Digital Technology Improving Financial Inclusion in India: Post Covid Evidence

Abstract

Technology is transforming the financial inclusion landscape and growing the digital infrastructure that is essential to accomplishing numerous national objectives.The Covid-19 pandemic and the subsequent lockdowns imposed in 2020–21 significantly impacted economies worldwide due to restricted mobility and disrupted goods and services, while also exposing the vulnerabilities of traditional financial systems. Amidst this challenging scenario, technology played a crucial role in bridging gaps and enhancing financial access.

There has been a pivotal role of digital technology in improving financial inclusion prospects, especially during the COVID-19outbreak, when access to digital transactions and financial services became a necessity to prevent economic collapse. Governments around the world responded by offering financial support to citizens, creating both opportunities and difficulties for promoting financial inclusion.

Due to its ability to enhance the lives of those with low incomes, financial inclusion is still a subject of extensive investigation. Subsequent analyses highlight the mutually beneficial connections between digital technology, financial inclusion, and economic expansion.

This research has been carried out in the Indian context using onlysecondary sources of data, to provide a comprehensive, evidence-based analysis of the role of digital technology in improving financial inclusion with particular reference to the Pre- and Post-Covid eras. A variety of published reports and articles, including newspaper stories, journal articles, and policy papers, have been utilized to conduct the semi-systematic evaluation.

Drawing from secondary sources of data through documentary analysis, this study uncovers compelling evidence of how digital technology has expanded financial inclusion in India and

the Covid-19 pandemichas acted as the prime catalyst of this process. The evidence presented herein also contributes to the growing body of research on financial inclusion's impact on low-income livelihoods and serves as a catalyst for future studies on leveraging technology for economic growth and improved financial well-being.

The study's overall conclusions indicate that there is a strong correlation between the acceleration of financial inclusion in India and the Covid-19 measures for the quick, simple, and widespread accessibility of digital technology.The post-COVID increase in the RBI's Digital Payments Index (RBI-DPI) underscores India's astonishing leap in digital payment usage, which has been fuelled mostly by the success of UPI. The use of Aadhaar and digital payment options, as well as increased competition, has increased financial inclusion, all made possible through contributions from the implementation of the JAM trinity (Jan Dhan, Aadhaar, and Mobile).

Keywords: Financial Inclusions, Digital Technology, Covid-19, Economic Growth

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I. INTRODUCTION

1.1 Defining Financial Inclusion:

Practitioners and scholars alike are becoming increasingly interested in the role that financial inclusion plays in the economic and financial debate. Development partners including the World Bank, International Monetary Fund, G20, and AFDB have also expressed interest in the dialogue. Also, a lot has been already discussed on it by Modi government, Reserve Bank of India, Economic Survey and it has been a research point for the researchers not within India but also all over the world.

It is beginning to seem more possible to achieve the basic definition of financial inclusion, which is to make it easier for people to access useful and reasonably priced financial products and services that meet the needs of both individuals and businesses. These services and

products include transactions, payments, savings, credit, and insurance, and they should all be provided in an environmentally friendly and sustainable way.

Financial inclusion is described by Peterson K. Ozili in his book Theories of Financial Inclusion (2020) as the accessibility and availability of basic formal financial services to all members of the general populace. When people and businesses have access to formal financial services that are accessible, helpful, and meet their requirements in an ethical and sustainable manner, they are said to be financially included. The principles underlying the observed diversity in financial inclusion practices need to be identified, as financial inclusion practices differ throughout countries.

The definition of financial inclusion as "the process of ensuring access to financial services, timely and adequate credit for vulnerable groups such as weaker sections and low-income groups at an affordable cost" was provided by Dr. C. Rangarajan, RBI, in 2008. The committee is chaired by him.

"Access to practical and reasonably priced financial products and services that fulfill individuals and businesses needs - transactions, payments, savings, credit, and insurance - provided in an ethical and sustainable manner" is what the World Bank defines as "financial inclusion" (2022)

In fact, the United Nations (UN) has made financial inclusion an important objective in developing the economy since 2020. Financial inclusion is defined as "universal access, at a reasonable cost, to a wide range of financial services, provided by a variety of sound and sustainable institutions," according to the United Nations Department of Economic and Social Affairs Financing. The goal of inclusive finance is to improve financial services accessibility for small, medium-sized businesses as well as individuals.

One thing unites these definitions: they highlight the importance of ensuring that every person in the community has access to the financial services that are readily available.

1.2 India Story

India's tale has been uneventful when it comes to financial inclusion (FI). The Jan Dhan Yojana (PMJDY), which was initially introduced by the Prime Minister in 2014, intends to give residents access to financial services like bank accounts, remittances, credit, insurance, and pensions. It attracted 15 million users on its first day of operation.

On its journey to development, India has seen a rise in the use of digital finance in the years after demonetization in 2016. The Indian government, in conjunction with the central bank, has implemented many measures aimed at augmenting financial inclusion. These include the implementation of MUDRA banks, Electronic Benefits Transfer, Pradhan Mantri Jan Dhan Yojana, and no-frill accounts, which mandate either a minimum or no balance.

There were around 512.5million PMJDY accounts as of December 2023, with 348Million Rupay Cards issued and an overall balance of INR 211 trillion. In most rural households, formal banking services are available. India does better than the developing economy average of 71%, according to the newly released Global Findex Report, with 78% of persons having bank accounts. Although having access to bank accounts was just the start of financial inclusion, it was by no means the finish. It has since advanced. In addition to receiving direct benefit transfers, people are also receiving insurance benefits and making social security contributions.

The current and former governments of India have implemented a number of FI schemes, including Jan Dhan to Jan Suraksha, Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), Pradhan Mantri Mudra Yojana, and Stand-Up India Scheme.

1.3 COVID-19: A Push Towards Digitalisation

Although the pre-pandemic phase laid the foundation for the shift to digital banking, the pandemic gave families and individuals a strong incentive to embrace new payment technologies as a result of social distancing norms.

The global economy was greatly affected by the Covid-19 pandemic and the lockdowns that followed in 2020–21. These events disrupted products and services and limited movement, while also highlighting the weaknesses in established financial institutions. In this difficult situation, technology was vital in filling gaps and improving access to finance. During the health crisis, it became undoubtedly the most affordable, safest, and practical option to send money to loved ones.

Digital payment methods are used by many families and individuals in the country to send money home like the migrant workers overseas, and digital technology solutions are aimed at meeting the needs of the unbanked in the country. Remittances sent via mobile devices are turning into a useful tool in the fight for financial inclusion. More significantly, in order to lessen the need for actual cash during the crisis, digital payments and transfers ought to be encouraged as a way to get social benefits.

During the pandemic, more than 80 million adults in India alone adopted digital merchant payments for the first time, highlighting the potential for a digital revolution in the finance sector. According to the Financial Access Survey 2021, developed countries depended on internet and mobile banking, while low- and middle-income countries used mobile money more frequently.

There has been a pivotal role of digital technology in improving financial inclusion prospects, especially during the COVID-19outbreak, when access to digital transactions and financial services became a necessity to prevent economic collapse. Governments around the world responded by offering financial support to citizens, creating both opportunities and

difficulties for promoting financial inclusion.The Covid epidemic created a window of opportunity and increased the prominence of cashless financial services in the banking industry.

1.4Financial Inclusion and Digital Technology Interrelations

The use of digital technology in financial institutions, often known as FinTech, has expedited the advancement of financial services today. Digital technologies include the advent of mobile money, UPI, and internet banking options. These technologies have an effect on the financial planning process as well as the economy. For financial services to continue being innovative and relevant, the financial sector must embrace digital technologies.

Technological advancement in recent years has made it possible for financial inclusion to happen more quickly and in a shorter amount of time. The progress and use of technology has resulted in huge improvements and coverage in the deepening of digital financial features.

Beyond the adoption of digital technology, nonetheless, telecommunications services must also be extended to the impoverished in rural areas in order to fully integrate the digital economy. This is crucial in order to establish a digital communication channel between customers and mobile money agents in these remote areas. A key component of digital financial inclusion is access. Digital access has been measured using a variety of metrics, including the percentage of people who possess smartphones and use the internet. Although having digital access lays the groundwork for digital financial inclusion, using it effectively depends on having digital skills. Even the most isolated locations have been affected by the internet and mobile phone revolution in recent years.

More people now have access to financial services due to India's digital financial infrastructure, which consists of elements including a digital payment platform and the country's digital biometric identification (Aadhaar) (D'Silva et al. 2019).

The Aadhar-enabled payment system (AePS) has been especially beneficial for expanding payment system coverage in India's rural areas. Small Finance Banks and Payments Banks have been set up in India in an effort to lower the percentage of the population that is still financially excluded. Transactions involving a lot of cash have been replaced, and financial services linked to digital ID (Aadhar) have expanded thanks to technical advancements like net banking, mobile wallets, payment platforms, etc.

India is rapidly adopting digital technology. India is regarded by the globe as having one of the largest Internet user bases with the lowest Internet tariff, having expanded internet access to approximately 76 crore inhabitants. India leads the world in digital identities; the 1.36 billion Aadhaar program, the largest in the world, has enabled the impoverished to receive benefits straight into their accounts. As a result, up until December 31, 2022, ~ 27.76 lakh crore have been disbursed and ~ 2.2 lakh crore have been saved. (Annual Report MeitY 2022–2023)

The advent of quick payment systems, such as Immediate Payment Service (IMPS) and Unified Payment Interface (UPI), which enable beneficiaries to conduct financial transactions around-the-clock, has also aided in the shift to digital payments. Since its introduction, the Unified Payments Interface, or UPIs, is another innovation by the Indian digital payments industry that has gained a lot of traction. With inter-operability, a large section of the population who are not actively using banking services will now be empowered to access UPIs.

P2P and P2M digital payments are supported via UPI, which is compatible with both application-based smartphones and unstructured supplementary service data (USSD)7-based feature phones. In addition, it offers non-financial functions including checking balances (Reserve Bank of India 2021).

Transparency, ease, and speed have been introduced to a wide range of digital transactions by the nation's growing use of digital payments. The Government of India has made the promotion of digital payments its top priority in an effort to formally include every sector of the population in digital payment systems. The adoption of digital payments in the nation has been greatly aided by a number of programs, including the Bharat Interface for Money (BHIM) app, the Aadhaar Enabled Payment System (AePS), and the Pradhan Mantri Jan Dhan Yojana (PMJDY).

The National Payments Corporation of India (NPCI) is the driving force behind the development of a safe and transparent digital environment. The initiatives have improved the general public's access to digital payment options. In addition, during the past few years, a number of stakeholders have worked together to promote the use of digital payments in India as a result of the COVID-19 epidemic.

Digital payments are headed toward a voice-based, contactless, frictionless payment environment in India. A variety of cutting-edge devices were introduced by NPCI in September 2023 with the intention of accelerating the Unified Payments Interface (UPI), a massive payment system, toward its objective of processing 100 billion transactions monthly. These products and services include a UPI credit line, the "Hello UPI" conversational payment method, BillPay Connect, UPI Tap & Pay, and UPI Lite X (Source Moneycontrol.com)

II. LITERATURE REVIEW

The terms "Financial inclusion," "Digital Technology," and "Digital Inclusion" have been used to source several research papers from various publishing sources. This procedure made it simple for the researcher to locate relevant research articles for the study and to examine those publications toinvestigate the connection between digitalization and financial inclusion

using digital technology. This study adds to the existing literature by clarifying the present stage of development of digital financial inclusion in India. Data also indicates that the COVID-19 situation has led to an increase in digital payments, which is hastening the process of financial inclusion.

2.1 Literature on Financial Inclusion and Digital Technology Definitions

The degree to which "individuals, households, and firms have access to formal financial services" and "citizens are integrated" is known as financial inclusion. (Aduda and Kalunda, 2012)

According to Allen et al. (2012), financial inclusion (FI) guarantees that the financial systems are accessible, inexpensive, and available to all societal members.

Similarly, according to Demirgüç-Kunt and Klapper (2012), financial inclusion is the use and availability of reasonably priced financial services to enhance people's welfare.

"Access to and use of formal financial services" is the definition of financial inclusion. It records a variety of financial services for both individuals and businesses, including transactions, savings, credit, and insurance , as quoted in (Sahay and others 2015).

Access to formal financial services is especially important for the poor (Allen et al., 2016; Ozili, 2018; Pham et al., 2019; Sarma, 2008).

Through financial inclusion, businesses and individuals may meet their needs by having access to financial services and products (Hlophe, 2018).

In her study "Innovative financial technologies to support livelihoods and economic outcomes," Huma Haider (2018) looked at how people's livelihoods are supported by these technologies. A greater range of financial services, including online and mobile banking as well as digital credit for the unbanked, are made possible by access to digital technologies,

particularly mobile phones, internet connectivity, and biometric verification. Low-income and impoverished people in developing nations can save and borrow in the official financial system, make a financial return, and smooth their consumption thanks to digital financial services, which can often be more practical and cost-effective than traditional banking services.

Banking services are now accessible to those outside of the traditional banking system because of fintech, or digital financial technology. It is also a crucial instrument for enacting policies that will help achieve the Sustainable Development Goals (SDGs) of the UN, which include digital financial inclusion and gender equality. (The Global Partnership for Financial Inclusion (GPFI) 2020)

Since the idea has become part of the agenda for sustainable development goals, academics and policymakers worldwide have become interested in expanding financial products and services in a way that makes them accessible to all members of society for the purposes of economic development and poverty reduction (Van et al., 2021).

By providing financial services to unbanked adults via digitally interfaced devices, including smartphones or other digital gadgets, digital financial inclusion aims to integrate them into the formal financial system. (Peterson, Ozili, 2022).

According to Li et al. (2023), by easing the financing obstacles connected with green projects, digital financial inclusion can address capital misallocation, enhance financial efficiency, and encourage green innovation in businesses.

The depth of usage and breadth of coverage of digital financial inclusion have had a favorable and growing non-linear impact on the quality of economic growth. (Yingdong Wang and Wenzhi Xi, 2023)

2.2 Literature on relationship between digital technology and financial inclusion

Numerous empirical researches have demonstrated how digital technologies are becoming more and more important for financial inclusion.

By targeting the underprivileged, financial innovation and cutting-edge technologies can increase financial inclusion (Al- Mudimigh and Anshari, 2020; Chinoda and Kwenda, 2019; Beck et al., 2015).

Through the pay-for-use Simpa Network model, telecom companies in countries like India can provide services like electricity purchases to financially excluded communities and those living in remote areas by combining AI, IoT, and mobile money technologies (Salvia & Brandli, 2020; Yadav &, 2021).

According to Malladi, Soni, and Srinivasan (2021), digital-only financial inclusion refers to the expansion of financial inclusion through the use of solely digital technology.

The financial sector may now adopt financial technologies in a stimulating environment because of recent advancements in information and communication technology (Kanga et al., 2021).

The financial sector can become more effective and efficient through the digitalization of financial services (Scott et al., 2017).According to Ertürk et al. (2021), FinTech is viewed by academics and decision-makers as a means of facilitating financial inclusion in developing nations.

The long-term effects of FinTech diffusion and financial inclusion on GDP per capita were found in Kanga et al.'s (2021) study on the relationship between financial technology (FinTech), financial inclusion, and living standards, or GDP per capita.

The excessive use of cell phones due to rapid technical improvements offers a chance to implement mobile payment solutions as a means of attaining financial inclusion (Lutfi et al., 2021).

Globally, mobile payment-enabled smartphones have revolutionized banking and financial services and goods (Kanga et al., 2021).

Khera et al. (2022) found that the large-scale application of advanced technology in the finance industry and the popularization of digital financial services are the key driving forces of financial inclusion.

Services involving mobile money (MM) are an effective means of financial inclusion. Customers' continued use of MM services generates additional engagement and advocacy goals. (Aijaz A. Shaikh, Robert Ebo Hinson, Heikki Karjaluoto, and Richard Glavee-Geo, 2023)

The results of the aforementioned literature demonstrate how the emergence of digital technology has greatly supported in the expansion of financial inclusion.

III OBJECTIVES OF THE STUDY

(1) To uncover compelling evidence of how digital technology has expanded financial inclusion in India.
(2) To discover the adoption trends of digital technology in financial inclusions pre and post Covid 19
(3) To assess the advantages and benefits of digital financial inclusion on Indian socio - economic development

IV MATERIAL AND METHODS

The superiority of the documentation technique of data gathering for carrying out interpretive research was noted by Bhattacherjee (2012, page: 103-112). This study involves a systematic approach as mentioned by Okoli (2015) , which allows researchers to summarize and synthesize the facts from prior research. As a result, this study uses interpretive research

methodology and documentation techniques. To accomplish the goals of the study, a thorough evaluation of the pertinent literature that has already been published has been carried out.

This paper uses secondary sources to present a comprehensive evidence-based analysis on the importance of digital technology in improving financial inclusion, with a focus on the post-covid era. A variety of published reports and articles from newspapers, journals, policy papers from the RBI, ABD, G20, World Bank, and IMF, Springer, Tailor & Francis, Emarald, Google Scholar, Research Gate, SSRN, and other sources are used in the semi-systematic review. An organized strategy was created to gather pertinent information about the pre- and post-COVID-19 pandemic scenarios for digital technology-enabled financial inclusion in India from 2018 to 2023.

This study adds to the body of research on financial inclusion that looks at how digital technologies increased financial inclusion in India both during and after the COVID-19 pandemic.

V RESULT& DISCUSSIONS

5.1 Digital Connectivity &Infrastructure's Role inEmpowering Financial Inclusion

Even though COVID-19 has increased the usage of digital finance, not all customers or communities were able to quickly switch to digital financial services and products. In order to use digital financial services, consumers needed connectivity, which included having a smartphone, having access to the internet, and having digital literacy to manage online and mobile applications. The usage of DPIs was aided by the rising adoption of smartphones and mobile data as a result of sensible telecom regulations that created a market that was open, competitive, and reasonably priced.

The digital ecosystem has grown significantly in India as a result of rising internet and smartphone usage. For India, digitalization is especially important given the large population, with over 60% living in rural areas.

By the end of 2023, there will be 907.4 million Internet users in India (64% of the population), up from 398.2 million (29% of the population) in 2018.

By the end of 2023, there will be 966.4 million mobile users in India, or 68% of the country's population, up from 763.1 million (56% of the population) in 2018.

Nearly half of rural India has come online, with a 30% growth rate and room for additional expansion in the future, according to the other report, "India Internet Report 2023."

Compared to urban India, where 295 million individuals routinely used the internet, rural India had over 425 million internet users—a staggering 44% higher.

One of India's most promising sectors is digital financial inclusion through mobile financial services (MFSs), which is made possible by the country's growing number of internet and mobile customers. As the number of mobile phone subscribers has expanded substantially over the previous decade, this has emerged as the most promising segment of India's financial sector. Between 2018 and 2023, there was a 27% increase in mobile phone customers and a 128% increase in mobile internet users.

The marginalized unbanked people now have greater access to banking services and facilities because of the continued high penetration of MFSs, which has ultimately contributed significantly to both the financial inclusion and economic growth of the nation. The efficiency advantages brought about by increased formalization, increased financial inclusion, and the economic prospects brought about by economic reforms based on digital technology have also begun to help the Indian economy.

India's digital highways, which will enable the widespread delivery of digital financial services (DFS), are the result of coordinated efforts by the government, regulators, and financial service providers. The main goals of these initiatives have been to enable interoperability, develop safety features into digital platforms, and provide a shared, open, and secure digital ecosystem and infrastructure.

Fig 1: A current glimpse of India's DFS infrastructure

Source:http://www.microsave.net/

5.2Digital ID lowered the cost barrier in providing financial inclusion.

Financial inclusion has increased as a result of increased competition, Aadhaar use, and digital payment options. For a minority, Aadhaar served as their first ID, and over half of them used it to open their first bank account. The procedure of obtaining financial services is made easier using Aadhar-based e-KYC. Some estimates state that banks using e-KYC reduced their compliance costs from Rs 1,000 to Rs 5. Lower-income customers were more appealing to serve as a result of the cost reduction, which also produced revenues for the development of new items.

Table 1 : Payments Layer with Definition

Identity layer	**Definition**	**Year of**	**Operating Body**

		Launch	
Aadhar	A 12-digit unique identification number that is linked to biometric (fingerprints, iris, face) demographic (name, age, gender, address) and optional contact details (email, phone number)	2009	Unique Identification Authority of India (UIDAI)
eKYC	Electronic authentication of a customer's identity using their Aadhaar details	2013	Unique Identification Authority of India (UIDAI)
eSign	Service enabling Aadhaar holders to digitally and remotely sign documents with a legally valid electronic signature	2016	Controller of Certifying Authorities (CCA)
Payments Layer			
AePS (Aadhaar Enabled Payment System)	An interoperable financial system allowing customers to access and transact on their bank accounts by authenticating their Aadhaar	2010	National Payments Corporation of India (NPCI)
APB (Aadhaar Payment Bridge)	System for electronically channelling the Government benefits and subsidies in the	2011	National Payments Corporation of India (NPCI)

	Aadhaar Enabled Bank Accounts (AEBA) of the intended beneficiaries.		
UPI	Unified Payments Interface is an instant real-time payment system	2016	National Payments Corporation of India (NPCI)

Source: IMF WORKING PAPERS "Stacking up the Benefits: Lessons from India's digital journey" March 2023, Working Paper No. 2023/078

Since its foundation, the National Payment Corporation of India (NPCI) has strived to build a shared digital infrastructure, interoperability, and protection inside digital platforms. India's digital payments infrastructure has expanded dramatically in the last several years due to a number of factors including increased internet and smartphone usage, government efforts, and the growth of financial inclusion.

According to the Economic Survey 2023, over 1.1 billion bank accounts are now able to share data on the Reserve Bank of India's regulated data sharing system, the account aggregator (AA) framework and about 3.8 million users have shared data successfully through the platform. A worldwide techno-legal framework known as the Account Aggregator (AA) allows people to freely and swiftly communicate their financial information with any regulated third-party financial institution of their choosing.

5.3 Indicator shows faster adoption of Digital Financial Inclusions The World Bank's G20 Global Partnership for Financial Inclusion (GPFI) report, which was published in September 2023, noted that the financial inclusion rate of adults has increased over the past six years from 25% in 2008 to over 80% thanks largely to the JAM (Jan Dhan, Aadhaar, and Mobile) trinity. An extremely intriguing observation about India's progress has been made in this

research. India has met its goals for financial inclusion in six years, compared to a minimum of 47 long years.

From 32.48 crore in August 2018 to 50.09 crore in August 2023, PMJDY Accounts expand 1.5 times. Women own 56% of Jan-Dhan accounts, while 67% of Jan-Dhan accounts are located in rural or semi-urban areas. To PMJDY account holders, 31.94 crore RuPay cards were distributed.

The Reserve Bank of India acknowledged in 2021 that increased financial inclusion (FI) is essential to more extensive, equitable, and long-term growth. India's level of financial inclusion increased steadily in 2022, rising from 43.4 in 2016–17 to 56.4 in 2021–22. The financial inclusion index (FI Index) currently has a value of 60.1 in March 2023 compared to 56.4 in March 2022.

The FI index (FII) might increase by 3.7 points in a year, which would be an excellent overall advancement. In March of 2017, it was only 43.4. Its increase of 16.7 points over the last six years could be attributed to increasing banking penetration, the existence of banking touchpoints, and digitization.

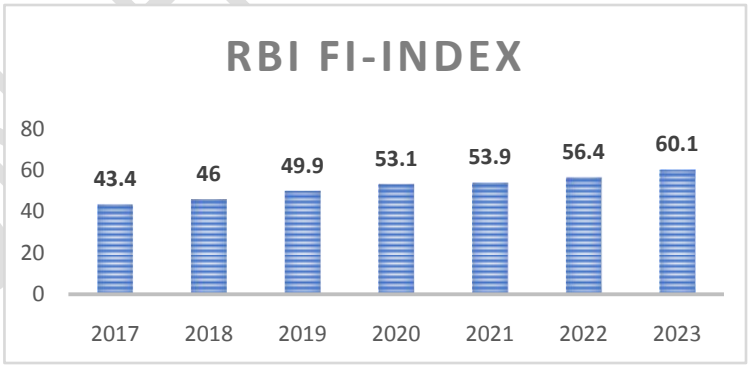

Figure 2 : Data Source : Reserve Bank of India

The nation's digital transaction volume has increased because of the Covid-19 outbreak and its accompanying restrictions. The Reserve Bank of India's Digital Payment Index is a signpost for quicker adoption of online payment methods. Payment performance, payment

infrastructure—supply-side variables, payment infrastructure—demand-side factors, payment enablers, and consumer centricity are its five parameters.

According to data from the RBI, digital payments nationwide saw a significant increase at the end of March 2023 on a year-over-year (YoY) basis. The notable expansion in payment infrastructure and payment performance throughout the nation over time has resulted in an increase in the RBI-DPI index under all categories. The digital payment index (RBI-DPI) of the apex bank was 395.57 in March 2023 compared to 207.84 at the beginning of the COVID-19 term in March 2020.

The increase in RBI's Digital Payments Index (RBI-DPI) Post covid highlights the remarkable surge in digital payment adoption in India, predominantly propelled by the success of UPI.

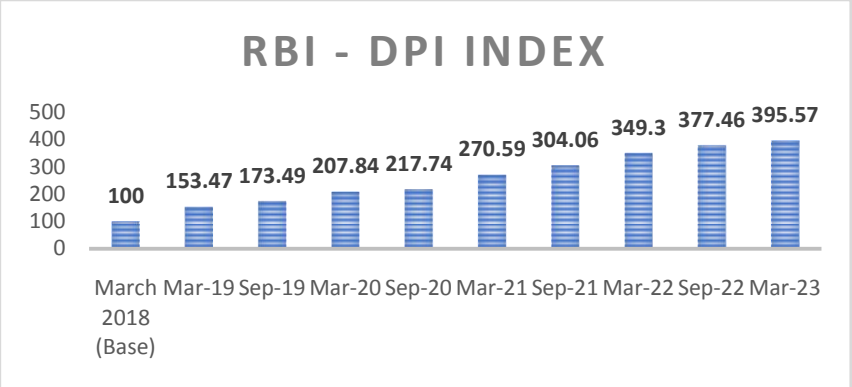

Figure 3 : Data Source : Reserve Bank of India

5.4 DigitalPayments enabling Financial Inclusions Faster

Both the public and commercial sectors now have more ability to promote innovation, enhance service delivery, and provide a user-centered experience for a range of digital

payment services. Products like RuPay credit and debit cards, AePS, BAP, Bharat QR, BBPS, and UPI have made it easy for people, companies, and governments to make payments. India's digital payment market has grown significantly year over year, as shown below:

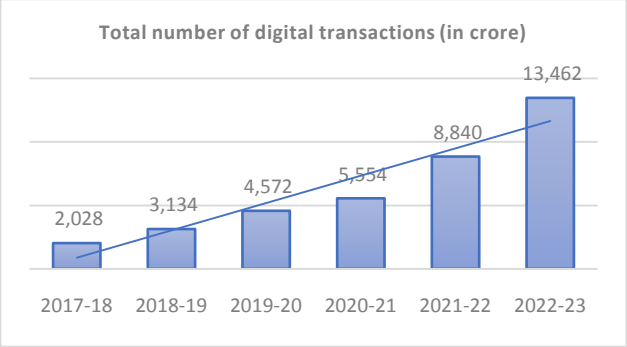

Figure 4: Total number of digital transactions (in crore)

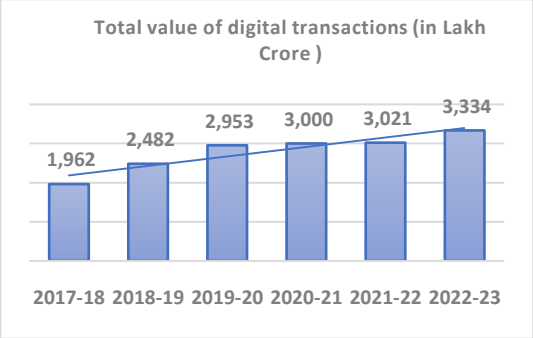

Figure 5: Total number of digital transactions (in Lakh crore)

Data Source : https://www.meity.gov.in/digidhan

Note : Digital payment modes considered are BHIM-UPI, IMPS, NACH, AePS, NETC, debit cards, credit cards, NEFT, RTGS, PPI and others.

The government's coordinated efforts with all stakeholders have resulted in a notable increase in digital payments in recent years. At a CAGR of 29.99%, the total transaction volume grew from 4,572 crore in FY 019-20 (the COVID Period) to 13,462 crore in FY 2022–2023 (the FY 2022–2023 period).

Alternatives to traditional banking services are also being offered by new FinTech service providers; some of these are recently launched and aimed at lower-class and rural populations.

Citizens may easily receive payments in their accounts and make payments using their phones thanks to digital payments, which provide anytime, anywhere account access. Individuals who might have been put off by the time and expense of physically visiting a bank branch to conduct transactions can now easily access their bank account online and enjoy all the advantages of joining the official banking system and gaining financial

inclusion. With the recent implementation of UPI 123PAY, feature phone users can now conduct digital transactions in assisted voice mode using UPI, promoting financial inclusion and digital transactions in rural regions.

The investments made by payment apps like PhonePe, Google Pay, PayTM, and others, which drew a sizable merchant base and raised consumer awareness, are largely responsible for the high adoption rate of UPI. These businesses have arisen in India in part because of the country's developing ecosystem for tech startups. Since making payments is a frequent use case, developing a payments app enabled these businesses to create a financial platform that millions of people can use on a daily basis. This created numerous opportunities for e-commerce or other related financial services to be cross-marketed. Since National Payments Corporation of India (NPCI) launched UPI (Unified Payments Interface) in 2016, the country has experienced a considerable increase in its use. Here are some highlights of the UPI journey in India with YoY (Year-on-Year) growth statistics till Jan 2023:

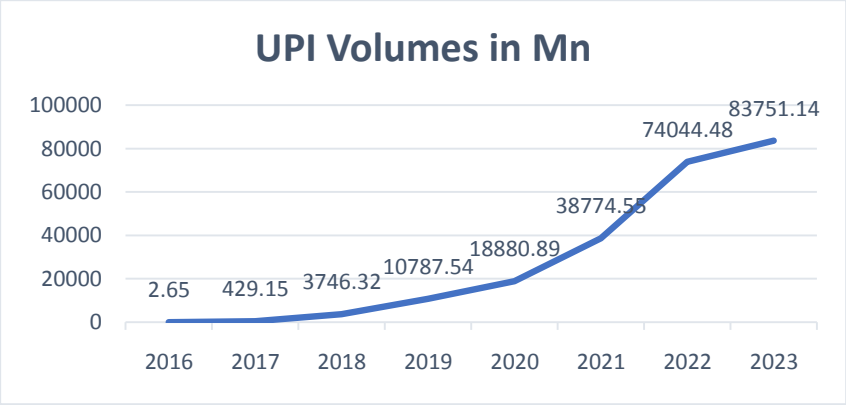

Figure 6 :UPI Volumes in Mn

Data Source :https://www.nic.in/blogs/digital-payments-driving-the-growth-of-digital-economy/

The growth is observed in the volume which increased, respectively, at a CAGR 86.16% between 2018 and 2023. UPI transactions are already expanding remarkably; Figure 6 illustrates this growth between April 2018 and May 2023. The surge is attributed to the 360-

percent increase in the number of banks that are active in UPI, from 97 in April 2018 to 447 in May 2023. During that time, UPI transaction volume climbed by 4,800 percent, while transaction value jumped by 5,400 percent.

5.5 Impact of Digital Financial Inclusion on Socio - Economic Development

Financial inclusion is advocated in the literature and studies as a government policy to achieve sustainable or inclusive economic growth and reduce poverty levels. It also discusses the role of financial inclusion in women's financial literacy and empowerment. It must be noted that focusing solely on women rather than men and women from poorer or weaker households could boost the effectiveness of financial inclusion initiatives. Governments have given priority to a number of financial inclusion programs aimed at giving economically disadvantaged families access to mainstream financial services, such as insurance.

When financial inclusion was first implemented in India, it was difficult to identify the actual beneficiaries and their circumstances. But with the aid of information and communication technology, it has been made possible. Direct Benefit Transfer has turned out to be one of the novel methods for receiving benefits without the use of intermediaries or equipment. Benefits, schemes, incentives, and support are now being delivered directly to the beneficiaries' bank accounts. For the Direct Benefit Transfer to be successful, bank accounts and Aadhar cards were linked using a digital format. In India, direct benefit transfers are having a big impact on financial inclusion.

Through 318 government programs, including the Pradhan Mantri Matratva Vandana Yojana (PMMVY) for women and the Pradhan Mantri Ujjwala Yojana (PMUY) for men, this tool has greatly aided in the distribution of benefits to a large population spread geographically. Other programs include the Krishi Unnati Yojana (KUY) and the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for beneficiary bank accounts held by

any gender. The cumulative direct benefit transfers as on date for the financial year 2023–2024 amounted to Rs. 33,62,087 crores. (Source https://dbtbharat.gov.in/)

Customers can make payments with ease, convenience, and speed, along with numerous rewards using digital payment methods. In the digital economy, the ever-changing payments sector remains persistent in innovating and expanding its product offerings to accommodate last-mile customers.In order to aid customers left out from the digital economy, UPI, mobile wallets, payments banks, mobile ATMs, etc., have entered rural regions where bank branches and ATMs are not financially viable. Due to the high adoption of feature phones and smartphones in the underserved segment, digital channels have become more and more popular as a viable distribution platform, as they also come with the ability to customize the interface for different phone kinds. This, together with a significant expansion of the acquiring side's rural point of sale (POS) infrastructure, has set the groundwork for payments service providers (PSPs) to use digital channels to reach underserved populations.

People may now pay for goods and services, receive earnings from businesses, and transmit money to family members more easily, affordably, and safely thanks to the digital transition.High volume, small value transactions are better handled by mobile money accounts, enabling users to access financial services better and save money for emergency situations. Women who have individual accounts also have greater control, security, and privacy over their finances.

Many private firms should be able to pay their employees and suppliers electronically as digital payments become more common and affordable. The digital revolution presents an opportunity to boost employment in the formal economy without unduly burdening compliance.

Economic growth has been demonstrated to benefit from digital financial inclusion in the recent past. The Organization for Economic Cooperation and Development (OECD) recently highlighted the digital economy's unrealized potential as well as the profound effects of the digital revolution on social and economic advancement.

In particular, the long-tail market's capital demands can be satisfied and innovation in the finance sector is encouraged by digital financial inclusion, which would enhance the standard of economic growth. This promotes equitable distribution of the benefits of economic development among all parties and increases the effectiveness of financial services for the actual economy.Over the past few years, digital financial inclusion has had a favourable and growing marginal impact on the quality of economic growth.

VI.CONCLUSIONS & RECOMMENDATIONS

The study's overall conclusions indicate that there is a strong correlation between the acceleration of financial inclusion in India and the Covid-19 measures for the quick, simple, and widespread accessibility of digital technology. In India, the widespread acceptance of digital payments and digital commerce has been fueled by the worldwide pandemic.

India's digital financial inclusion has seen a significant shift in digital transactions due to shifting governmental policies and changing consumer behaviours. This has finally increased overall digital transactions by nearly three times between 2020 and 2023 and shows a significant increase when compared to pre covid period.

The RBI's newly established Digital Payment Index (DPI) has grown significantly as a result of these payment methods. As March 2023 came to an end, the RBI-DPI increased to 395.57. This figure shows an amazing increase of over 90% from 2020, reflecting the country's greater acceptance and expansion of cashless transactions in the wake of the COVID-19 pandemic.

Higher economic growth in India is correlated with a rise in the use of digital payments. Digital payments' revolutionary potential has made financial inclusion more widely available, accelerated economic expansion, and elevated India to the forefront of the emerging digital economies worldwide.

Communities are not equally endowed with digital tools and abilities; this is especially true for women, people living in rural areas, and those from lower socioeconomic backgrounds, who frequently exhibit inequalities in their access to these resources.

The data presented in this study implies that by utilizing digital technological advancements, the three pillars of financial inclusion—access, utilization, and quality—could all favourably contribute to socioeconomic growth.

Financial inclusion has advantages, but it also presents new difficulties. To increase people's confidence in doing digital transactions, there is also an urgent need for improved cybersecurity, consumer protection, and data security. Better safety net and consumer protection policies will raise the bar for digital financial inclusion.

It will be possible to increase protected digital financial inclusion by fortifying the regulatory environment for digital finance. It is imperative to modify regulatory strategies to maintain a balance between bolstering financial innovation and tackling obstacles and hazards to financial stability.

In contrast to traditional finance, digital financial inclusion prioritizes precise risk management and efficient information sharing through cutting-edge tools and technologies like cloud computing, big data, and the Internet. This allows all social groups to take advantage of fair, practical, effective, and reasonably priced financial products and services. This will result in historically significant shifts within the finance sector and boost overall economic growth.

Further investigation is necessary to fully understand the connections between digital payments and financial inclusion. Although there has been significant progress in granting access to financial services, the comparatively low levels of usage suggest that the impact of these services may not always be consistent with reality.Future research on financial inclusion will focus on the potential contributions of innovations in technology to the advancement of financial inclusion, including blockchain, virtual currencies, digital banks, and digital finance.

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