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Impact of Digital Banking in Promoting Financial Inclusion: A Study of Delhi NCR

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ABSTRACT

This paper explores the effect of digital bank on financial inclusion in Delhi NCR region and zooms in the question that to what extent is the technological advancement narrowing the financial gaps or digitizing access for already included individuals. India is well on its way to simulation, full steam ahead and the country is on a massive digitalisation drive due to increasingly digital transactions through UPI, linkages through Aadhaar and Jan Dhan accounts. But gaps persist, especially for the poor, women and informal workers. This research adopted mixed methods by surveying 70 respondents in both urban and semi-urban and interviewing informants who are unbanked to identify their level of conscience and behavior toward the perception, usage, and barriers to mobile banking adoption. Results demonstrate high utilization of digital banking among young people, but key obstacles, including digital illiteracy, concern over fraud, and infrastructural issues, continue to restrict broader participation in these forms of banking. The study underscores that digital tools have opened access, but usage and trust by marginalized groups are not yet widespread. Suggested intervention components are digital literacy training, user-friendly app interfaces, and community outreach. The study ends with the argument that digital banking has great potential for inclusive growth, but, real financial inclusion will emerge from the human side, from the inclusive and trust building interventions that take care of the social economic and technological gaps.

1. INTRODUCTION

1.1 India's Digital Banking Revolution and Its Impact on Delhi NCR

Digital banking in India has disrupted the banking sector, creating greater access to banking services with mobile wallets, UPI, Aadhaar-linked accounts, zero-balance accounts. Thus, digital transaction increased from 2,071 crores in 2017-18 to more than 13,462 crore in 2022-23, indicating rapid digitalisation, as per the Ministry of Finance (2013). In Delhi NCR, while mobile and internet penetration is high, usage remains unequal—particularly among migrant workers, low-income groups, and informal sector women. Over 50% of Jan Dhan accounts in the region are dormant (PTI, 2024), indicating a gap between access and effective use.

Despite initiatives like biometric ID (Aadhaar), instant credit, and mobile interfaces (FHI 360, 2019; Ghosh, 2020), challenges such as digital illiteracy, weak infrastructure, and trust issues hinder widespread adoption. This study aims to evaluate whether digital banking is truly enabling financial inclusion in Delhi NCR or merely acting as a technological upgrade.

1.2 Historical Context and Growth Drivers

India's journey through digital banking had its seeds when NEFT and RTGS (2004–2005) were introduced, and were hastened by Aadhaar (2010) and PMJDY in 2014. The growth of digital payments, especially via UPI, received a fillip after the demonetization in 2016. As of 2025, 67,54.58 crore PMJDY accounts had been opened with 55.7% accounts being opened by women, indicating the progress in women-inclusive finance (PIB, 2025).

The proliferation of fintech platforms like Paytm, PhonePe, Google Pay brought a surge of UPI transactions, which stood at 16.58 billion for October 2024. There's been significant impact of these trends in Delhi NCR – the increased adoption of smartphones, cheaper 4G and a tech-friendly user base – has brought digital banking within the reach of even the underprivileged.

1.3 Key Challenges and the Problem Statement

In spite of a national drive, Delhi NCR has the following constraints in its financial inclusion:

- Uncertainty of migrants, and Constant challenges of documentation among migrants,
- Poor digital literacy (mostly in peri-urban and rural belts)

- Infrastructure limitations in slums and settlements,
- Financial access constraints from the standpoint of economic ability to participate in formal finance.

The high rates of dormancy (21% of PMJDY accounts in Jan 2025) make distinctions between having an account and using it salient (NPCI, 2025). Mistrust, low awareness and restricted access to smartphones are also barriers to its benefits. For women and informal workers, while account ownership is growing, usage is constrained by sociocultural customs and minimal financial literacy (Journal of Informatics Education & Research, 2023).

2. OBJECTIVES

1. To measure the knowledge level of digital banking services among people in Delhi NCR whether they are banked or unbanked.
 2. To investigate the key drivers and challenges inducing digital banking adoption among both urban and semi-urban users
 3. To investigate the consumers' way in which they use the digital banking services.
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3. LITERATURE REVIEW

Demircuc-Kunt and Klapper (2012) were the first to signal that digital banking could overcome barriers like distance, costs and documents by way of the Global Findex Database. Nations that had robust mobile infrastructure saw improved financial inclusion, although disparities between the two genders remained. This academic work was instrumental in making a case that digital finance could be a new way to fight poverty. Durga et al. (2023) underlined the influence of various Indian governments' initiatives—PMJDY, Aadhaar, UPI and BHIM—for the deepening of access of digital finance, particularly in rural regions. Yet challenges including digital illiteracy and connectivity challenges remain, mandating a public–private collaboration. Rastogi et al. (2021) praised UPI for promoting cashless behavior and inclusive finance, primarily due to user-friendly apps such as Google Pay and PhonePe. The service helped users establish financial histories and boosted participation in rural areas. According to the Asian Development Bank (2017), digital finance could address 40% of unmet financial needs in Southeast Asia “emphasizing mobile app simplicity and public - private partnerships”. Seng (2020) further emphasized on role of financial literacy as a strong determinant of digital banking adoption in Cambodia.

Some studies conducted in Nigeria (Chude & Chude, 2014; Maigari et al. (2023), pointed out that access was improved and employment opportunities were created through agent banking and POS service. Women and workers in the informal sector reaped the greatest gains, though obstacles such as liquidity and infrastructure still exist. Ahmad et al. (2020) investigated the applicability of mobile money in Sub-Saharan Africa and found that digital means facilitated financial autonomy of women and enable investment in education and healthcare. Similarly, Rhyne and Kelly (2018) and Lal and Sachdev (2015) highlighted Kenya's success with M-Pesa due to mobile coverage, agent networks, and tailored service models. In Nigeria, Ogunsakin and Olumide (2017) showed digital platforms improved household savings and reduced reliance on informal moneylenders. Naouar (2018) emphasized digital identity and infrastructure improvements for expanding financial services in West Africa.

Service quality, reliability, ease of use, and responsiveness was associated with customer satisfaction in Malaysia (Amin, 2016). Chauhan et al. (2022) and Meher et al. (2021) also empirically substantiated this by associating digital service characteristics with MSME's growth and superior user experience in India. Suri and Jack (2016) demonstrated how mobile money in Kenya had positive effects on poverty reduction and social and economic empowerment of women. Andrianaivo and Kpodar (2012) also discovered that ICT and mobile services had significantly affected rural financial access and the GDP growth in Africa. Beck et al. (2009) and Chibba (2009) connected financial inclusion to the larger developmental agenda, and promoted digital finance, eased KYC filters and public–private partnerships for poor populations. Evans and Pirchio (2015) highlighted the role of agent networks, inter-operability, and regulation in scaling mobile money effectively. Klapper and Singer (2017) highlighted digital finance's potential to serve the unbanked but stressed the need for inclusive design, digital literacy, and robust consumer protection especially for women and rural populations.

Allen et al. (2016) conducted study in 120+ countries which concludes that simplified onboarding, biometric ID & mobile connectivity have enhanced digital banking adoption significantly. Agent networks were crucial for expanding inclusion, particularly among young and informally employed individuals. The framers emphasized consumer protection as well as innovation. GSMA (2020) indicated that there were more than 1 billion mobile money accounts worldwide, and Sub-Saharan Africa achieved the highest activity of accounts. Growth was driven by inter-operability, flexible pricing and gender-inclusive services. But data protection and financial literacy were highlighted as crucial missing links. Zins and Weill (2016) are among those who validated that education, income and access to technology had an impact on the use of financial services across Africa. Mobile money made inroads with low-income and rural users, but gender gaps remained. They promoted personalized digital therapies. Donner and Tellez (2008) studied Latin America and Africa and found that mobile phones were a cheaper alternative to the traditional banks, encouraging saving and small business ventures. Policy incentives for low-income segments and agent-based models were identified as important. Jack and Suri (2011), for example, showed that Kenya's M-Pesa enhanced household security, enabled remittances, and allowed families to cope with crises. Their study converged early proof of the development effect of mobile banking. For example, using data on mobile-banking in Indian states, Ghosh (2016) related mobile-banking with more inclusion of underprivileged classes. It stimulated saving, lowered transaction costs, and facilitated government transfer access, but required awareness programs for further diffusion.

4. RESEARCH METHODOLOGY

This study is designed to explore the effect of digital banking in the way of financial inclusion in Delhi NCR region, including urban, semi urban and rural areas of Delhi, Noida, Gurugram, Ghaziabad, Faridabad and Alwar. The region is home to more than 46 million people with diverse, educated backgrounds, which make it an ideal landscape for assessing the digital financial inclusion outreach and obstacles.

The methodology adopted was descriptive research design with a structured survey approach, and the study was both qualitative and quantitative in nature. The sample size comprised of 70 (students, salaried, homemaker and small scale business) randomly selected respondents. The data were collected both digitally and using paper for digitally active as well as digitally excluded respondents widely covering gender, age, occupation, education, urbanisation status and preferred language and mode of participation.

Primary data was collected using:

- Google Form questionnaires for digital users.
- In person interviews to unbanked respondents.
- Field observations in informal areas to assess real-world barriers.

Secondary data were obtained from RBI, Ministry of Finance and World Bank reports and leading bank publications for situating the results obtained in perspective and to benchmark the trends.

This combination of qualitative and quantitative methodology provides depth and validity to our understanding of the role of digital banking in financial inclusion, generating insights which capture the subtle nuances of access, adoption and constraints in Delhi NCR.

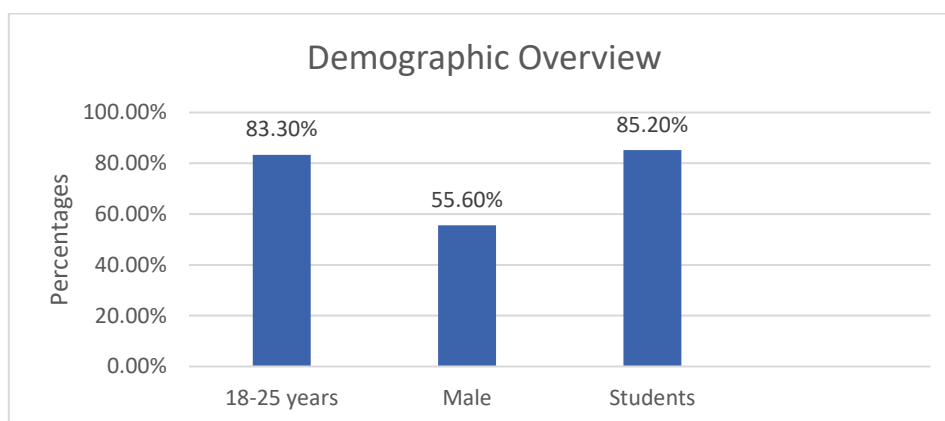
5. DATA INTERPRETATION

5.1 Introduction

This section shows a brief analysis of 54 respondents from the Delhi NCR region, who were interviewed in order to understand whether financial inclusion will be impacted due to the digitally driven banking features. Their prevalence in urban and semi-urban geographies also point to why digital banking tools such as UPI (Unified Payments Interface), mobile banking apps and AEPS (Aadhaar Enabled Payments System) are being used more. But inclusion is not just about access and availability, it's also about capability, confidence and actual consumption. The findings below are illustrated with specific visual evidence in order not to reproduce, yet maintain, comprehensiveness.

5.2 Demographic Overview

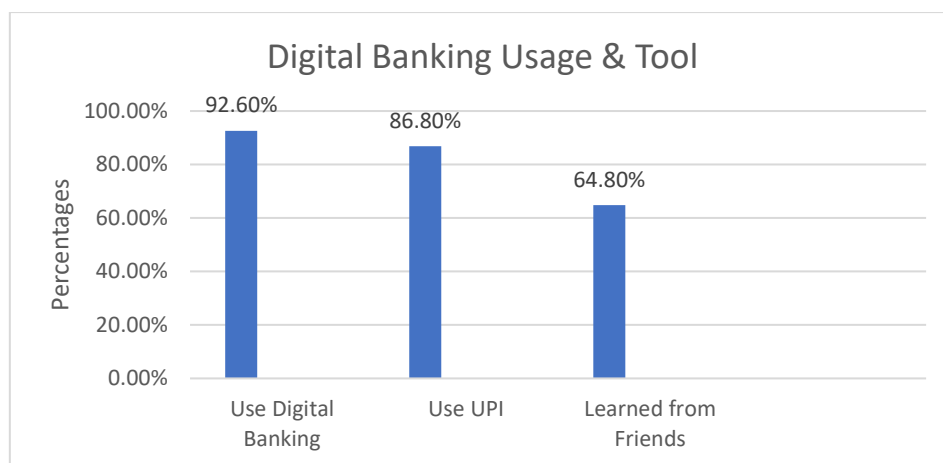
The majority of the participants were aged between 18-25 years (83.3%) and the majority were students (85.2%). As far gender was concerned, majority were men and 55.6% male and 42.6% female, with a high educational profile — over 63% were graduates or postgraduates. From the income perspective, 61.1% of the respondents claimed as having no income, indicating dependency, likely on guardians or scholarships.



Graph 1: Combined Demographic Profile – Age, Gender, Occupation

5.3 Digital Banking Usage & Awareness

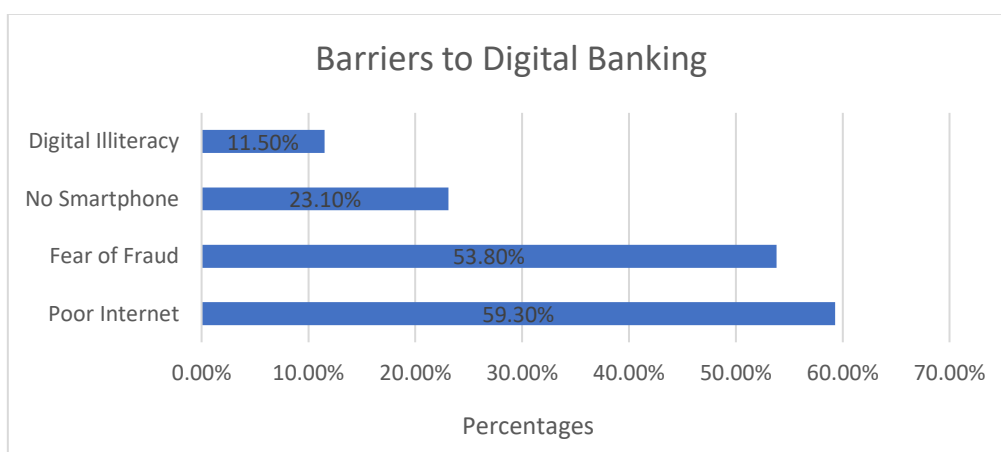
An overwhelming 92.6% have adopted one or other mode of digital banking, the UPI being the most popular (86.8%). Approximately 61.1 use these services daily and 70.4% is very confident using these services. The sources of awareness are largely informal: 64.8% heard about this from friends or family, while 27.8% from social media. Institutional engagement (banks, government, etc) is very low.



Graph 2: Digital Banking Usage & Tool

5.4 Barriers, Challenges, and Perception

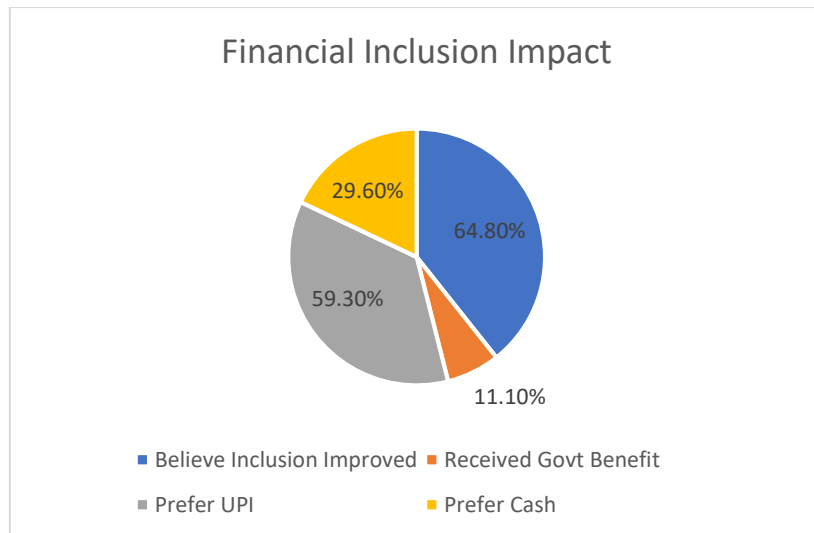
Despite the confidence, 59.3% complained of poor internet connection, while 53.8% complained of fear of fraud. One small but troubling fraction conceded to digital illiteracy. Some 29.6% continue to favor cash, and 23.1% say device/internet access are impediments. All the same, 74.1% think digital is more secure than cash.



Graph 3: Common Challenges & Barriers to Digital Banking

5.5 Financial Inclusion Perception & Behavior

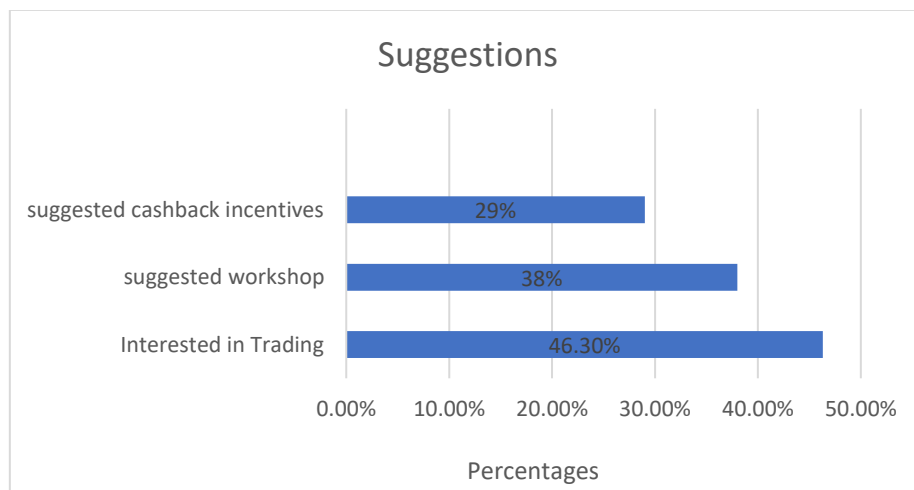
64.8% feel that digital banking has opened access for the rural and poor communities. And just 11.1% accessed government benefits digitally — most likely because many of the respondents, being young, don't receive DBT at all. Many favor UPI over traditional bank transfers or cash, but the use of cash persists on small charges.



Graph 4: Perceived Impact & Usage Preferences

5.6 Interest in Capacity Building & Suggestions

46.3% would like to attend sessions to improve digital literacy and proposed ways to increase digital banking awareness are through local workshops, language support, cashback schemes, and better design of apps.



Graph 5: Willingness to Learn & Awareness Suggestions

5.7 Insights from Unbanked Respondents and Observations

Interviews and field observations with the unbanked showed problems such as fear of fraud, lack of documentation and understanding about how the apps work and a sense that formal banking is “not for them.” A significant portion rely on informal cash-based networks. looked for QR codes and POS machines in the poor and “No QR codes and no POS machines can be found in those poor and reluctance to engage with kiosks or banking apps.

5.8 Secondary Data Correlation

Reports from RBI, NPCI, and World Bank show that while account ownership has increased due to Jan Dhan and UPI, usage remains skewed toward urban youth. The gaps lie in consistent usage, trust, and outreach to low-literacy groups.

6. LIMITATIONS

1. The sample size of just 70 means findings are not representative of the whole population of Delhi NCR.
2. City specific and responders bias confined the generalisability of the results to the other sub-urban (rural/remote) NCR areas.
3. The fact that youth predominate in participation may skew observed results towards youth tech-savvy behaviour.

4. Attention to “mainstream” digital tools precludes lessons from other financial technologies.
5. It is worth mentioning that a relatively small period of data collection can miss the changes in user’s behavior, or the effect of the policy, too.
6. Few unbanked interviews limit depth of insight about barriers to financial exclusion.
7. Not everyone has access to the internet, nor the ability to keep up with smart phones, thus, using Google Forms for data collection would exclude those people.

7. CONCLUSION

This research analysed digital banking, a driver for financial inclusion in Delhi NCR. Grounded on first-hand field data collected from structured questionnaires, oral interviews, and field observations, and complemented with secondary data, the study identifies some progress and some continued challenges in addressing inclusive finance. Banked participants had high UPI, internet banking and mobile app awareness, and regular usage due to convenience and speed.

But it turned out there were very real barriers underlying unbanked individuals’ reasoning and choices: they’re unbanked because they’re not digital literate, they’re unbanked because they’re scared of banks, and they’re unbanked because they simply have bad access to smartphones, internet and the infrastructure they need to bank. It is this population – frequently composed of daily wage workers and small vendors – which continues to be excluded, even as digital finance options proliferate.

This is supported by secondary data that demonstrates that though UPI, Jan Dhan have increased its reach, access is still skewed—towards middle and higher-income users. It is a market dominated by major banks, with little penetration among the unbanked.

The report finds that digital banking has the potential to improve inclusion, but on its own that is not enough. Socio-economic and psychological constraints need to be addressed through literacy programmes, user-friendly platforms, and infrastructure building. True financial inclusion will come by merging of technology to the type of human-centered interventions that those most frequently left behind get to see.

8. SUGGESTIONS

1. Organize digital skill based workshops in poor and informal workers communities.
2. Develop easy-to-use banking applications with light user interface and local languages.
3. Initiate awareness programmes to build trust and advantages of having formal banking.
4. Provide incentives, such as cashback or rewards, to entice new digital consumers.
5. Deliver assisted digital services via helpdesks and mobile agents.

9. FUTURE RESEARCH DIRECTION

1. Expansion of the study in the rural NCR and neighboring states for urban and rural comparison.
2. Apply samples larger and with more heterogeneity such as older individuals, migrants or women.
3. Examine how fintech startups are on a different path than banks in driving digital inclusion.
4. Assess the actual impact of government schemes such as PMJDY and DBT.
5. Explore cultural and psychological barriers to the adoption of digital banking.
6. Investigate the role of cybersecurity concerns on trust and use.
7. Evaluate digital uptake among MSMEs, micro enterprises, and street vendors.

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