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Demonetization- It's effects on digitalization in India

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Abstract
The Government of India had declared the largest demonetization in Indian history, prohibiting the usage of Rs.500 and Rs.1000 currency notes beginning at midnight on November 8, 2016. Demonetization was executed with the goal of making India a cashless economy, which would be accomplished through digital payments. The goal of this research is to look at how the phenomenon of demonetization affects digitalization. The purpose of this study is to identify the impact of demonetization on different digital payment modes in India. In the research methodology, a paired sample t-test has been used, and the researcher has used secondary data for the period April 2012 to October 2016 as pre and December 2016 to June 2022 as post demonetization, data has been derived from the RBI's official website (Payment System Indicator). Researchers found that there are significant differences in the transaction values of RTGS, NEFT, IMPS, M-Banking, M-Wallet, and Credit Card and Debit Card usage at POS between the pre- and post-demonetization periods. So it can be said that demonetization has played a very important role in making Indian economy as a cashless economy.

Keywords: demonetization, digital payment, point of sales, RTGS, NEFT, IMPS

Introduction

Demonetization did not occur for the first time in India in 2016, but it did twice before, first in 1946 and then again in 1978. The Rs.1000 and Rs.10000 banknotes were demonetized in January 1946, but the identical Rs.1000, Rs.5000 and Rs.10000 notes were reinstated in 1954 and demonetized again in January 1978. The Janata Party administration demonetized the currency for the second time in 1978. On the morning of January 16, that year, it issued an edict to withdraw Rs.1000, Rs.5000 and Rs.10000 notes. The goal of all previous and recent acts of demonetization has been to reduce black money, corruption, and phoney currency.

The primary motivations for demonetization were to incorporate digitalization and increase the number of tax payers, to combat corruption and counterfeiting, and to eliminate black money. However, this unexpected demonetization brought millions of new users into the digital economy. The people of India were left in limbo after the severe exchange limits that prevented individuals from exchanging the banned currency notes from banks because banks didn't have enough cash to distribute, and thus demonetization transitioned India to a partial cashless economy. There was a lot of cash in circulation after one year of demonetization. According to the RBI, the amount of currency in circulation was just 9% lower than it was before demonetization. Only 12–15 percent of transactions are completed online, but this figure is expected to increase over the next decade.

Digitalization

The use of binary digits is referred to as "digital." Digitalization refers to the adoption of modern technology and the transformation of physical data into digital form. The process of introducing digital technologies into daily life by digitising anything that may be digitised is known as digitalization. The literal definition of digitalization implies progress and a world that is technologically dependent. This is not a novel concept; it has existed since the dawn of time. Banks and other financial institutions around the world are modernising to keep up with technological advances. Newcomers are also diversifying their financial services and products. The banking industry has been especially impacted by digitalization. The rise of block chain-based systems, cloud computing, and increased cyber security concerns are all increasing digital issues. Cloud computing has the ability to increase efficiencies and enable the introduction of new customer services. It will surely change the way banks compete in the market, as well as the way they innovate in terms of people, products, and services. This will increase client happiness while also surprising them. It is a common knowledge that Smartphone and tablet usage is skyrocketing all over the world. Following demonetization, social media, smartphones, and online interaction will aid digitalization while also expanding financial inclusion. The consequent cash scarcity caused by demonetization encouraged an increase in electronic payments via Android phones. Paytm, Google Pay, and other similar services are used increasingly by supermarkets, cab drivers, and street vendors.

Effects of Demonetization on Digitalization

The Indian government has initiated Digital India initiative to ensure that residents may access services online through improved online infrastructure and connectivity, a process known as digital empowerment. Many customers have been urged to use more e-delivery banking channels, such as mobile banking, retail, corporate, or USSD-NUUP,UPI, *99 # and e-wallet banking. Going digital will undoubtedly have numerous direct and indirect economic benefits. Since

digitization will lead to more creative inventions, cheaper maintenance costs, increased accountability, improved financial transparency, and more deposits, bond markets, mutual funds, and savings, among other things, the RBI and banks will benefit the most from it. As a result, we must empower one another by assisting one another in learning appropriate technological skills. This will undoubtedly pave the way for a cashless society to emerge. The use of digital payment methods has significantly increased as a result of demonetization. Cashless transactions are encouraged as a result of demonetization. Because transactions are done over a digital medium, the amount of money that is made physically decreases, which reduces printing costs and reduces the circulation of black money.

Digital Payment Modes

The Real Time Gross Settlement (RTGS)

A financial transfer system that enables real-time transfers of money and/or securities is known as "real-time gross settlement" (RTGS). A continuous process known as the real-time gross settlement system (RTGS) is used to settle payments on an individual order basis without netting debits and credits across a central bank's books. Real-time gross settlement payments are final and irrevocable once they have been made. Most nations' central banks oversee and administer these frameworks.

National Electronic Funds Transfer (NEFT)

NEFT is an electronic payment system designed by the Reserve Bank of India to make it easier for consumers to transfer money from one bank to another in India. It is a safe, cost-effective, dependable, and efficient means of transferring payments between banks. The remitter must provide the relevant information at the time of the money transfer, such as the beneficiary's name and account number, the bank's name, branch name, and the beneficiary branch's IFSC code.

Immediate Payment Service (IMPS)

The Immediate Payment Service is India's real-time interbank electronic fund transfer mechanism (IMPS). A mobile phone-based interbank electronic fund transfer service is called the Interbank Mobile Payment Service (IMPS). It is open every day of the week, including weekends and holidays, for a full 24 hours. It is run by the National Payments Corporation of India (NPCI).

Mobile Banking

A customer can make financial transactions remotely using just a smartphone or a tablet, using a service provided by a bank or other financial institution. Contrary to internet banking, which is carried out through the bank's own website, it is done through a piece of software, sometimes referred to as an "app."

Mobile Wallet

Many banks as well as other recognised financial companies like Mobiquick, Paytm, GooglePay, Phonepay, Freecharge, etc. offer digital or mobile wallet services. Debit and credit cards and online banking can be used to add money to wallets, which can then be used for a variety of purchases.

Plastic Money

Credit cards, debit cards, and a variety of prepaid cards are all considered forms of plastic money. Since plastic money eliminates the need to carry huge amounts of cash, it is more practical to use it. When using a credit card, payment is made after the items have been purchased. When using a debit card to make a purchase, the money is immediately taken out of the cardholder's bank account. When purchasing or using other prepaid cards, the funds are already on the card.

Point of sales

The term "point of sale" (or "POS" in its abbreviated form) refers to the location—or point—at which a sales transaction takes place, such as a checkout line or retail counter. The "point of sale system" is the hardware and software combination that controls the actual sale. Using a point of sale system instead of a traditional cash register has many benefits, since a computer can record, save, share, and report sales, payment, and customer information.

Review of Literature

Fouillet & Guerin (2020) [3] according to their research paper, demonetization has had a significant impact on payment digitization. Data from the Reserve Bank of India from 2014 to 2020 has been used to demonstrate that the demonetization era resulted in a decrease in ATM withdrawals. It also increased the use of digital payment methods such as POS and mobile banking. Since October 2016, the number of POS transactions has nearly tripled, while ATM transactions have dropped by about one-fifth. (Fouillet, Guerin, & Servet, 2020) [3]

Reich, Gopinath, Mishra & Narayanan (2020) [9] in their research paper, have presented a model of demonetization in which agents hold cash in order to satisfy a constraint on cash-in-advance and to evade taxes. Using a cross-section of Indian districts and several novel data sets, they tested the model's predictions. Districts that saw more severe demonetization saw relative declines in economic activity, a quicker uptake of alternative payment methods, and a slower expansion in bank credit. (Reich G. M., 2020) [9]

Ghosh (2021) [4] in his research, has been argued that India's ambition to create a digital India and digital payments not only enable people make payments or receive money, but also perform a number of services like notifying users of pending payments, presenting various offers, and saving time. This is one of the key facts as part of the government of India's ambition to transform the country into a digital India. This is because smartphone sales are on the rise and high-speed internet access is widely accessible for a reasonable price. The "digital India" goal will surely be a major success, and the use of digital payment methods will rise in the near future. (Ghosh G., 2021) [4]

Brijesh & Shivathanu (2019) [2] throughout the demonetization process, has concentrated on how individuals used or accepted digital payment systems. The study was based on a conceptual framework and used a sample size of 766 people. The data analysis revealed that behavioural objectives and reluctance to innovation had an effect on actual usage. (Brijesh, 2019) [2]

Abbigeri & Shettar (2018) [10] explained how the Digital India flagship campaign encouraged many people to start using digital wallets, many of which began using them due to the abundance of cash back offers and coupons available. After the government launched its "digital India" initiative, the market was flooded with companies that produced mobile wallets and other payment systems like UPI and NEFT. (S. Abbigeri & M. Shettar, 2018) [10]

Baghla (2018) discussed how India may adopt the digital payment system in his paper. The paper also discusses how, following demonetization, people began to use digital platforms for transactions. The government's ambition to make our economy cashless is examined further, as is how consumers will adapt to such a system. A structured questionnaire was used to gather data and predict the future of India's digital payment system.

Kalyani (2016) [5] according to her research paper, the clients have other purchase options. Alternatives to cash include M-wallets, online banking, Credit cards, Debit cards and mobile banking. People are utilising e-wallets like Paytm and accepting mobile payments. E-wallets like Paytm and Freecharge are accepted by several street vendors and stores. Many news sites are reporting on the acceptance of "cashless" transactions. Cashless transactions are promoted by e-wallet service providers by offering "discounts" and "cashback" on purchases. For this reason, people prefer to pay by card. After analysing the circumstances and the impacts of demonetization, the author proposes that people should be educated about the different alternatives available in the market, and that online transactions should be made safer to build confidence. The purchasing treasury will alter as the younger generation grows up and uses emerging technologies like 5G networks and smartphones. (Kalyani, 2016) [5]

Research Gap

Research studies conducted on the issue of demonetization and digitalization are really limited. Few studies have been conducted on the short-term effects of demonetization on digitalization. Fewer studies have been conducted on the long-term impact of demonetization on digital transactions. This study is an attempt to find out the long-term effects of demonetization on various digital payment indicators in India.

Research Objective

1. To understand the effects of demonetization on digitalization in India; and
2. To study the various modes of digital payment transactions during pre and post demonetization in India.

Research Hypotheses

H_O: There is no significant difference in transactions value of RTGS, NEFT, IMPS, M-Banking, M-wallet, Credit Card and Debit Card usage at POS between pre and post demonetization period.

H_1: There is a significant difference in transactions value of RTGS, NEFT, IMPS, M-Banking, M-wallet, Credit Card and Debit Card usage at POS between pre and post demonetization period.

Research Methodology

Sample

For this study researcher has selected all the digital transactions existing prior to demonetization in November 2016. For analysis, the sample includes the use of RTGS, NEFT, IMPS, M-Banking, M-wallets, and cards at POS.

Period of Study

The study's time frame has been split into two matched groups: the pre-demonetization period, which runs from April 2012 to October 2016, and the post-demonetization period, which runs from November 2016 to March 2022. The researcher took into account a 55-month window both before and after demonetization, with the exception of November 2016, the month in which demonetization was put into effect. The purpose of the study is to determine how demonetization will affect various digital payment channels over the long term; therefore, the researcher collected data up to both 55 months before and after the event.

Source of Data

The data on the transaction value of each digital payment method during the sample period was used by the researcher for analysis purposes. The data was retrieved from the RBI's website in the module on payment system indicators.

Research Method

Sample Paired T-test is used to compare the value of digital payment transactions during pre and post demonetization period for any significant growth.

Analysis and Interpretation

Table 1: Descriptive statistics of value of Transactions in various Digital Payment Transactions (In Million)

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
RTGS Pre	55	6666821	5611559	12278380	8340028.60	193416.10
RTGS Post	55	12625657	6443653	19069310	11859173.5	374840.50
NEFT Pre	55	827006	195630	1022636	503730.10	30626.27
NEFT Post	55	2165541	880788	3046329	1779017.14	55731.64
IMPS Pre	55	34349	8.00	34357	7491.78	1217.56
IMPS Post	55	294755	32481	327236	155581.23	10716.95
M-banking Pre	55	113706	235	113941	20376.90	3955.91
M-banking Post	55	1168273	80506	1248779	400821.07	39402.74
M-wallet Pre	55	3376	9	3385	956.12	131.96
M-wallet Post	55	15480	3306	18786	12497.09	465.78
Credit Card usage at POS Pre	55	20915	9027	29942	16062.16	684.26
Credit Card Usage at POS post	55	51554	20765	72319	48859.30	1671.39
Debit Card usage at POS Pre	55	16869	5072	21941	10348.67	508.77
Debit Card usage at POS Post	55	46876	23250	70126	49618.27	1453.43
Valid N (listwise)	55					

Source- Author’s estimation based on RBI Data

The above Table 1 presents the descriptive statistics of different digital payment modes during pre and post demonetization process.

Table 2: Paired Sample Statistics of Digital Payment Transactions in India

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	RTGS Pre	8340028.60	55	1434412.23	193416.10
	RTGS Post	11859173.5	55	2779891.57	374840.50
Pair 2	NEFT Pre	503730.10	55	227130.52	30626.27
	NEFT Post	1779017.14	55	413316.92	55731.64
Pair 3	IMPS Pre	7491.78	55	9029.71	1217.56
	IMPS Post	155581.23	55	79479.08	10716.95
Pair 4	M-banking Pre	20376.90	55	29337.81	3955.91
	M-banking Post	400821.07	55	292218.56	39402.74
Pair 5	M-wallet Pre	956.12	55	978.67	131.96
	M-wallet Post	12497.09	55	3454.35	465.78
Pair 6	Credit Card usage at POS Pre	16062.16	55	5074.62957	684.26291
	Credit Card Usage at POS post	48859.30	55	12395.37337	1671.39180
Pair 7	Debit Card usage at POS Pre	10348.67	55	3773.20823	508.77929
	Debit Card usage at POS Post	49618.27	55	10778.99664	1453.43961

Source- Author's estimation based on RBI Data

Observation

Table 1 makes it evident that, when compared to a similar time before demonetization, the overall average value of transactions for all digital payment methods has increased over the past 55 months. Customers are moving more and more favourably toward electronic payment methods. But the difference between months has also grown a lot, as shown by the fact that the standard deviation and standard error of the value of monthly transaction values have both gone up in the same way. The mean value of RTGS is ₹ 8340028.60 crore and ₹ 11859173.50 crore, NEFT is ₹ 503730.10 crore and ₹1779017.16 crore while the mean of IMPS is ₹ 7491.78 crore and ₹ 155581.23 crore, the mean of Mobile Banking is ₹ 20376.91 crore and ₹ 400821.07 crore , the mean of Mobile Wallet is ₹ 956.12 crore and ₹ 12497.09 crore, the mean of Credit Card usage at POS is ₹ 16062.16 crore and ₹ 48859.30 crore, and the average of Debit card usage at POS is ₹ 10348.67 crore and ₹ 49618.27 crore during pre and post demonetization period respectively. It clearly indicates that the means of paired samples of RTGS, NEFT, IMPS, Mobile Banking, Mobile Wallet, Credit Card and Debit Card usage at POS are different and increased during the pre and demonetization period.

Table 3: Paired Sample T-test of Digital Payment Transactions in India

Paired Samples Test									
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	RTGS Pre RTGS Post	-3519144.90	3428464	462294.02	-4445988.61	-2592301.20	-7.61	54	.000
Pair 2	NEFT Pre NEFT Post	-1275287.03	348476	46988.62	-1369493.55	-1181080.52	-27.14	54	.000
Pair 3	IMPS Pre IMPS Post	-148089.45	72380	9759.75	-167656.58	-128522.32	-15.17	54	.000
Pair 4	M-Banking Pre M-banking Post	-380444.16	269558	36347.25	-453316.02	-307572.29	-10.46	54	.000
Pair 5	M-Wallet pre M-Wallet Post	-11540.96	3306	445.83	-12434.81	-10647.11	-25.88	54	.000
Pair 6	Credit Card at POS pre Credit Card at POS Post	-32797.14	10525	1419.26	-35642.59	-29951.69	-23.10	54	.000
Pair 7	Debit Card at POS Pre Debit Card at POS Post	-39269.60	9185	1238.59	-41752.83	-36786.36	-31.70	54	.000

Source- Author's estimation based on RBI Data

Observation

The above table 3 shows the Paired Samples Test of digital payment transactions –RTGS, NEFT, IMPS, M-Banking, M-Wallet, and Credit Card and Debit Card usage at POS with 54 degrees of freedom (n-1) and 95 percent confidence interval around the mean differences. The paired sample tests clearly reflect there is significant change in above all transactions in pre and post demonetization period.

We can reject the null hypothesis by one percent significance level as the 2-tailed p-value is <0.05 and accept the alternative hypothesis. The result describes that the mean differences between pre and post demonetization - RTGS, NEFT, IMPS, M- Banking, M-wallet, Debit and Credit Card usage at POS are not equal to zero. Hence, demonetization has significantly raised all the modes of digital payments.

The dependent sample test clearly reveals that demonetization has significantly increased RTGS with ₹3519144.94 crore, NEFT with ₹1275287.06 crore, IMPS with ₹148089.45 crore, Mobile Banking with ₹380444.16 crore, Mobile Wallet with ₹11540.96, Credit Card Usage ₹32797.14, Debit Card usage at POS ₹39269.60. It indicates that demonetization played a very significant role in raising the digital payment transactions in the country. So it can be conclude that there is a significant difference in transactions value of RTGS, NEFT, IMPS, M-Banking, M-wallet, Credit Card and Debit Card usage at POS between pre and post demonetization period.

Conclusion

The purpose of this study was to investigate how demonetization will impact digitalization. We have demonstrated that the demonetization phase accelerated the use of digital payment solutions, such as Point of Sale Terminals (POS), Mobile banking, Mobile wallets using data collected by the Reserve Bank of India between 2012 and 2021. It was found that the adoption of digital payment methods, including IMPS, RTGS, NEFT, M-Banking, M-wallet has grown significantly. The use of debit and credit cards at POS has dramatically expanded during the last five years. Since demonetization, sentiments toward digitization have improved. The review and analysis of secondary data demonstrates that the average transaction value increased dramatically after demonetization, according to the t - statistic, which is significant in every single case. So, it wouldn't be wrong to say that India's recent demonetization gave digital payment methods a much-needed boost that led to their widespread use.

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