women's financial confidence, investment choices and economic empowerment.

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