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Measuring Digital Financial Literacy: A Comparative Analysis

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Abstract

In today's digital landscape, digital financial literacy (DFL) has become a critical skill due to the widespread adoption of digital financial services. However, there remains a dearth of research on how demographic factors influence DFL, especially in developing countries like India. Understanding the influence of demographic variables on DFL is critical for evaluating and refining existing policies aimed at promoting digital financial inclusion. This study examines the influence of various demographic factors such as age, gender, marital status, employment class, employment sector, income level and education level on DFL among residents of the National Capital Territory (NCT) of India. The study, which surveyed 499 residents of the NCT, used the Kruskal-Wallis test for independent samples to analyse the data. The results reveal differences in DFL levels depending on age, gender, marital status, employment sector, income level and education. In particular, men, unmarried people, high earners, young adults and employees with a high level of education show a higher DFL level. These findings offer valuable insights for policy makers, financial institutions, and educators to develop interventions tailored to the specific needs of demographic groups to promote digital financial literacy and inclusion across India.

Keywords: Digital Financial Literacy, Age, Gender, Marital Status, Employment Class, Labour Sector, Income Level, Education

Introduction

The financial landscape has been fundamentally reshaped by the rapid expansion of digitalisation, markedly improved the accessibility of financial services. This technological integration has not only made financial systems more convenient for individuals but has also spurred changes in consumer behaviour, leading to a heightened demand for financial services. The proliferation of financial innovations, particularly in digital payments, has become a central development in the financial sector, necessitating swift adaptation from both traditional and new financial entities.

In the digital era, Digital Financial Literacy (DFL) holds significant importance, acting as a catalyst for entrepreneurship, financial independence, and economic growth, particularly in developing countries. Governments and financial institutions in these nations are urged to prioritise enhancing DFL to ensure comprehensive participation in the digital economy.

Examining the financial literacy landscape across BRICS economies reveals an average literacy rate of 28% among adults, with notable disparities, ranging from 24% in India to 42% in South Africa. India, among major emerging economies, records the lowest financial literacy rate, attributed to state-level disparities, lack of formal training, and limited awareness. While some emerging economies

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exhibit higher rates, there is room for improvement. The Reserve Bank of India's minimum financial literacy threshold is met by only 27% of Indian adults and 24% of women, according to a March 2022 report by the Asian Development Bank. Global variations in utilising mobile phones or the internet for bill payments are evident, with Australia leading at 75%, while India and Mexico lag below 10%.

In the pursuit of enhancing Digital Financial Literacy (DFL), conducting a comparative analysis based on demographic factors holds significant importance for developing countries. Such analysis, encompassing age, gender, marital status, income level, and education, can illuminate variations in DFL levels among distinct demographic groups. For example, women in developing nations often demonstrate lower financial literacy levels, potentially influenced by social and cultural barriers. Implementing targeted initiatives to enhance financial literacy among women can help narrow this gap and foster gender equality. Similarly, examining DFL levels across different age brackets can uncover specific challenges encountered by the elderly, facilitating the development of tailored interventions. Comparative studies rooted in demographic factors play a pivotal role in advancing financial inclusion and mitigating the digital disparity prevalent in developing countries.

Review of Literature

Digital financial literacy (DFL) research has become increasingly important in the digital age, especially with the rise of digital financial services (DFS). Scholars such as Kass-Hanna, Lyons and Liu (2022) argue for expanding the definition of traditional financial literacy to include digital literacy and emphasise its role in strengthening the long-term financial resilience of households. Financial literacy involves acquiring the necessary knowledge, skills, confidence, and competencies to effectively use digitally delivered financial products and services tailored to individual economic and social circumstances (Alliance for Financial Inclusion, 2021). The importance of DFL, recognised as financial literacy on digital platforms (Lyons & Kass-Hanna, 2021), is evident in various global studies, including India (Prasad, Meghwal & Dayama, 2018), Indonesia (Setiawan et al., 2020), China (Shen, Hu & Hueng, 2018), and Bangalore (Tony & Desai, 2020). Morgan and Trinh (2019b) emphasise the crucial link between financial literacy and the adoption of digital financial products and underline the need for further research in this area. Financial literacy plays a central role in promoting inclusivity and financial resilience, with differences observed between regions and household types (Kass-Hanna, Lyons & Liu, 2022). The importance of digital literacy for online entrepreneurship is also emphasised by Bayrakdaroglu and Bayrakdaroglu (2018), who found that both digital and financial literacy have a significant impact on people's intention to engage in online entrepreneurship, with digital literacy having a stronger influence. Numerous studies advocate for the development of digital financial education programmes, particularly targeting vulnerable groups such as the elderly, the less educated, SME owners, start-ups and women (Morgan, Huang & Trinh, 2019). Marvaniya's (2023) study stresses the urgency of policy interventions and educational initiatives to enhance DFL among marginalised sections in India, contributing to financial inclusion and economic growth. Koskelainen, Kalmi, Scornavacca and Vartiainen (2023) identify key themes in digitalisation's impact on financial literacy and capability, proposing strategies for measuring DFL and fostering collaboration between the public and private sectors. Similarly, Kumar, Pillai, Kumar and Tabash (2023) demonstrate the direct influence of skills on financial decision-making, with DFL emerging as a significant predictor and mediator. The study by Hasan, Ashfaq, Parveen and Gunardi (2023) on women's entrepreneurship highlights the correlation between advanced digital financial literacy and the use of formal banking channels. Choung, Chatterjee and Pak's (2023) study of Korean adults shows a positive relationship between digital financial literacy and financial well-being and highlights the significant impact across different socio-demographic groups.

The findings of Yadav and Banerji (2023) show that digital finance is evolving and moving from a socioeconomic focus to broader issues. The study by Yang, Wu and Huang (2023) illustrates a robust positive relationship between financial knowledge and the use of digital financial products, particularly in online borrowing and financial products, and highlights the central role of this relationship among disadvantaged groups. Respati et al. (2023) examined the impact of digital financial literacy and confidence on the younger generation and emphasised their significant influence on financial behaviour and well-being. The study by Aulia, Rahayu and Bahari (2023) found a significant relationship between digital financial literacy and well-being, with financial behaviour moderating the relationship, especially in West Sumatra.

The study by Cdr and Anandalakshmy (2023) on working women in Kerala identified factors influencing digital financial literacy and their significant role in investment behaviour. The study by Joshi and Mirchandani (2023), on the other hand, found remarkably low levels of financial literacy among the respondents, despite having a strong preference for investing in securities and stock markets. Only 40% scored more than 12 out of 18 points, suggesting that financial literacy efforts need to be stepped up.

The study of digital financial literacy is imperative to safeguard individuals from digital fraud and associated risks while ensuring effective use of DFS. Upon reviewing the literature in this field, it is evident that DFL is rapidly evolving, necessitating a more defined and comprehensive approach. There is a crucial need to assess DFL levels across diverse population segments globally and explore its impact on various aspects such as financial management behaviour, entrepreneurship intentions, financial wellbeing, and financial inclusion. This study specifically aims to evaluate and compare the DFL levels among different demographic profiles of employed individuals in the National Capital Territory (NCT) of India, providing valuable insights for policymakers, educators, and financial service providers. The gathered information can inform the development of targeted interventions and programmes tailored to the specific needs of distinct groups, contributing to an enhanced understanding of DFL.

Research Objectives

The study endeavours to gauge and compare the level of Digital Financial Literacy (DFL) among employed individuals in the National Capital Territory (NCT) of India, considering various demographic factors such as gender, marital status, age, income, education, and employment class.

Research Methodology

The Study

Employing a descriptive analysis approach, the research aims to assess how individuals' profiles influence their digital financial literacy. Data collection was conducted among employed men and women in the NCT of India, aged between 18 to 60 years, using judgment cum snowball sampling. The judgment criteria required respondents to be employed in the NCT of India, aged between 18 to 60 years, and active users of digital platforms for financial transactions. Additionally, respondents were encouraged to forward the e-questionnaire to contacts meeting these criteria, ensuring a diverse sample representing various demographic profiles.

The Sample and the Sampling Technique

According to Cochran's 1977 formula, with a confidence level of 95% and a probability of success (p) set at 0.5, corresponding to Z values of 1.96, the calculated sample size for the employed population in the National Capital Territory (NCT) of India is 385 respondents. However, in this study, 410 respondents independently completed the survey, while the researcher digitally filled out 110 questionnaires on behalf of participants using their digital devices. Thus, a total of 520 responses were collected, out of which 499 met the study's criteria and were considered engaged responses. It is noteworthy that all selected respondents possessed at least a senior secondary education qualification, ensuring their capability to fill out the questionnaire using digital devices such as smartphones, tablets, and laptops. The demographic information of the respondents is summarised in Table 1.

Table 1: Demographic Information of Participants

Variables	*Categories*	*Frequency*	*Percentage*
Gender	Male	246	49.3
	Female	253	50.7
Marital Status	Married	336	67.3
	Unmarried	163	37.7
Age	18-29	181	36.3
	30-39	196	39.3
	40-49	78	15.6
	50 and above	44	8.8
Education	Secondary education or Equivalent	26	5.2
	Graduation or Equivalent	177	35.5
	Post-Graduation or Higher	287	57.5
Employment Status	Salaried class	355	71.1
	Self-employed	144	28.9
Annual Income	Less than 2 Lakh	80	16.0
	2 lakhs – 5 Lakhs	162	32.5
	5 lakhs – 10 Lakhs	142	28.5
	10 Lakhs and above	115	23.0

Source: Authors' calculation.

The research employed a dual approach, combining judgmental sampling and the snowball technique, to gather data from employed individuals aged 18 to 60 who engage in financial transactions through digital platforms. Online questionnaires facilitated data collection, with the researcher serving as an enumerator in instances where respondents needed assistance. This combined approach ensured an efficient and cost-effective collection of data from a diverse sample of employed individuals using digital platforms for financial transactions.

Data Collection Tool and Technique

Quantitative results were obtained through a 22-item e-questionnaire, adapted from Chhillar and Arora's validated DFL scale (2023) (see Appendix 1). This DFL tool, demonstrating sound psychometric properties, serves as a reliable and validated measure for assessing DFL in developing nations like India. Data collection occurred digitally, with an online survey link distributed via email and social platforms such as WhatsApp, LinkedIn, and Facebook. Respondents were encouraged to share the questionnaire within their networks. While most respondents self-completed the online questionnaires, in cases where discomfort or disability hindered respondents, the researcher served as an enumerator and filled out the questionnaire on their behalf. Out of 499 responses, 110 were filled by the researcher upon request from respondents, ensuring inclusivity and accessibility.

Tools for Data Analysis

The research hypothesis was tested using the Non-Parametric test of Independent-Samples Kruskal-Wallis Test. This decision was made after finding that the p-value of the one-sample Kolmogorov-Smirnov test was significant at a 5% significance level. This significance indicates that the distribution of Digital Financial Literacy (DFL) deviates from normality, as presented in Table 2. The collected data was processed using SPSS version 26 for statistical analysis.

Table 2: Tests of Normality

	Kolmogorov-Smirnov[a]			*Shapiro-Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
DFL_score	.082	499	.000	.973	499	.000
a. Lilliefors Significance Correction.						

Source: Authors' calculation. SPSS output.

Research Hypotheses

Financial literacy is influenced by various demographic factors, such as age, gender, income, education, and marital status. These factors affect an individual's access to financial products and services and their ability to make informed financial decisions. In particular, socio-economic factors such as age, income level, and education level have a direct impact on digital financial literacy (Laily, 2016). Understanding the digital aspect of financial literacy in relation to demographic variables is crucial, as different demographic groups may have different access to and understanding of digital financial services (DFS), which affects their financial decisions and use of these services.

Previous studies suggest a gender gap in financial literacy, with women generally having lower levels than men, especially among those with lower levels of education and income (Lusardi & Mitchell, 2014). Socioeconomic and demographic factors such as age, gender, income, marital status, and education influence the level of financial literacy among youth, with females tending to have lower levels of education and limited debt literacy (Garg & Singh, 2018). Married women tend to have lower levels of financial literacy compared to married men, possibly due to traditional gender roles in financial decision-making (Aguiar-Díaz & Zagalaz-Jiménez, 2022). While some studies found no interaction between gender and marital status on financial literacy (Baglioni et al., 2018), others reported no gender differences (Klapper & Panos, 2011; Grohmann et al., 2021). However, further research is needed to understand the underlying gender differences in financial literacy (Yu et al., 2015).

Based on these insights, the following hypothesis is proposed:

H01: There is no significant difference in digital financial literacy (DFL) between male and female professionals in the National Capital Territory (NCT) of India.

Garg and Singh (2018) identified various socio-economic factors such as age, gender, income, marital status and education as influencing factors for financial literacy among youth. However, Cole et al. (2009) found that marital status is an insignificant predictor of financial literacy in India and Indonesia. Aguiar-Díaz and Zagalaz-Jiménez (2022) found that married/married women tended to have lower financial literacy than their male counterparts. Conversely, Kadoya and Khan (2020) found no influence of marital status on financial literacy in Japan. In contrast, Bucher-Koenen et al. (2017) found that married women have lower financial literacy than married men. Lee and Dustin (2021) concluded that financial stress in marital relationships affects financial satisfaction. Baglioni et al. (2018) found no interaction effect between gender and marital status on financial literacy in Italy, indicating the need for further research. Therefore, the following hypotheses are proposed:

H02: There is no significant difference in digital financial literacy (DFL) between married and unmarried professionals in National Capital Territory (NCT) of India.

Wewala and Ediriweera (2021) emphasised that there are hardly any studies comparing the level of financial literacy of employees in the public and private sectors. Their findings suggest that those with moderate financial literacy are more likely to be found in the public sector, while those with high financial literacy are more likely to be found in the private sector. However, a closer look reveals that the majority of employees in the public sector have a moderate level of financial literacy, while a significant proportion of employees in the private sector have a high level of financial literacy. The following hypothesis is therefore put forward:

H03: There is no significant difference in DFL scores between private and public sector employees in NCT of India.

Research shows that low financial knowledge is prevalent among both employed women (Bucher-Koenen et al., 2016) and the unemployed (Lusardi & Tufano, 2009). The unemployed were more likely to give significantly poorer answers to financial literacy questions than the self-employed or employed (Lusardi & Mitchell, 2011). In terms of employment status, the self-employed showed more positive financial attitudes towards retirement planning than their employed counterparts (van Rooij et al., 2009). Therefore, the following hypothesis is put forward:

H04: There is no significant difference in DFL scores between employed and self-employed individuals in NCT of India.

Higher education is often associated with the development of critical thinking skills and an improved ability to understand complicated financial information. Rahayu et al. (2022) demonstrated a positive and significant influence of socioeconomic factors such as age, education, and income on digital financial literacy (DFL) in West Sumatra. Similarly, Melo (2021) found a positive correlation between digital financial literacy and education level, indicating that individuals with longer schooling tend to have higher levels of digital financial literacy. Therefore, the following hypothesis is put forward:

H05: There is no substantial difference in DFL scores between undergraduate and postgraduate employed individuals in NCT of India.

The younger generation is increasingly adopting cashless methods like UPI and digital wallets. Lusardi and Mitchell (2014) found generally low financial literacy levels across all age groups, with young adults exhibiting particularly low levels. Klapper, Lusardi and Van Oudheusden (2015) reported that younger individuals were more inclined to use Digital Financial Services (DFS) compared to their older counterparts. Buenestado-Fernández et al. (2023) observed in Mexico that young people not only recognised the importance of digital financial education but also understood critical concepts, mobile applications, online financial operations, and digital security. Therefore, the following hypothesis is proposed:

H06: There is no substantial difference in DFL scores among employed individuals across different age groups in NCT of India.

Rahayu et al. (2022) demonstrated that socio-economic factors such as age, education, and income positively and significantly influenced Digital Financial Literacy (DFL), subsequently impacting financial well-being positively and reducing financial problems in West Sumatra. Klapper, Lusardi and Van Oudheusden (2015) found that individuals with higher incomes were more likely to use and be knowledgeable about Digital Financial Services (DFS), including online banking and mobile payment apps. Additionally, financial literacy levels among low-income groups were observed to be low (OECD, 2005; Jariwala, 2013). Therefore, the following hypothesis is proposed:

H07: There is no substantial difference in DFL scores among employed individuals across different income levels in NCT of India.

Reliability and Hypothesis Testing

The estimated value of the Cronbach alpha coefficient is 0.848; therefore data can be used for further analysis (Nunnally, 1978). The items in DFL were scaled on a five-point likert scale. Three items were reverse coded (see Appendix 1). The DFL scoring criteria suggested in the OECD toolkit (2022) was adopted in which a value of 1 is assigned for the favorable responses and a value of 0 is assigned to unfavorable responses. The maximum score of DFL for a participant was 22 and minimum was 0. The scores were then converted into percentage. The results showed that the level of DFL among employed people in NCT of India is at 59.20 %, which indicated a low level of DFL among employed individuals in the urban NCT of India (see Table 3).

Table 3: Scoring Across Different Categories

Categories	*DFL Scores*
Males	61.89
Females	56.59
Married	57.27
Unmarried	63.18
Private	60.45
Public	55.49
Salaried	58.64

Categories	DFL Scores
Self-employed	60.60
Secondary education	52.20
Graduates	56.62
Postgraduates	64.79
18-29	63.43
30-49	59.76
40-49	52.09
50-59	51.96
Below 2 L	52.32
2 L - 5 L	59.25
5L - 10 L	59.60
10 L and Above	63.43
Overall	59.2

Source: Authors' calculation.

H01: No significant difference in DFL scores between male and female workers in NCTs of India was tested using independent samples Kruskal-Wallis test. The results showed that there was a significant difference in the level of digital financial literacy between male and female employees in NCT in India, with a p value of 0.003 and a significance level of 5% (see Table 4). Therefore, we reject the first null hypothesis.

H02: The hypothesis of a difference in DFL scores between married and single employees in NCTs of India was tested using independent samples Kruskal-Wallis test. The results revealed a significant difference, showing that single employees showed higher levels of digital financial literacy compared to married participants (p-value: 0.003, significance level 5%), thus rejecting the second hypothesis.

H03: To assess the hypothesis concerning the difference in DFL scores between private and public sector employed individuals in NCT of India, the Independent-Samples Kruskal-Wallis Test was conducted. The analysis revealed a noteworthy difference, with the mean DFL score among private sector employees significantly surpassing that of public sector employees (p-value: 0.011 at a 5% significance level), resulting in the rejection of the null hypothesis.

H04: The hypothesis regarding the absence of a significant difference in DFL scores between salaried and self-employed individuals in NCT of India was investigated through the Independent-Samples Kruskal-Wallis Test. Despite the higher mean DFL score among self-employed respondents, the analysis did not detect a significant difference in DFL levels between the two groups (p-value: 0.408 at a 5% significance level), leading to the retention of the null hypothesis.

Table 4: Results of Independent-Samples Kruskal-Wallis Test

The Null Hypothesis	P-Value	Decision
H01	0.003	Reject
H02	0.003	Reject
H03	0.011	Reject
H04	0.408	Fail to reject
H05	0.000	Reject
H06	0.000	Reject
H07	0.004	Reject

Source: Authors' calculation. SPSS output.

H05: The hypothesis examining the uniformity of DFL scores across different education levels among employed individuals in NCT of India was scrutinised using the Independent-Samples Kruskal-Wallis Test. Contrary to the null hypothesis, the analysis revealed a significant variance in DFL scores across various education levels (p-value: 0.000 at a 5% significance level), with individuals holding Master's degrees or higher qualifications displaying notably higher DFL levels compared to those with Graduation or secondary level qualifications (Table 5).

Table 5: Pairwise Comparisons of Education

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
High School-Graduation and equivalent	-38.045	25.762	-1.477	.140	.419
High School-Masters and Higher	-98.402	26.618	-3.697	.000	.001
Graduation and equivalent-Masters and Higher	-60.356	13.752	-4.389	.000	.000

Source: Authors' calculation. SPSS output.

H06: The hypothesis concerning the absence of a substantial difference in DFL scores across different age groups in NCT of India was evaluated via the Independent-Samples Kruskal-Wallis Test (Table 6). The analysis revealed a significant disparity in DFL scores across age groups (p-value: 0.000 at a 5% significance level), with younger age groups exhibiting higher DFL levels. Moreover, specific intergroup comparisons highlighted a noteworthy inverse relationship between DFL levels and age among employed individuals in NCT of India.

Table 6: Pairwise Comparisons of Age

Sample 1-Sample 2	*Test Statistic*	*Std. Error*	*Std. Test Statistic*	*Sig.*	*Adj. Sig.*[a]
50-59-40-49	6.340	27.129	.234	.815	1.000
50-59-30-39	58.066	24.003	2.419	.016	.093
50-59-18-29	80.631	24.185	3.334	.001	.005
40-49-30-39	51.726	19.263	2.685	.007	.043
40-49-18-29	74.291	19.489	3.812	.000	.001
30-39-18-29	22.565	14.833	1.521	.128	.769

Source: Authors' calculation. SPSS output.

H07: To assess the hypothesis regarding the uniformity of DFL scores across different income levels among employed individuals in NCT of India, the Independent-Samples Kruskal-Wallis Test was employed. The results demonstrated a significant variance in DFL scores across income levels (p-value: 0.004 at a 5% significance level), with higher-income individuals exhibiting notably higher DFL levels. Specific intergroup comparisons revealed a substantial difference between individuals earning less than 2 Lakhs and those earning above 10 Lakhs, with the latter group displaying significantly higher DFL scores (Table 7).

Table 7: Pairwise Comparisons of Income

Sample 1-Sample 2	*Test Statistic*	*Std. Error*	*Std. Test Statistic*	*Sig.*	*Adj. Sig.*[a]
Less than 2 Lakh-5 Lakh - 10 Lakh	-48.371	20.114	-2.405	.016	.097
Less than 2 Lakh-2 Lakh - 5 Lakh	-48.785	19.662	-2.481	.013	.079
Less than 2 Lakh-10 Lakh and above	-76.899	20.948	-3.671	.000	.001
5 Lakh - 10 Lakh-2 Lakh - 5 Lakh	.414	16.541	.025	.980	1.000
5 Lakh - 10 Lakh-10 Lakh and above	-28.528	18.051	-1.580	.114	.684
2 Lakh - 5 Lakh-10 Lakh and above	-28.114	17.545	-1.602	.109	.654

Source: Authors' calculation. SPSS output.

Discussion

The results show a DFL level of 59.20% among the employed in the NCT of India, indicating a remarkably low DFL level in the urban NCT. This is particularly worrying considering that 93% of the respondents were graduates and had access to sound digital financial infrastructure and information and communication technology (ICT). Possible explanations for this low DFL level are insufficient financial knowledge, limited awareness of digital financial options, insufficient education in digital financial matters, or a lack of exposure to digital financial tools. According to a survey by Standard and Poor's Financial Services, financial literacy in India stands at a meagre 24%, well below the global average. Remarkably, about 76% of the adult population in India does not have a basic understanding of basic financial concepts. Despite respondents holding at least a graduate degree, the quality of financial education in their curriculum may be insufficient (Lusardi & Mitchell, 2014). Additionally, entrenched traditional financial habits in certain segments of the population may contribute to a reluctance to adopt DFS (Sarma & Pais, 2011).

The study found statistically significant differences in DFL scores between different demographic profiles of employed persons in the NCT of India, taking into account factors such as gender, marital status, age, education, income, and work sector, except for differences between service and non-service sector employment categories. The study revealed that, in the NCT of India, males compared to females, unmarried individuals compared to married, those employed in the private sector compared to the public sector, highly educated individuals compared to graduates and those with secondary education qualifications, younger individuals compared to senior age groups, and higher-income individuals compared to lower-income groups exhibited higher levels of DFL. However, no statistically significant differences were observed among service- and non-service employed individuals in the NCT of India. These findings align with the conclusions drawn by Melo (2021), indicating that men tend to have higher DFL levels than women, with a slight age-related difference favouring younger individuals in Portugal. The study also supports the positive correlation between DFL and education level, suggesting that individuals with more extensive education tend to be more digitally financially literate. Similarly, research by Azeez and Akhtar (2021) in the Aligarh district of India affirmed that men and unmarried individuals have higher DFL levels. Kamau et al. (2023) explored the link between financial literacy and over-indebtedness, highlighting gender disparities in access, usage, financial literacy, and indebtedness, with women exhibiting lower DFL levels and a higher likelihood of being over-indebted compared to men, despite reduced gender gaps in digital financial product access. Minas (2021) consolidated existing models examining indicators of digital and financial literacy, and found that gender, place of residence, area of study, and level of education had the greatest impact on DFL levels.

Previous research, including studies by Pomogaeva (2007, 2008), Yurik and Petrov (2010), and NISM, has consistently found a lack of financial literacy among certain demographic groups, such as the low-income group, women, students, the less educated, and minorities. The gendered digital exclusion highlighted by the OECD 2018 is attributed to several factors, including barriers to access, high costs, limited financial and digital literacy, and gender biases and social norms. Unfortunately, digital tools and skills are not equally accessible, especially for women, rural households, and low-income adults, who often struggle to access digital technologies and acquire the necessary digital skills. Globally, there is a gender gap in smartphone ownership. Women are 26% less likely to own a smartphone than men, and in South Asia, it is as high as 70. As a result, according to the OECD, around 327 million more men than women own a smartphone worldwide. The GSM Association reports that women in low- and middle-income countries are 20 percent less likely to own smartphones than men, due to lack of skills, owner identification and poor product design. In addition, men are more likely to engage in e-commerce activities than women. In Turkey, for example, men are 14 percentage points more likely to use digital merchant payments than women, and in Mexico, men are almost twice as likely to make such payments. Internet usage statistics in both developed and developing countries show that the male population, younger people, and urban dwellers predominate, with the differences being even more pronounced in developing countries. In Portugal, BOTELHO (2021) conducted an online survey with 1136 participants to investigate the factors influencing financial knowledge and DFL and found that men tend to have higher levels of financial knowledge and DFL as indicated by self-assessed knowledge.

Individuals who have a master’s degree or higher have significantly better DFL scores than those with a college degree or high school diploma. This suggests that a higher level of formal education can bring benefits in terms of financial and digital literacy. These individuals may have had better access to resources and opportunities to learn about financial concepts, leading to a deeper understanding of digital financial instruments. Studies such as those by Grohmann and Menkhoff (2015) suggest that financial knowledge and behaviour are more favourable among individuals with higher income, greater wealth and higher levels of education. Higher educational status proves to be a key indicator of high levels of financial knowledge, attitudes, behavior and education, as the research by Garg and Singh (2017) shows. In Portugal, BOTELHO (2021) observed that people with higher levels of education and income generally have a higher level of financial knowledge and a higher DFL, as suggested by their self-assessed knowledge. Conversely, according to Minas (2021), older people tend to have a lower DFL level. Azeez and Akhtar (2021) demonstrated a positive correlation between higher education and higher DFL in rural areas of Aligarh district, while Rahayu et al. (2022) found that socioeconomic factors such as age, education, and income significantly influence DFL in West Sumatra.

However, Amalda (2022) reported that factors such as age and educational background did not significantly influence DFL among millennials in Indonesia.

The results indicate a significant difference in DFL scores among various age groups of employed individuals in the NCT of India, revealing an inverse relationship between DFL levels and age. This pattern is attributed to the younger generation's greater inclination towards cashless methods such as UPI and wallets. Younger individuals, particularly Generation Z (born after 2001), exhibit a preference for technology, including gadgets, email, and other communication technologies, as explained by Yanuar (2016). Azeez and Akhtar (2021) support this by noting that the younger generation is more adept at handling financial matters due to their familiarity with the latest technological devices, like smartphones and laptops. Resistance to shifting away from cash and greater exposure to technology and digital financial tools contribute to the higher DFL level among younger individuals. Klapper and Miller (2021) highlight the challenge posed by the resistance of younger adults to move away from cash, while See, Chin and Ying (2021) demonstrate that younger adults tend to adopt more financial technology for retirement planning, compared to older adults facing declining tech-savviness. Statista's report supports the claim that internet penetration is higher among younger individuals in India, potentially influencing their greater exposure to digital financial tools. Despite their inclination toward using digital tools, it is essential to note that younger individuals may not necessarily have a higher overall financial literacy. The Reserve Bank of India's 2022 survey reveals age-related differences in payment mode preferences, with older respondents favouring cards and younger/middle-aged individuals preferring digital payment options like UPI and mobile wallets. Contrary findings in Indonesia by Amalda (2022), where age did not significantly affect DFL among millennials, and in Portugal by Botelho (2021), where older individuals tend to have lower DFL levels, suggest variations in the impact of age on DFL across different contexts. Buenestado-Fernández et al.'s (2023) study on young people's digital financial culture highlights the importance of digital financial education, with some young individuals excluding themselves from online finance, creating a notable digital financial culture gap. However, Rahayu et al. (2022) found that age positively and significantly influenced DFL in West Sumatra, indicating regional differences in the relationship between age and DFL.

The results indicate that there is a significant difference in digital financial literacy (DFL) between people with an income of less than L2 and those with an income of more than L10, with the latter group having higher scores. This is consistent with the findings of Klapper, Lusardi and Van Oudheusden (2015), who suggest that those with higher incomes may have better access to resources and opportunities to learn about DFS. There may be several reasons why people with incomes above 10L have higher DFL scores. First, people with higher incomes may have better access to resources such as financial advisors or wealth management tools that can help them better understand and manage their finances. Second, higher-income individuals may have more experience managing larger amounts of money, which could also contribute to their higher DFL scores. Managing larger sums of money may require a higher level of financial knowledge and expertise, which could lead to greater familiarity with financial concepts and terminology. Finally, it is also possible that higher-income individuals may have a greater interest in financial matters and be more motivated to learn about DFS. This may be because they have more at stake financially or because they have a greater awareness of the potential benefits of using these services. While higher-income individuals may have an advantage in terms of resources and opportunities, it is still possible for individuals at all income levels to develop their DFL skills through education and experience. Financial literacy and financial behaviour tend to be better when respondents have a higher income, greater wealth, and a higher level of education (Grohmann & Menkhoff, 2015). Amalda (2022) found that income is a significant socioeconomic factor affecting financial literacy among millennials in Indonesia and emphasised the need for increased efforts to improve financial literacy among millennials, especially those with lower incomes, to promote better financial decisions and behaviours. In Portugal, Botelho (2021) found that people with higher education and higher income tend to have higher levels of financial knowledge and financial literacy (based on self-assessed knowledge). Azeez and Akhtar (2021) showed that higher income is associated with higher financial literacy among respondents in the rural areas of

Aligarh district. Rahayu et al. (2022) showed that social-economic factors (age, education, and income) positively and significantly influenced DFL in West Sumatra.

These results emphasise the urgent need to establish and promote DFL campaigns to increase awareness and usage of DFS among females, married people, public sector employed people, graduates, and people with lower education qualifications, middle aged and senior people and lower income households in the NCT of India. Fitriamiranti (2022) believes that it can increase public awareness of the benefits of good health and that DFL has a positive impact on financial health, thereby improving financial prospects and disaster preparedness. The results of various studies further highlighted the importance of digital financial literacy (DFL) activities. For example, studies by Prasad, Meghwal, and Dayama (2018) and Fathima (2018) highlight the importance of digital finance and the need to educate the Indian public about DFL. Additionally, a study by Tony and Desai (2020) found that digital financial literacy has a significant impact on digital financial literacy in Bangalore, with a significant impact of 65.8%. According to the OECD (2018), DFL is important because it affects how people save and consume and has a positive impact on savings and behaviour. Overall, these findings highlight the important role of DFL in advancing digital finance, including goals and recommendations for the development and introduction of DFL services in india.

Conclusions

This study aims to evaluate and compare the impact of various demographic factors on digital financial literacy (DFL) among NCT workers in India. The results of the study show that among people working in NCT in India, men, unmarried people, those working in the private sector, university students, young people and the rich are more visible in DFL. However, there was no significant difference between employed and non-employed workers. Notably, individuals earning more than INR 10 million had higher DFL scores than other income groups, and there appeared to be a positive relationship between DFL levels and the age of the workforce in India. Improve digitalisation by improving financial information, the financial sector can provide regular financial services (DFS), introduce and create core financial products. Schools can integrate digital financial literacy into their curriculum and collaborate with financial institutions and fintech companies. Government institutions such as the Delhi government can promote digital financial literacy through policy development, including measures, market regulations and research support. Digital financial education in the workplace can reduce employee financial stress and increase productivity, especially in emerging businesses. Community groups can play a role in promoting digital financial literacy and good financial management. Therefore, it is recommended that NCT stakeholders, including government agencies, schools, and financial institutions, prioritise digital financial education for women, married people, civil servants, middle-aged and elderly, graduates, low-educated people, and low-income people families. These findings may encourage regulators, NGOs, financial institutions, and schools to collaborate and take significant steps to promote digital financial education and inclusion, ultimately improving financial and health benefits. However, this study may be affected by parental education, sources of information, media influence, etc. It is worth noting that it does not take into account all determinants of digital financial literacy, such as: parental education levels, sources of financial knowledge, media influence, etc.

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