2 India's Hybrid Financial Ecosystem: Challenges and Opportunities in the Digital-Cash Balance

Dr. Pawan Pushpad[1*] & Mr. Yogesh Yadav[2]
[1,2]Assistant Professor, IPS Academy, Department of Commerce, Indore.
*Corresponding Author: smenter.jp@gmail.com

Abstract

No doubt, our modern India is gradually catching the cashless syndrome. E-payments, ATM cards and others are now the order of the day at our work-places. This paper takes a keen look into the feasibility of introducing cashless means of digital transactions into our society and the security threats associated with it. The paper explains the potentials of going cashless or digital payments. India's digital payment landscape has transformed dramatically. Here's the latest snapshot for 2025 digital payments:

- **Digital Dominance:** As of the first half of 2025, digital payments account for 99.8% of total transaction volume and 97.7% of transaction value in India
- **UPI Surge:** Unified Payments Interface (UPI) continues to lead the charge, with record-breaking monthly volumes and widespread adoption across urban and rural areas.
- **Cash Still Present:** Despite the digital boom, cash remains relevant in specific contexts especially in local markets, small towns, and informal sectors. The Reserve Bank of India notes that India is not yet a cashless economy, but rather a hybrid model where cash and digital coexist The depletion in cash due to demonetization has pushed digital and e-transactions to the forefront; UPI, e-banking, e-wallets, and other transaction apps becoming prevalent.

Keywords: Cashless Society, UPI, Digital Payment, Going Cashless, e-Banking, e-Wallets, Hybrid Model, Digital, e-Transactions.

Introduction

Reducing Indian economy's dependence on cash is desirable for a variety of reasons. India has one of the highest cash to gross domestic product ratios in the word, and lubricating economic activity with paper has costs. According to a 2014 study by Tufts University, The Cost Of Cash In India, cash operations cost the Reserve Bank of India (RBI) and commercial banks about Rs 21, 000 crore (~A$2.4bn) annually. Also, a shift away from cash will make it more difficult for tax

evaders to hide their income, a substantial benefit in a country that is fiscally constrained. To be sure, the government on its part is working at various levels to reduce the dependence on cash. Opening bank accounts for the unbanked under the Jan Dhan Yojana (Prime Minister Financial Inclusion scheme) and adoption of direct benefit transfer is part of the overall idea to reduce usage of cash and increase transparency. RBI has also issued licenses to open new-age payment banks and small finance banks which are expected to give a push to financial inclusion and bring innovative banking solutions in modern India. Things are also falling in place in terms of technology for modern Indi .The launching of Unified Payments Interface by National Payments Corporation of India makes digital transactions as simple as sending a text message. So, will the exercise to exchange currency notes and the ongoing currency crunch be a decisive factor in making India a truly cashless economy.

Cashless transactions have gone up in recent times; a meaningful transition will depend on a number of things such as awareness, technological developments and government intervention. For instance, mobile wallets have seen notable traction, and it is possible that a large number of Indians will move straight from cash to mobile wallets. According to the GSMA's 2025 State of the Industry Report, mobile money accounts have continued to grow globally, especially in emerging markets. The report highlights: Over 1.75 billion registered mobile money accounts worldwide.

A significant increase in active users and transaction volumes, driven by P2P transfers, bill payments and merchant transactions.

The **Reserve Bank of India (RBI)** also tracks mobile banking volumes monthly. As of **July to September 2025**, mobile banking transactions in India have shown steady growth, with millions of transactions processed monthly across NEFT, RTGS, and mobile platforms.

However, as noted above, a material transition to a cashless economy will depend on a number of factors.

- **First,** the availability and quality of telecom network will play a crucial role. Presently, people face difficulties in making electronic payments even in metro cities because of poor network.
- **Second,** as one of the biggest beneficiaries of this transition, banks and related service providers will have to constantly invest in technology in order to improve security and ease of transaction. People will only shift when it's easier, certain and safe to make cashless transactions.
- **Third,** the government will also need to play its part. It will have to find ways to incentivize cashless transactions and discourage cash payments. Implementation of the goods and services tax, for example, should encourage businesses to go cashless. Government should also use this

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opportunity to revamp the tax administration, as more than taxes, small businesses fear tax inspectors.

The government will have to create conditions—not necessarily by creating cash shortages—to push cashless transactions to a threshold level after which the network effect will take over. India may not become a cashless economy in the foreseeable future, but it needs to reduce its unusually high dependence on cash to bring in much needed transparency and efficiency in the system.

What is Cashless Economy?

Cashless Economy can be defined as a situation in which the flow of cash within an economy is non-existent and all transactions must be through electronic channels such as direct debit, credit cards, debit cards, electronic clearing, and payment systems such as Unified payment interface (UPI) Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT) and Real Time Gross Settlement (RTGS) in India.

Types of Cashless Modes and Payments

- **Unified Payments Interface (UPI):** Unified Payments Interface, or UPI, is a super easy and fast way to send or receive money using your smart phone. Instead of remembering long bank account numbers or IFSC codes, you can simply use a UPI ID—kind of like an email address for your bank account—or scan a QR code to make payments. Whether you're splitting a bill with a friend, paying for groceries, or shopping online, UPI lets you do it all instantly, any time of the day, even on holidays. It works through apps like Google Pay, PhonePe, Paytm, and BHIM, and it's backed by strong security features like a personal PIN and two-step verification. UPI has become a go-to method for millions of Indians because it’s quick, safe, and incredibly convenient.
- **Mobile wallet:** It is basically a virtual wallet available on your mobile phone. You can store cash in your mobile to make online or offline payments. Various service providers offer these wallets via mobile apps, which is to be downloaded on the phone. You can transfer the money into these wallets online using credit/debit card or Net banking. This means that every time you pay a bill or make a purchase online via the wallet, you won’t have to furnish your card details. You can use these to pay bills and make online purchases.
- **Plastic money:** It includes credit, debit and prepaid cards. The latter can be issued by banks or non-banks and it can be physical or virtual. These can be bought and recharged online via Net banking and can be used to make online or point-of-sale (PoS) purchases, even given as gift cards. Cards are used for three primary purposes – for withdrawing money from ATMs, making online payments and swiping for purchases or payments at PoS terminals at merchant outlets like shops, restaurants, fuel pumps etc.

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- **Net banking:** It does not involve any wallet and is simply a method of online transfer of funds from one bank account to another bank account, credit card, or a third party. You can do it through a computer or mobile phone. Log in to your bank account on the internet and transfer money via national electronic funds transfer (NEFT), real-time gross settlement (RTGS) or immediate payment service (IMPS), all of which come at a nominal transaction cost.
- **Aadhaar Enabled Payment System (AePS):** Aadhaar Enabled Payment System (AePS) makes banking simple and accessible, especially for people in rural or remote areas. Instead of needing a debit card or smartphone, all you need is your Aadhaar number and a fingerprint. You can walk into a nearby shop or banking kiosk with a micro ATM and do basic things like withdraw cash, check your balance, or send money. It's safe too—your fingerprint acts like your password. AePS has made it possible for millions of people, even those without internet or smartphones, to be part of the formal banking system and manage their money with ease.
- **QR Code-Based Payments:** QR Code-Based Payments are one of the easiest ways to pay using your phone. Instead of handing over cash or swiping a card, you just open a payment app like Google Pay, PhonePe, or Paytm and scan a small black-and-white square called a QR code. That code holds all the payment details, so once you scan it, you simply enter the amount and tap to confirm. It's quick, secure, and you don't need to touch anything or carry cash—just your phone. Whether you're buying veggies from a local vendor or paying at a big store, QR codes make the whole process smooth and hassle-free.

The RBI classifies every mode of cashless fund transfer using cards or mobile phones as '**prepaid payment instrument'**. They can be issued as smart cards, magnetic stripe cards, Net accounts, Net wallets, mobile accounts, mobile wallets or paper vouchers. They are classified into four types:

- **Open Wallets:** These allow you to buy goods and services, withdraw cash at ATMs or banks and transfer funds. These services can only be jointly launched in association with a bank. Apart from the usual merchant payments, it also allows you to send money to any mobile number linked with a bank account. M-Pesa by Vodafone is an example.
- **Semi-Open Wallets**: You cannot withdraw cash or get it back from these wallets. In this case, a customer has to spend what he loads. For example, Airtel Money/Ola Money is a semi-open wallet, which allows you to transact with merchants having a contract with Airtel/Ola.
- **Closed Wallets:** This is quite popular with e-commerce companies; where in a certain amount of money is locked with the merchant in case of a

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cancellation or return of the product, or gift cards. Flipkart and Book My Show wallets are an example.

- **Semi-Closed Wallets:** These wallets do not permit cash withdrawals or redemption, but it allows you to buy goods and services from listed vendors and perform financial services at listed locations. Paytm is an example.

Advantages of a Cashless Economy

- Tackling Black Money**:** The main advantage of a cashless society is that a record of all economic transactions through electronic means makes it almost impossible to sustain black economies or underground markets that often prove damaging to national economies. It is also much more risky to conduct criminal transactions. An economy that is largely cash based facilitates a rampant underground market which abets criminal activities such as drug trafficking, human trafficking, terrorism, extortion etc. Cashless transactions make it difficult to launder money for such nefarious activities. Circulation of Fake Currency notes can be curbed.
- A cashless economy will help reduce corruption.
- Increase Tax base: It is difficult to avoid the proper payment of due taxes in a cashless society, such violations are likely to be greatly reduced. Increased tax base would result in greater revenue for the state and greater amount available to fund the welfare programmes.
- Digital transactions bring in better transparency, scalability and accountability.
- Digital transactions are convenient and improves market efficiency
- Transaction costs will come down in the long run
- It would bring down the logistics & cost involved in printing, managing and moving money around.
- It will eliminate the risks associated with carrying and transporting huge amounts of cash.

Literature Review

Moody's Analytics(2010) study the impact of card usage on GDP for 51 countries. The 51 countries in the sample—which collectively account for 93% of the world's gross domestic product—electronic card usage added $1.1 trillion in real dollars to private consumption and GDP from 2003 to 2008. Put another way, real global GDP grew an extra 0.2% a year on average beyond what it would have without card usage.

Gangopadhyay (2009), shows that more than half the Indian population is not financially included. Overall 525 of the households have a bank account, thee relevant percentages are 67% in urban areas and 40% in rural areas. **Oz Shy**

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(2002), "The Economics of Network Industries", Cambridge University Press, for discussions on various network effects involving banks.

Schacklett (2000) predicts that —as smart cards gain momentum in the financial ser- vices marketplace, it's likely that other forms of plastic like credit, debit, and ATM cards will all meld into one universal, multifunctional smart card.

Cartes Bancaireswho saw advantage of using the technology in reducing fraud. By replacing magnetic striped cards with smart cards fraud rates in France dropped tenfold then (Flohr, 1997).

Lee, Jinkook, Fahzy Abdul-Rahman, and Hyungsoo Kim. "Debit card usage: an examination of its impact on household debt." Financial Services Review16.1 (2007): 73.

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Methodology

For the purpose of this study, secondary data methods were employed. Data was obtained from existing literature and supporting documents from the internet, books and journals from around the world.

The Challenges ahead

The biggest roadblock India faces in setting up a cashless economy is with regard to Digital and Banking Infrastructure, Security and Literacy. Most of the cash transactions in the country are small exchanges for goods or services and the penetration of PoS terminals is just not enough. Millions of people still don't have a bank account, access to PoS terminals, internet or awareness to understand and use online payment methods etc. So we need a large scale penetration of digital services and PoS terminals to facilitate digital transactions in small towns, rural areas, untapped markets in urban India.

- **Universal Financial Inclusion** – Despite the success of Jan Dhan Yojana in improving financial inclusion, it has been found that most accounts have been dormant. Many PMJDY accounts lie empty and have been labeled as zero-balance accounts.
- **Card acceptance infrastructure –** India struggles to keep pace with its growing population in 2024, the global average was approximately 20 ATMs and 11 commercial bank branches per 100,000 adults in comparison to Uzbekistan where ATMs per 100,000 adults: Jumped from 5 to 15 between 2014 and 2023. From 2013 to 2015, debit cards grew twice as fast as the number of PoS terminals and 1.5 times the number of ATMs, with the majority of the new infrastructure taking root in urban centers. There are at

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least 1.45 million PoS terminals setup by banks across the country with over 2 lakh ATMs. But, the retail locations for PoS transactions is nowhere near to the over the counter cash transactions. India's modern banking system maps neatly onto social and spatial inequalities. Only 18% of all ATMs are deployed in rural India. The RBI's own research finds that the states with a higher female population and a more rural populace showed lower levels of financial inclusion.

- **Consumer Behavior & Financial Literacy**: Common man finds the usage of cards, mobile banking and PoS terminals to be a complex process. This requires large scale literacy and awareness campaigns to be run across the country.
- **Low Penetration of Mobile Banking**: The impact of mobile wallets in hastening the transition to a cashless economy is clearly overstated. Merely26% of India has internet access, and there are only 200 million users of digital payment services. The World Bank's Global Findex clearly shows that Indians are significantly less familiar with digital banking – in the use of credit or debit cards, in transacting using mobile phones, and using net banking to pay bills – than their peers in middle-income nations.

Conclusion

Electronic cash is a system which allows individuals to purchase goods or services in today's society without the exchange of anything tangible. The term money still exists, but it is more in an electronic form than previously. This is the ultimate goal of cashless society paradigm. This paper has identified some of the important issues which have been, or will be encountered in cashless society brought on in part by electronic cash.

Challenges in Transitioning to a Modern Cashless Society

- **Acceptance infrastructure and digital inclusion:** Lack of adequate infrastructure is a major hurdle in setting up a cashless economy. Inefficient banking systems, poor digital infrastructure, poor internet connectivity, lack of robust digital payment interface and poor penetration of PoS terminals are some of the issues that need to be overcome. Increasing Smartphone penetration, boosting internet connectivity and building a secure, seamless payments infrastructure is a pre requisite to transition into a cashless economy.
- **Financial Inclusion** – For a cashless economy to take off the primary precondition that should exist is that, there should be universal financial inclusion. Every individual must have access to banking facilities and should hold a bank account with debit/credit card and online banking facilities.

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- **Digital and Financial Literacy** – Ensuring financial and digital inclusion alone is not sufficient to transition to a cashless economy. The citizens should also be made aware of the financial and digital instruments available and how to transact using them.
- **Cyber Security** – Digital infrastructure is highly vulnerable to cyber-attacks, cyber frauds, phishing and identity theft. Off late cyber-attacks have become more sophisticated and organized and poses a clear and present danger. Hence establishing secure and resilient payment interfaces is a pre-requisite for going cashless. This includes enhanced defenses against attacks, data protection, addressing privacy concerns, robust surveillance to pre-empt attacks and institutionalized cyber security architecture.
- **Changing habits and attitude** – Indian economy functions primarily on cash due to lack of penetration of e-payment modes, digital illiteracy of e-payment and cashless transaction methods and thirdly habit of handling cash as a convenience. In this scenario, the ideal thing to do is to make people adopt e-payments in an incremental fashion and spread awareness to initiate behavioral change in habits and attitude.
- **Urban – Rural Divide** – While urban centers mostly enjoy high speed internet connectivity, semi urban and rural areas are deprived of a stable net connection. Therefore, even though India has more than 200 million smart phones, it is still some time away for rural India to seamlessly transact through mobile phones. Even with regard to presence of ATM's, PoS terminals and bank branches there exists a significant urban-rural divide and bridging this gap is a must to enable a cashless economy.
- **Poor Internet Connectivity**: Despite the exponential surge in mobile penetration, India is riddled with below par internet connectivity and electricity shortage. The Indian government had pegged the 'JAM Trinity' as the building block towards a less cash future. But data suggests that India still has a long way to go in efficiently linking bank accounts with mobile numbers. Also a clear urban-rural divide exists in this regard.
- **Securing the digital gateways**: Banking infrastructure is wide open to compromise and that has been witnessed on multiple occasions in recent years. In October 2016, 3.2 million debit card details belonging to multiple Indian banks were hacked. The breach is said to have originated in malware introduced in systems of Hitachi Payment Services, which enabled fraudsters to access information allowing them to steal funds. Cyber-attacks have become increasingly difficult to curb and the focus needs to also be on drafting a strong legislation to guarantee digital privacy and data security. Individuals must be allowed more control over their data, conditional access to data indicating user behavior etc.

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- **Privacy Concerns:** The potential loss of privacy is an obvious concern that comes with a cashless economy. Possibilities of personal surveillance and electronic snooping as well as profiling without consent have been pointed out by many. A cashless society can potentially give the government of the day unprecedented access to information and power over the citizens and would require strong technical and legal frameworks to guard against misuse of power. The problem is compounded by the fact that data protection laws and public policies often lag way behind technology anywhere in the world. In India, privacy is not a major concern and there is a lack of privacy or data protection laws.

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