

A Review of the Digital Payment Landscape in India and Future Perspective

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Abstract

India's adoption of digital payment methods, such as the Unified Payments Interface (UPI) and mobile wallets, has become a significant factor in driving economic inclusion, formalization of trade, and other benefits. This paper presents a comprehensive overview of the Indian digital payment system, discussing current developments, identified key challenges faced by stakeholders, and providing recommendations for improving the system to ensure secure yet accessible and inclusive financial transactions. It also gives insights into future directions, and looks at ways in which the digital payments can contribute to financial inclusion, economic growth and a cashless economy.' It is an attempt to understand the different types of digital payment transactions that people use in their everyday lives and also to provide information about the current state of the industry and its potential for growth, as well as India.

Keywords: Digital Payment System, Digital India, Financial Inclusion, Cashless Economy, Financial Technology, Regulatory Framework, Indian Digital Economy

Introduction:

India's digital payment landscape has undergone a significant transformation over the past decade, emerging as a global leader in digital financial transactions (A & Bhat S, 2022). With the government's push towards a cashless economy through initiatives like Digital India, and the introduction of innovative platforms such as Unified Payments Interface (UPI), the adoption of digital payment systems has grown exponentially (Ghosh, 2021). These developments have not only redefined the way transactions are conducted but have also brought financial services closer to traditionally underserved and unbanked populations. In India, the expansion of the digital payment system was made possible by demonetization. The goal of the Indian government's 2015 Digital India plan is to establish a cashless and paperless society that is empowered by technology.

The rapid shift from cash to digital payments has been driven by multiple factors, including increasing smartphone penetration, affordable internet access, and a robust regulatory framework that supports FinTech innovations (Putrevu & Mertzanis, 2024). The demonetization moves in 2016 further accelerated the adoption of digital payment methods as citizens sought alternatives to cash transactions. Additionally, the COVID-19 pandemic highlighted the importance of contactless payments, leading to a surge in the use of digital wallets, QR codes, and mobile banking services. According to new research by PhonePe and Boston Consulting Group, India's digital payment business would more than treble from three trillion to ten trillion dollars by 2026 (Economic Times, 2023).

The Reserve Bank of India (RBI) observed Financial Literacy Week (FLW) with the theme "Make a Right

Start: Become Financially Smart" from February 26 to March 1, 2024.

The initiative aimed to promote financial education among the public, emphasizing saving, compounding, banking essentials for students, and digital literacy. The RBI organized various activities, including workshops, seminars, and an idea on for postgraduate students, to encourage responsible financial behavior and informed decision-making (PIB, 2024).

Literature Review:

(Raisagar, 2024) observed that there is tremendous growth in the volume and value of transactions of UPI in the last years. In 2020, there was a recorded double-digit increase in transactions when compared to the prior year. Digital payment apps boost economic openness, which boosts the nation's reputation and encourages foreign investments.

(Trivedi, 2024) examined the growth, adoption, and challenges of digital payment systems in India, finding that despite increasing usage, cash remains the preferred payment mode due to slow adoption caused by multiple barriers.

(Daggubati, 2024) has carried out an investigation to find out how important UCD is to efficiently optimizing the payment experience. It has been discovered that the power of UCD to humanize digital transactions fills the technological gap in the payment system.

(Ray & Mohan, 2024) highlighted improvements in India's banking sector through government-led bank recapitalization, stressed asset resolution, and an effective bankruptcy framework. The study also emphasized the rapid growth of digital financial infrastructure and digital payments, which has made everyday transactions easier and more accessible to the public.

According to (M, et al., 2024) in India's digital payments environment, the Unified Payments Interface (UPI) has changed the game by providing a plethora of advantages while overcoming obstacles to guarantee smooth operation. This paper's ABCD study clarifies the role that UPI plays in advancing affordability, innovation, convenience, financial inclusion, and security.

(Bera & Li, 2024) examined how UPI was adopted and integrated widely, assessing its impact on the banking industry, the Indian public's daily financial activities, and its role in fostering a cashless economy. The report emphasizes the strong framework of the UPI system, which combines high security with ease of use, and has a substantial impact on India's shift towards digital financial services through a thorough investigation of the mechanism.

(Prasuna, et al., 2024) used a panel data regression model to identify the variables affecting financial inclusion in 27 states of India from 2005 to 2020. The authors discovered that there are regional differences in financial inclusion; for example, the southern region outperformed the other regions in this regard.

The results of the (Kirmani, et al., 2023) study indicate that users are likely to stick with UPI-based payments in the future if they were happy with them during the COVID-19 pandemic. User satisfaction and continued intention for UPI-based payment systems were found to be significantly influenced by post-adoption perceived risk, perceived usefulness, and perceived value.

(ANGAMUTHU, 2020) examined how digital payments increased in India between 2012–2013 and 2018–2019, analyzing transaction volume and value using seven different parameters: RTGS, CTS, IMPS, M-Wallet, PPI cards, debit and credit cards.

Results demonstrated significant increase, highlighting the influence of IMPS and M Wallet services on digital payments. terrain. A cashless society is becoming more and more popular in the economy due to the efficiency and convenience of use of electronic transactions.

The study by (Ravikumar, et al., 2020) looked into digital payments in industrialized and developing nations, paying particular attention to India. Electronic money transfers have showed growth across all business sizes, small and large. The analysis found that India is getting closer to being a cashless economy, but there is still more work to be done.

Objectives:

1. To evaluate the growth trajectory of digital payments in India
2. To examine issues such as digital literacy, cybersecurity risks, infrastructure gaps, and regulatory barriers that hinder the widespread adoption of digital payments in India.
3. To provide suitable suggestions on how to handle digital payments in a simple and practical manner.

Research Methodology:

The nature of the investigation is exploratory. Secondary data served as the study's foundation. To ensure the effectiveness of the study, materials were gathered from books, journals, newspapers, and pertinent websites that were consulted. The researcher has read up on the subject matter and has a good understanding of how digital payment methods are used. The study's objective is to supply secondary data so that other researchers can carry out their research. Since there are no primary data, the dependability is reliant on the secondary data. The study also incorporates the knowledge and experiences of the researcher.

Types of Digital Payment Systems in India:

- **Unified Payments Interface (UPI):** NPCI created UPI, a real-time payment system that allows mobile phone users to transfer money instantly between bank accounts. In India, it is becoming one of the most popular digital payment options.
- **Mobile Wallets:** Digital wallets like Paytm, Google Pay, and PhonePe store funds for easy payments and transactions. They are popular for small-scale transactions and peer-to-peer transfers.
- **Internet Banking:** Online banking services like NEFT, RTGS, and IMPS are widely used for transferring money digitally between accounts.
- **Credit and Debit Cards:** Traditional payment methods using cards remain relevant, with contactless payment features and integration with digital payment platforms.
- **Aadhaar Enabled Payment System (AePS):** This system allows bank transactions using Aadhaar authentication, particularly beneficial for rural and unbanked populations.

Benefits of Digital Payments:

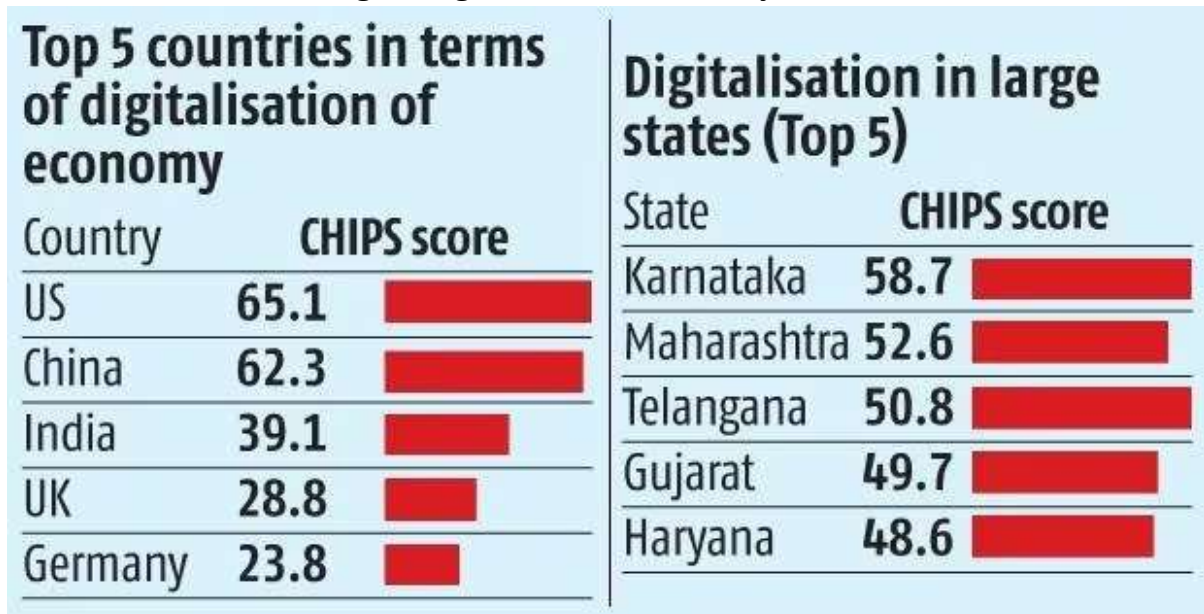
- **Convenience and Speed:** Instant and hassle-free transactions from anywhere at any time.
- **Financial Inclusion:** Bridging the gap between rural and urban India by bringing financial services to the unbanked population.
- **Reduced Costs:** Lower transaction fees compared to traditional banking services and reduced dependency on cash.
- **Transparency:** Digital payments create an auditable transaction history, reducing corruption and tax evasion.
- **Economic Growth:** Boosts e-commerce and small businesses by simplifying payments and expanding market reach.

Challenges in Digital Payment Adoption:

- **Digital Divide:** Limited internet connectivity and low digital literacy, especially in rural areas, hinder adoption.
- **Security Concerns:** Fraud, data breaches, and cyber-attacks can erode consumer trust.
- **Resistance to Change:** Traditional habits and trust in cash still dominate, especially among older generations and in rural communities.
- **Infrastructure Gaps:** Limited availability of PoS terminals and digital infrastructure in remote areas.
- **Regulatory Challenges:** Complex regulatory requirements can slow innovation and pose barriers to new entrants in the market.

Interpretation and Findings:

Fig. 1: Digitalisation of Economy in India



The above Fig.1 presents a comparison of the digitalization of economies and states.

Country-level comparison:

- The United States leads with a CHIPS score of 65.1, followed by China at 62.3.
- India ranks third with a CHIPS score of 39.1, surpassing the UK (28.8) and Germany (23.8).

State-level comparison within India:

- Karnataka stands out as the most digitally advanced state with a CHIPS score of 58.7.
- Maharashtra, Telangana, Gujarat, and Haryana follow in descending order of digitalization.

Overall, the data indicates a significant gap between the digitalization levels of the United States and China compared to other countries, including India. While India has made progress, it still lags behind the global leaders in terms of digital economy development (Paul, et al., 2020). The state-level comparison within India highlights the regional disparities in digitalization efforts

Recent Trends in Digital Payments:

- **Contactless Payments:** Growing preference for QR code-based payments and NFC-enabled transact-

ions post-pandemic.

- **Integration with Financial Services:** Many digital wallets and apps now offer additional financial services like insurance, loans, and investments.
- **Cross-Border Transactions:** Simplified and faster cross-border payment solutions are emerging, driven by technological advancements.

India's rate of internet adoption between 2014 and 2024.

India's internet penetration rate increased from over 14% in 2014 to over 52% in 2024. Despite the seemingly modest numbers, this indicates that over half of the 1.4 billion individuals in the world had internet connection in that particular year. In terms of the number of active internet users worldwide, this also placed the nation second.

Accessibility and availability of the Internet

The number of internet connections in the nation quadrupled by 2021, with a higher density of connections found in urban than rural areas. The promise of internet usage in India remains unfulfilled, even with very low internet pricing. The core of the issue is a real gender gap and a lack of knowledge, with accessible mobile phones and mobile internet access providing only a partial solution.

Living digitally

India, which has one of the biggest populations of netizens worldwide, is a hive of activity where people use the internet constantly. Indians have embraced digital living, from information and research to commerce and entertainment to owning smart houses. Using social media was one of the most popular excuses for using the internet among these.

Financial Inclusion in India

In its Financial Inclusion (FI) Index, the Reserve Bank of India (RBI) disclosed a score of 64.2 for March 2024. Compared to its value of 53.9 in March 2021, when it was originally recorded, this is a notable improvement. Based on retroactive estimates, the value of the FI index in March 2017 was 43.4. Since then, it has grown at a Compound Annual Growth Rate (CAGR) of almost 6%, tracking the growth rate of India's GDP during the same time period. Let's examine the FI Index's constituent (Gupte, et al., 2012) parts in order to comprehend this. The index has three dimensions:

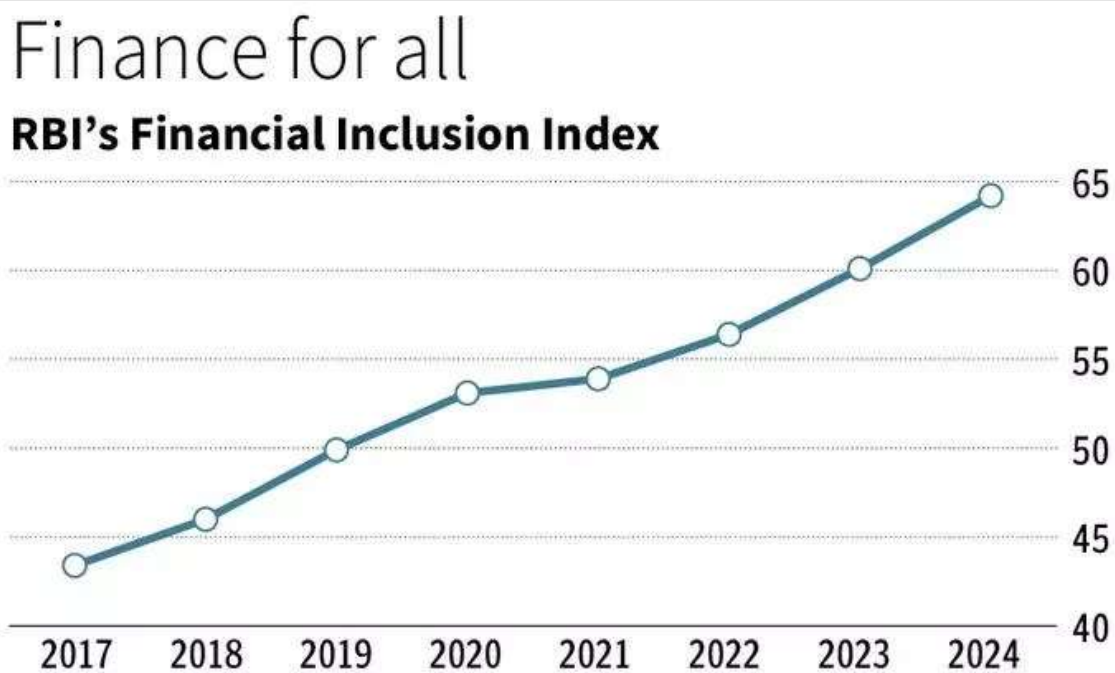
- **Usage (45% of total weight)**
This dimension accurately reflects economic activity by capturing the quantity and value of transactions. The degree to which financial services are used is also reflected in the utilization dimension (Cámara & Tuesta, 2014). This covers the quantity of loan and bank accounts, online transactions, insurance coverage, and enrollments in pension plans. The increasing number of Indians doing financial activities, such as taking out loans and making digital payments, directly supports GDP development. Notably, the majority of purchases, even those made in the unorganized sector, increasingly go via financial institutions and are thus included in this measure.
- **Access (35% of total weight)**
This feature serves as a barometer for financial services availability and accessibility. Important criteria include the density of ATMs, the number of bank branches per 100,000 people, and the reach of banking and microfinance correspondents. More individuals participating in the economy thanks to

greater access results in increased economic production. How successfully financial organizations adapt to market demands is seen by the quantity and Geographic distribution of their financial service locations. Increased economic activity, including saving, investing, and spending, is made possible by improved access (Goel & Sharma, 2017). Since financial institutions have ample opportunity to develop in India, an improvement in the access parameter would translate into a growth in GDP, making access a direct causal factor for GDP growth.

▪ **Quality (20% weightage)**

This evaluates how well the financial system works, taking into account factors including consumer protection, the strength of grievance redressal procedures, and the percentage of people who are financially literate (Sarma & Pais, 2011). Robust and long-term economic participation and therefore GDP growth is facilitated by well-informed, happy, and safeguarded customers secured by high-quality financial services. Note that additional inclusion factors are also included in RBI's quality criterion, which isn't only a rigid assessment of service quality. Consequently, it would have a strong correlation with GDP, which grows in line with inclusion (Annemalla & Kasturi, 2025).

Fig. 2 RBI's Financial Inclusion Index



Source: Statista.com

Fig.2 presents a line graph illustrating the trend of the RBI's Financial Inclusion Index from 2017 to 2024.

Key Points and Observations of above table:

- **Steady Growth:** The index has exhibited a consistent upward trajectory over the years, indicating a positive trend in financial inclusion in India.
- **Accelerated Growth in Recent Years:** The rate of increase seems to have accelerated in the past few years, particularly from 2021 onwards. This suggests intensified efforts or favourable conditions for financial inclusion.

- **Highest Value in 2024:** The index reached its highest point in 2024, signifying a significant improvement in financial inclusion compared to earlier years.
- **Positive Impact of Government Initiatives:** The steady growth likely reflects the impact of government initiatives and policies aimed at promoting financial inclusion, such as demonetization, GST implementation, and the push for digital payments.

Possible Factors Contributing to the Growth:

- **Digital Financial Services:** The rapid expansion of digital platforms like UPI and mobile wallets has made financial services more accessible to a wider population, especially in rural areas.
- **Government Incentives:** Government schemes and subsidies have inspired individuals and businesses to adopt formal financial services.
- **Financial Literacy Initiatives:** Increased awareness and education about financial products and services have empowered people to make informed decisions.
- **Improved Infrastructure:** Better connectivity and infrastructure have facilitated the delivery of financial services to remote regions.

Implications and Future Outlook:

- **Continued Progress:** The positive trend suggests that India is making significant strides in achieving its goal of financial inclusion.
- **Challenges and Opportunities:** Despite the progress, challenges such as financial literacy, digital divide, and infrastructure gaps remain. Addressing these issues will be crucial for **further advancements**.
- **Role of Technology:** Technology will continue to play a pivotal role in driving financial inclusion. Innovations in fintech and AI can enhance accessibility and efficiency.
- **Policy Measures:** The government will need to maintain its focus on policies that promote financial inclusion, such as expanding financial literacy programs, improving infrastructure, and supporting digital financial services.

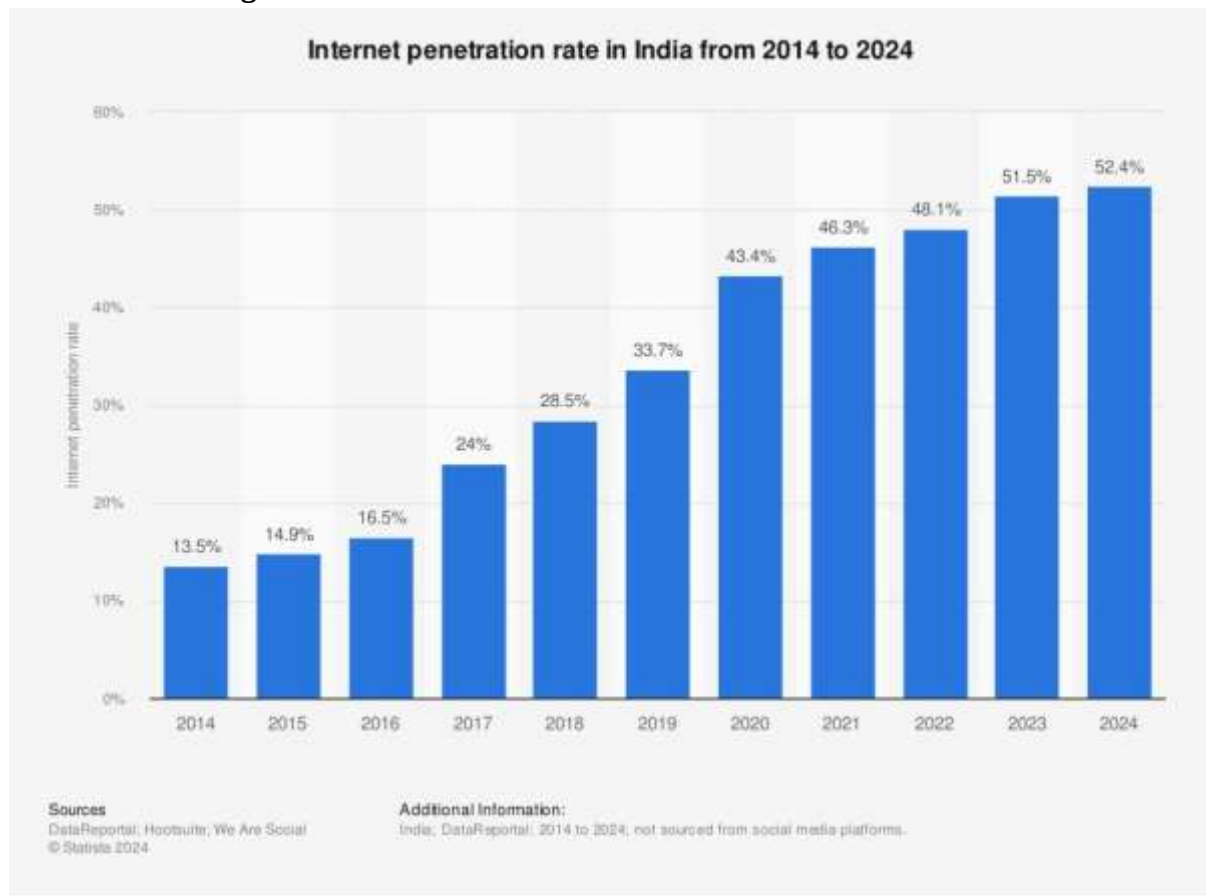
Overall, the image presents a positive outlook for financial inclusion in India. The steady growth of the RBI's Financial Inclusion Index indicates that India is making progress towards providing financial services to all its citizens.

Growth and Trend of Digital Payment in India

India has seen incredible progress in the field of digital payments during the past ten years. From just 162 crores in Financial Year (FY) 2012–13 to over 16,443 crores in FY 2023–24—a rise of more than 129 times, the overall number of digital transactions has surged in volume.¹ The rate has increased steadily over the years, from 12.5% in 2014 to 52.4% in 2024. This indicates that more and more people in India are gaining access to the internet.

¹ Annual Report 2023-24, RBI, Gol, Delhi, 2024, p. 162

Fig.3 Internet Penetration Rate in India from 2014 to 2024



Source: DataReportal. (2024). Internet penetration rate in India from 2014 to 2024.

Trend analysis of Fig. 3: -

- **Rapid Growth:** The internet penetration rate in India has experienced significant growth from 2014 to 2024.
- **Steady Increase:** The rate has increased steadily year-on-year, with no major dips or plateaus.
- **Accelerated Growth:** The growth rate seems to have accelerated in recent years, especially from 2018 onwards.

Key Observations:

- **Starting Point:** In 2014, only about 13.5% of the Indian population had internet access.
- **Milestone:** The penetration rate crossed the 50% mark in 2023, indicating that more than half of the population has internet access.
- **Projected Future:** It is anticipated that the rate will continue to rise, reaching 52.4% in 2024.

Implications:

- **Digital India:** The increasing internet penetration rate aligns with the Indian government's "Digital India" initiative. The goal of the "Digital India" campaign was to make the nation a digital economy.
- **Economic Growth:** Improved internet connectivity can drive economic growth by enabling e-commerce, online services, and digital businesses.

- **Social Impact:** Better access to education and healthcare information, a reduction in the digital divide, and citizen empowerment are all possible with increased internet access.

Conclusion:

Internet usage has increased quickly throughout India's socioeconomic structures as a result of the Digital India program. India, which has the second-largest internet user base behind China, embraced financial technology rapidly. India's internet industry is revolutionizing the country's economy (Zhang & Hu, 2024). There has been a complete transition to the nation's digital ecosystem with the establishment of the required digital infrastructure and reasonably priced data plans (Chowdhury, 2022). As of December 31, 2022, the number of broadband connections has increased significantly from 61 crore in 2014 to 83.22 crore in 2023. Between 2015 and 2021, there was a notable 200 percent rise in internet subscribers in rural regions and a 158 percent increase in urban areas.² The goal was to guarantee that every citizen could easily access high-speed internet. This expansion is attributable to the accomplishment of India's "Digital India" initiative. Over 836 million people in India are active internet users as of right now. That may increase to more than 900 million by 2025. With the largest rural broadband connection network project at "Bharat Net" and the 5G auction in mid-2022, the goal is to connect over 400 million users in the near future and increase the number of people with internet access to over 1.2 billion.³ This will increase digital literacy and close the nation's digital gap. As a result, digital inclusion, affordability, accessibility, and connection will all increase throughout India (Patel, 2024). Therefore, as the nation moves forward with the vision of "Techade," a period of 2021–30 committed to achieving all-around technology development in India, this will assist realize the goal of digitally empowering every citizen.

Recommendations:

- **Infrastructure Development:** Continue investing in expanding internet infrastructure, especially in rural areas, to ensure wider coverage. Expanding PoS machines and enhancing digital infrastructure in underserved regions.
- **Enhancing Digital Literacy and Trust:** Promote digital literacy programs to help people effectively use the internet and harness its benefits. Focused educational programs and awareness campaigns to build confidence among users, especially in rural areas.
- **Affordable Access:** Work towards making internet access more affordable for a larger population.
- **Data Privacy and Security:** Strengthen data protection measures to safeguard user privacy and security in the growing digital ecosystem. Implementation of robust and scalable cybersecurity frameworks for secure transactions.
- **Digital Governance:** Leverage technology to improve governance, transparency, and efficiency in public services.
- **Regulatory Innovations and Support:** Balanced regulatory measures promoting innovation while ensuring consumer protection.

² "India's Techade: Broadband Connections Grow Exponentially", *PIB*, May 24, 2023 at <https://static.pib.gov.in/WriteReadData/specificdocs/documents/2023/may/doc2023524202601.pdf>. Accessed on 7 June 2024

³ Saroj Bishoyi, "Technology, Geopolitics and India's Quest for Tech Self-Reliance", *VIF Paper*, Vivekananda International Foundation (VIF), New Delhi, April 2024, pp. 33-34.

- **Encouraging Public-Private Partnerships (PPP):** Collaborative initiatives between government and FinTech companies to drive financial inclusion.

Future Scope of the Study:

- **Comparing Growth Rates:** Analyze the year-on-year growth rates to identify periods of accelerated growth and potential factors contributing to these trends.
- **Regional Variations:** Explore internet penetration rates across different states and regions to understand disparities and target interventions accordingly.
- **Demographic Analysis:** Examine how internet penetration varies among different age groups, genders, and socioeconomic strata.
- **Impact on Sectors:** Assess the impact of increased internet penetration on specific sectors like agriculture, education, healthcare, and finance.

By carefully analyzing the data and considering these recommendations, policymakers, businesses, and organizations can effectively leverage the growing digital landscape in India.

References:

1. A, M. & Bhat S, G., 2022. India's Digital Payment Landscape – An Analysis. *International Journal of Case Studies in Business, IT, and Education*, 6(1), pp. 223-236.
2. Angamuthu, B., 2020. Growth of digital payments in India. *NMIMS JOURNAL OF ECONOMICS AND PUBLIC POLICY*, 5(4).
3. Annemalla, R. & Kasturi, A., 2025. Financial Inclusion Among Indian States: An Analysis Through Financial Inclusion Index. *Global Business Review*, p. 09721509251356954.
4. Bera, S. & Li, B., 2024. UPI: THE FUTURE OF PAYMENT SYSTEM IN INDIA. *Journal of Philanthropy and Marketing*, 4(1).
5. Cámara, N. & Tuesta, D., 2014. Measuring Financial Inclusion: A Multidimensional Index. *BBVA Research Paper*, 14(26).
6. Chowdhury, R. H., 2022. Digital government initiatives and national resilience: How digital governance frameworks were transformed post-COVID to maintain national services. *World Journal of Advanced Engineering Technology and Sciences*, 07(01), pp. 224-240.
7. Daggubati, L. S., 2024. Designing Digital Payment Experiences: The Crucial Role of User-Centered Design and Effective User Feedback Integration. *International Journal of Computer Trends and Technology*, 72(2), pp. 27-29.
8. Ghosh, G., 2021. Adoption of Digital Payment System by Consumer: A review of Literature. *International Journal of Creative Research Thoughts*.
9. Goel, S. & Sharma, R., 2017. Developing a Financial Inclusion Index for India. *Procedia Computer Science*, Volume 122, pp. 949-956.
10. Gupte, R., Venkataramani, B. & Gupta, D., 2012. Computation of Financial Inclusion Index for India. *Procedia - Social and Behavioral Sciences*, Volume 37, pp. 133-149.
11. Kirmani, M., Haque, M. A., Sadiq, M. A. & Hasan, F., 2023. Cashless preferences during the COVID-19 pandemic: investigating user intentions to continue UPI-based payment systems in India. *Journal of Science and Technology Policy Management*, 14(4), pp. 758-779.
12. M, M. A., Asif V A, N. & Mahale, D. P., 2024. An Overview of India's Unified Payment Interference (UPI): ABCD. *International Journal of Research Publication and Reviews*, 5(5), pp. 5998-6003.

13. Patel, D. S., 2024. Perspective of Digital Transformation in Rural India. *International Journal of Science and Research*, 13(4), pp. 121-128.
14. Paul, M., Upadhyay, P. & Dwivedi, Y. K., 2020. Roadmap to digitalisation of an emerging economy: a viewpoint. *Transforming Government: People, Process and Policy*, 14(3), pp. 401-415.
15. Prasuna, A., Kasturi, A. & Annemalla, R., 2024. Unveiling the factors influencing financial inclusion in India: a comprehensive analysis. *Cogent Economics & Finance*, 12(1), p. 2381682.
16. Putrevu, J. & Mertzanis, C., 2024. The adoption of digital payments in emerging economies: challenges and policy responses. *Digital Policy, Regulation and Governance*, 26(5), pp. 476-500.
17. Raisagar, V., 2024. UPI: Revolutionizing the digital payment system in India: A critical review. *Asian J Manage Commerce*, 5(1), pp. 38-40.
18. Ravikumar, T., Murugan, N., Suhashini, J. & Rajesh, R. R., 2020. Digital Payments Diffusion in Emerging and Developed Economies. *International Journal of Innovative Technology and Exploring Engineering*, 9(4).
19. Ray, P. & Mohan, R., 2024. Recent Developments in Indian Central Banking: Flying through Turbulence but Aided by Some Tailwinds. *Asian Economic Policy Review*, 20(1), pp. 103-123.
20. Sarma, M. & Pais, J., 2011. Financial Inclusion and Development. *Journal of International Development*, 23(5), pp. 613-628.
21. Trivedi, H., 2024. Evolution of Digital Payment System in India: Past, Present and Future. *International Research Journal of Humanities and Interdisciplinary Studies*, 5(1), pp. 30-40.
22. Zhang, L. & Hu, D., 2024. National Digital Development Strategy and Its Practice in India. *Countries and Regions: Dynamic Interconnectivity*, pp. 137-181.