

MOBILE WALLET INTEROPERABILITY IN INDIA

Introduction

The debated uproar in the aftermath of demonetization has reached a mad rush. Social activists having colours from political affiliation to policy wonks and economists

have caused a hullabaloo on public forums such as Twitter and Facebook, alas with no results as the views appear to be sharply divided. Amid tugged views, unless government and the regulatory authorities put in order the necessary infrastructure

facilitating digital transactions - prospective gains for the economy will remain just that—potential positives. One of the many infrastructural necessity is the implementation of interoperability of Digital Wallets.



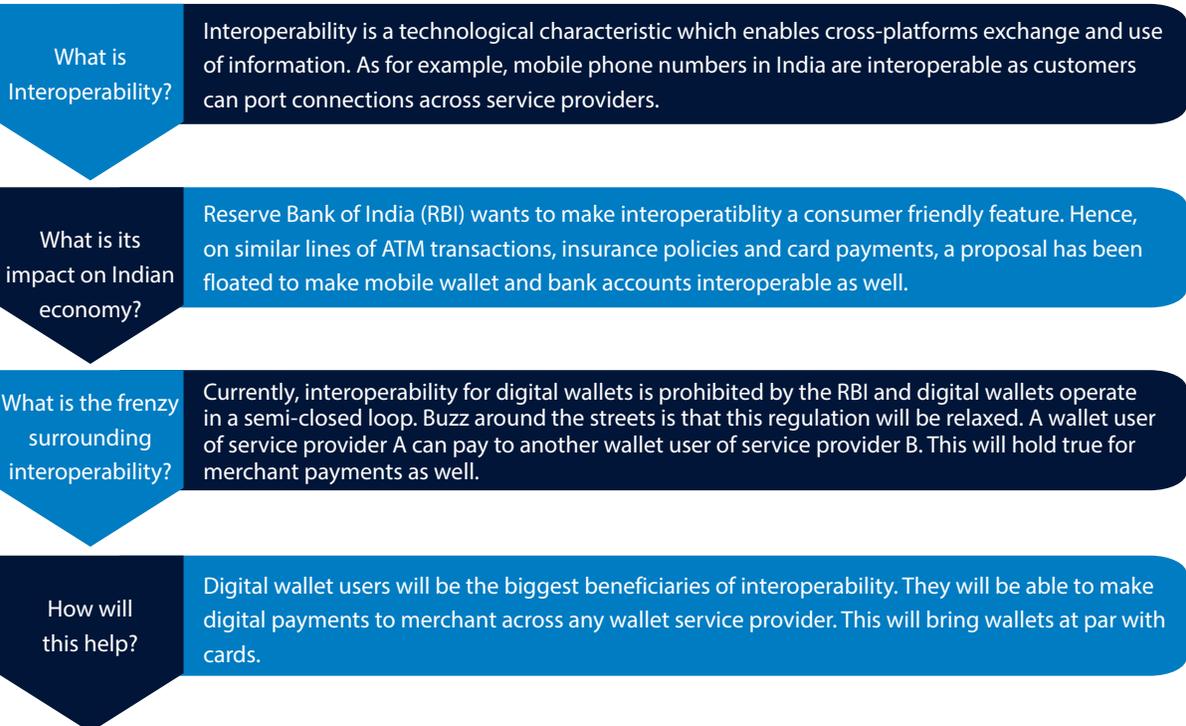
Demonetization would see a massive activation of digitization of financial services in the country, although there will be some amount of "short term pain" in the coming weeks. ...what would have taken another 3-6 years to get rolled out, I now believe because of the urgency of the matter, will happen in 3-6 months.

- Nandan Nilekani, Advisor NPCI, Former Chairman-UIDA and ex-CEO of Infosys Ltd

Digital wallets have acted as a useful tool in driving the Government's agenda, however, they operate in a semi-closed loop because

of their inability to interact with each other. Hence, the RBI has planned to necessitate changes in the present digital transactions

ecosystem by introducing interoperable wallets and opening the doors for Unified Payments Interface.



What are the regulations governing interoperability?

Interoperability means that competing companies will end up sharing resources and hence loyalty programs coupled with

state of the art customer service will be required to retain existing users and attract new customers. Ultimately, the current free wallet services may phase out to a charge being put on interoperable wallet transactions. This will be the cost

of using other company's network and will be governed by the rules set by RBI around interchange fees. These suggest the road ahead will not be easy for digital wallet firms.

As per the new guidelines:

- Non KYC compliant users need to be compliant within a period of 60 days from the date of issue. Transaction and credit will be blocked for non-compliant wallets
- The rules specified implicitly provide for sanctions checks and anti-money laundering mechanism

Know Your Customer



- The company or its associate company or group, cannot have Prepaid payment instrument (PPI) account as a part of access to other services
- An annual audit report covering systems compliance along with technology and hardware needs to be submitted

Security



- Rooted devices need to be barred from app installations
- Source code audits and assurance will be required to ensure that the app is free from embedded malicious code

Compliance



- Wallets will cease to have lifetime validity
- Wallets which are inactive or have zero balance for a period of one year shall be deactivated with prior notice to users

Validity



- Service providers will be required to timely submit to the bank a list of merchants it hosts
- Instead of agreements with individual merchants, they shall now be in force with digital marketplace and payment aggregator



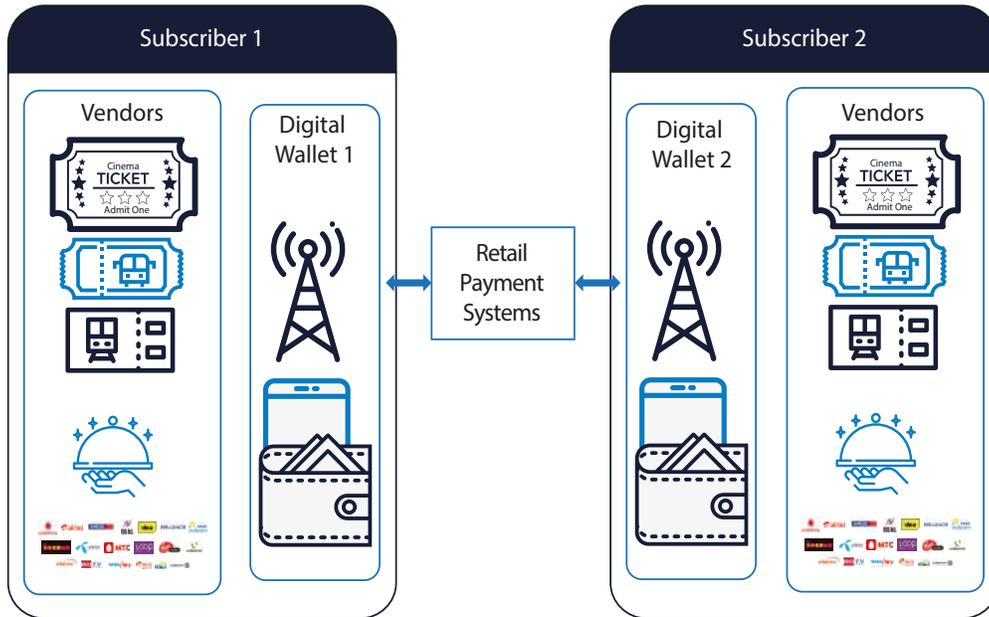
- The fund transfer limit of Rs 10,000 from mobile wallet to bank account will have to be reworked in order to not create a negative impact on the recently picking up digital wallet ecosystem as it conflicts with the set limit for merchant users

Fund transfer



What are the options for achieving interoperability?

1. UPI

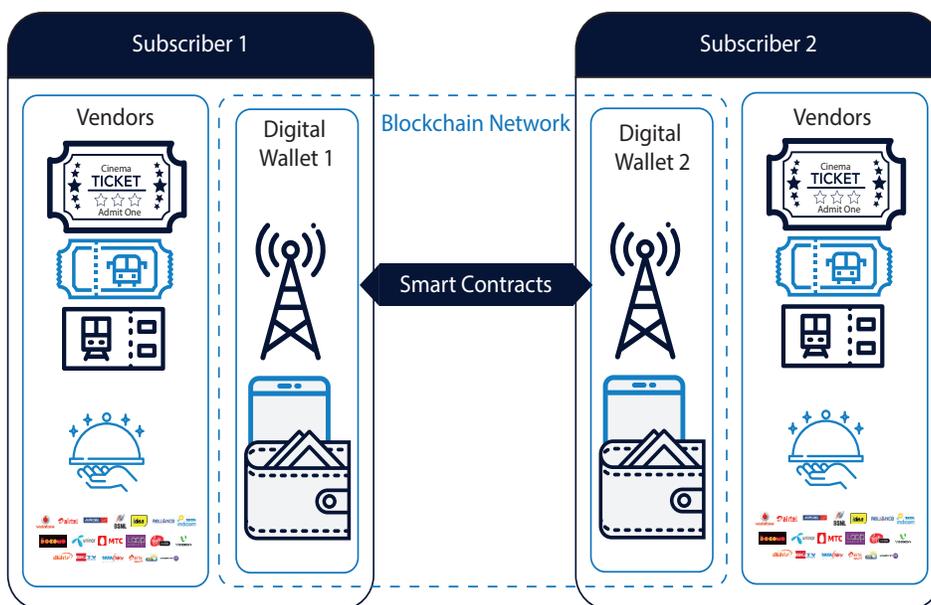


Payments are hard. Online payments, even more so. For UPI to evolve into a one stop solution for payments, it will take a lot of nurturing. For example, non-participating bank account holders

such as co-operative banks or foreign banks cannot transfer funds through UPI. Presently, there is no support for escrow too. Hence, features need to be added as a new layer in UPI, on similar

lines that UPI is based on existing IMPS framework. Interoperability through UPI will be like presenting old wine (Real Time Gross Settlement, RTGS) in a new bottle.

2. Distributed Ledger



- Digital wallet service providers have multiple options for getting identities of subscribers verified – telecom operator, KYC or Aadhar. The subscribers can avail services such as booking tickets, restaurant payments, online shopping, etc.
- Being partners in the blockchain network and hence bound by a smart contract, digital wallet service providers able to cross validate subscribers more quickly and more efficiently.
- Subscribers need to choose digital wallet as the payment mode and thereafter can view the list of supported service providers.
- Subscribers also have the option to pay using QR code scan at merchant outlets.
- In payment gateway, the user needs to enter mobile number and password. Smart contract is used for completing payment transaction.

Less maintenance and more innovation is required for creating an integrated financial ecosystem with common backbone supporting various players and processes. Distributed ledger as a backbone can help achieve this dream. Using blockchain will help payments network achieve the ease that we today have with Software as a Service and APIs. Not only will it help achieve interoperability between similar services, but if required, across services too. It will also help create an integrated financial ecosystem which will be future ready. The icing on the cake is that this ecosystem can be local, regional, national or even global.





Benefits



- Time to validate subscriber identity comes down drastically
- Increases transparency of transactions between the service providers
- Easier to track the movement of money by merchants and subscribers
- Seamless experience of across merchants
- Regulatory bodies such as RBI can be part of this network - compliance and governance for money movement visibility

Format

Transaction ID	Hash ID
Transaction Type	Debit/Credit
Transaction Datet	dd-mm-yyyy
Transaction Time	hh-mm-ss
Settlement Date	dd-mm-yyyy
Settlement Time	dd-mm-yyyy
Response Code	xxx
Remitter	WalletA
Beneficiary	WalletB
Remitter Mobile Number	xxxxxxxxxx
Beneficiary Mobile Number	xxxxxxxxxx
Amount	Rs xxx
Remitter Reference Number	xxxxxxxxxx
Beneficiary Reference Number	xxxxxxxxxx

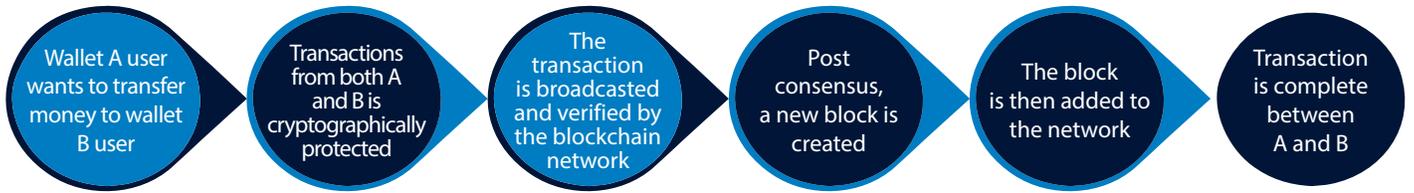
Clearing and Settlement

Clearing and settlement is an area which is not only riddled with legacy systems but also multiple intermediaries and hence is ripe for a change. We propose clearing and settlement through a shared ledger system which will occur in real-time or near real-time. Transactions will be cleared instantaneously through a private blockchain network of service providers with real-time risk management, reporting as well as other financial transfer instructions.

The current structure is dominated by centralized institutions such as RBI and NPCI whereas a distributed ledger network is meant to be decentralized, so how will this work? Well, it will, because in the existing mechanism, majority of the transactions

are being run on behalf of their markets by central operators as permitted or double permissioned network.

In fact, the overall technology and operational costs could be reduced by considering shared ledgers as the new hardware and software hosting option. As for example, transaction database and executable business logic provided by central institutions, could potentially be hosted outside for many financial transactions. This would in turn allow the use of smart contracts provided by central participants and pave the way for bilateral P2P execution. On the other hand, a central coordinating body would still be required for an array of related functions ranging from general governance to synchronising upgrades of smart contract versions.



Conclusion

We conclude that although using the existing UPI framework will lead to a quicker implementation, it will push us away from creating an integrated financial ecosystem. Moreover, it will also lead to higher cost of transactions which would negate USPs of digital wallet and primarily the goal of financial inclusion. Higher costs may also close the doors for new players.

UPI	Blockchain
Easier to implement – short term cost effective move	Cost effective in the longer run. Will utilize blockchain benefits viz. consensus, provenance, immutability and finality
Difficult to create an integrated financial ecosystem	Easier to create an integrated financial ecosystem
Wallets being generally used for low ticket transactions – cost of transfer will increase negating the primary aim of financial inclusion	Intermediaries not mandatory
Required 'trusted' and centralized intermediaries	Near real-time processing
Clearing and settlement in batches	Reduced infrastructure cost and lower fees
Costly infrastructure setup and maintenance along with higher fees	Will require a setup from scratch.

To offer competitive and better services to wallet users and merchants, interoperability for digital wallets needs to be realized. Demonetization drive has provided the much-needed push and awoken the pundits for renewed focus on the development of India's non-cash

payment infrastructure. Digital wallet interoperability is a critical catalyst in the long journey from the rhetoric of cashless society to the reality of a cash-lite society. With innovative and evolving technologies like distributed ledgering; interoperability can be

achieved with speed and transparency. The next step towards an integrated financial ecosystem would be to create a blockchain that could be shared by all counterparties across industries, regions and continents – every bank and intermediary worldwide.

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References

- https://rbi.org.in/SCRIPTS/BS_ViewMasDirections.aspx?id=11142

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