Impact of Demonetization on Digitalization and Financial Inclusion in India and the Way Forward

Atreyee Sinha Chakraborty
Associate Professor
Gokhale Institute of Politics
and Economics
Pune, Maharashtra, India.

Rajesh Danane
Research Assistant
Gokhale Institute of Politics
and Economics
Pune, Maharashtra, India.

Sunil Bhosale
Research Associate
Gokhale Institute of Politics
and Economics
Pune, Maharashtra, India.

Abstract

This paper explores the impact of demonetization on digitalizing financial transactions and promoting financial inclusion in India. The Government of India implemented demonetization, the sudden withdrawal of high-denomination currency notes from circulation, in November 2016 to curb black money, promote a cashless economy, and enhance financial inclusion. The paper analyzes the effects of demonetization on digital payment systems, the adoption of technology in financial services, and the inclusion of previously unbanked segments of the population. It also highlights the challenges and opportunities associated with these changes and provides insights for policymakers and stakeholders in the financial sector. The paper is distributed into five sections i.e. introduction, digitalization of financial transactions, technology adoption in financial services, financial inclusion, Challenges, and Opportunities. The final section concludes.

Keywords

Demonetization, Digital transactions, Financial inclusion, Cashless economy, Digital payments, Technology adoption, Unbanked population, and Financial services.

1. Introduction

1.1 Background of Demonetization in India (Shirley:2017)

Demonetization refers to the act of stripping a currency unit of its status as legal tender. In the case of India, demonetization was a significant policy move implemented by the Government of India on November 8, 2016. The decision involved the withdrawal of the ₹500 and ₹1,000 denomination banknotes, which accounted for a significant portion of the currency in circulation at the time. The primary objectives behind this move were to curb black money, combat corruption, reduce counterfeit currency, and promote a digital and cashless economy.

Prior to demonetization, India had been witnessing an increased emphasis on financial inclusion initiatives, such as the Jan Dhan Yojana, which aimed to provide access to banking services for the unbanked population. However, a significant portion of the Indian economy still operates on a cash-based system, with limited penetration of digital payment methods.

The demonetization moves temporarily disrupted the economy as people were required to exchange their old currency notes for new ones. The sudden scarcity of cash resulted in long queues outside banks and ATMs as individuals sought to deposit or exchange their old currency. However, amidst these challenges, the government also aimed to leverage this opportunity to accelerate the adoption of digital payment systems and promote financial inclusion.

1.2 Objectives of Demonetization: Digitalization and Financial Inclusion

The demonetization exercise in India was driven by a set of objectives, including curbing black money and countering corruption and promoting digitalization and financial inclusion. The government recognized that the transition from a cash-based economy to a digital economy could unlock several benefits, such as transparency, efficiency, and greater access to financial services for all segments of the population. Digitalization and financial inclusion have worked through promoting digitalization, enhancing financial inclusion, encouraging cashless transactions, strengthening financial infrastructure, increasing accountability, and curbing illicit activities.

2. Digitalization of Financial Transactions

Demonetization in India acted as a catalyst for the rapid growth and adoption of digital payment systems. The scarcity of physical currency during the demonetization period led to a surge in digital transactions as individuals and businesses sought alternative means to carry out their daily financial activities. This section discusses the significant increase in digital payments witnessed in the aftermath of demonetization.

Following the demonetization announcement, there was a sharp rise in the usage of digital payment methods, such as mobile wallets, payment apps, and online banking. The necessity to adapt to the cash crunch and the government's emphasis on digital transactions spurred individuals to explore and embrace digital payment solutions. Mobile wallets, also known as e-wallets, gained significant traction during this period. Wallet providers like Paytm, PhonePe, and MobiKwik experienced massive usage and user registrations. These mobile wallet platforms allow users to store money digitally and make payments through their smartphones, providing a convenient and secure alternative to cash transactions. Prominent mobile wallet providers such as Paytm, PhonePe, MobiKwik, and Google Pay (formerly Tez) witnessed a significant surge in usage and user registrations after demonetization. These platforms offered a range of features, including peer-to-peer (P2P) transfers, bill payments, merchant payments, and even options to pay for utilities, groceries, and transportation. Payment apps based on the Unified Payments Interface (UPI) also played a significant role in driving digital payments. UPI-enabled apps such as BHIM (Bharat Interface for Money), Google Pay, PhonePe, and Paytm Payments Bank allowed users to link their bank accounts and make instant payments using virtual payment addresses. UPI simplified transactions by eliminating the need for traditional bank account details, enabling users to make seamless transfers to individuals and merchants. The interoperability of UPI-based apps further enhanced their utility, as users could transact with individuals using different payment apps. This interoperability facilitated a more inclusive digital payment ecosystem, as users were not restricted to a specific payment app for transactions. Mobile wallets and payment apps not only provide convenience to users but also contribute to financial inclusion and the formalization of the economy. They enabled individuals, including those in remote areas, to participate in digital transactions, access banking services, and build a digital financial identity. Thus, Demonetization in India not only accelerated the adoption of digital payment methods but also witnessed a significant increase in online banking and e-commerce transactions. As cash became scarce, individuals turned to online platforms for their banking needs and shopping requirements. Tables 1 and 2 as well as charts 1, 2, and 3 show the continuous uprising trends toward the digitalization of payments.

Table 1:- Status of Digital Payments after Demonetization

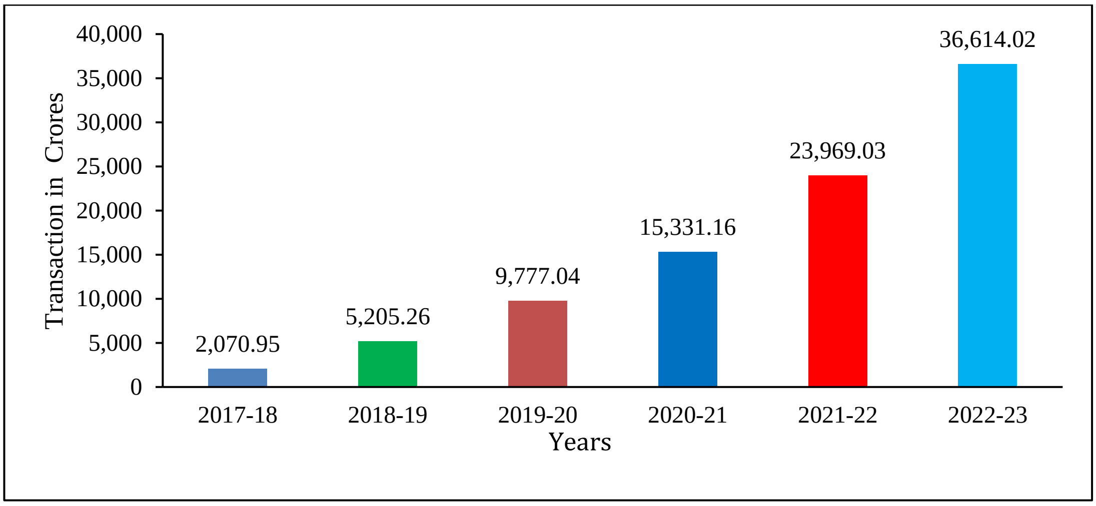
Sr. No.	Duration	Digital Transactions (Crore)	BHIM Transactions (Crore)	Debit Card (Crore)
1	2017-18	2070.95	91.31	334.34
2	2018-19	5205.26	626.47	776.13
3	2019-20	9777.04	1878.22	1288.51
4	2020-21	15331.16	4111.17	1699.98
5	2021-22	23969.03	8671.96	2114.73
6	2022-23	36614.02	16996.01	2494.93

***Source*:-** Ministry of Electronics and Information Technology, Government of India, 2023-24. https://meity.dashboard.nic.in/KpiReport_DivisionWise.aspx?Report=MzcjMjMjMTg4IzM2I0UjMg

Table 2:- Payment System Indicators

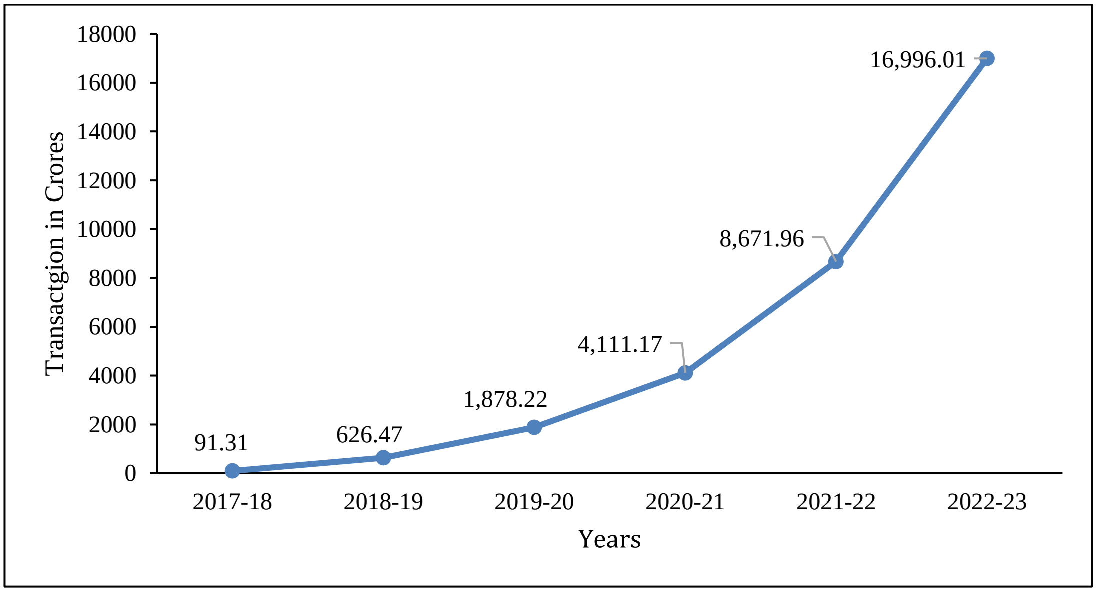
(Volume in Million; Value in ₹ Billion)										
Particulars	2012-13		2013-14		2014-15		2015-16		2016-17	
	Volume %	Value %	Volume %	Value %	Volume %	Value %	Volume %	Value %	Volume %	Value %
Cards	74.22	1.40	73.65	1.46	71.89	1.51	66.37	1.60	61.69	1.32
Credit Cards	4.80	0.09	5.22	0.10	5.29	0.11	5.23	0.13	5.60	0.15
1 Usage at ATMs	0.03	0.00	0.03	0.00	0.04	0.00	0.04	0.00	0.03	0.00
2 Usage at POS	4.77	0.09	5.19	0.10	5.25	0.11	5.19	0.13	5.56	0.14
Debit Cards	69.42	1.31	68.43	1.36	66.60	1.40	61.13	1.47	56.09	1.18
Usage at ATMs	63.80	1.26	62.11	1.29	59.71	1.32	53.37	1.38	43.82	1.03
Usage at POS	5.61	0.06	6.32	0.06	6.90	0.07	7.76	0.09	12.28	0.14
Prepaid Payment Instruments (PPIs)	0.80	0.01	1.36	0.01	2.68	0.01	4.95	0.03	10.05	0.04
m-Wallet	0.39	0.00	1.10	0.00	2.18	0.00	3.99	0.01	8.34	0.02
PPI Cards	0.41	0.00	0.26	0.00	0.50	0.01	0.95	0.01	1.70	0.01
Paper Vouchers	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Banking	0.64	0.00	0.97	0.01	1.47	0.06	2.57	0.22	5.00	0.57

***Source*:-** Handbook of Statistics On Indian Economy, Reserve Bank of India, 2016-2017, pp.130-131.



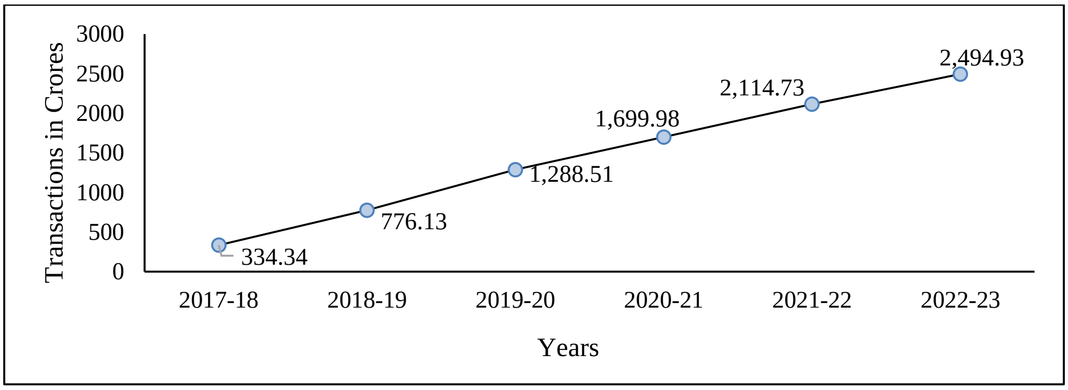
Source:- Ministry of Electronics and Information Technology, Government of India
https://meity.dashboard.nic.in/KpiReport_DivisionWise.aspx?Report=MzcjMjMjMTg4IzM2I0UjMg

Chart 1:- Digital Transactions (Crore)



Source:- Ministry of Electronics and Information Technology, Government of India
https://meity.dashboard.nic.in/KpiReport_DivisionWise.aspx?Report=MzcjMjMjMTg4IzM2I0UjMg

Chart 2 :- BHIM Transactions (Crore)



Source:- Ministry of Electronics and Information Technology, Government of India https://meity.dashboard.nic.in/KpiReport_DivisionWise.aspx?Report=MzcjMjMjMTg4IzM2I0UjMg

Chart 3 :- Digital Payments of Debit Card (Crore)

3. Technology Adoption in Financial Services

Demonetization in India acted as a catalyst for the rise of financial technology (fin-tech) start-ups, which played a significant role in the digitalization of financial services. Fintech start-ups leveraged technology and innovation to provide a wide range of financial services, disrupting traditional banking models and expanding access to financial products and services. This section elaborates on the emergence and impact of fin-tech start-ups in the post-demonetization era. Fintech start-ups seized the opportunity presented by demonetization to address the gaps in the financial ecosystem and cater to the growing demand for digital financial services. These start-ups harnessed technology, such as mobile applications, artificial intelligence, data analytics, and blockchain, to offer innovative solutions that simplify financial transactions and enhance customer experience. Additionally, fin-tech start-ups focused on financial inclusion by reaching out to underserved and unbanked populations. These start-ups leveraged technology to provide basic financial services, such as savings accounts, micro-insurance, and investment options, to individuals who were previously excluded from the formal financial system. By harnessing mobile technology and digital platforms, fin-tech start-ups facilitated financial inclusion by providing affordable and accessible financial services to marginalized populations. The rise of fin-tech start-ups also fostered innovation in areas such as wealth management and personal finance. Start-ups like Scrip Box, Zerodha, and Kuvera introduced online investment platforms that allowed individuals to manage their portfolios, invest in mutual funds, and access financial advice at their fingertips. These platforms democratized investment opportunities and empowered individuals to take control of their financial future. The emergence of fin-tech start-ups brought competition and innovation to the financial services sector. They challenged traditional banking models, forcing established financial institutions to adapt and embrace digital transformation. Banks responded by investing in technology and partnering with fin-tech start-ups to leverage their capabilities and expand their digital offerings.

Demonetization in India not only accelerated the digitalization of financial transactions but also spurred the adoption of Aadhaar-based services. Aadhaar played a crucial role in the post-demonetization era as it facilitated the digitization and authentication of individuals' identities. It served as a secure and verifiable proof of identity, enabling individuals to access a wide range of government and financial services. Aadhaar authentication leverages biometric data such as fingerprints and iris scans, ensuring a high level of accuracy and security. Moreover, Aadhaar-based Direct Benefit Transfer (DBT) programs were implemented to ensure targeted and efficient delivery of government subsidies and welfare benefits. The linkage of Aadhaar to bank accounts enabled direct transfers of subsidies, eliminating intermediaries and reducing leakages. According to the Ministry of Finance, Aadhaar-based DBT resulted in savings of approximately INR 83,184 crore ($12.3 billion) between 2014 and 2019.

The adoption of Aadhaar-based services also facilitated financial inclusion by bringing previously unbanked individuals into the formal financial system. The use of Aadhaar simplified the account opening process, making it easier for individuals without traditional identity documents to access banking services. As per the World Bank's Global Findex Database 2017, India witnessed a significant increase in the number of adults with bank accounts, reaching 80 percent in 2017 compared to 53 percent in 2014.

In the wake of demonetization, the expansion of micro-ATM (Automated Teller Machine) infrastructure played a crucial role in enhancing financial inclusion and promoting digital transactions. Micro-ATMs are handheld devices that enable individuals in remote areas to access basic banking services, such as cash withdrawals, balance inquiries, and fund transfers. This section elaborates on the expansion of micro-ATM infrastructure and its impact on financial inclusion. Micro-ATMs emerged as a solution to address the challenges faced by individuals residing in rural and underserved areas who had limited access to traditional banking infrastructure. These handheld devices, often operated by business correspondents (BCs) or banking agents, enabled individuals to conduct basic banking transactions in their own localities, eliminating the need to travel long distances to access a bank branch. According to the Reserve Bank of India (RBI) data, the number of micro-ATMs in India witnessed substantial growth after demonetization. In December 2016, the number of micro-ATMs stood at around 3.3 lacks, which increased to more than 12 lakhs by December 2019. This expansion in micro-ATM infrastructure played a vital role in improving access to banking services, especially for marginalized populations.

4. Impact on Traditional Banking Practices

Demonetization in India had a significant impact on traditional banking practices, compelling financial institutions to adapt and embrace digital transformation. Post demonetization there was increased adoption of digital channels i.e. there was a surge in the adoption of digital banking channels by both customers and financial institutions. Traditional banks witnessed a significant increase in online and mobile banking transactions as individuals sought alternative methods for conducting financial transactions. According to the Reserve Bank of India (RBI), the number of digital transactions, including Mobile banking and Internet banking, witnessed a substantial growth of 55.1 percent in volume and 24.8 percent in value in 2016-17. There was also reduced reliance on cash, enhanced focus on customer experience, integration of Aadhaar, and enhanced fin-tech collaboration.

The impact of demonetization on traditional banking practices was a transformative one. Financial institutions embraced digitalization and adapted their strategies to meet the changing customer demands and market dynamics. The focus shifted from physical branches to digital channels, resulting in improved efficiency, enhanced customer experience, and increased financial inclusion. It is important to note that while the impact of demonetization was significant, traditional banking practices continue to coexist alongside digital transformation. Traditional banking channels and physical branches still play a vital role, particularly in serving customers who prefer face-to-face interactions or those residing in remote areas with limited digital infrastructure. The data presented in Table 4 reinforces the transformative impact of demonetization on traditional banking practices in India. It provides quantitative evidence of the shift from paper-based transactions to digital payment methods.

Table 4 shows a decline in paper-based transactions like paper clearing and cheque truncation. In 2016-17, paper clearing accounted for only 6.17 percent of transaction volume and 3.55 percent of transaction value, indicating a significant decrease compared to previous years. Similarly, cheque truncation saw a decline, accounting for 5.69 percent of transaction volume and 3.24 percent of transaction value in 2016-17.

On the other hand, digital payment methods experienced substantial growth during this period. Retail electronic clearing, which includes electronic funds transfer (EFT) and National Electronic Funds Transfer (NEFT), witnessed significant increases in both volume and value. In 2016-17, retail electronic clearing accounted for 21.52 percent of transaction volume and 5.79 percent of transaction value, reflecting the growing adoption of digital payment channels.

The table also highlights the rise of innovative payment solutions such as Immediate Payment Service (IMPS) and National Automated Clearing House (NACH). These digital payment methods saw substantial growth in volume and value during the analyzed period, indicating a shift towards faster and more efficient payment systems.

Table 4:- Payment System Indicators

(Volume in Million; Value in ₹ Billion)										
Particulars	**2012-13**		**2013-14**		**2014-15**		**2015-16**		**2016-17**	
	Volume %	**Value %**	**Volume %**	**Value %**	**Volume %**	**Value %**	**Volume %**	**Value %**	**Volume %**	**Value %**
Paper Clearing	15.79	7.54	12.83	6.14	10.21	5.08	7.25	4.46	6.17	3.55
Cheque Truncation System (CTS)	3.31	1.64	6.03	2.94	8.23	3.97	6.34	3.81	5.69	3.24
MICR Clearing	9.90	4.33	4.49	2.04	0.19	0.11	-	-	-	-
1 RBI Centres	5.97	2.71	2.20	1.00	0.06	0.04	-	-	-	-
2 Other Centres	3.92	1.61	2.29	1.03	0.13	0.07	-	-	-	-
3 Non-MICR Clearing	2.59	1.57	2.30	1.16	1.79	1.00	0.91	0.65	0.49	0.30
Retail Electronic Clearing	8.34	2.40	11.31	3.15	14.40	3.89	20.77	4.98	21.52	5.79
ECS DR	2.12	0.08	1.97	0.08	1.93	0.10	1.49	0.09	0.04	0.00
ECS CR (Includes NECS)	1.47	0.13	1.56	0.16	0.98	0.12	0.26	0.06	0.05	0.01
EFT/NEFT	4.74	2.18	6.74	2.88	7.92	3.55	8.28	4.54	8.30	5.26
Immediate Payment Service (IMPS)	0.01	0.00	0.16	0.01	0.67	0.03	1.46	0.09	2.59	0.18
National Automated Clearing House (NACH)	-	-	0.88	0.01	2.90	0.07	9.28	0.21	10.53	0.35

***Source*:-** Handbook of Statistics On Indian Economy, Reserve Bank of India, 2016-2017, pp.130-131.

4. Financial Inclusion

Financial inclusion was a key objective of demonetization, and one of the notable initiatives undertaken to promote financial inclusion was the opening of Jan Dhan accounts. Jan Dhan Yojana, launched in August 2014, aimed to provide access to financial services to the unbanked population in India. This section elaborates on the opening of Jan Dhan accounts and its impact on financial inclusion. Jan Dhan Yojana aimed to ensure that every household in India had access to a bank account and other financial services such as debit cards, insurance, and pension schemes. The initiative was instrumental in bringing millions of unbanked individuals into the formal financial system, promoting savings, and facilitating access to credit.

According to data from the Ministry of Finance, as of January 2017, over 28 crores (280 million) of Jan Dhan accounts were opened since the launch of the scheme. These accounts witnessed a substantial increase during the demonetization period, with around 24 crores (240 million) of accounts opened between November 2016 and January 2017. This surge in account openings demonstrated the success of the initiative in bringing the unbanked population into the formal banking sector. The opening of Jan Dhan accounts played a crucial role in enhancing financial inclusion in several ways like increase access to Banking Services, Direct Benefit Transfer (DBT), facilitating insurance and pension schemes like the Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY).

One of the key impacts of demonetization in India was the increased accessibility to formal financial services, particularly for the unbanked and underbanked populations. This section elaborates on the improvement in accessibility to formal financial services following demonetization. Demonetization spurred the adoption of digital technologies in financial services, leading to the development of innovative solutions for improving accessibility. Mobile banking, mobile wallets, and other digital payment platforms became popular, providing individuals with the convenience of conducting financial transactions anytime and anywhere. The availability of low-cost smartphones and affordable internet connectivity further contributed to the accessibility of formal financial services.

Demonetization in India had a significant impact on empowering women and rural communities by promoting financial inclusion and enhancing their access to formal financial services. Data from the Ministry of Finance, Government of India, and other studies highlight the positive impact of demonetization on the empowerment of women and rural communities. The microfinance sector in India has witnessed significant growth in recent years. According to the Microfinance

Institutions Network (MFIN), the number of women borrowers from MFIs increased by 26 percent from 2016 to 2019, indicating improved access to credit and financial services for women.

Table 5:- RBI Financial Inclusion Plan - Progress Report

Particulars	Banking Outlets in Villages - Total	Change in Percentage	BSBDA Total (in millions)	Change in Percentage	ICT A/Cs-BC-Transaction - No. in millions	Change in Percentage
Mar-2010	67694	0	73.45	0	26.52	0
Mar-2011	116208	41.75	104.76	29.89	84.16	68.49
Mar-2012	181753	36.06	138.5	24.36	155.87	46.01
Mar-2013	268454	32.30	182.06	23.93	250.46	37.77
Mar-2014	383804	30.05	243	25.08	328.6	23.78
Mar-2015	553713	30.69	398	38.94	477	31.11
Mar-2016	586307	5.56	469	15.14	826.8	42.31
Mar-2017	598093	1.97	533	12.01	1159	28.66
Mar-2018	569547	-5.01	536	0.56	1489	22.16
Mar-2019	597155	4.62	5742	90.67	21019	92.92
Dec-2020	1253177	52.35	6384	10.06	23289	9.75
Dec-2021	1900523	34.06	6631	3.72	21095	-10.40

***Source*:-** Reserve Bank of India, Annual Report 2011-12 to 2021-2022.

The data presented in Table 5 provides a progress report on the Reserve Bank of India's Financial Inclusion Plan, highlighting the changes in various financial inclusion indicators over the years.

The first column of the table shows the total number of banking outlets in villages, indicating the availability of banking services in rural areas. The data reflects a steady increase in the number of banking outlets from 67,694 in March 2010 to 1,900,523 in December 2021. This represents a significant growth of 181.4 percent over the analyzed period, indicating improved access to banking services in rural areas.

The second column presents the number of Basic Savings Bank Deposit Accounts (BSBDA) in millions, which are low-cost, no-frills accounts designed to promote financial inclusion. The data reveal a substantial increase in the number of BSBDA accounts, from 73.45 million in March 2010 to 6,631 million in December 2021. This marks a remarkable growth of 8,915.6 percent over the analyzed period, signifying the success of initiatives aimed at bringing unbanked individuals into the formal banking system.

The third column focuses on Information and Communication Technology (ICT) Accounts through Business Correspondents (BC) and the number of transactions conducted. The data demonstrate a significant increase in the number of ICT

A/Cs-BC transactions, rising from 26.52 million in March 2010 to 21,095 million in December 2021. This reflects the growing adoption of digital payment channels and the utilization of technology-enabled banking services.

Overall, the table highlights the progress made in enhancing financial inclusion in India. The expansion of banking outlets in villages, the significant growth in BSBDA accounts, and the surge in ICT A/Cs-BC transactions signify increased accessibility to formal financial services for previously underserved populations. These developments have contributed to improving access to formal financial services, particularly in rural areas.

5. Challenges

While demonetization in India has led to significant progress in digitalization and financial inclusion, it has also brought forth several challenges and highlighted existing technological barriers. The digital divide refers to the disparity in access to technology, particularly internet connectivity and smartphones, among different segments of the population. In rural areas and among marginalized communities, access to reliable internet services and affordable smartphones remains limited. According to the Telecom Regulatory Authority of India (TRAI), as of March 2021, the rural Tele-density stood at 60.14 percent compared to the urban tele-density of 143.69 percent indicating a significant gap in connectivity. Alongside unequal access to technology, limited digital literacy poses a significant barrier to the adoption of digital financial services. Many individuals, particularly in rural areas and among the elderly population, lack the necessary knowledge and skills to navigate digital platforms and conduct online transactions. This gap in digital literacy hampers the effective utilization of digital financial services and inhibits the complete integration of marginalized populations into the formal financial system. Inadequate infrastructure, such as the availability of reliable electricity and network coverage, poses challenges to the widespread adoption of digital financial services. In remote and rural areas, where connectivity and infrastructure are limited, conducting online transactions becomes difficult. Insufficient infrastructure also impacts the functioning of micro-ATMs and other digital payment devices, hindering the accessibility of financial services in these areas.

The digitalization of financial transactions brings forth concerns related to cybersecurity and data privacy. Individuals, especially those with limited exposure to digital platforms, may be wary of sharing sensitive financial information online. The lack of trust in the security of digital transactions can deter individuals from fully embracing digital financial services.

Addressing these challenges requires a multi-pronged approach involving government initiatives, private sector participation, and community engagement. Initiatives like infrastructure development, digital literacy programs, simplified and User-friendly interfaces, addressing security and privacy concerns, addressing infrastructure and connectivity issues, provisioning last mile connectivity, and increasing consumer awareness are required to address the challenges.

6. Way Forward through Capacity Building

Promoting capacity building and financial literacy is essential for ensuring the successful adoption of digital financial services. This section elaborates on the importance of capacity building and financial literacy initiatives and their impact on digital inclusion.

Capacity-building programs aimed at enhancing digital skills among individuals play a crucial role in promoting the adoption of digital financial services. Financial literacy programs and awareness campaigns also play a very important role in educating individuals about the benefits of digital transactions, addressing concerns related to security and privacy, and highlighting the convenience and accessibility of digital financial services. Awareness campaigns can be conducted through various channels, including mass media, community outreach programs, and digital platforms. Financial institutions play a crucial role in promoting capacity building and financial literacy. Thus capacity building and financial literacy initiatives have a significant impact on digital inclusion, financial empowerment, and improved financial decision-making.

By focusing on capacity building and financial literacy, India can empower individuals to effectively participate in the digital economy and promote inclusive financial growth.

7. Conclusion

Demonetization had a profound impact on digitalization and financial inclusion in India. The total digital payment as a share of total payment has shown an increasing trend throughout the last decade (92.56 percent in 2017-18 to 99.03 percent in 2021-22). The move towards a cashless economy and the promotion of digital financial services aimed to improve transparency, reduce corruption, and enhance financial access for all segments of society. Demonetization served as a catalyst for the rapid growth of digital payments in India. According to the Reserve Bank of India (RBI), digital transactions in terms of volume and value witnessed significant growth post-demonetization. The volume of digital transactions increased from 672 million in November 2016 to 1.03 billion in December 2016, representing a growth rate of 53.2 percent. The value of digital transactions also witnessed a surge, reaching INR 1.42 trillion in December 2016. The demonetization drive led to a surge in the adoption of mobile wallets and payment apps. Companies like Paytm, PhonePe, and Google Pay witnessed exponential growth in their user base and transaction volumes. The ease of use, convenience, and accessibility of mobile wallets played a significant role in the rapid adoption by both urban and rural populations. Demonetization also accelerated the adoption of online banking and e-commerce platforms. As individuals faced a shortage of physical cash, they turned to online platforms for their banking needs and shopping requirements. Online banking transactions, including fund transfers, bill payments, and online shopping, witnessed a significant increase, reflecting a shift toward digital financial services. Demonetization spurred the growth of financial technology (fin-tech) start-ups in India. These start-ups introduced innovative solutions and digital platforms to enhance financial services, including digital lending, investment platforms, and personal finance management tools. The rise of fin-tech start-ups contributed to the expansion and diversification of digital financial services in the country.

As already, discussed one of the key objectives of demonetization was to promote financial inclusion by bringing the unbanked and underbanked population into the formal financial system. The opening of Jan Dhan accounts direct benefit transfers, and subsidy rationalization initiatives aimed to provide access to formal financial services to marginalized populations. These initiatives, coupled with the growth of digital financial services, have contributed to improved financial access and inclusion in India. The progress in financial inclusion post-demonetization is evident through the expansion of banking services, increased access to credit, and the adoption of digital financial services. The initiatives undertaken by the government, coupled with the growth of digital technologies, have contributed to greater financial access and empowerment of marginalized communities in India. The impact of demonetization on digitalization and financial inclusion in India has been significant, but there is still room for improvement. Looking ahead, it is crucial to continue building upon the progress made and address the challenges that hinder complete financial inclusion. To ensure widespread access to digital financial services, there is a need to improve digital infrastructure and connectivity, especially in rural and remote areas. Expanding high-speed internet connectivity, strengthening mobile network coverage, and promoting the development of digital payment infrastructure will facilitate the adoption of digital financial services by all sections of society. Increasing financial literacy and awareness programs will empower individuals to make informed financial decisions and effectively utilize digital financial services. Collaborative efforts by government agencies, financial institutions, and non-profit organizations can play a crucial role in designing and implementing comprehensive financial literacy initiatives. These programs should focus on educating individuals about digital financial services, safe digital practices, and the benefits of financial planning. As digital financial services continue to expand, it is essential to ensure robust consumer protection mechanisms. Regulatory authorities should enforce stringent data privacy and security standards to safeguard consumers' financial information. Promoting transparency, fair practices, and effective grievance redressal mechanisms will install confidence among individuals and promote trust in digital financials. Addressing the digital divide is critical to ensure equal access to digital financial services. Efforts should be made to bridge the gap in digital literacy and infrastructure between urban and rural areas, as well as among different socio-economic groups. Targeted initiatives, such as skill development programs and subsidies for digital devices, can help bridge the digital divide and promote equitable access to digital financial services.

Collaboration between government agencies, financial institutions, technology companies, and non-profit organizations is essential to drive digitalization and financial inclusion. Public-private partnerships can facilitate the development of innovative solutions, promote interoperability, and drive the adoption of digital financial services. Cooperative efforts will ensure that all stakeholders work together towards a common goal of inclusive digitalization. Encouraging innovation in the fin-tech sector will contribute to the growth of digital financial services. Regulatory sandboxes, supportive policies, and favourable regulatory environments can nurture a vibrant fin-tech ecosystem. Collaboration between traditional financial institutions and fin-tech start-ups can result in innovative solutions that cater to the unique needs of underserved populations. Regular monitoring and evaluation of digitalization and financial inclusion initiatives are crucial to assess their impact and identify areas for improvement. Data-driven insights will enable policymakers to make informed decisions and refine strategies to enhance financial inclusion further.

By implementing these recommendations and staying committed to the goals of digitalization and financial inclusion, India can continue its journey toward a more inclusive and digitally empowered society. The collective efforts of various stakeholders will be crucial in creating an ecosystem that enables every individual, irrespective of their background, to access and benefit from digital financial services.

8. References

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Annexure 1: Payment System Indicators
(Volume in Million; Value in ₹ Billion)

Year	2012-13				2013-14				2014-15				2015-16				2016-17			
	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%
1 RTGS	**68.52**	**0.82**	**10,26,350.05**	**77.21**	**81.11**	**0.83**	**9,04,968.04**	**59.57**	**92.78**	**0.79**	**9,29,333.09**	**55.24**	**98.34**	**0.65**	**10,35,551.64**	**56.43**	**107.86**	**0.55**	**12,53,652.08**	**54.93**
1.1 Customer Transactions	63.99	**0.77**	5,12,997.84	**38.59**	76.35	**0.78**	5,73,614.03	**37.76**	88.39	**0.75**	6,31,050.74	**37.51**	93.95	**0.62**	7,00,899.82	**38.19**	103.66	**0.53**	8,49,950.51	**37.24**
1.2 Interbank Transactions	4.52	**0.05**	1,63,843.20	**12.33**	4.75	**0.05**	1,60,638.37	**10.57**	4.38	**0.04**	1,22,981.62	**7.31**	4.37	**0.03**	1,23,678.19	**6.74**	4.17	**0.02**	1,31,953.25	**5.78**
1.3 Interbank Clearing	0.01	**0.00**	3,49,509.02	**26.29**	0.01	**0.00**	1,70,715.64	**11.24**	0.01	**0.00**	1,75,300.73	**10.42**	0.02	**0.00**	2,10,973.63	**11.50**	0.02	**0.00**	2,71,748.31	**11.91**
2 CCIL Operated Systems	**2.26**	**0.03**	**5,01,598.49**	**37.74**	**2.56**	**0.03**	**6,21,569.63**	**40.91**	**3.03**	**0.03**	**7,52,000.42**	**44.70**	**3.12**	**0.02**	**8,07,370.42**	**44.00**	**3.65**	**0.02**	**10,56,173.36**	**46.28**
2.1 CBLO	0.16	**0.00**	1,20,480.39	**9.06**	0.18	**0.00**	1,75,261.92	**11.54**	0.21	**0.00**	1,67,645.96	**9.96**	0.22	**0.00**	1,78,335.28	**9.72**	0.22	**0.00**	2,29,528.33	**10.06**
2.2 Govt. Securities Clearing	0.70	**0.01**	1,19,947.98	**9.02**	0.87	**0.01**	1,61,848.24	**10.65**	1.09	**0.01**	2,58,916.76	**15.39**	1.02	**0.01**	2,69,778.20	**14.70**	1.51	**0.01**	4,04,389.08	**17.72**
2.2.1 Outright	0.66	**0.01**	65,920.33	**4.96**	0.82	**0.01**	89,566.99	**5.90**	0.98	**0.01**	1,01,561.62	**6.04**	0.88	**0.01**	97,285.41	**5.30**	1.34	**0.01**	1,68,741.46	**7.39**
2.2.2 Repo	0.04	**0.00**	54,027.65	**4.06**	0.05	**0.00**	72,281.26	**4.76**	0.11	**0.00**	1,57,355.15	**9.35**	0.13	**0.00**	1,72,492.78	**9.40**	0.17	**0.00**	2,35,647.62	**10.32**
2.3 Forex Clearing	1.40	**0.02**	2,61,170.12	**19.65**	1.51	**0.02**	2,84,459.46	**18.72**	1.73	**0.01**	3,25,437.69	**19.34**	1.89	**0.01**	3,59,256.94	**19.58**	1.93	**0.01**	4,22,255.95	**18.50**
3 Paper Clearing	**1,313.45**	**15.79**	**1,00,168.15**	**7.54**	**1,257.31**	**12.83**	**93,316.04**	**6.14**	**1,196.50**	**10.21**	**85,434.14**	**5.08**	**1,096.37**	**7.25**	**81,860.79**	**4.46**	**1,206.69**	**6.17**	**80,958.15**	**3.55**
3.1 Cheque Truncation System (CTS)	275.04	**3.31**	21,779.52	**1.64**	591.38	**6.03**	44,691.39	**2.94**	964.86	**8.23**	66,769.93	**3.97**	958.39	**6.34**	69,889.15	**3.81**	1,111.86	**5.69**	74,035.22	**3.24**
3.2 MICR Clearing	823.31	**9.90**	57,503.97	**4.33**	440.07	**4.49**	30,942.81	**2.04**	22.43	**0.19**	1,850.40	**0.11**	-		-		-		-	
3.2.1 RBI Centres	496.81	**5.97**	36,045.97	**2.71**	215.50	**2.20**	15,246.84	**1.00**	7.50	**0.06**	614.51	**0.04**	-		-		-		-	
3.2.2 Other Centres	326.50	**3.92**	21,458.00	**1.61**	224.57	**2.29**	15,695.97	**1.03**	14.93	**0.13**	1,235.89	**0.07**	-		-		-		-	
3.3 Non-MICR Clearing	215.10	**2.59**	20,884.66	**1.57**	225.86	**2.30**	17,681.84	**1.16**	209.21	**1.79**	16,813.81	**1.00**	137.98	**0.91**	11,971.64	**0.65**	94.83	**0.49**	6,922.93	**0.30**

Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14
	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%
4 Retail Electronic Clearing	**694.07**	**8.34**	**31,881.14**	**2.40**	**1,108.32**	**11.31**	**47,856.29**	**3.15**	**1,687.45**	**14.40**	**65,365.51**	**3.89**	**3,141.53**	**20.77**	**91,408.14**	**4.98**	**4,204.96**	**21.52**	**1,32,255.30**	**5.79**
4.1 ECS DR	176.53	**2.12**	1,083.10	**0.08**	192.91	**1.97**	1,267.96	**0.08**	226.01	**1.93**	1,739.78	**0.10**	224.75	**1.49**	1,651.50	**0.09**	8.76	**0.04**	39.14	**0.00**
4.2 ECS CR (Includes NECS)	122.18	**1.47**	1,771.28	**0.13**	152.54	**1.56**	2,492.19	**0.16**	115.35	**0.98**	2,019.14	**0.12**	39.00	**0.26**	1,059.44	**0.06**	10.10	**0.05**	144.08	**0.01**
4.3 EFT/NEFT	394.13	**4.74**	29,022.42	**2.18**	661.01	**6.74**	43,785.52	**2.88**	927.55	**7.92**	59,803.83	**3.55**	1,252.88	**8.28**	83,273.11	**4.54**	1,622.10	**8.30**	1,20,039.68	**5.26**
4.4 Immediate Payment Service (IMPS)	1.23	**0.01**	4.33	**0.00**	15.36	**0.16**	95.81	**0.01**	78.37	**0.67**	581.87	**0.03**	220.81	**1.46**	1,622.26	**0.09**	506.73	**2.59**	4,116.24	**0.18**
4.5 National Automated Clearing House (NACH)	-		-		86.50	**0.88**	214.81	**0.01**	340.17	**2.90**	1,220.88	**0.07**	1,404.08	**9.28**	3,801.83	**0.21**	2,057.27	**10.53**	7,916.17	**0.35**

Annexure 2: Payment System Indicators
(Volume in Million; Value in ₹ Billion)

Year	2012-13				2013-14				2014-15				2015-16				2016-17			
	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%	Volume	%	Value	%
5 Cards	**6,174.48**	**74.22**	**18,670.65**	**1.40**	**7,219.13**	**73.65**	**22,159.58**	**1.46**	**8,423.99**	**71.89**	**25,415.27**	**1.51**	**10,038.67**	**66.37**	**29,397.65**	**1.60**	**12,055.87**	**61.69**	**30,214.00**	**1.32**
5.1 Credit Cards	399.23	**4.80**	1,244.27	**0.09**	512.03	**5.22**	1,556.72	**0.10**	619.41	**5.29**	1,922.63	**0.11**	791.67	**5.23**	2,437.02	**0.13**	1,093.51	**5.60**	3,312.21	**0.15**
5.1.1 Usage at ATMs	2.51	**0.03**	14.43	**0.00**	2.96	**0.03**	16.87	**0.00**	4.29	**0.04**	23.47	**0.00**	6.00	**0.04**	30.41	**0.00**	6.37	**0.03**	28.39	**0.00**
5.1.2 Usage at POS	396.72	**4.77**	1,229.84	**0.09**	509.08	**5.19**	1,539.85	**0.10**	615.12	**5.25**	1,899.16	**0.11**	785.67	**5.19**	2,406.62	**0.13**	1,087.13	**5.56**	3,283.82	**0.14**
5.2 Debit Cards	5,775.25	**69.42**	17,426.39	**1.31**	6,707.10	**68.43**	20,602.86	**1.36**	7,804.57	**66.60**	23,492.65	**1.40**	9,247.00	**61.13**	26,960.63	**1.47**	10,962.36	**56.09**	26,901.79	**1.18**
5.2.1 Usage at ATMs	5,308.39	**63.80**	16,683.42	**1.26**	6,088.02	**62.11**	19,648.35	**1.29**	6,996.48	**59.71**	22,279.16	**1.32**	8,073.39	**53.37**	25,371.36	**1.38**	8,563.06	**43.82**	23,602.73	**1.03**
5.2.2 Usage at POS	466.86	**5.61**	742.97	**0.06**	619.08	**6.32**	954.51	**0.06**	808.09	**6.90**	1,213.49	**0.07**	1,173.61	**7.76**	1,589.27	**0.09**	2,399.30	**12.28**	3,299.07	**0.14**

Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14	2014-15	2015-16	2016-17	Year	2012-13	2013-14
	Volume	**%**	**Value**	**%**	**Volume**	**%**	**Value**	**%**	**Volume**	**%**	**Value**	**%**	**Volume**	**%**	**Value**	**%**	**Volume**	**%**	**Value**	**%**
6 Prepaid Payment Instruments (PPIs)	**66.94**	**0.80**	**79.23**	**0.01**	**133.63**	**1.36**	**81.05**	**0.01**	**314.46**	**2.68**	**213.42**	**0.01**	**748.02**	**4.95**	**487.58**	**0.03**	**1,963.66**	**10.05**	**838.01**	**0.04**
6.1 m-Wallet	32.70	**0.39**	10.01	**0.00**	107.51	**1.10**	29.05	**0.00**	255.00	**2.18**	81.84	**0.00**	603.98	**3.99**	205.84	**0.01**	1,629.98	**8.34**	532.42	**0.02**
6.2 PPI Cards	33.76	**0.41**	49.62	**0.00**	25.60	**0.26**	28.36	**0.00**	58.91	**0.50**	105.35	**0.01**	143.47	**0.95**	253.77	**0.01**	333.11	**1.70**	277.52	**0.01**
6.3 Paper Vouchers	0.48	**0.01**	19.60	**0.00**	0.53	**0.01**	23.63	**0.00**	0.55	**0.00**	26.24	**0.00**	0.56	**0.00**	27.97	**0.00**	0.56	**0.00**	28.08	**0.00**
7 Mobile Banking	**53.30**	**0.64**	**59.90**	**0.00**	**94.71**	**0.97**	**224.18**	**0.01**	**171.92**	**1.47**	**1,035.30**	**0.06**	**389.49**	**2.57**	**4,040.91**	**0.22**	**976.85**	**5.00**	**13,104.76**	**0.57**
8 Grand Total (1.1+1.2+2+3+4+5+6)	**8,319.71**	**100**	**13,29,238.70**	**100**	**9,802.05**	**100**	**15,19,234.99**	**100**	**11,718.19**	**100**	**16,82,461.12**	**100**	**15,126.04**	**100**	**18,35,102.59**	**100**	**19,542.66**	**100**	**22,82,342.58**	**100**

Source: Reserve Bank of India, Handbook of Statistics On Indian Economy, 2016-2017, pp.130-131.