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June
2022

White Paper

RBI'S COF AND TOKENISATION GUIDELINES

Assessing the Preparedness of the Payments Ecosystem

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Acknowledgement

The research team would like to express our gratitude to Mr. Nandkumar Saravade, Strategic Advisor, DeepStrat and Founding CEO, ReBIT; Kazim Rizvi, Founding Director, The Dialogue; Mr. Saikat Datta, Founding Partner, DeepStrat; and Mr. Anand Venkatnarayanan, Strategic Advisor, DeepStrat, for their guidance, encouragement, and useful critique of this report. The team would also like to thank Mr. Gautam Kathuria for his inputs and help in the interview process.

The team would also like to extend our sincere gratitude to the participants of our stakeholder interviews for offering us their time and resources in collecting inputs for the report.

This study is a second in the series with regard to Card-on File Tokenisation and RBI guidelines. The first one published in December was an impact study titled RBI's CoF and Tokenisation Guidelines - Analysing the Potential Impact on Digital Payments Industry aimed to understand potential effects of tokenisation on the industry. The present study, an evolution of the first paper, delves into the preparedness of the ecosystem to ensure successful implementation of the tokenisation mechanism.

Research Methodology

The Dialogue and DeepStrat conducted a series of interviews with key stakeholders in the digital payments ecosystem which are impacted by these regulations. These interviews helped garner insights from members of the digital payments community in terms of their sentiments on the RBI's CoF and tokenisation framework and their preparedness to implement it by June 30, 2022.

This report is an effort to understand the preparedness of the payments ecosystem in India. It has analysis conducted by the team at The Dialogue and DeepStrat by combining inputs collected from the stakeholders with existing literature that was reviewed throughout the process.

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Key Findings and Recommendations

Extension of at least six months to comply with deletion of card details as the industry is moving towards preparedness

- Industry has made significant progress towards implementation of tokenisation in the last six months. However, there are still loose ends which need to be addressed. For instance, there have been advancements on token provisioning but the industry is still grappling with issues relating to solutions for use cases.
- The industry requires an extension in the deadline for at least six months for the deletion of CoF data to ensure that the transition takes place without any hassles.
- Rushed implementation of the guidelines will cause great consumer inconvenience and losses to the industry.
- The RBI should conduct a detailed assessment of the readiness of the entire payments ecosystem, move towards phased implementation, and only once it is clear that the industry is ready for implementing tokenisation, should it mandate deletion of CoF data.

Stakeholders within the payment ecosystem are at varied levels of readiness

- Different stakeholders are at varied levels of preparedness. While for token provisioning, the preparedness has progressed significantly for all stakeholders, such is not the case for other aspects. Card networks, Banks and PA/PGs are not equally prepared. For example, in our discussions, it appeared that a set of stakeholders were ready with a solution for one set of use cases (Use Case A), while struggling to identify solutions for a different set of use cases (Use Case B). While on the other hand, a different set of stakeholders are ready to implement solutions for Use Case B, while not ready for implementing solutions for Use Case A.
- Merchants are facing high transaction failure rates and finding it difficult to use the tokenisation mechanism for high volume transactions. Consequently, it is difficult for them to ensure a smooth transaction experience. Further, the latency rate also seems to be very high in comparison to the pre-existing Card on File (CoF) method.

Greater amount of testing required before complete implementation of the guidelines

- Solutions for use cases such as guest checkouts, EMIs, recurring transactions, are still in the development and implementation phase, and for some of them they do not even exist yet. Building these solutions and testing them would require more time.
- Smaller merchants with less technical capabilities are significantly more vulnerable to the disruption. They do not possess the necessary resources and know-how for meaningful implementation of tokenisation, and require more time for integrating with the tokenisation mechanism.

- APIs to enable merchants to process the transaction are being made available to them, however, more time is needed to run tests and pilot programmes in order to ensure minimum transaction failures.

- There seems to be a lack of transparency with regard to the readiness of the ecosystem which is creating friction between the merchants and the other stakeholders. There is no public record or database which shows the preparedness of each of the regulated entities involved.

1. Introduction

The growth of e-commerce, including online retail, over-the-top (OTT) media, food delivery, travel and apparel sectors has been accompanied with tremendous growth in online payments in India. Significant changes in the fintech industry have revolutionised the way people, banks and financial organisations handle day-to-day transactions. However, the growth of fintech has not been without its challenges. Data security is one of the key concerns in this regard. While physical banking systems are considered relatively safe, with guards and bulletproof doors, online banking systems are more intricate, and therefore, vulnerabilities are more discreet. A recent ethnographic study on retail financial cyber crimes in India by The Dialogue and DeepStrat revealed that nearly 10.56% of the frauds were cyber crimes.[1]

On one hand, innovations in digital payments like Unified Payments Interface (UPI) and digital wallets have transformed the manner in which consumers transact online, while on the other hand, digital payment players have extensively leveraged existing modes of payment as well, including net banking or debit and credit cards. In 2019, it was found that cards are the most popular mode of payment in India, accounting for almost 31% of all transactions.[2] To ensure that card details can be utilised with convenience by consumers, the Card on File (CoF) feature by merchants has been helpful. This feature, also known as 'stored credentials', refers to the strategy adopted by the merchants, payment aggregators (PAs), payment gateways (PGs) or digital wallets to save the cardholders' details such as card number, expiry date and name. This primarily serves the purpose of eliminating the need for customers to re-enter these details on the merchant site every time they conduct a transaction.

However, since the CoF feature involves storing of credentials by various stakeholders including merchants, numerous security concerns have arisen over the past few years. The lack of adequate protection standards for the stored data results in increased cyber security risks and makes the datasets vulnerable to hacks.

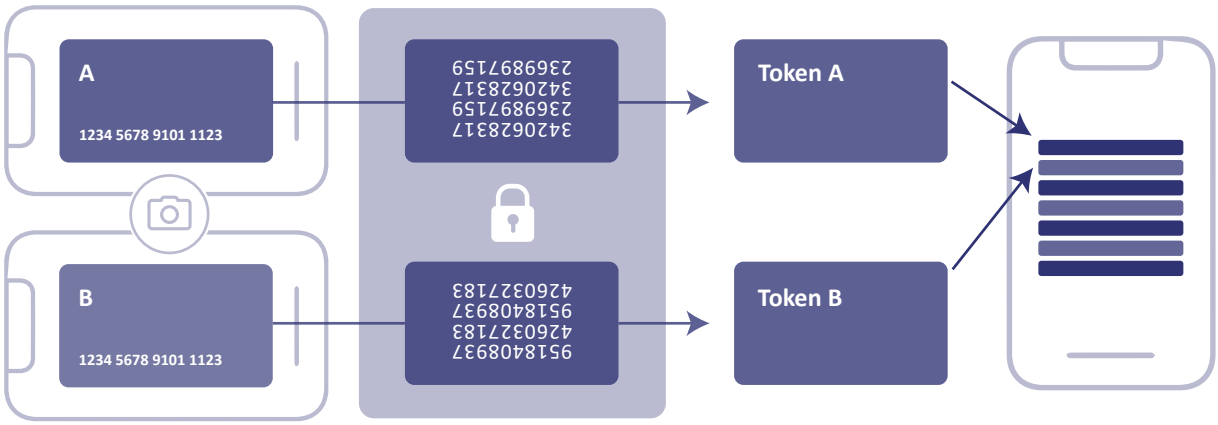
There has been an increase in cybersecurity breaches and consumer databases being stolen. Further, in the post pandemic world, the online presence has significantly increased which in turn increases the chance of cyber security breach. The concern of the RBI emanates from several instances of security breaches in private companies over the last few years. As per National Crime Record Bureau's observations,[3] cases of online financial fraud using credit or debit cards have seen an increase of over 225 % amid the pandemic - from 367 in 2019 to 1194 in 2020. The concern of RBI can also be seen from its press release in September 2021, which suggested CoFT, where RBI mentioned that "*In the recent past, there were incidents where card data stored by some merchants have been compromised / leaked.Any leakage of CoF data can have serious repercussions because many jurisdictions do not require an AFA [Additional Factor Authentication] for card transactions*".[4] In order to counteract such concerns, the RBI had previously come out with detailed guidelines on March 17, 2020. The first one, titled 'Guidelines on Regulation of Payment Aggregators and Payment Gateways', stated that merchants and Payment Aggregators (PAs) would no longer be allowed to store credentials, if they do not implement tokenisation.

[1] Chandermohan, et.al., Tackling Retail Financial Cyber Crimes in India, The Dialogue and DeepStrat, Available at: https://thedialogue.co/wp-content/uploads/2022/05/Tackling-Retail-Financial-Cyber-Crimes-In-India-Deepstrat13.05.2022-1.pdf
[2] JP Morgan (2021), '2020 E-commerce Payments Trends Report: India', JP Morgan, Retrieved from https://www.jpmorgan.com/merchant-services/insights/reports/india-2020.
[3] *Crime in India 2020.* National Crime Records Bureau.
[4] RBI, Tokenisation of Card Transactions – Enhancements, Sept, 7, 2021 Available at: https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=52188

2. Background

Tokenisation is a process by which any individual's card details are replaced with an irreversible encrypted 'token' generated by authorised Token Service Providers(TSPs), which can be card networks and banks. Under the Card on File Tokenisation (CoFT) mechanism, a unique token is generated against each card number. This token is in turn used by the merchants to process subsequent transactions. This creates an additional layer of protection, and secondly, the consumer would be saved from the burden of re-entering the card details on every occasion.

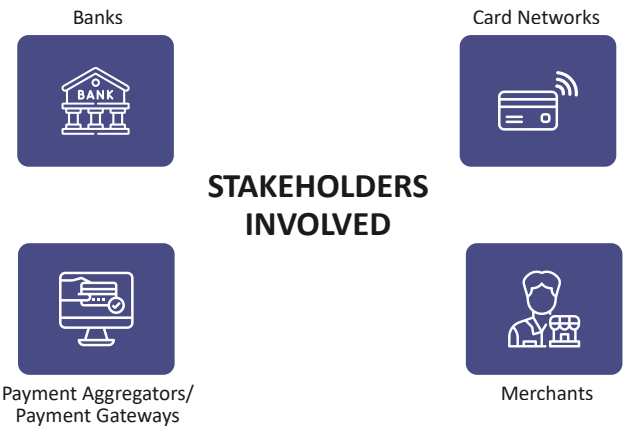
Fig. 1.0 How Tokenisation Works



Source[5]

Tokenisation is not to be confused with the concept of data encryption. Data encryption involves modifying the original data mathematically; therefore, encrypted data can be decrypted using the right key. However, a token is merely a representation of the original data and is therefore not a modification of the original data per se. The original data is stored in a secure cloud environment, different from the business systems. Therefore, the token does not have any value of its own; it is merely associated with the individual's card details. In essence, tokenisation involves additional security layers and reduces the possibility of security breaches without taking away consumer convenience of digital payments.

Fig. 2.0: Stakeholders Involved



[5] "Credit Card Tokenization, How It Works, Everything You Must Know" Credit Directa (7 Jun, 2022) Available at https://creditdirecta.com/credit-card-tokenisation-how-it-works/

[6] Ghosh, Shayan. "RBI Extends Card Tokenisation Deadline by 6 Months till Jun-End." Mint, 23 Dec. 2021, https://www.livemint.com/industry/banking/rbi-extends-tokenisation-deadline-by-another-six-months-11640273361577.html.

The RBI has also been cognizant of concerns of the ecosystem with regards to implementation of tokenisation. It is extremely important to ensure that all stakeholders i.e. card networks, banks, PA/PGs and merchants are involved in implementing this mechanism; and even if a few are left out, it might have serious impact on both the merchant/payment aggregators and the consumers. For instance, there will be infrastructural changes required to incorporate tokenisation of card numbers, which needs a significant amount of time. Therefore, taking cognisance of such needs, the RBI, through its circular on March 31, 2021, extended the deadline up to September 30, 2021. Taking account of the fact that further time was required for its proper implementation, the deadline was further extended up to December 31, 2021, and then up to the end of June, 2022.[6]

Table 1.0 CoFT Timelines

S. No.	RBI Instruction	Date	Purpose
1.	Tokenisation – Card transactions	January 8, 2019	Card network services were authorised to implement tokenisation services.
2.	Guidelines on Regulation of Payment Aggregators and Payment Gateways	March 17, 2020	Merchants and payment aggregators were prevented from saving the consumer's card details, in lieu of rising instances of cyber crimes.
3.	Extension of the deadline imposed upon merchants to delete stored credentials (upto December 31, 2021)	March 31, 2021	In light of various requests by merchants and industry stakeholders, who stated that complying with the RBI guidelines demanded large-scale changes in tech architecture, an extension was given.
4.	Tokenisation – Card Transactions: Permitting Card-on-File tokenisation (CoFT) Services	September 7, 2021	In light of various requests by merchants and industry stakeholders, who stated that complying with the RBI guidelines demanded large-scale changes in tech architecture, an extension was given.
5.	Further extension of the deadline imposed upon merchants to delete stored credentials (upto June 30, 2022)	December 23, 2021	In light of various requests by merchants and industry stakeholders, the deadline was further extended by 6 months.

As explained above, CoFT is an extremely efficient way of complying with the RBI guidelines, ensuring data security and maintaining convenience. However, it would involve a certain amount of time and costs for merchants and payment aggregators to holistically implement this mechanism.

3. Preparedness of the Ecosystem

The payments ecosystem has come a long way in comparison to the status of readiness of the industry six months ago, i.e., in December 2021. Then, the industry was at a very nascent stage of progress towards this transition. It needs to be kept in mind that shifting to the tokenisation system requires major infrastructural changes which needs time to implement smoothly. As per our findings through primary research, stakeholders including banks, card networks, PAs, PGs and importantly merchants were not ready at that time. The tokens were not generated and the industry had very little idea on the path to follow. However, since the extended deadline, considerable progress has been made towards shifting the industry to token based transactions.

CoFT is a three stage process - Token provisioning, processing and addressing the multiple use cases of cards which require CoFT. Token provisioning is the process through which a payment service provider requests for a token to be generated. Token processing is the part where the token is generated and sent for payment approval. Use cases are unique transaction methods requiring different Application Programming Interface (APIs) such as guest checkout, recurring payments, EMI, refunds, offers and promotions etc. In order to process the transactions, the systems of the card network, issuing bank, acquiring banks, payment aggregators, and merchants have to be integrated.

In the chain of readiness, card networks, banks, aggregators, and gateways have the onus to develop the infrastructure and solution for the transactions in order for tokenisation process to be successfully deployed. They have to develop the solutions for use cases and develop APIs and supply it to merchants for them to use it. Merchants have two options, first, to in-house deploy the solutions and second, to tie-up with PA/PGs. To be ready, merchants have to deploy these solutions and conduct testing for actual transactions. It is a highly interdependent system with a sequential process where all the stakeholders interact with each other.

To emphasise the interconnectedness of the ecosystem, it is important to understand the transaction chain. To begin with, a customer inputs their card details on the merchant's website. Now these card credentials will be sent to the merchant's payment service provider. In turn, the service provider will send this information to PGs linked with the acquirer bank, who then share this with the card network.

As per industry inputs, while token provisioning has made considerable progress with more than ten crore tokens generated by the token service providers, which will cover 60-70% of the Indian cardholders, the industry is still continuously working towards developing solutions for certain use cases such as guest checkouts, EMIs and recurring payments, which have been in a constant phase of evolution. However, more time is required for testing and ensuring scalability for a successful implementation.

The card networks such as Mastercard, Visa and RuPay have claimed that their solutions are ready for tokenisation.[7] Similarly, PA/PGs such as PayU, Razorpay, PhonePe, Pine Labs etc. have also come up with

[7] Saloni Shukla, "Banks, merchants push for card tokenisation as deadline looms", The Economic Times (Jun 06, 2022) Available at https://m.economictimes.com/tech/technology/banks-merchants-push-for-card-tokenisation-as-deadline-looms/articleshow/92023254.cms

solutions to help the businesses transition to the framework.[8] Larger merchants have initiated integrating the system and have started tokenisation of the cardholders. Paytm has claimed that they have already tokenised 2.8 crore cards which constitute 80% of the cardholders on their app.[9] Other merchants have also started the consent process for it. However, there is little information available on the readiness of the banks in the ecosystem. It is safe to say that due to the efforts of the industry to implement this solution, the state of readiness is far ahead of what it was six months ago. All stakeholders in the ecosystem have taken strides towards readiness and there is no one who is not ready at all, however, different stakeholders are at various levels of readiness, some partially ready while others at advanced stages, but the ecosystem as a whole is not ready completely for the mechanism to be implemented effectively.

[8] Krishna Veera Vanamali, "Is India ready for tokenization this time?" Business Standard (May 26, 2022) Available at https://www.business-standard.com/podcast/current-affairs/is-india-ready-for-tokenization-this-time-122052600082_1.html
[9] Ibid

4. Challenges

By implementing CoFT, we are ushering towards a new and secure era.[10] Tokenisation will significantly evolve the online payments experience for users, giving them an added layer of security, minimising potential cyber threats, and providing them with the same convenience of not having to repeatedly enter their card details, thus keeping the overall input level to complete a transaction at the bare minimum.

However, there are certain challenges to the implementation of the framework that need to be addressed. Firstly, the transition from processing card details to tokens would require extensive preparation by all the stakeholders involved, which is at varying levels across stakeholders in the ecosystem. Secondly, there might be certain issues in the tokenisation process itself that need to be solved, such as deployment of solutions for use cases. Therefore, the challenges in implementing tokenisation can be divided into two categories i.e. pre-implementation and post implementation challenges:

4.1. Pre-Implementation/Readiness Challenges

The pre-implementation challenges faced by the ecosystem while preparing for transition to tokenisation foremost includes building relevant infrastructure. It is important to note that years of transactions, saved card details, etc. need to be identified, categorised and potentially moved or deleted while paving the way for tokenisation. This is a tedious task for most of the players, especially smaller ones, as it requires manpower, and is costly. In light of the same, the players/ecosystem need ample amount of time to transition to a new system.[11] Smaller players in the market would rely on solutions offered by other stakeholders such as PA/PGs to accept payments. They need to approach these service providers to get them integrated into the system.

The CoF data, which needs to be erased, is usually not stored in a single database, and may exist in silos across the system. Existing mechanisms for erasing data for reasons such as redundancy and security without causing incidental harms, have limited bandwidth and may take time to be effectively implemented for the purpose of tokenisation.[12] Furthermore, making APIs available is also a time consuming process. This is so because APIs for guest checkout and recurring payments are still in the process of development.

The preparation/readiness of each and every player is important as the whole process is so interconnected and sequential that even if one entity involved in the transaction fails to implement, the transaction cannot effectively happen. One of the reasons for unreadiness of the ecosystem can be attributed to infrastructure unavailability which all the stakeholders do not have access to. The stakeholders including RBI, banks and card networks have been developing this infrastructure, however, it requires time to make it fully operational.

[10] Tim Winston, Kristine Harper, and Michael Guzman, How to use tokenization to improve data security and reduce audit scope, AWS (25 Jan 2022) Available at <https://aws.amazon.com/blogs/security/how-to-use-tokenization-to-improve-data-security-and-reduce-audit-scope/>

[11] View: The tokenisation regime will affect all businesses that accept cards, The Economic Times (Jun 08, 2022) Available at <https://economictimes.indiatimes.com/opinion/et-commentary/view-the-tokenisation-regime-will-affect-all-businesses-that-accept-cards/articleshow/92090170.cms>

[12] Ben Dwyer, Credit Card Processing: How it Works Card Fellow (Apr 06, 2020) Available at <https://www.cardfellow.com/blog/how-credit-card-processing-works/>

4.1.1. Integration of Smaller Merchants

Integration of smaller merchants into the system is key to the successful implementation of tokenisation. It is important to note that merchants would be at the receiving end if the transaction fails as they would be the one losing the transactions and business revenue. Majority of the merchants interviewed mentioned that they have very little say on this whole process, however at the same time, there are a lot of consequences for them as they might incur losses on transaction failures. Merchants with global presence may be able to implement these changes due to their financial strength and experience with tokenisation in foreign jurisdictions.[13]

However, smaller merchants active only within India may find the implementation difficult due to limited experience and resources. It may cause internal disruptions as merchants will have to assess whether the solution supports their security policy, review its interaction with the tokenisation system, update incident response systems and disaster recovery plans. This will require great overhaul of internal systems which is time consuming.

Smaller merchants are anticipating a 30-40% drop in their transaction once the process is implemented from 1st July onwards. Creating awareness among the smaller merchants is another aspect to consider. Micro and small scale enterprises may not be aware of the changes brought by the RBI and their implications which may result in business loss for them who are still reeling from the effects of the Covid-19 induced lockdowns in the previous years. Merchants operating from rural areas would be susceptible to greater transaction failures and loss of business. If we can learn anything from the disruption caused during the standing instructions mandate brought in October 2021, it is that smaller merchants are generally not entirely aware of the changes brought by the regulators. Standing instructions are recurring payments which are made as a matter of course rather than initiating a transaction every time. The mandate was given by the RBI that no merchant will auto-debit any recurring payment unless the customers have registered themselves and approve of those transactions with additional factor authentication. It had a significant impact on the consumers as well, since it was difficult to enable standing instructions and therefore their recurring payments were automatically stopped.

4.1.2. Unavailability of APIs

A small number of APIs which enable the merchants to process the transaction have been made available to them, however, subsequent integration of these APIs to the payment system would require an additional amount of time to run tests and pilot programmes in order to ensure minimum transaction failures.

4.1.3. Lack of Testing Time

As per inputs from the industry stakeholders, there is not enough time for testing and successfully launching the tokenisation payment system. While the merchants are still receiving the APIs, it would require an additional two to three months to test and launch the pilot programmes. With the current deadline of June 30, there does not seem to be sufficient time to run these tests and implement the solutions.

[13] Krishna Veera Vanamali, Is India ready for tokenization this time? Business Standard (May 26, 2022) Available at https://www.business-standard.com/podcast/current-affairs/is-india-ready-for-tokenization-this-time-122052600082_1.html

4.1.4. Lack of transparency in terms of readiness

One of the major concerns is the opaque nature of the ecosystem in terms of it's status readiness. While it seems that token service providers are regularly in touch with the RBI, there is no publicly available data available that assess the readiness of the ecosystem. There is no process to assess any sort of readiness with regard to various use cases or successful transaction rate either. Based on the interviews, it seems that different stakeholders in the ecosystem are at varied levels of preparedness. While the mandate to delete CoF details is on the merchants, the duty to ensure that tokenisation systems are ready falls upon the card networks, banks and PA/PGs. The card networks have said that they are ready, however, there is no indication or reports regarding the readiness of the banks. The merchants have little to no clarity regarding the readiness of the other stakeholders in the ecosystem. While large merchants would be less impacted by this, smaller merchants with no access live in uncertainty. For smaller merchants, we also have to keep in mind that they do not possess the technical prowess compared to some of the larger players. This lack of technical capabilities make them more vulnerable to losses.

It needs to be kept in mind that for successful transition into the tokenisation mechanisms, stakeholders cannot operate in isolation. As explained in the above sections, tokenisation is a technique which requires the whole transaction chain to be at the same level for successful transactions. For this, there is a need for a transparent and clear mechanism to ensure that readiness has been achieved.

4.2. Post-Implementation Challenges

These challenges generally relate to some issues that may be inherent in the transition or the new system itself. The challenges may be divided into the following categories:-

4.2.1. High Transaction Failure Rates and Scalability

Transitioning into a new system which requires significant infrastructural changes is not always smooth and requires polishing. As per the inputs received, stakeholders are experiencing high transaction failure rates with some merchants having transaction success rates lower than 10%. This low success rate will significantly impact the consumers and businesses, and their ability to put faith into the new system of tokenisation.

Moreover, one of the key challenges here is the ability of the ecosystem to handle multiple transactions at a given time and its scalability. The e-commerce websites generally handle 1600-1900 transactions per second during sale days and 600-800 on other days but the current system supports a maximum of 8-10 transactions per second.[14] If the system is not able to handle high volume transactions, there would be considerable loss to the merchants and deter customers from experiencing online commerce.

[14] Romita Majumdar, Aashish Aryan and Dia Rekhi, “Industry groupings question banks readiness as tokenisation deadline looms”, The Economic Times Available at https://m.economictimes.com/tech/technology/industry-groupings-question-banks-readiness-as-tokenisation-deadline-looms/articleshow/91772982.cms

4.2.2. Non-availability of solutions and lack of testing time

Another concern of the industry is the lack of solutions for certain use cases. The ecosystem is continuously grappling with the solutions to use cases such as guest checkout, EMI, recurring payments, offers etc. As per the stakeholder interviews, there are divided opinions on the availability of solutions.

Certain stakeholders have solutions to recurring payments for example, but are having issues with guest checkout and vice versa. It seems that the ecosystem is not ready with solutions for all use cases.

Guest Checkout

Guest checkouts are transactions where users purchase the product on a website without logging in or saving any information. Majority of the interviewees said that they do not have the solution to implement tokenisation in guest checkouts. Almost 50 - 60% of small business transactions occur through guest checkouts. In short, there are some benefits of card-data-storage which may not be enjoyable in tokenisation unless a solution is presented. While the industry is working on it, even if the solution is ready by the deadline, it would require a significant amount of time to test and make it functional. Therefore, an additional amount of time is required to ensure that solutions to these use cases are deployed before the mechanism goes live.

Recurring Payments & Other Issues

Issues occur in recurring payments and EMIs, as well where information storage is necessary.[15] This problem will be far less for PAs, but it will be faced largely by smaller merchants. Furthermore, there are some businesses that operate on the basis of long-term relationships between customers and the business. An integral tool to ensure repeat business is by providing seamless payment mechanisms, including the ability to conveniently access payment details.

Repeat transactions are especially important for businesses providing subscription based services, since these services involve weekly, monthly or yearly payment options. If businesses are unable to provide regular customers a smooth card payment experience, they risk losing them, which will lead to a loss of revenue, and risk business continuity. Further, re-entering the card details is also another hassle and inconvenience for the customers. Having to enter a 16 digit card number, expiry date and CVV, it takes the consumer convenience away. The loss will affect small merchants substantially. Further, companies utilise consumer data, including financial data to innovate and personalise their product and services. The inability to store data may hamper these capabilities.

Considering the above said disruptions/use case issues coupled with general inconvenience, the consumer trust in digital payments might be hampered, thus reversing their habits back towards cash-based

[15] Anand Adhikari, RBI's tokenisation facility to help customers make recurring, one-click purchases, Business Today (Sep 08, 2021) Available at https://www.businesstoday.in/latest/economy/story/rbis-tokenisation-facility-to-help-customers-make-recurring-one-click-purchases-306193-2021-09-08

payments. The regulators must look towards making the online transactions more easy and smooth to support the Digital India mission. The continuous change in payments mechanism, such as standing instruction mandate, and now CoFT will hamper the growth of industry as well as discourage card-based payments. Therefore, unless and until proper mechanisms are in place, RBI should not mandate deletion of CoF data.

5. Potential Disruption to the ecosystem

Even though the tokenisation process has been implemented with the intent to ensure cyber security and customer convenience, the same could potentially cause major disruptions, if implemented in haste, and without adequate planning. As iterated in the above sections, with the current state of development and lack of preparedness amongst various stakeholders, there is likelihood of major loss of business, especially for small merchants. Further, the customers are unaware of the various intricacies of the change proposed by the RBI. This could eventually cause them inconvenience while making daily transactions and eventually bring them into the tokenisation cycle without ensuring meaningful consent. Moreover, given the current consumer behaviour and the current state of financial digital literacy, an additional layer during the transaction process will deter the users from seeing through the final payment.

5.1. Impact on businesses

As discussed earlier, tokenisation solution essentially involves three steps ie., token provisioning; token processing and scale-up for multiple use cases. However, it has been noted that India is yet to reach close to completing these steps and by rushing the process, the measures to protect consumer interests may have undesirable consequences for the digital payments and e-commerce ecosystem.[16] The current deadline of implementation of tokensation of June 30 should be further extended to avoid potential disruption which will have a network effect, including on consumers. Industry bodies have provided an approximate estimate of potential disruption and projected loss of upto 40% of the revenue, due to lack of preparedness, for the merchants as they would no longer be allowed to keep the information of the users.[17] An abrupt transition to the new system might potentially shave off nearly 1/3rd of the digital industry's revenues, according to certain industry bodies.[18]

It has been highlighted that even though card networks, a few banks, as well as certain payment networks are ready to accept the transition, it might not translate into readiness of the entire ecosystem.[19] A major national bank's management has also pointed out that various merchants are still unable to migrate to the new system and are observing breakdowns in settlements, reconciliation and services such as refunds, cash-backs and charge-backs.[20] This may potentially deteriorate consumer trust in the system and result in a loss of business operations for small merchants who are not ready with the back-end infrastructure to support large transaction volumes.[21] Additionally, there is a considerable backlog in terms of token generation and even the time taken to process the financial transactions through the tokens is slow due to underdeveloped infrastructural capacity.

[16] PTI, "Online merchants can lose up to 40 pc revenues after December 31 due to tokenisation of user card info" *The Economic Times* (Dec 22, 2021) Available at https://economictimes.indiatimes.com/industry/banking/finance/online-merchants-can-lose-up-to-40-pc-revenues-after-december-31-due-to-tokenisation-of-user-card-info/articleshow/88438943.cms

[17] PTI, "Online merchants can lose up to 40 pc revenues after December 31 due to tokenisation of user card info" *CNBC TV 18* (Dec 22, 2021) Available at https://www.cnbctv18.com/business/companies/online-merchants-can-lose-up-to-40-revenues-after-dec-31-due-to-tokenisation-of-user-card-info-11905502.htm

[18] Surabhi Agarwal, "Tech companies want two more years for tokenisation" *The Economic Times* (Dec 21, 2021) Available at https://economictimes.indiatimes.com/tech/technology/tech-companies-want-two-more-years-for-tokenisation/articleshow/88399160.cms

[19] Ibid.

[20] Guest, "Payments ecosystem not fully ready for tokenisation", The Financial Express (May 31, 2022) Available at https://www.financial-express.com/industry/banking-finance/payments-ecosystem-not-fully-ready-for-tokenisation/2542784/

[21] Mayuri Ramanan, "Experts weigh in on how RBI's new digital payment guidelines can impact small businesses", *Your Story* (Dec 13, 2021) Available at https://yourstory.com/2021/12/experts-weigh-rbi-new-digital-payment-guidelines-impact-small-businesses/amp

These stages constitute the three pillars of tokenisaiton and have to be built first. The ideal processing speed for tokenised transactions has been estimated to be around 2,000 transactions per second, however some of the major players are currently able to process only 8-10 transactions per second.

With limited tokenisation transition and processing, when the merchants would be compelled to destroy stored card data, the consumers would need to re-enter their card details each time they enter into a transaction. This would result in a high-friction checkout process and the consumers are likely to save their card details on their phones or other unsecured media which would defeat the policy objective and cause unrivalled unease in e-commerce transactions.[22] It needs to be kept in mind that the volume and value of transactions that are processed using cards in e-commerce is immense. Mandating deletion of card details by merchants not prepared with tokenisation, therefore, has the potential to cause a quantitative impact that may cross lakhs of crores. The value and volume of transactions that are processed through cards on e-commerce has been provided below. The scope of the transactions that may potentially be impacted is, as can be seen below, significant.

Table 2.0. Card Transactions in E-commerce

Time Period	Debit card at e-commerce		Credit Card at e-commerce	
	Volume	Value	Volume	Value
October 2021	1250.34	20817.05	775.28	48056.43
November 2021	1098.94	17820.65	743.01	44331.50
December 2021	1063.97	17474.41	769.57	47800.63
January 2022	1063.28	17388.60	749.43	46340.13
February 2022	947.87	16088.87	698.29	43933.54
March 2022	995.69	17578.01	844.72	54600.55
April 2022	973.13	16098.85	818.36	51375.47
May 2022	995.85	16757.00	895.01	57079.12
1st - 2nd June 2022	144.93	2726.05	125.69	8570.13

**Volume in lakhs; Value in INR Crores. Source*[23]

[22] Akash Karmakar and Falaq Patel, "Is India Inc. ready for RBI's fast-approaching tokenization deadline?" Tech Circle (6 Jun, 2022) Available at https://www.techcircle.in/2022/06/06/is-india-inc-ready-for-rbi-s-fast-approaching-tokenisation-deadline

[23] Payment Systems – Daily Data Publication Available at https://rbidocs.rbi.org.in/rdocs/content/docs/PSDDP04062020.xlsx

In 2021, the RBI, after an extension, had implemented 'Guidelines for automatic e-mandate'.[24] As per the guidelines, a one time re-registration was required for all the e-mandates and for auto-debit payments above Rs 5,000 a month, and a two factor authentication was introduced. The card-issuers or the banks were also required to send a notification for automated debits at least 24 hours in advance to their customers with the option to opt-out of the transaction.[25] After the deadline, within a month all the stakeholders including customers, banks and subscription-based companies saw massive disruption,[26] leading to a lot of companies leaning towards annual models, causing loss of business. However, even after almost a year since the deadline of implementation, multiple levels of integration are still ongoing and 40% of recurring payment mandates are failing.[27] It is anticipated that the disruption caused by tokenisation may match or even surpass the disruption that was witnessed in the aftermath of the e-mandate guidelines.

Lastly, implementation of tokenisation immediately may lead to either i) certain merchants refusing to process payments through cards; ii) customers facing transaction delays and failures; or iii) customers having to repeatedly enter card details for making payments. This may lead to reliance on other modes of transfer, i.e., UPI and net banking, which may reduce the reliance on card networks, essentially isolating an entire stakeholder in the ecosystem. Additionally, a greater reliance on other payment methods would put more pressure and stress on them and could result in high transaction failure. Having multiple payment options in the ecosystem divides the risk and minimises potential for failure and cyber threats.

5.2. Impact on small merchants

The rushed implementation of tokenisation and deleting card details is likely to adversely impact a considerable number of small merchants.

Additionally, even with the extension notification of December 2021 providing some respite, there were no clarifications or changes released by the RBI to support the implementation process for the stakeholders, posing an added disadvantage for the small operators.[28] Limited technical or infrastructural support/ incentive has been offered to the small merchants and they don't possess the resources to undertake this mammoth process of tokenisation without potentially losing a major part of their current customer base. While allowing tokenisation to be used as an alternative to credential storage is a progressive move by the RBI, it is important to note that this may lead to disruption in the fintech ecosystem.

[24] Vipul Das, "Explained: How e-Mandate For Recurring Payments Will Impact You From October 1?" *Good Returns* (Sep 27, 2021) Available at https://www.goodreturns.in/news/explained-how-e-mandate-for-recurring-payments-will-impact-you-from-october-1-1224830.html

[25] Hiral Thanawala, "RBI norms on credit and debit cards e-mandates kick in today. Here's what you must know" Money Control (Oct 01, 2021) Available at https://www.moneycontrol.com/news/business/personal-finance/rbi-norms-on-e-mandates-kick-in-today-heres-what-you-must-know-7525501.html

[26] Priyanka Iyer, "No respite from recurring payments disruption even a month after new norms kick in" Money Control (Nov 04, 2021) Available at https://www.moneycontrol.com/news/business/no-respite-from-recurring-payments-disruption-even-a-month-after-new-norms-kick-in-7677181.html

[27] Priyanka Iyer, "RBI guidelines on recurring payments continue to cause disruption even after 6 months of deadline" Money Control (Mar 25, 2022), Available at https://www.moneycontrol.com/news/business/rbi-guidelines-on-recurring-payments-continue-to-cause-disruption-even-after-6-months-of-deadline-8274251.html

[28] PVikram Jeet Singh, Kalindhi Bhatia and Prashant Daga, "India: RBI's Card Tokenization Mandate – A Bridge Too Far?"Mondaq (07 Jan 2022) Available at https://www.mondaq.com/india/shareholders/1148176/rbi39s-card-tokenisation-mandate-a-bridge-too-far https://www.business-standard.com/article/economy-policy/most-consumers-wary-of-stricter-rules-for-online-card-use-survey-121122001024_1.html

This is because tokenisation demands large scale changes in tech infrastructure, which would require a considerable amount of time, labour and money. Once the deadline passes, merchants, irrespective of whether they have rolled out tokenisation to the customers or not, would no longer be allowed to save consumer data in its existing form, which might in-turn cause them to incur heavy losses. Moreover, tokenisation has caused merchants to depend on external parties such as banks and card networks for readiness, with regard to the continuity of their own businesses. At the same time, small merchants possess very limited ability to drive ecosystem readiness on tokenisation.

In order to ensure that the system of tokenisation is properly implemented, and that no stakeholder is left suffering, the RBI must monitor compliance implementation by regulated entities. Once this is done, merchants can begin modifying their tech infrastructure, testing it on full scale, and finally complying with the guidelines. In the event of adherence seeming unlikely, the RBI might well consider extending the deadline further.

5.3. Customer Inconvenience

Over the last few years, the surge in online platforms with the introduction of hurdle free payment channels has encouraged the Indian customers to transition to online payments. Ineffective implementation of tokenisation can impact this convenience in two ways: Firstly, it may force users to repeatedly enter card details on merchant sites, or not allow users to make card transactions at all. A recent nationwide survey claims that almost 82% of customers find it inconvenient to re-enter card details every time they wish to make payments for a particular purpose online.[29] A 2020 survey conducted by PYMNTS also observed that the majority of the 14,000 customers studied found it hectic to re-enter their personal information on every occasion, and therefore preferred stored credentials.[30]

Another consequence, i.e., not being allowed to use card details at all, was recently witnessed in the case of a major technology company. This has the potential to reduce payment options for consumers.[31] Additionally, as per industry inputs, there is a high latency rate in processing the card transactions through tokenisation. Reports suggest that time taken to generate a token is almost between 10-45 minutes in comparison to 4-6 seconds that it takes currently.[32]

Secondly, disruptions in the ecosystem may impact consumer faith in the payments ecosystem. According to consumer surveys,[33] customers prefer simple and streamlined payment experience and, therefore, easy acceptance of credit and debit cards becomes more important. Such ease of convenience might be affected

[29] Alawadhi,N. (2021 December 20), Most consumers wary of stricter rules for online card use: Survey, Business Standard, Available at https://www.business-standard.com/article/economy-policy/most-consumers-wary-of-stricter-rules-for-online-card-use-survey-121122001024_1.html

[30] PYMNTS, "The Rise Of Card-On-File Commerce" PYMNTS.com (Jun 1, 2020) Available at https://www.pymnts.com/news/payments-innovation/2020/rise-of-card-on-file-commerce/

[31] ETtech, "Apple stops accepting card payments, switches to UPI and net banking" *The Economic Times* (May 19, 2022) Available at https://economictimes.indiatimes.com/tech/technology/apple-stops-accepting-card-payments-switches-to-upi-and-net-banking/articleshow/91663193.cms

[32] Romita Majumdar, Aashish Aryan and Dia Rekhi, "Industry groupings question banks readiness as tokenisation deadline looms", *The Economic Times*, Available at https://m.economictimes.com/tech/technology/industry-groupings-question-banks-readiness-as-tokenisation-deadline-looms/articleshow/91772982.cms

[33] Worldpay Editorial Team, "How consumer payment preferences are shaping commerce" *FisGlobal* (Jul 10, 2019) Available at https://www.fisglobal.com/en/insights/merchant-solutions-worldpay/article/how-consumer-payment-preferences-are-shaping-commerce

if tokenisation is not implemented efficiently within the given time frame, as online transactions through cards might fail, get delayed or not go through at all. Such disruptions may erode the trust of the consumers in digital payments, which could grativate them back towards cash-based payments. Transaction failures and system delays are one of the main reasons why most people are still discouraged to experiment with the payment options that are available to them.[34] A disrupted payment mechanism, wherein payments will either be not processed or will be processed with delay, can potentially amplify these issues for consumers, deter them from online transactions, which will defeat the purpose and the effort of bringing millions of Indians online with the objective of making transactions simpler and easier.

The no card storage rule also poses a huge impact on being able to serve the customers. This is because the card information allows the merchants to provide customer specific promotions, process refunds and also helps them in grievance redressal.[35] A lot of merchants today curate specific discounts and incentives for the customers based on the cards they use to complete the transactions. The tokenisation process would not allow merchants to store data and therefore they would not be able to offer transactional incentives to their customers. Moreover, the time taken for settlement of excess payments/refunds is a key aspect that drives the consumer's shopping experience.

5.4. Consumer awareness

Currently, a lot of consumers have limited knowledge of tokenisation and only a few platform centric efforts, with limited information provided to consumers, have been undertaken. A major food delivery app has been flashing constant reminders to its consumers to secure their accounts and a notable payment wallet company has reported that they have tokenized 80% of their monthly active cards on the app through disclaimers.[36] However, a significant gap exists between the people who are aware of the steps taken for their benefit and those who are unaware. While the RBI website details the process of tokenisation and provides literature giving a brief overview for customer support,[37] no real time efforts have been made to ensure that the customers are meaningfully being informed of the possible consequences of this process.

Merchants are supposed to take consent from consumers to tokenise their card details. The principles of meaningful/informed consent are a part of the draft Data Protection Bill, 2021.[38] Notice and choice are the two critical components of consent. The manner in which a particular policy is presented to the consumers must reasonably ensure that not only is the policy placed for them to read, but also for them to understand and comprehend properly. Therefore, choice becomes a major aspect of meaningful consent as it allows the consumer to opt-in or opt-out of the information sharing requirements. This ensures that the policy balances the privacy of the customer while fulfilling the business or policy mandate.[39]

[34] Shyam A. Kakkad, "A Detailed Analysis of Selected Digital Payment Systems in India" *Indian Journal of Economics and Research* (2021), Available At http://indianjournalofeconomicsandresearch.com/index.php/aijer/article/view/155366

[35] Akash Karmakar, "RBI's tokenization rules may cause breakdown of digital payments market" *Tech Circle* (28 Nov, 2021) Available at https://www.techcircle.in/2021/11/28/rbi-s-tokenisation-rules-may-cause-breakdown-of-digital-payments-market

[36] Krishna Veera Vanamali, Is India ready for tokenization this time? *Business Standard* (May 26, 2022) Available at https://www.business-standard.com/podcast/current-affairs/is-india-ready-for-tokenisation-this-time-122052600082_1.html

[37] Notifications, Tokenisation – Card transactions (Jan 08, 2019) RBI/2018-19/103, RBI Available at https://m.rbi.org.in/scripts/FS_Notification.aspx?Id=11449&fn=9&Mode=0

[38] Ethan Loufield, Shweta Vashisht, "Data Consent: Let's Share the Burden for Effective Consumer Protection" *Center for Financial* Inclusion (Jan 15, 2020) Availble at https://www.centerforfinancialinclusion.org/data-consent-lets-share-the-burden-for-effective-consumer-protection

[39] Suneeth Katarki and Ashi Bhat, India: Privacy Policy & Policy Of Privacy – Data Protection Conundrums *Mondaq* (06 February 2018) Available at https://www.mondaq.com/india/privacy-protection/671084/privacy-policy-policy-of-privacy-data-protection-conundrums

The ideal notion of consent must meaningfully help customers carefully consider their privacy options and consent to the parts they agree to.[40] However, as per a recent report by SEBI, only 27% of the Indians are financially literate.[41] This implies that most customers might be unable to comprehend the intent behind tokenisation, making the whole process an endeavour that does not meaningfully ensure consent of users.

[40] Gayatri Murthy, David Medine, "Data Protection and Financial Inclusion: Why Consent Is Not Enough" CGAP (20 Dec 2018) Available at https://www.cgap.org/blog/data-protection-and-financial-inclusion-why-consent-not-enough

[41] The growing significance of financial literacy in India – Gaps and opportunities *Financial Express* (Jan 19, 2022) Available at https://www.financialexpress.com/money/the-growing-significance-of-financial-literacy-in-india-gaps-and-opportunities/2410548/

6. Way Forward

There is no doubt that CoFT is the most secure way forward. The rationale behind bringing this mechanism is to prevent breaches at the merchant's and PA/PG's end, which are particularly prone to data breaches.

However, it must be ensured that the transition to tokenisation is smooth and inclusive. In our previous report,[42] we noted that apart from preventing risk at the merchant's end, there is also a need to increase awareness at the consumer's end to prevent any sort of payment fraud. Previously, the Wattal [43] *Committee Report on Medium Term Recommendation to Strengthen Digital Payments Ecosystem* and the Nilekani[44] *Report of the High Level Committee on Deepening of Digital Payments* had also identified behavioural and demographic aspects like literacy as potential reasons for payment frauds. Therefore, it is important that the approach towards ensuring payment security looks at technological limitations, behavioural aspects and demographic factors holistically.

Emphasis must also be placed on the interconnectedness of the ecosystem. Every stakeholder involved in the processing of transaction chains i.e., card networks, banks, PA/PGs and merchants is dependent on another. In case one of them is not meaningfully ready, there is going to be potential transaction failure. Therefore, every entity involved in the process has to be ready with the necessary solutions, where the success rate must be atleast 85 percent across multiple use cases. During the consultative process, we received several recommendations towards ensuring a smooth transition to tokenisation. While everyone echoed similar sentiments that tokenisation is the way forward, concerns were raised regarding the readiness of the ecosystem.

Following are some of the key recommendations that could be considered to ensure successful implementation.

6.1. Extension of Deadline at least by 31st December, 2022

Majority of the stakeholders recommended that extension of the deadline is essential for testing the solutions for different use cases and to test the scalability of the tokenisation solution. Ecosystem readiness is at the core of the transition and a small extension of a reasonable time period would prove helpful.

Mandate to delete the CoF data needs to be delayed and it should be done only when the RBI is satisfied that the ecosystem can handle the existing levels of transactions with the same level of success rates. It needs to be ensured that all the stakeholders are at a similar level of preparedness.

[42] Anand V, Ayush T, Gautam K, Saksham M, (December 2021), RBI's CoF and Tokenisation Guidelines-Analysing the Potential Impact on Digital Payments Industry, New Delhi, *The Dialogue and DeepStrat*,Available at: https://thedialogue.co/wp-content/uploads/2021/12/Tokenisation-_-Final-Draft..pdf

[43] Watal, R.P., et.al. (2016) , Committee on Digital Payment, Ministry of Finance, Available at https://dea.gov.in/sites/default/files/watal_report271216.pdf

[44] Committee on Deepening of Digital Payments (2019 May) Report of the High Level Committee on Deepening of Digital Payments, Reserve Bank of India, Available at https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CDDP03062019634B0EEF3F7144C3B65360B-280E420AC.PDF

We commend the efforts of the RBI to ensure that payment stakeholders i.e. card networks, banks and PA/PGs are up and running with the solutions. However, there does not seem to be enough time to ensure that all the stakeholders are ready. Therefore, an extension of six months would be helpful in this regard for ensuring minimal disruption.[45]

6.2. Phased Implementation

As suggested in our previous report,[46] there is a need for the RBI to come up with a phased implementation programme. The onus to get the system ready lies with the card networks, banks and PA/PGs, however, the impact of potential disruption would largely be seen on the merchants. The infrastructure readiness i.e token provisioning, token processing and addressing the use cases, has to be dealt with by the abovementioned stakeholders and RBI should ensure only after the whole infrastructure is ready with all the solution deployed, should they go ahead with the mandate for deletion of CoF data. Therefore, rather than giving a fixed deadline for deletion of CoF data, RBI may ensure the preparedness of the ecosystem through multi-tier auditing of the regulated entities at different levels. Card networks, banks and PA/PGs would be the first in line. Further, RBI should also take inputs from the merchants about their readiness as well.

Importantly, phased implementation would also enable stakeholders to easily identify and resolve the pain points. This would give them sufficient time to identify the issues, points of failure and to resolve concerns at an ecosystem level. For instance, we are witnessing that use cases such as guest checkouts, recurring payments etc. are facing issues. Further, scalability and transaction failures are also some of the pain points. These issues could be resolved through phased implementation of the mechanism, as the industry implements tokenisation.

6.3. Requirement of Testing Period

As of now, tokenisation is being tested at the entity level and not at scale. Some of these entities are facing high failure rates and are facing issues with large volumes of transactions. E-commerce websites process a lot of transactions per second that requires the system to be operating at an optimum level. Further, in order to understand its working and especially the issues that may arise in the operations, a separate testing period should be given to the merchants. During such a period, stakeholders should be allowed to save card details which could be used as a backup in case the tokenisation system is not able to handle the scale of transactions or is receiving high failures. Even from the regulator's standpoint, there is no evidence about the extent of readiness at the merchant level; therefore, reports and audits could complement these testing periods to ensure that the transition progresses in a consistent and predictable manner.

[45] Shashank Didmishe, Payments ecosystem not fully ready for tokenisation, *Financial Express* (May 31, 2022) Available at https://www.financialexpress.com/industry/banking-finance/payments-ecosystem-not-fully-ready-for-tokenisation/2542784/

[46] Anand V, Ayush T, Gautam K, Saksham M, (December 2021), RBI's CoF and Tokenisation Guidelines-Analysing the Potential Impact on Digital Payments Industry, New Delhi, *The Dialogue and DeepStrat*.Available at: https://thedialogue.co/wp-content/uploads/2021/12/Tokenisation-_-Final-Draft..pdf

6.4 Identifying solutions for use cases

It is anticipated that a significant scale of disruption might occur if implementation is done immediately without proper testing and efficient solutions. Therefore, it is the need of the hour to allow some more time for stakeholders to get ready with their solutions. There will potentially be problems relating to recurring payments, EMIs and post-transaction activities including chargeback handling, dispute resolution, reward and loyalty programmes, etc. While some payment aggregators/gateways may have come up with these solutions, the same are not available to most of the players facing similar issues. There is a need to look for these solutions first and effectively implement them. Some stakeholders are anticipating a disruption at a scale larger than the one witnessed in the aftermath of the standing instructions mandate in October 2021, as at that time only recurring payments were affected. However, this time the whole card infrastructure is significantly changing.

6.5. Ensure Consumer Awareness

As discussed earlier, a lot of consumers have limited knowledge of what actually tokenisation is. This results in collecting uninformed consent from the masses. While RBI has made efforts to ensure that merchants and PA/PGs provide that information to the customers, it could not stress enough the need for creating consumer awareness regarding tokenisations. India's financial and digital literacy rates are not among the best in the world and this kind of change, without sufficient understanding, may compel users to shift to other payment mechanisms and disincentivise them to remain in the payment ecosystem. Therefore, long-term and sustainable programs in vernacular languages are required to ensure that customers are aware of the intricacies and implementation of tokenisation before consenting to its usage which is key to the actual aim of this policy.

6.6. Enable Transparency

RBI must make the readiness of the industry transparent to gain trust of the ecosystem. Every stakeholder is operating in silo and may or may not report to the RBI regarding its preparedness. This opaquess is resulting in confusion in the ecosystem about the extent of readiness of different stakeholders. For instance - one of the stakeholders is ready with recurring payments solutions and are facing issues with guest checkout solutions while other is facing issues with guest checkouts but not for recurring payments. However, both are claiming that they are ready to effectively implement tokenisation without providing demonstrable evidence of comprehensive solutions. Further, token provisioning should not be the only criteria for ecosystem readiness. RBI must look into the implementation of solutions to the use cases as well. A transparent mechanism to check that every stakeholder is at the same level of preparedness for different use cases would go a long way in enhancing trust of various stakeholders in the transition, including users, banks, merchants, PA/PGs and card networks and its successful implementation

Published : June 13, 2022

Recommended Citation: Ayush T, Saksham M (June 2022). RBI's CoF and Tokenisation: Assessing the Preparedness of the Payments Ecosystem, New Delhi, The Dialogue and DeepStrat

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