



Technology-Driven Financial Inclusion and Financial Literacy: A Conceptual Study

Dr.Sandhya Ch V L

Associate Professor, Department of Management studies,
East Point College of Higher Education, Bengaluru, India
dr.sandhyachvl@gmail.com

Prof. Shalini S N

Sr.Assistant professor, Department of Management
New Horizon college of Engineering, Bengaluru, India
shalini.shetty1288@gmail.com

Dr.Saumi Roy

Associate professor, Department of Management
New Horizon College of Engineering, Bengaluru, India
saumiroy6@gmail.com

Publication History

Manuscript Reference No: IJIRAE/RS/Vol.12/Issue12/DCAE10103

Research Article | Open Access | Double-Blind Peer-Reviewed | Article ID: IJIRAE/RS/Vol.12/Issue12/DCAE10103

Received:20, November 2025, Revised:29, November 2025, Accepted: 01, December 2025, Published Online:12, December 2025. <https://www.ijirae.com/volumes/Vol12/iss-12/24.DCAE10103.pdf>

Article Citation:Dr.Sandhya,Prof.Shalini,Dr.Saumi(2025),Technology-Driven Financial Inclusion and Financial Literacy: A Conceptual Study, IJIRAE: International Journal of Innovative Research in Advanced Engineering, Volume 12, Issue 12 of 2025 pages 827-834 **Doi:**> <https://doi.org/10.26562/ijirae.2025.v12i12.24>

BibTeX Key: Dr.Sandhya@2025Technology-Driven

IJIRAE papers should be cited as IJIRAE (International Journal of Innovative Research in Advanced Engineering, AM Publications, India 2025, ISSN 2349-2163, <https://doi.org/10.26562/ijirae.2025.v12i12.24> The journal's official abbreviation is IJIRAE. **Orcid:** <https://orcid.org/0009-0004-9398-7488>

Copyright©2025 copyright by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract: The way people access, handle, and interact with money has changed dramatically due to the quick development of digital financial technologies. Through the use of digital payments, fintech apps, mobile banking, and digital learning platforms, technology-driven financial inclusion offers opportunity for the development of responsible financial behavior and financial knowledge across all demographics. By looking at access, digital financial literacy, and behavioural learning, this conceptual study investigates how technology-enabled financial services improve financial literacy. The study finds patterns in age, gender, education, occupation, and urban/rural residency by combining secondary data from national surveys (NCFE–NFLIS) and worldwide trends with current literature. The results underscore the necessity of focused interventions for marginalized communities while highlighting the vital role of digital tools in closing financial knowledge gaps.

Keywords: digital finance, digital literacy, technology-driven financial inclusion, fintech, and financial literacy

INTRODUCTION

The quick digitization of financial institutions has completely changed how people handle their finances. Financial access has increased because to innovations like fintech apps, digital payment platforms, e-wallets, online budgeting tools, and mobile banking.



This movement, referred to as "technology-driven financial inclusion," makes use of digital capabilities to offer previously underprivileged communities simple, accessible, and reasonably priced financial services. One of the fundamental factors influencing responsible financial conduct is still financial literacy, or the capacity to comprehend, assess, and use financial information. Even though digital financial services are widely accessible, many people still don't know enough about finance. As informal learning platforms, digital tools offer not only access but also hands-on chances for risk management, investing, saving, and budgeting. Research shows that digital financial education tools, fintech platforms, and mobile banking improve financial capability, encourage saves, lower transaction costs, and boost confidence in financial decision-making. Technology makes learning and access easier, but it also comes with concerns including digital fraud, overspending, and false information. Policymakers, educators, and financial institutions must thus comprehend how technology-driven financial inclusion affects financial literacy.

By providing a conceptual framework that clarifies the ways in which fintech interaction influences financial literacy outcomes, this study seeks to investigate how digital financial services contribute to financial knowledge, behavior, and overall financial well-being. Research shows that digital financial education tools, fintech platforms, and mobile banking improve financial capability, encourage saves, lower transaction costs, and boost confidence in financial decision-making. Technology makes learning and access easier, but it also comes with concerns including digital fraud, overspending, and false information. Policymakers, educators, and financial institutions must thus comprehend how technology-driven financial inclusion affects financial literacy.

REVIEW OF LITERATURE

Fintech platforms, online tools, mobile banking, and AI-enabled services are examples of digital technologies that both increase access to financial resources and have an impact on financial literacy.

- According to Ozili (2023), digital finance lowers transaction costs and increases accessibility, especially for groups that have little access to traditional banking.
- Amnas, Selvam, and Parayitam (2024) showed that people who use fin tech applications for investing, budgeting, or payments improve their financial literacy, demonstrating that digital financial literacy mediates the relationship between fintech usage and financial inclusion.
- Choung, Chatterjee, and Pak (2023) discovered a substantial correlation between digital financial literacy and financial well-being; without digital skills, financial inclusion is insufficient.
- Senduk et al. (2024) found that using digital technologies in conjunction with educational help improves financial capabilities across all demographic groups.
- Rahayu et al. (2022) highlighted how digital financial literacy influences financial behaviour, emphasising the importance of online lessons, gamified finance tools, and budgeting apps.
- Gulati, Singla, and Saini (2025) observed that by providing financial education at scale, digital platforms lessen socioeconomic differences.
- Gumilar, Sangka, and Totalia (2024) found that using digital tools to facilitate problem-based learning enhances decision-making abilities.

The overview of literature review points to three ways that technology-driven financial inclusion improves financial literacy:

1. Greater availability of fintech and digital banking services.
2. Improved digital financial literacy, which makes it possible to use financial instruments efficiently.
3. Behavioural learning, which enhances practical financial abilities through frequent use of technology.

RESEARCH OBJECTIVES

- To theoretically investigate the ways in which technology-driven applications enhances financial inclusion.
- To theoretically investigate the ways in which technology-driven financial applications enhances financial literacy.

RESEARCH METHODOLOGY

Conceptual frame work:

The financial Literacy is definitely more than just understanding to manage income and expenses, it's a deep comprehension of how money works in the real world. So attempt was made to understand phase wise acquisition of financial literacy by using various fintech apps in this technology driven society.

Levels of Financial Literacy:

1. Awareness & Knowledge Acquisition
 - a. Understanding basic money concepts & Fintech tools available.
 - b. Analysing features and functionality of these apps.
2. Skill development
 - a. Using financial calculators (EMI Calculators, SIP Calculators)
 - b. Application of expense trackers
3. Behavioural Change & Financial Discipline
 - a. Developing financial discipline (Budgeting apps, saving apps)
4. Advanced Decision Making
 - a. Planning financial aspects of future

- i. FIRE
- ii. Wealth creation.



RESEARCH DATA

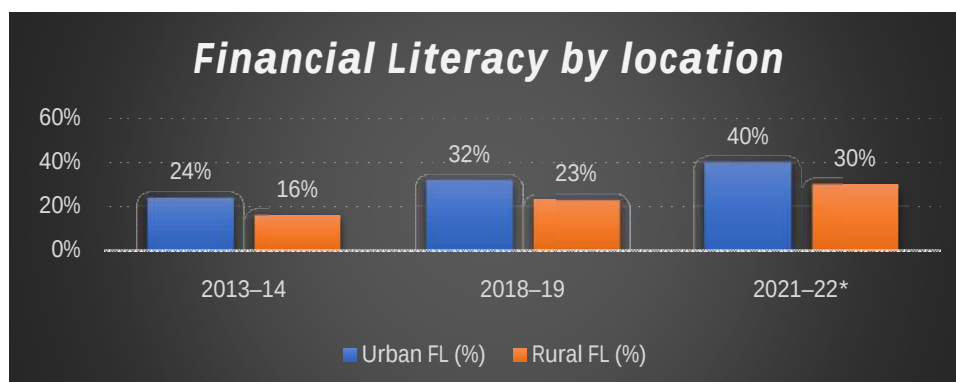
Data is fully collected from secondary sources such as peer-reviewed journals, policy publications (RBI, NCFE–NFLIS, OECD), and international databases, this study employs a conceptual research methodology. "Digital financial literacy," "technology-enabled financial inclusion," "financial behaviour," "fintech adoption," and "digital financial tools" were among the keywords. Research conducted between 2019 and 2025 was given priority. To combine results, spot trends, and create theoretical connections between variables including age, gender, education, occupation, income, and urban/rural location, a narrative synthesis was used. Thematic analysis was used to develop the conceptual framework, which shows how technology-driven financial inclusion serves as a tool for enhancing literacy of finance.

Analysis and Findings

The study initiated from a study of profound bulletin stating financial literacy in India, which was structured from location of population, gender, age, education qualification and Income groups with the extent increase in financial literacy over a period of time and increase in inclusion of Fintech apps. like financial news apps, Expenses -EMI-Finance calculator apps, Budgeting apps, Trading & Investment apps.

Table 1: Financial Literacy by location Across Time (Urban vs. Rural)

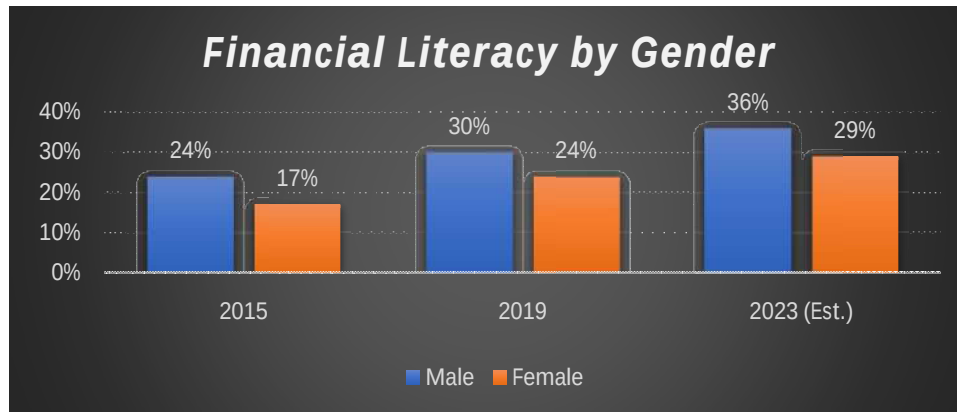
Time Frame	Urban FL (%)	Rural FL (%)
2013–14	24%	16%
2018–19	32%	23%
2021–22*	40%	30%



Because of improved digital access, infrastructure, and exposure, urban populations consistently have higher levels of financial literacy. Although a gap still exists, rural communities are steadily improving, showing the effects of fintech uptake and government initiatives.

Table 2: Financial Literacy by Gender

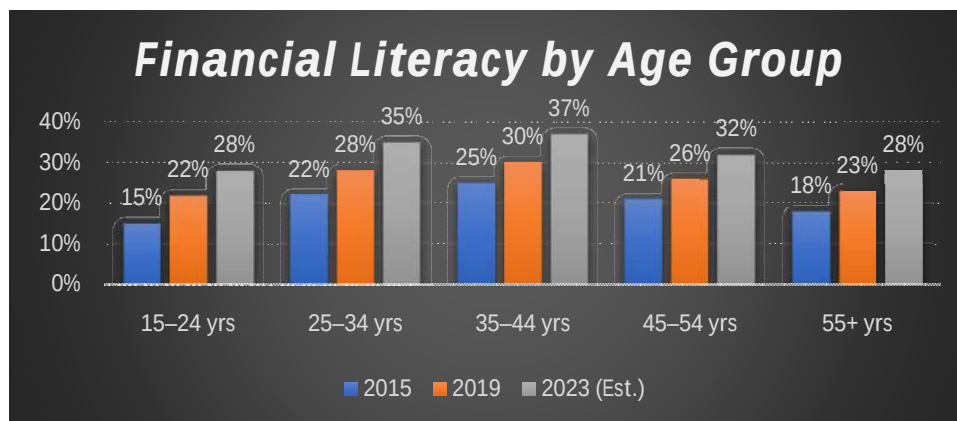
Time Frame	Male	Female
2015	24%	17%
2019	30%	24%
2023 (Est.)	36%	29%



Due to growing workforce involvement, financial inclusion initiatives, and access to digital technologies, women's literacy has steadily improved despite historically higher levels among men.

Table 3: Financial Literacy by Age Group

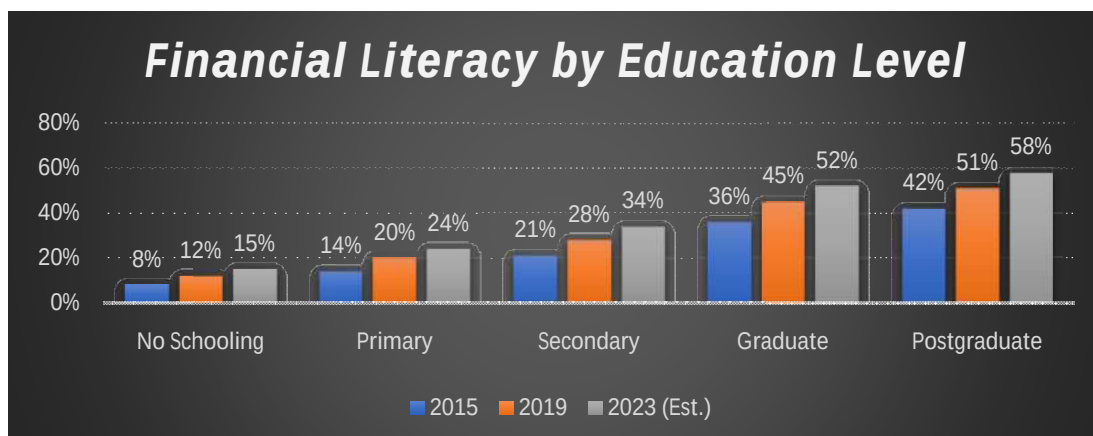
Time Frame	15–24 yrs	25–34 yrs	35–44 yrs	45–54 yrs	55+ yrs
2015	15%	22%	25%	21%	18%
2019	22%	28%	30%	26%	23%
2023 (Est.)	28%	35%	37%	32%	28%



Due to greater access to digital tools, online education, and policy interventions, younger and middle-aged cohorts gradually improve.

Table 4: Financial Literacy by Education Level

Time Frame	No Schooling	Primary	Secondary	Graduate	Postgraduate
2015	8%	14%	21%	36%	42%
2019	12%	20%	28%	45%	51%
2023 (Est.)	15%	24%	34%	52%	58%



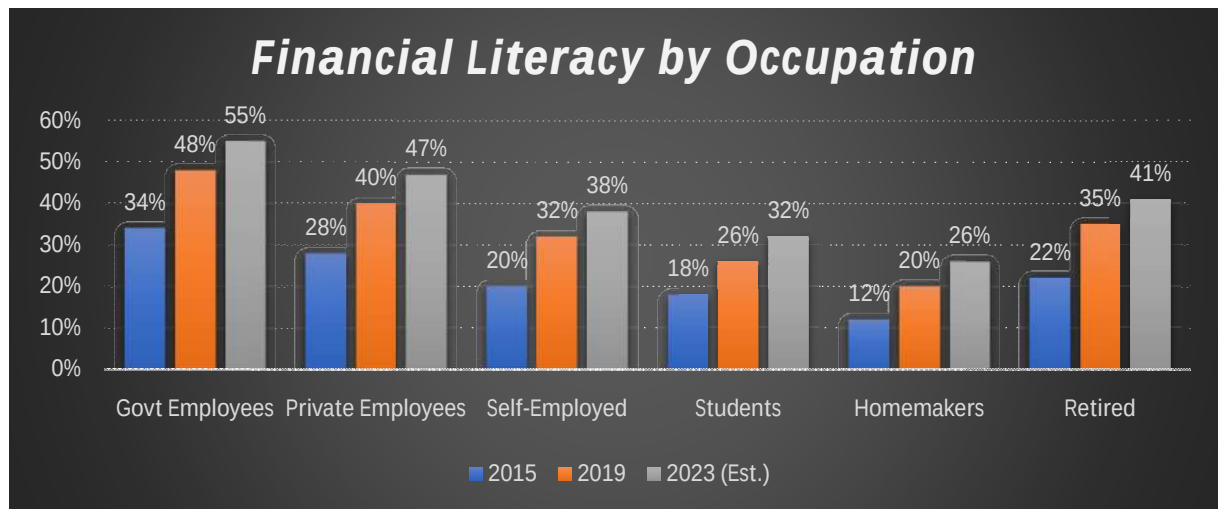
Financial literacy is highly correlated with higher educational achievement. While inequalities still exist among less educated populations, improvements across all educational levels reflect exposure to fintech and digital learning

Table 5: Financial Literacy by Occupation

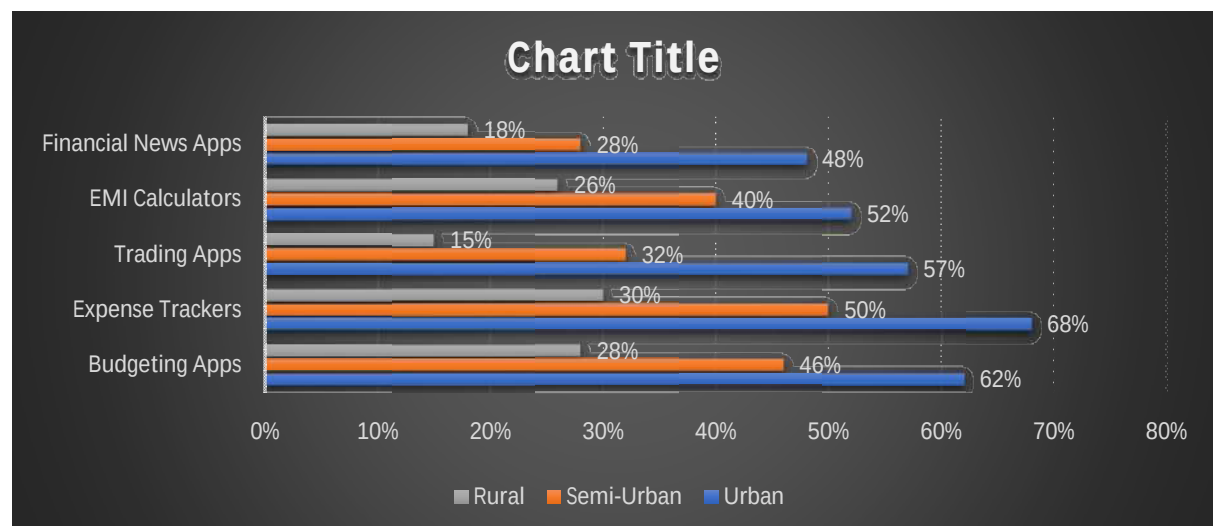
Time Frame	Govt Employees	Private Employees	Self-Employed	Students	Homemakers	Retired
2015	34%	28%	20%	18%	12%	22%
2019	48%	40%	32%	26%	20%	35%
2023 (Est.)	55%	47%	38%	32%	26%	41%

Table 6: Location & Technology driven financial apps

Region	Budgeting Apps	Expense Trackers	Trading Apps	EMI Calculators	Financial News Apps
Urban	62%	68%	57%	52%	48%
Semi-Urban	46%	50%	32%	40%	28%
Rural	28%	30%	15%	26%	18%



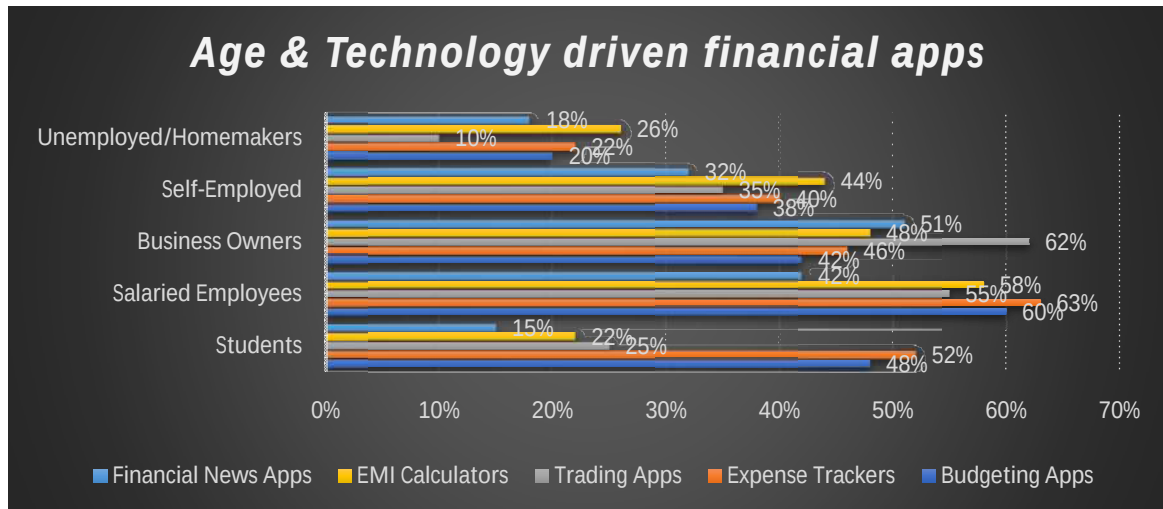
Financial literacy is influenced by occupation; employees and business professionals have greater levels because they deal with money on a regular basis. Using digital technologies and educational resources, students and stay-at-home moms demonstrate progress.



Above data examines the use of fintech tools in urban, semi-urban, and rural areas. Due to improved access to smartphones, internet connectivity, and financial literacy, urban respondents exhibit the highest adoption rates in all categories. Moderate usage is seen in semi-urban areas, especially in EMI calculators and budgeting apps, suggesting a slow pace of digital inclusion. Due to poorer digital literacy and infrastructure hurdles, rural adoption is still significantly lower, particularly in trading and financial news apps. The table makes it evident how a person's geographic location affects their financial inclusion and level of digital preparedness.

Table 7: Age & Technology driven financial apps

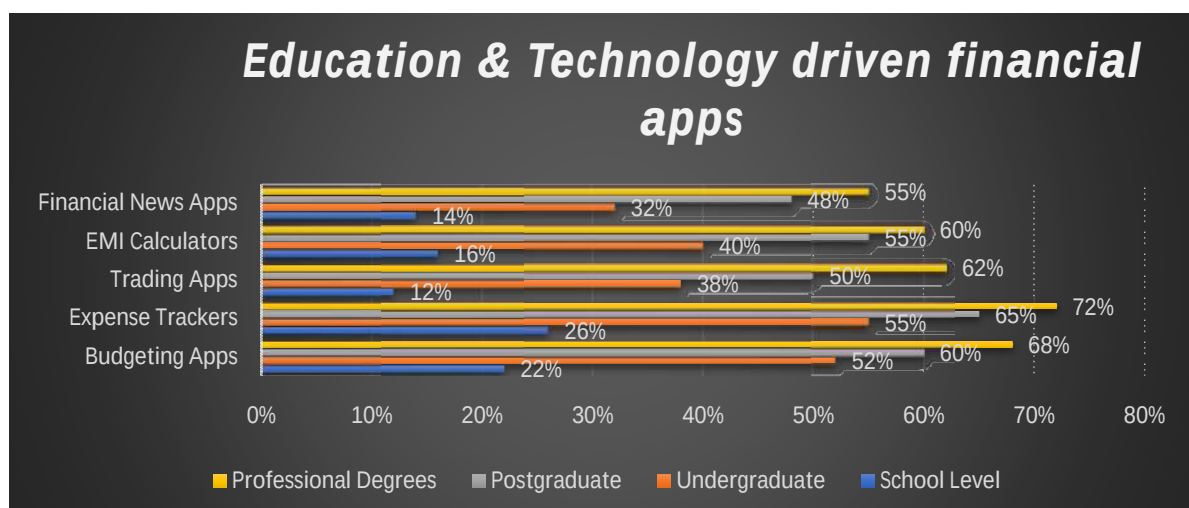
Age Group	Budgeting Apps	Expense Trackers	Trading Apps	EMI/Loan Calculators	Financial News Apps
15–20 years	38%	42%	28%	20%	18%
21–30 years	55%	60%	52%	40%	35%
46–60 years	32%	34%	22%	48%	38%
46–60 years	32%	34%	22%	48%	38%
60+ years	18%	20%	10%	25%	22%



Data demonstrates the use of various fintech tools by age groups, demonstrating distinct generational disparities in the adoption of technology. Due to their increased digital exposure and need for income planning, young adults (ages 21 to 30) exhibit the highest levels of engagement with trading, cost tracking, and budgeting apps. The age group between 31 and 45 uses EMI/loan calculators more frequently. Teens (15–20 years old) use fintech technologies mostly for tracking expenses and creating budgets, although they are less likely to participate in investment activities. Although they use financial news apps and EMI calculators more frequently, older persons (46 years of age and older) show somewhat lower adoption overall. The claim that age has a major impact on the adoption of financial technology and digital financial literacy is supported by this table.

Table 8: Education & Technology driven financial apps

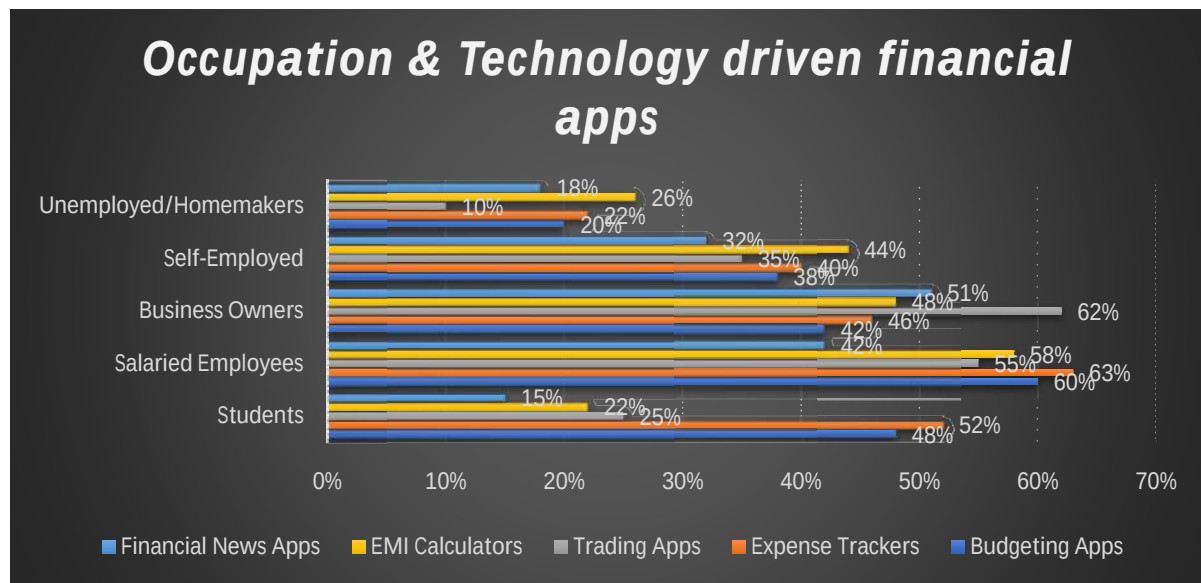
Education Level	Budgeting Apps	Expense Trackers	Trading Apps	EMI Calculators	Financial News Apps
School Level	22%	26%	12%	16%	14%
Undergraduate	52%	55%	38%	40%	32%
Postgraduate	60%	65%	50%	55%	48%
Professional Degrees	68%	72%	62%	60%	55%



Above data shows that the use of fintech tools and education level are strongly positively correlated. Professional degree holders have the highest utilization in every category, highlighting their increased digital platform comfort and financial understanding. Additionally, budgeting tools, cost trackers, and investment apps are widely used by undergraduates and graduate students. Users with merely a school education, on the other hand, exhibit comparatively lower uptake, especially of trading apps and financial news services. The data shows that digital financial literacy and behaviour are significantly influenced by educational achievement.

Table 9: Occupation & Technology driven financial apps

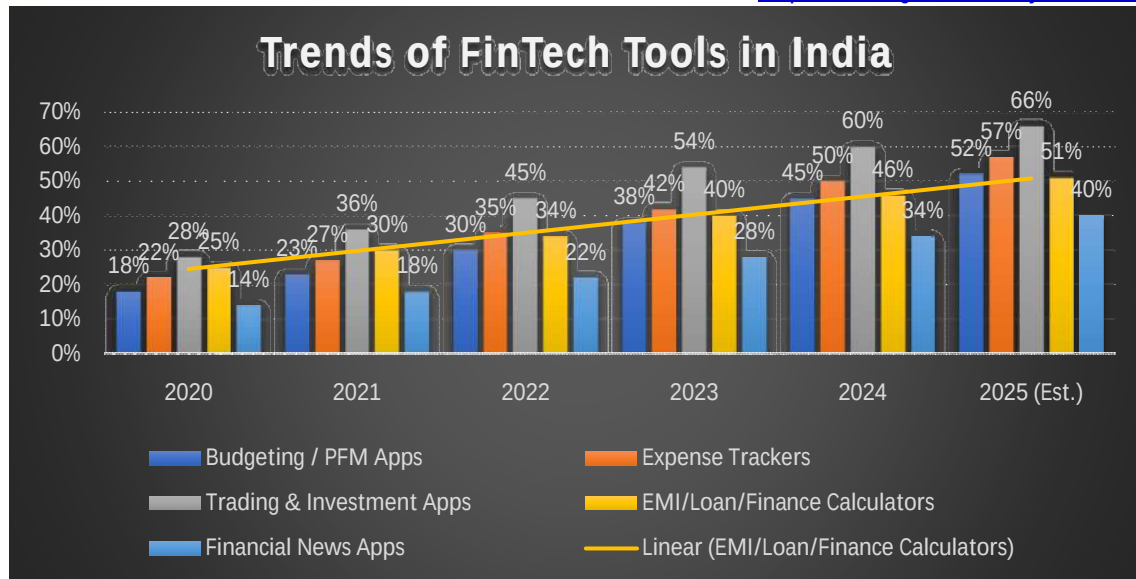
Occupation	Budgeting Apps	Expense Trackers	Trading Apps	EMI Calculators	Financial News Apps
Students	48%	52%	25%	22%	15%
Salaried Employees	60%	63%	55%	58%	42%
Business Owners	42%	46%	62%	48%	51%
Self-Employed	38%	40%	35%	44%	32%
Unemployed/Homemakers	20%	22%	10%	26%	18%



This shows how different occupational groups use fintech in different ways. Because they handle monthly revenue, EMIs, and budgeted expenses, salaried personnel exhibit the highest usage of budgeting applications, spending trackers, and EMI calculators. The demand for real-time market updates and investing tools is shown by the fact that business owners use trading apps and financial news portals the most. Students actively utilize cost trackers and budgeting, while they use investment-related apps less frequently. Due to reduced financial activity and less exposure to the internet, respondents who are unemployed exhibit the lowest adoption, whereas self-employed people exhibit moderate usage.

Table 10: Increasing Fin tech usage in past 5 years

Year	Budgeting / PFM Apps	Expense Trackers	Trading & Investment Apps	EMI/Loan/Finance Calculators	Financial News Apps
2020	18%	22%	28%	25%	14%
2021	23%	27%	36%	30%	18%
2022	30%	35%	45%	34%	22%
2023	38%	42%	54%	40%	28%
2024	45%	50%	60%	46%	34%
2025 (Est.)	52%	57%	66%	51%	40%



The table displays a six-year trend (2020–2025) that illustrates how users are increasingly adopting five primary categories of fintech tools: Financial News Apps, Expense Trackers, Trading & Investment Apps, EMI/Loan/Finance Calculators, and Budgeting/Personal Finance Management (PFM) apps. The figures show the percentage of users who actively used each type of digital financial tool during the corresponding year.

Overall Pattern

The data demonstrates a consistent and noteworthy increase in fintech usage across all categories, demonstrating rising smartphone penetration, financial literacy, digital awareness, and confidence in technology-assisted financial management. Due in part to early digital usage habits, 2020 has the lowest adoption, while 2025 has the highest adoption, which reflects the maturity of fintech ecosystems and the speed at which digital transformation is occurring.

Further-Scope

Empirical Research: The framework can be verified by surveys, interviews, or experiments. Regional Analysis: Barriers unique to a certain area might be found through comparative research. Technological Innovation: New financial solutions, such as blockchain, gamified apps, and AI advisers, can be researched. Policy Evaluation: It is possible to evaluate the success of literacy campaigns and inclusion initiatives.

CONCLUSION

Overall, the results show that by providing easily available, real-time, and user-friendly financial management solutions, fintech products have a significant potential to improve financial literacy. Nonetheless, demographic differences point to the necessity of focused interventions, particularly for low-income, rural, and illiterate communities. The study comes to the conclusion that, if inclusion-oriented policies focus accessibility, awareness, and digital competency across all societal sectors, technology can play a transformative role in bridging financial knowledge gaps. Fintech platforms offer opportunity for real-time, practical financial education. To guarantee equitable financial literacy growth across all societal segments, policies and programs should prioritise accessibility, awareness, and digital skills.

REFERENCE

- Amnas, M. B., Parayitam, S., and Selvam, M. (2024). FinTech and financial inclusion: Examining how perceived regulatory support and digital financial literacy function as mediators. *Risk and Financial Management Journal*, 17(3), 108.
- Choung, H., Pak, T., and Chatterjee, S. (2023). financial well-being and digital financial knowledge. *Letters on Finance Research*, 58, 104438.
- Saini, P., Singla, A., and Gulati, T. (2025). A comprehensive survey of the literature on digital financial literacy and usage. *Informatics Education and Research Journal*, 25(1), 1–18.
- Gumilar, D. W. A., Totalia, S. A., and Sangka, K. B. (2024). Digital financial literacy's mediation function in technology-assisted education. *Journal of Education*, 10(2), 78–93.
- P. Ozili (2023). Financial vulnerability, financial inclusion, and digital finance. *Financial Regulation and Compliance Journal*, 31(2), 250-266. https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=21865
- Financial inclusion through technology and literacy in India: Strategies for sustainable growth December 2024, confederation of Indian Industry