To what extent has the adoption of UPI transformed consumer payment preferences compared to traditional cash and card transactions in India?

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Abstract

The payment systems are important in the development of the economic behavior because they determine the manner in which people will transact, save and also consume. Consumer preferences and market structures are directly influenced by the efficiency, availability and cost of payment mechanisms in the market, especially in developing economies. Over the last few years, India has undergone a paradigm shift in its payment system, which has been mostly caused by the creation and fast growth of the Unified Payments Interface (UPI).

UPI, which was introduced in 2016, has become a disruptive financial innovation that has greatly changed the hegemony of traditional car and cash-based payment systems. This paper will analyze how UPI has altered the taste of consumers with regard to the mode of payment in India and compare its adoption and use with cash transactions and debit/ credit card payments. Although the cash was the prevailing mode of transacting business historically in the Indian economy because of its simplicity and wide acceptance the UPI has minimized the transaction frictions and, as a norm, has made digital payments even with low-value and frequency transactions. Compared to card-based payments, the Interoperable nature, low infrastructure needs, zero base charge rate of UPI have made it perform better

than cards in the daily consumer payment transactions, especially in small retail and informal businesses.

In addition to the substitution effects, the paper points out the behavioral and structural changes that have been occasioned by UPI. These have been modification in frequency of spending, fewer psychological obstacles to payment, greater financial inclusion, and the development of an embedded digital finance ecosystem. The research paper is founded on secondary data analysis which is based on reports by Reserve Bank of India, National Payments Corporation of India, government publications, industry reports and existing literature in scholarly knowledge.

The results indicate that UPI has not only served as a different form of payment but has fundamentally reorganized consumer payment behavior and market relationships in India. The paper concludes that UPI leads to the long-term payment preferences shift, transforming the place of cash, cards, and forming the new outlines of the trajectory of the Indian digital economy.

1. Introduction

1.1 The Hook Scale of transformation.

India is the hub of the global revolution in digital payment. The country, which has helped with almost half of all real-time payment transactions in the world, has become the best example of how the financial infrastructure of technology can transform daily economic action. As per the latest estimates, it is seen that digital payments represent about 99.8 percent of the overall transaction volume in India which is a simply unbelievable number, as it shows the degree to which digital mode has infiltrated everyday consumer behavior. In the centre of this change is the Unified Payments Interface (UPI)- a system that not only hastened the

process of digital transactions but it has also changed the way people think, access, and utilize money in their daily life.

As opposed to most digital payment systems worldwide that are either bank-based or platform-based, UPI has become a universally recognized case study of interoperable low-cost and inclusive payment architecture. Whether it is roadside peddlers and tiny kirana stores, or multinationals and online commerce, UPI has turned into the payment system of millions of Indians. Its growth can be seen not only as a technical improvement but also a shift in behavior and institutional behavior of consumers towards the payment preferences, with serious implications about the future of the conventional cash and card-based payment.

Source: NPCI

1.2 Pre-UPI Payment Landscape

In 2016, India transitioned to a cashless payment ecosystem before introducing UPI. Cash was considered both a medium of exchange and a store of trust in an economy where the degree of penetration of banks and financial illiteracy were low, and in a highly informal economy. Smaller value transactions were still dependent on physical money which led to

inefficiencies like change handling was time consuming, high chances of theft, or loss and no record of transactions. To the consumers and sellers, cash transactions had concealed expenses of security, accountability, and convenience.

Although there were digital substitutes like NEFT, RTGS and IMPS, they were not much applicable in daily consumer payment. NEFT and RTGS had a rigid operating schedule, settled the transactions slowly, and relatively complicated procedures that did not favor frequent or low-value transactions. Card payments which were easier had their own drawbacks. Penetration of the Point-of-Sale (PoS) machines continued to be site specific i.e. in the urban environment, and rural and semi-urban regions were left out. Moreover, merchants commonly stored the transaction costs in the form of Merchant Discount Rates (MDR) to dishearten small businesses to accept payments in the form of cards. As a result, even with digital infrastructure, the Indian payment system was disconnected, ineffective and highly cash-based.

1.3 Technology and Policy Leaders.

The shift in the payment preferences in India did not take place in a vacuum; rather it was as a result of a combination of policy programs and technological developments. The Digital India initiative of the government was instrumental in enhancing the use of digital infrastructure, financial inclusion, and adoption of technology in sectors. This impetus was also worsened by the 2016 policy of demonetising and effectively disrupted cash supply, forcing consumers and businesses to seek non-cash methods of payment.

At the same time, the fast adoption of smart phones and the falling prices of mobile data led to a wider access to the internet to people, both rural and low-income earners. The transformation of India as one of the largest smartphone markets in the globe provided the best environment to the success of app-based payment solutions. The COVID-19 crisis only

increased this shift, making digital payments a necessity instead of a convenience issue. The physical cash health issues, lockdown-related mobility issues, and the explosion of online transactions all supported the shift of consumers to digital transaction methods. What could have otherwise been a slow evolution process took place at a rate that was unprecedented and ensconced UPI into the daily economic reality.

1.4 UPI as an Ecosystem (Not a Tool).

The success of UPI cannot be explained only by the fact that it is a payment application, but it is a digital financial ecosystem in its entirety. UPI was developed and is being run by the National Payments Corporation of India (NPCI) in partnership with the Reserve Bank of India and it brought about full interoperability, where customers can easily make transactions across banks and applications. This removed silos that the previous digital payment systems had and greatly minimized friction in the financial transaction.

Another characteristic UPI has had is its zero MDR policy that eliminated the cost-barrier to merchants and motivated their prevalence. Moreover, UPI has facilitated the experience of embedded finance, which means that payments can be integrated with services like bill payments, subscriptions, credit products, and financial management apps in one interface. The ease of transactions through QR also democratized the use of digital payments to the point that even small-time vendors could engage without having to invest in costly hardware. Consequently, UPI was turning the payments into a single process that is the part of larger economic interactions.

2. Conceptual Framework: Consumer Choice of payment systems.

The conceptual framework that must be undertaken to understand the effect of payment systems on consumer choice is the integration of economic logic and behavioural

analysis. The payment methods are not just the neutral tools of money transfer; they are the ones that define the perception of consumers on the transactions, cost-benefit analysis, and decision-making process of spending. The payment system adopted in developing economies where daily transactions are common with a large percentage being of low value impact a lot in the determination of consumption patterns, market efficiency, and financial inclusion. This paragraph is a description of the key dimensions of consumer payment preference, the key categories of payment systems, the economic and behavioural theories that are relevant, and the specific context of digital payments in the developing economies like India.

2.1 Meaning of Consumer Payment Preference.

Consumer payment preference is the inclination of a person to choose a particular way of payment among others depending on the perceived advantages and restrictions. These preferences are affected by a number of factors.

One of the biggest determinants is convenience. Easy to use payment systems, which do not need a lot of work and can be easily merged into the routine are more adopted (Rogers, 2003). The instant payment capability with no procedural complexity is a great enhancement to user acceptance.

Another important thing that influences preference is cost. This encompasses direct monetary expenses e.g. transaction charges as well as indirect expenses e.g. time and effort invested in a transaction. In economies sensitive to prices, less expensive payment systems have a quicker and broader adoption (World Bank, 2022).

There is the element of trust which is decisive especially in digital systems. This is because consumers need to be assured that their money and personal data is safe and that their transactions would be done safely. Low confidence in the institutions or technology may decrease the adoption even with the existence of digital substitutes (RBI, 2023).

Speed is a factor that affects preference because it minimizes the friction of a transaction. Quick-er payment confirmation improves the user experience and makes it easy to use again, particularly on small-value transactions that are used in everyday use.

Lastly, the inclusiveness of a payment system is ascertained by accessibility. The accessibility is based on the availability of infrastructure, smartphone ownership, internet accessibility, and being digital. The systems of payment that are both universal and ubiquitous across income populations and geography will be more likely to be adopted (NPCI, 2024).

2.2 Types of Payment Systems

Broadly, payment systems can be classified as cash-based systems, card-based payments as well as digital real-time payment systems.

The cash method has been the most prevalent mode of payment in the emerging economies. It has the benefits of being universally accepted, anonymous and not requiring a technological infrastructure. Nonetheless, cash is associated with high handling expenses, security threats, inability to record transactions, and inefficiency of mass economic operation (RBI, 2022).

Debit and credit cards are a type of card-based payment which is partly digital and depends on both the banking infrastructure and point-of-sale terminals. Although convenient and traceable, cards have a limited adoption due to the infrastructure costs, the rate of merchant discounts as well as their inability to penetrate rural and informal markets (Worldline, 2025).

Digital real-time payment architecture, like UPI, allows immediate transfer between bank accounts via digital interfaces. These systems integrate the pace of cash and the trackability of cards as well as reducing the infrastructure and transaction expenses by large

margins. Their simplicity and ability to integrate with each other render them especially applicable to high-frequency and low-value transactions (NPCI, 2024).

2.3 Economic and Behavioural Theories.

Some economic and behavioural theories can explain changes in the preferences of consumers to payment.

According to transaction cost theory, people use payment methods which reduce the overall transaction costs including time, effort, and monetary costs (Coase, 1937). These costs are greatly lowered by digital real-time payment options, which make them more appealing than other options such as cash or credit cards that are used in day-to-day activities. The psychological effect of the payment methods is mentioned in behavioral economics, in particular, in the notion of the pain of paying. A physical payment entails a physical loss, which may limit expenditure, and so the payment is likely to be less than digital payment, which removes this mental load and allows people to make more payments (Prelec and Loewenstein, 1998).

Network effects also identify high adoption rates. The more the consumers and merchants use a payment system, the more its value will achieve to all users in a self reinforcing circle of growth (Katz, 1985). This trend is especially apparent on online payment systems.

Consumer behavior is also affected by switching costs. When users get time to learn a system and make it their daily routine, they will hardly change their mind unless the perceived benefits of another system are significant (Shy, 2001).

2.4 Digital Payments in Emerging Economies.

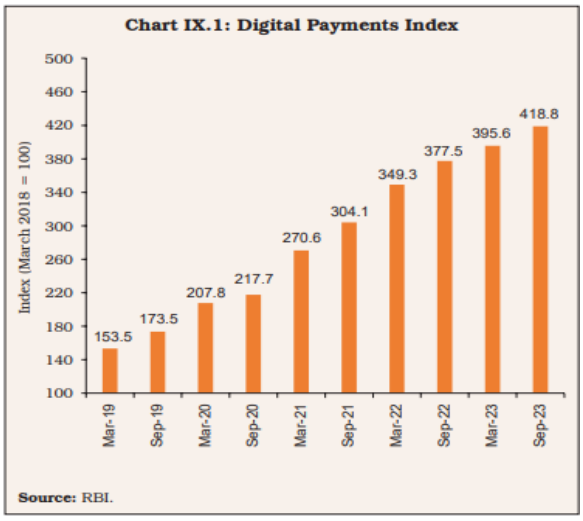
The structural problems facing the uptake of digital payments within developing economies are not the same as those that affect the same in advanced economies.

Informality is high implying that a significant number of transactions are done outside of the formal banking systems. Small merchants and informal workers should be therefore able to use payment solutions to make them widely used (World Bank, 2022).

Accessibility of financial services has been a significant challenge, whereby a section of the population does not access the conventional banking services. The use of digital payments can make the reliance on physical branches of banks less significant, but it is necessary to ensure that the system design is uncomplicated and inclusive (RBI, 2023).

Lastly, there is always a lack of trust due to the fear of fraud, data privacy, and low levels of digital literacy. This can only be counteracted using technological protection, but also high institutional credibility and consumer education.

These conceptual aspects allow developing a base that will be used to examine the influence of UPI on the preferences of consumers in India regarding payments and the reasons why digital real-time payment systems have become so dominant compared to cash and card-based payment systems.



(Source : RBI annual report 2023-24)

3. Evolution of UPI in India

Unified Payments Interface (UPI), has already become one of the most important technological advancements in finance industry in India, not just redefining the way payments are done in the country but also providing a model of real-time payment systems in other parts of the world. Its formation is synergistic in nature involving institutional design, technology, participation of private sector, and enabling of the public policy. This part follows the history of UPI, its development path, the main technical peculiarities that contributed to the spread of its use, and the regulatory environment that allowed it to grow fast.

3.1 Genesis of UPI

Unified Payments Interface was developed with an idea of streamlining and standardizing digital money transfer in India, providing a platform where money could easily be transferred as instantly as possible between bank accounts via mobile phones. The National Payments Corporation of India (NPCI) which is a nonprofit organization established in 2008 at the direction of the Reserve Bank of India (RBI) and the Indian Banks Association (IBA) developed UPI. The inception of NPCI was to develop a strong retail payment infrastructure to the Indian economy through promoting interoperability, low cost and high accessibility, which later became the source of UPI design philosophy. In April 2016 UPI was launched as a followup to the already existing Immediate Payment Service (IMPS) and based on open APIs allowing real-time transfers between bank accounts with simplified identifiers, such as Virtual Payment Addresses (VPAs) instead of account numbers or IFSC codes - an innovation aimed at minimising friction in digital payments.

The UPI design highlighted three fundamental principles, namely, interoperability between banks and applications and user simplicity, as well as standardization of payment processes. UPI was designed as an open system that allows third-party applications to be easily connected to banking networks, unlike closed and bank-specific payment systems. This architecture was the key to the fast adoption of UPI since it enabled various stakeholders (banks, fintechs and merchant platforms) to create innovative user experiences above a shared settlement layer.

3.2 Growth Trajectory

UPI has had an unprecedented adoption pattern since its humble inception in 2016 with a few transactions. During the initial year, UPI was only dealing with a few million transactions. In the following few years, it experienced an exponential growth as the numbers of smartphones and internet subscriptions increased and as more consumers became familiar with the concept of digital payment.

During its first years of operation, as well as the early 2020s, UPI overtook most of traditional digital payment methods and grew its portion of overall digital payment in India. The volumes of transactions started to grow quickly in UPI, and by the end of 2019, the company registered hundreds of millions of transactions every month. By 2024-25, it had a 83.4 percent share of all digital payment volumes in the Indian retail ecosystem, indicating the extent to which UPI had become integrated into the everyday economy; it was a marker of how successfully it had infiltrated the economic fabric of India.<|human|>By 2024-25, UPI had processed approximately 185.8 billion transactions in a single financial year, representing a significant portion of the total digital payment volumes in the Indian retail ecosystem, a metric of the extent of its penetration into the economic life of

More recent statistics indicate that UPI has been on the same upward trend into 2025, where monthly payment volumes were often over 20 billion and an overall annual volume that indicates its general usage between urban and rural markets.

One of the movements that have contributed to this growth is the presence of numerous applications in the private sector which are based on the infrastructure of UPI. Apps like PhonePe, Google Pay (GPay), and Paytm became a common household name, and they developed consumer-friendly features and incentives that attracted millions of new consumers to the UPI ecosystem. As an example, at one time during recent years, PhonePe itself has processed a large portion of all UPI transactions, nearly half of the total volumes, with Google Pay right on its heels and other players such as Paytm still holding significant niche market shares.

3.3 Major Capabilities that are Fueling Adoption.

There have been a number of technical and operational advantages that have been vital to the success of UPI:

Interoperability: UPI can transfer funds to other banks and apps smoothly unlike closed system which limits transfer to a single bank or service provider. UPI enables a mobile device to send money to any bank account via any UPI-enabled application and significantly enhances the convenience of the user and makes being accepted by a merchant simpler.

Zero-cost transactions: The model of low or no transaction costs (particularly of low value transactions) by UPI was a motivating force behind adoption. UPS, particularly during its early years, did not impose merchant discount rates (MDR) on the transactions, which made it appealing to small merchants who had always shunned card acceptance because of its fees and cost of hardware. This was a competitive edge to use digital payment even with micro-merchants.

QR ecosystem: The ubiquitous use of Quick Response (QR) codes made a common standard payment acceptance available to merchants of any size. QR codes did not demand too much hardware, and roadside vendors, kirana stores, and other small businesses could accept payments only by using a smartphone and a printed QR sticker. This digitalized the acceptance of payments across the socio-economic lines.

Bank-agnostic: UPI does not restrict the user to one bank or one app. UPI allows the user to connect many bank accounts and alternate apps without interfering with their payment capabilities. This design was bank agnostic and lowered the switching costs and allowed users to pick interfaces that best met their preferences.

3.4 Support of Institutions and Regulations.

The emergence of UPI also indicates the existence of a favorable innovations ecosystem of institutions and regulatory policies that promoted innovation and retained stability.

Reserve Bank of India (RBI): The RBI was the Supreme financial regulator, and as such, they had some supervisory roles in ensuring that UPI was working within sound risk management standards and the consumer protection standards. The periodical system of payments introduced by RBI showed the continued prevalence of UPI, which contributes to the larger-scale policy in favor of the real-time payments and financial inclusion digitally.

NPCI upgrades: NPCI was constantly providing platform updates e.g. UPI 2.0, UPI Lite, and capabilities allowing feature phone payments (e.g. UPI 123Pay). These upgrades increased the coverage of UPI in both demographics and applications, and especially in bridging less digitally empowered people. An example is UPI Lite, which supported small-value offline transactions and without the validation of the PIN, targeting the cases when the connection was not always possible.

Government incentives: The government of India promoted the growth of UPI by incentives such as incentives in the form of cashback to merchants and users as well as integration with other financial inclusion programs such as the Pradhan Mantri Jan Dhan Yojana that introduced millions of bank accounts to the UPI ecosystem. By providing incentives to street vendors to embrace digital payment (PM SVANidhi scheme), the adoption of UPI by the members of the informal sector was further promoted.

To conclude, the transformation of UPI into a new payment protocol and the core of the Indian digital payment infrastructure highlights a unique set of institutional vision, technology, inclusive design, and competitive engagement of the private sector. Its direction is not only the increase in its number but also the transformation of the flow of money in one of the most vast economies of the world.

4. UPI vs Cash: Consumer Change of Behavior.

4.1 Why Cash Dominated India

The Indian payment system was long rooted in the country and cash, throughout decades of existence, was the foundation of this system. A major factor contributing to this dominance was the high informal sector which absorbs a significant number of people as well as has a significant number of people outside the formal banking system. Small retail trade, household businesses, informal employment and daily wage labour used to depend on cash as they were traditionally not documented, lacked access to credit, and their incomes were not regular. Within this kind of environment, money offered immediacy, flexibility and universality.

Trust was another very important aspect that led to the dominance of cash. Physical money was filled with the promise of finality that once it was traded, that was it, the deal was done and the money had been spent. Conversely, initial digital systems were usually

considered as being under suspicion over concerns on transaction failure, fraud or bureaucratic complexity. Cash provided users with a way to circumvent institutional control, and this was welcome by those who were strongly concerned about taxation or monitoring in a cash economy of the past.

Its utilization was also strengthened by the tangibility of cash. According to behavioural economics, the act of actually giving money out to someone makes one psychologically aware of their expenditure otherwise known as the pain of paying. This tangibility was beneficial to control spending among the majority of the consumers and more importantly those with limited incomes. Consequently, cash was not only an exchangeable one but a reliable and culturally embedded financial instrument.

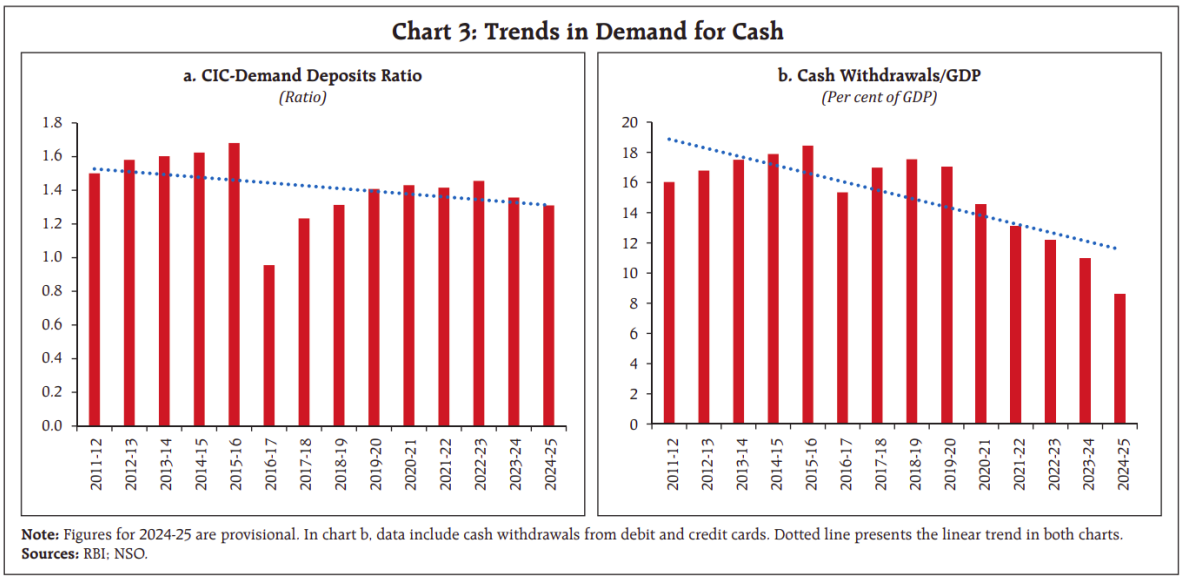
4.2 Decline of Cash Usage

Although the role of cash in India is historically significant, its role has been experiencing a certain decrease after the popularisation of UPI. The best way to explain this decline is in the difference between transaction volume and transaction value. Cash in spite of its still high share in the transactions and savings behavior still has lost its dominant position in volumes of transactions and especially in the daily payments.

UPI has particularly succeeded in taking over cash usage in low-ticket purchases, including tea booths, local transportation, grocery purchases, and utility bills. These are transactions that were previously regarded as insignificant to purchase through digital means and are currently the main motivation behind UPI utilization. RBI and NPCI data show that most UPI transactions can be classified as low value, which is indicative of the success in taking over the niche that used to be dominated by cash.

This transformation is more of a structural transformation than an elimination of cash. The use of cash has become more and more localized to certain situations, e.g., big informal

transactions, bank deposits or regions having poor connectivity, whereas UPI is prevailing over regular and high-frequency transactions. Therefore, the decline of cash is relative and action-based.



Source : RBI annual report 2025

4.3 Behavioural Shifts

The effect of UPI on consumer behavior is one of the greatest influences. UPI has completely changed the frequency and casual manner with which people conduct monetary transactions by severely lessening the level of transaction friction. The money transactions that used to take physical efforts in counting money, waiting to obtain change, or going to an ATM may now be achieved within seconds on a smart phone. This convenience has continued to increase the frequency of transactions with a considerable number of small payments done by consumers during the day.

The micro-payment normalization is a radical behavior change. The consumers are now making UPI payments as low as 5 or 10 rupees which was earlier deemed unsustainable to use non-cash. This has made the process of making payments relatively cheap and

disrupted the psychological difference between spending and non-spending. Consequently, the consumption patterns have turned more fluid, spontaneous and frequent.

Also, UPI has reduced the pains of paying in money, which comes with cash. Online transactions do not provide the physical indicators of spending, therefore, spending is less immediate. Along with other features like transaction history, automatic payment and cashback, UPI promotes regular use. In the long term, this has transformed the way consumers view money not as a physical resource but as a digital resource, not only in the way people pay but also in the way that they consider spending.

4.4 Financial Inclusion

UPI has been a game changer in promoting financial inclusion, especially to those who have been excluded in the server banking systems. The portability of UPI is an important advantage to migrant workers who can find it challenging to even open a bank account or access banking services in different states. Using one mobile-linked bank account, they will be able to receive payments, remit and pay immediately, eliminating the use of informal and expensive money transfer systems.

In the case of vendors and small informal sellers in the street, UPI has reduced barriers to entry into digital commerce. Even the smallest businesses can accept digital payments due to a simple QR code that is equal to the usage of PoS machines or cash handling. This has enhanced efficiency in transactions, minimized the risks of theft of cash and they have generated digital records of transactions which can possibly be used to access credit.

There is also improved transparency and competence in the wider informal sector. UPI enables small enterprises to engage in the digital economy without restructuring, and, therefore, it brings them into the realm of large-scale financial flows and allows them a

flexible approach to operations. This means that UPI has not just displaced cash, but it has also increased the number of economic participants through the redefining of access to a payment infrastructure.

4.5 UPI limitations against Cash.

Although UPI is currently widely adopted, the technology has a number of constraints that make it cannot fully replace cash. The issue of rural connectivity is still a significant threat, since not all parts of the country have decent internet connectivity and access to smartphones. Cash remains the most reliable mode of payment in locations where the network is poor or there are constant power cuts.

Digital interfaces can present a problem to older users as they lack technological knowledge, cannot perceive or operate the interface, and are afraid of making the mistake irreversibly. Cash is a more haptic and familiar form of exchange with this group of customers.

Another limitation is digital literacy. Although the penetration of smartphones has grown, there is a wide range of capabilities to navigate through apps in a safe and assured manner. The absence of knowledge on fraud prevention, PIN security, and grievance redressal systems may make use unwelcoming or subject users to vulnerabilities.

Lastly, the psychological factor is the cyber fraud and security issue. Phishing, unauthorized operations, and online frauds are compromises to confidence in UPI, especially when the first-time or low-income user is involved, and losing money can be disastrous. On the contrary, cash is perceived to provide control and anonymity despite its material dangers.

5. UPI and Cards: Structural Displacement.

5.1 The emergence of the debit and credit card (Pre-UPI)

In India, the most noticeable non-cash payment was the use of debit and credit cards before the implementation of the Unified Payments Interface. Their adoption was however mostly urban based and focused among the middle and high income households that had access to formal banking services. Debit cards used to be mostly issued in simple savings accounts whereas credit cards were linked to well paid jobs, regular income, and credit worthiness. Consequently, the card usage was associated with the structural inequalities in the availability of financial infrastructure, as opposed to universal convenience.

One of the major weaknesses of card payment was the fact that it was dependent on the Point-of-Sale (PoS) infrastructure. The merchants had to install card swiping machines and this required initial expenses and maintenance and also complexities in operation. The use of PoS was not yet economically viable to small retailers and informal sellers, especially in semi-urban and rural communities. As a result, the card payments were still restricted to the organized retail, restaurants, malls, and other urban service providers, which restrict their access to the rest of the economy.

Moreover, the problem of Merchant Discount Rates (MDR) also limited the usage of cards. Merchants had to pay a percentage of every card transaction as bank and payment network fees. This expense was a deterrent to businesses with thin margins especially those that are dealing with small vendors. Whereas consumers viewed the use of card payments as convenient, merchants had a tendency to use cash in order to avoid transaction fees. In that way, even with technological development, card-based payments did not completely eliminate cash and were structurally limited in both magnitude and inclusivity.

5.2 Why UPI Outperformed Cards

The launch of UPI was a death knell of Indian payment architecture by overcoming the structural constraints that hampered its uptake of cards. The biggest strength of UPI is that it is not hardware intensive. UPI transactions do not require a POS machine as is the case with card payments, but instead, all it takes is a smartphone and a printed QR code. This had a huge impact of lowering entry barriers of merchants and allowing us to adopt it broadly even by the smallest business.

Zero MDR policy is another very important reason of UPI success. UPI also removed one of the most enduring barriers to the use of digital payments by merchants by getting rid of transaction charges. There was no longer a trade-off between convenience and profitability among merchants, and UPI has become widely accepted in retail formats. This price advantage provided a clear cut advantage to UPI over the card networks, especially in price sensitive markets.

UPI also has instant settlement, as compared to card transaction where settlement is frequently delayed. The instant money transfer will boost liquidity among the merchants, especially those who have small amounts that depend on the cash outlay in a single day. Moreover, the fact that UPI could be used to facilitate both person-to-person (P2P) and person-to-merchant (P2M) transactions in the same interface further increased its utility way beyond the use of cards which are merchant-centric. This multidimensionality made UPI not just a payment alternative as a transactional platform but a skilled platform allowing it to supersede cards in various dimensions.

5.3 Effect on Banking and Merchants

The quick embrace of UPI has brought a major change in the position of banks and merchants in the payment ecosystem. In the case of banks, the conventional significance of

issuing cards as a transactional tool has been devalued. Although debit cards are still being issued as a part of account opening procedures, the utilization of them has continued to move not towards point-of-sale transactions but towards an ATM withdrawal or identity verification purpose. There is also a diminishing transactional relevance of cards especially the debit ones.

To merchants, the emergence of UPI has caused a tangible shift of the so-called swipe culture, which was prominent in the card payments. Swiping with a card or a PIN has been substituted with scanning via QR and mobile authentication. This change has shortened the turnover time, made less equipment and dependency, and increased customer throughput, particularly in high volume retail environments.

One of the most apparent products of the domination of UPI is the development of a QR-based economy. QR codes are cheap, simple to roll out and are universally applicable to UPI applications. This standardization has made digital payments more democratic and informal sellers can also take part in the digital economy without institutional constraints. Therefore, the payment ecosystem has moved towards the model that is less hardware-focused and more software-focused and interoperable and is more accessibility-focused and efficiency-focused.

5.4 Are Cards Becoming Obsolete?

Although UPI has definitely replaced cards in most of the transactional areas, it would not be fair to say that cards are entirely being pushed out. Credit cards, especially, still remain instrumental because of the role they play as a tool of accessing credit and not as a means of payment. Other characteristics like the revolving credit, interest-free card, reward plans, and consumer protection systems mean that credit cards will always be relevant particularly in urban and salaried consumers.

Conversely, debit cards have lost a significant market share in terms of transactions. As UPI provides a higher level of convenience, zero transaction fees, and wider acceptability, it has assumed that debit cards have become largely uncompetitive in their day to day payment transactions. Their further usefulness is becoming more confined to withdrawal of cash and back-end banking than to consumer transactions.

The changing position of UPI and cards indicates that there is functional differentiation and not total replacement. UPI has become the transaction of choice when it comes to high frequency and low value, and credit cards continue to play a role in consumption based on credit. This architectural movement is an indication of the potential of technological innovation to re-assert the order of the payment instruments without abolishing the old systems.

6. Psychological and Consumption Level Impact.

6.1 The "Pain of Paying" Effect

A very important psychological impact of the transition to digital payment using UPI instead of cash is the decrease of the pain of paying effect. According to the behavioural economics, the separation between the physical cash and the digital payment causes more psychological discomfort in the consumer. The process of giving up hard currency is both visible and immediate loss, which is a natural restraint to spending. Conversely, online payments make transactions less emotional and abstract, since this sensory feedback is minimized.

UPI payments require little physical and cognitive steps that are usually restricted to scanning a QR code and entering a PIN. This dissociation undermines the psychological connection between expenditure and financial loss to motivate consumers to regard payments as automatic behaviour as opposed to financial choices. Consequently, consumers might not

properly assess the aggregate contribution of low amounts of spending, especially where payments are low and digitized. In comparison to cash, which requires conscious action upon payment, UPI brings into the background a frictionless landscape that plays an indirect role in eliminating spending discipline.

The frequency of impulse spending varies across different years.

6.2 Impulse spending and Frequency

The changes in the frequency of spending and impulsivity have been realized by the reduced psychological barriers that are attributed to UPI. Convenience of the digital payments reduces the time and effort price of making purchases, thus, raising the chances of the spontaneous transactions. When the purchasing experience is immediate and painless, consumers tend to make impulse purchases that are small and unplanned.

This trend can also be traced especially in the emergence of consumption by subscription and repetitive payments. Auto-pay solutions are becoming more and more popular in services, including streaming services, food delivery subscriptions and utility bills, where the payment is automatically deducted without the active participation of the consumer. Although auto-pay makes it much more convenient and provides continuity of service at the same time, it makes consumers less aware of current spending. The payments are made in the background and the conscious budgeting is reduced and there is a possibility of financial complacency.

The ease of use of UPI has also even-handed high-frequency low-value transactions, motivating consumers to make many transactions daily. This is the opposite of cash-based behavior in which the frequency of transactions was automatically restricted by physical barriers like the availability of cash and handling of change. The growth in the payment frequency in the long run can dramatically change the consumption patterns resulting in an

elevated aggregate spending despite the fact that the money spent in individual transactions is low.

6.3 Cashback and Gamification

The other emission of the behavioural change in the use of UPI is that payment platforms are popularizing cashbacks, rewards, and gamification strategies. The UPI applications often give monetary rewards, scratch cards, discounts and loyalty points to promote reuse. These rewards serve as behavioural prompts, which strengthen the habitual use of digital payment systems.

Psychologically, these rewards take advantage of the principles of operant conditioning, which states that positive reinforcement is more likely to increase the frequency of repeated behaviour. Cashback can affect consumer behaviour disproportionately even in small amounts because it leaves a sense of benefit, and generates an offset sense of cost of expenditure. In the long term, users will evaluate payment platforms not on the need to use them but on the rewards that could be received on their use.

This has been further enhanced by the stiff competition between UPI service providers across the platform. In order to gain market share, the companies will spend much money on promotional activities that will stimulate increased volume of transaction. Although this healthy competition is good in the short run in terms of discounts, incentives, it also leads to higher spending and low price sensitivity. Value-based consumption slowly develops into reward-based behaviour, which changes the priorities of consumers and their financial lifestyles in a rather subtle manner.

6.4 Concerns of Data, Trust and Surveillance.

Even though UPI has increased the convenience and efficiency, it has raised the new issues concerning the data privacy, trust, and financial surveillance. Online payments produce more transaction information, such as how people spend, their favourite merchants and how often they transact. In as much as this data can be utilized to enhance user experiences and financial services, consumers have concerns on the collection, storage, and utilization of consumer information.

Awareness of privacy of data by the consumers is not uniform. A lot of users are more concerned with convenience and privacy and do not take into consideration all the terms of data-sharing, which leads to their acceptance. This brings about a privacy trade-off, where one gives personal information about financials in exchange of convenience of transaction and platform agreement. Conversely, cash dealings provide anonymity and autonomy that the users appreciate privacy of digital footprints and institutional control.

The factor of trust is a factor in acceptance of UPI. Although system reliability and regulatory controls have enhanced trust in online transactions, cyber fraud and phishing cybercrimes and unauthorized access continue to be a concern. These risks can destroy confidence and deter full dependence on digital systems in some consumers particularly those who are not computer savvy or those who are first-time users. The aspect of psychological reassurance that comes with cash even though it has physical risks still has effects on preference of payment in some situations.

7. Socio-Economic and Regional aspects.

7.1 Urban vs Rural Adoption

The introduction of UPI in India demonstrates a clear urban-rural gap, which is determined by the disparity in infrastructures, Internet access, and economic operations. The

adoption of UPI was high in urban areas because of the penetration of smartphones, good internet accessibility and increased exposure to digital services.

UPI in the cities soon became embedded in daily transactions in retail, transport, education and entertainment, as the default payment method of the majority of consumers. Rural adoption of UPI, in turn, has been relatively less and more skewed. Inadequate access to high-speed internet, decreased smartphone use, and unreliable access to electricity remain limiting to use. Also, the economies of rural areas are more reliant on agriculture and informal trade where the cash-based transaction is entrenched. Nevertheless, the recent government plans to increase rural connectivity and financial inclusion have led to the increase in the use of UPI in these regions. With the growth of digital infrastructure, rural consumers are paying over UPI to transfer government benefits and remittances, as well as to make purchases on basic retail items, and this is a good sign of a gradual decrease in the urban-rural divide.

7.2 Generational Differences

The generation aspect is also important when determining the consumer preference in terms of payment, where there are varied adoption behaviours by Gen Z, Millennials and the ageing generation.

With the increased digitally immersive environment growing up, gen Z is the most comfortable with UPI. In this generation, online transactions are simple, smooth and at times more desirable than cash or credit cards. The consumption patterns of Gen Z consumers show that they are more likely to perform peer-to-peer transfers with UPI, making purchases online, and having subscriptions, which indicates that the generation has a lifestyle that is constrained to digital platforms. They are also innovative in their use of technology and thus,

become early adopters of the new UPI features like credit on UPI and in-app financial services.

Millennials are a generation of transition having been exposed to both cash-based and computer-based systems of payment. Although they will not hesitate to use UPI because this technology is convenient and efficient, they also know cards and conventional banking instruments. This segment tends to strike a balance between UPI transactions and formal financial budgets and they utilize digital payments to cover their daily expenses and use cards or bank deposit to make their larger payments. They adopt behaviour that is pragmatic as opposed to being technologically enthusiastic.

Conversely, elderly people have serious obstacles to the adoption of UPI. Low levels of digital literacy, fear of fraud and being unfamiliar with smartphone interfaces are causes to persist in using cash. To most senior users, the provision of a sense of control and security that physical money provides is hard to duplicate with digital payments. Consequently, the concept of generational differences brings out the fact that technological adoption is not homogenous, but through experience, trust, and familiarity.

7.3 Gender and Inclusion Aspects

The aspects of gender and inclusion are directly interrelated with the problem of gender identity, and the author illustrates them through the prism of the yet-emerging social sciences, i.e. sociology, psychology and anthropology.

UPI has also had an impact on payment behaviour because it affects the financial inclusion of genders. Conventionally, women (especially in rural and poor families) have been hindered by social norms and mobility, as well as limitations on documenting their activities, to access formal financial services. The mobile nature of UPI will make women

less reliant on physical visits to the bank and give them the freedom to transact on their own and increase their financial independence.

Online payments also make it possible to have subtle and safe management over money, something that can be particularly enabling when females have minimal bargaining capacity regarding the allocation of domestic funds. Nonetheless, gender inequalities still exist because of differences in accessing smartphones, digital illiteracy and the cultural factors that limit the use of technology. Although new inclusivity opportunities are formed by UPI, their advantages are not distributed equally, which makes specific measures to address gender-based digital gaps necessary.

7.4 Small Businesses and Informal Sellers.

The adoption of UPI has created small business and informal sellers as one of its major beneficiaries. To these economic actors, UPI is a cheap and efficient substitute of cash and card payments. The option of receiving payments with just a few clicks of a QR code will help to avoid the necessity of costly PoS systems and minimize the risks of dealing with cash. UPI has made transaction transparency and record keeping to informal sellers, which allows them to manage their finances better and possibly get formal credit. UPI finds more and more application by street vendors, local service providers, and micro-entrepreneurs to facilitate business and customer convenience. Yet, difficulties including failure in transactions, reliance on network connectivity, and lack of effective dispute resolution mechanisms still affect the small sellers disproportionately. In spite of these limitations, UPI has been highly effective in increasing digital engagement of small businesses, making them more integrated as part of the formal economic system.

8. Challenges and risk in UPI Dominance.

Although UPI has become the building block of the digital payment system in India, when it becomes too dominant it also poses a set of systemic, behavioural, and structural risks. These challenges gain more and more relevance in the eyes of policy makers, financial institutions and consumers as they become increasingly dependent on a single payment infrastructure.

8.1 Cyber Fraud and Security Risk.

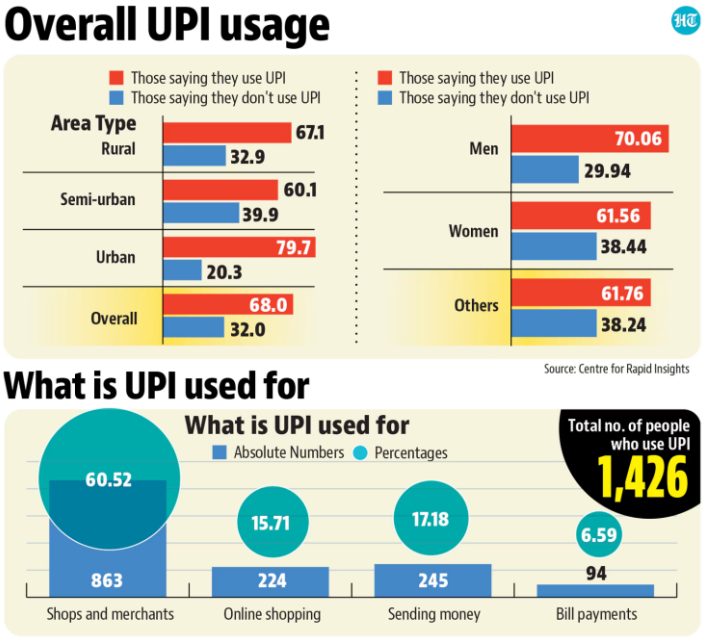
The increasing cases of cyber fraud can be regarded as one of the most severe issues linked to UPI. Along with the UPI usage, phishing attacks, spoof payments, social engineering attacks and account authorizations have grown. A lot of frauds take advantage of low levels of digital literacy and lack of consumer awareness especially on first time users and the elderly population. Although UPI transactions are authenticated by use of two factors, human vulnerability is the weakest. Increasing complexity of fraud methods poses a threat to consumer confidence and risky people might avoid it.

8.2 Infrastructure Dependence.

The size of UPI has rendered it an essential national payment infrastructure, with any short-term outage of the system having the potential to disorient millions of transactions. Even the smallest failure in technology, overloading, or slowing down of server connections can stop commerce, especially of the small businesses and the daily wage earners who use real-time payments. UPI is very reliant on internet connectivity, electricity, and backend systems unlike the cash system that is not dependent on digital infrastructure. This dependency creates a vulnerability of resilience, redundancy, and crisis preparedness, in particular, in times of emergency or peak transactions.

8.3 The Digital Divide

UPI has not yet succeeded in closing the digital divide in India; even though the organization has been expanding rapidly. Smartphone availability, strong internet access, and digital literacy are still disproportionately distributed across the regions and socio-economic classes. These barriers are disproportionately experienced by rural people, low income families, and the aged. With UPI as the new default mode of payment in most situations, people with no access to computers and the internet risk being marginalized in economic activities. This brings question of equity and shows the necessity of making sure that technological development does not unwillingly marginalize the vulnerable groups.



(Source : Hindustan Times article, 2024)

8.4 Platform Concentration and Market Power.

The other risk that is emerging is the concentration of the platforms in the UPI ecosystem. The volumes of transactions have a few applications, which have a considerable influence on the market. This concentration could decrease competition in the long run,

which can have undesirable consequences including a lack of innovation, biased transactions routing or more data control by the dominant platforms.

Although UPI is an interoperable system, the reality of platform-based competition to an unequal allocation of power may still emerge, leading to regulatory issues of fair access and consumer protection.

8.5 Behavioural Risks and Financial Over-Spending.

Lastly, the convenience of UPI poses the threat of financial over-spending. The convenience of easy payments, cashbacks, auto-pay option, and less pain of making payments can undermine spending discipline. Micro-transactions as high frequencies can add up to huge costs and consumers may not even be aware that they have to incur them. To some groups of users especially those who are young adults and low income families, this change in behaviour may lead to bad financial planning and higher susceptibility to debt.

9. Future of Consumer Payments in India.

9.1 UPI Innovations

The development of the Unified Payments interface is closely connected to the future of consumer payments in India. New and future developments indicate that UPI is no longer simply the transfer of funds but a more complex financial ecosystem. UPI Lite is one of such developments, and it is intended to support low-value offline transactions with less authentication. UPI Lite can overcome one of the most important weaknesses of digital payments, especially in low-network or high-volume settings, by decreasing its reliance on real-time internet connectivity.

Credit on UPI is another important innovation that enables consumer to get short-term credit via UPI platforms. The feature fills the gap in between transactional convenience and

credit availability, which has always been dominated by credit cards. UPI can help democratize access to formal credit by integrating credit into daily payment activities and, with the help of UPI, the product can be used by users with no previous credit histories.

Also, the International UPI projects are a significant move in the right direction of internationalizing the Indian digital payment infrastructure. The collaboration with Asian and Middle Eastern countries, among other countries, will allow providing remittances and merchant payments in UPI. This growth does not only make the life of the Indian travellers and India migrants a lot easier but also makes UPI a worldwide example of scalable, low-cost digital payment systems.

9.2 Will Cash Ever Disappear?

Even with the quick rise of UPI, the cash may not totally eradicate itself in the Indian economy in the near future. Cash still plays crucial roles especially as a store of value and medium of exchange in cases where digital infrastructure is not available. The cash usage is further perpetuated by cultural inclination, anonymity and universal acceptability particularly in rural communities, the elderly, and the informal sector.

In addition, cash is vital in cases of emergencies, system downturn, and crises which underscores its strength as a backup system. Instead of disappearing, the cash will tend to see a slow decrease in the rate of transactions, though still maintaining its applicability to particular socio-economic situations.

9.3 Coexistence Model

The new payment environment in India implies a co-existence model as compared to total replacement. Various payment instruments have different economic functions in the framework. Cash is becoming a store of value and a reserve medium, which is appreciated

due to its anonymity and dependability. Cards and especially credit cards still remain in use in facilitating credit access, deferred payments and consumer protection. UPI on the other hand is the most dominant in high frequency low-value transactions, as it is the fastest and most convenient and interoperable.

Such functional differentiation is indicative of a well-developed payment ecosystem in which technological solutions are used to complement each other, but not to entirely replace another. Coexistence of this nature will make the system more resilient and will guarantee inclusivity among various segments of consumers.

10. Conclusion

The aim of the study was to find out whether UPI has indeed replaced the conventional payment instruments, or has radically changed the consumer payment behaviour within India. This analysis proves the thesis statement that UPI did not merely substitute cash and cards but has reorganized consumer preferences and decision-making processes, as well as market interactions.

When comparing and contrasting the two assessments, it is apparent that UPI has greatly minimized the use of cash in daily transactions due to reduced friction, the ability to make micro-payments, and an increase in accessibility. Although cash is still pertinent in some situations, its supremacy in transactions is no more. In the same way, UPI has structurally supplanted debit cards by breaking the infrastructural and cost hurdle whereas credit cards are only left relevant as credit tools and not as payment convenience.

In addition to substitution, UPI has brought radical changes in behaviours. The habit of consuming and the general awareness of finance have been changed through reduced pain of paying, high frequency of transactions, gamification, and auto-pay. Concurrently, issues

regarding computer fraud, information security, and excessive expenditure are indicative of the necessity to regulate these processes in an equal measure and educate consumers on the subject matter.

UPI has built financial inclusion through the inclusion of small businesses, informal sellers, women, and migrant workers in the digital economy through the lens of a socio-economic perspective. Nonetheless, long-standing digital inequalities and intergenerational differences point to the fact that no one is included yet.

The policy implication of the dominance of UPI is great. The regulators should emphasize improving cybersecurity, competition in platforms, improving digital literacy, and resilience in payment systems. With UPI continually taking new forms with innovations like credit integration and global expansion, its governance will be very instrumental in determining the financial future of India.

To sum up, UPI is not only a technological breakthrough but also a reorganization and restructuring of the Indian payment system in terms of structure and behaviour. Other economies can learn much about its success, in order to provide inclusive, scalable, and efficient digital payment solutions.

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