Introduction to Fintech- ENT 306

PPT #4, IIITD, Monsoon 2025

Today's Agenda: Payments

- Features/Ways/Types/Authentication
- Developments in India/Regulations
- Participants/Networks
- Bank Transfer/Visa/UPI Process Flow/NPCI
- Payment Banks
- Payment Aggregators/Payment Gateways
- Pre-paid Instruments
- Tokenization
- 2 current discussion points around UPI

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Payment Aggregators (PAs)
Payment Gateways(PGs)

Payment Gateways

- Provide tech infra and a communication software to route & facilitate online payments between merchant app/website and the payment processor/merchant banks

- Primary focus is data security – transmit encrypted payment data-and transaction verification

- No handling of funds allowed

- Billdesk: 1st PG established. 2000. RBI License required.

- Other examples: Cc Avenue, PayU, Razorpay etc.

Payment Aggregators

- RBI introduced the PA framework in Mar 2020.

- A third-party provider that offers a unified platform for processing multiple payment methods

- Help ecom /merchants to accept all types of payment methods – credit/debit cards, UPI, bank transfers, digital wallets, prepaid instruments etc. Helps in disbursement also.

- Connects merchants to acquirers

- Ecom/merchant do not need to create own tech infra

- Pas receive payment from customers, pool & transfer them to merchant after a period of time

PAs

- #1: Onboard a merchant.

- #2: Customer selects a payment method and enters details. PA does fraud check and tokenizes the information.

- #3: PA sends information to the bank (acquiring bank) where it has a nodal account. – the account used for depositing and withdrawing funds.

- #4: Acquiring bank sends the information to the network.

- #5: Network sends the information to the issuing bank for authorization

- #6: Issuing bank checks the customer details and availability of funds in his credit card or bank account and sends an approval/rejection to the network.

- #7: Network shares the approval/rejection information with the acquiring bank who shares the information with the PA who sends it to the merchant.

- #8: If approved, funds move to PA's nodal account.

- #9: Settlement of accounts and fund transfer to merchant's account is done as per agreed rules.

PAs

- Funds kept in an escrow account. Transfer dates specified for Ecom.
  - PA responsible for delivery/merchant for shipment: T_s+1
  - Merchant responsible for delivery: T_d+1
  - If returns/refund allowed: T_r+1

- For normal merchants/vendors, settlement of accounts and fund transfer to merchant's account is usually done at the End of the Day by the PA

- **PAs to check** Payment Card Industry-Data **Security Standard** (PCI-DSS) and Payment Application-Data Security Standard (PA-DSS) compliance of the infrastructure of the merchants on-boarded.

- Most PGs are now PAs also.

PAs Now

- # of PAs licensed by the RBI as of May '25: 54

- Razorpay, Cashfree, Paytm, and PayU to slash processing rates to win merchants — driving the average "transaction margin to as low as 15 – 60 basis points".

- Future: Consolidation. M&As. 5-6 big players will be left.

ETPrime

Digital payment firms in a no-win game as margins hit rock bottom

By Pratik Bhakta, ETtech • Last Updated: Jun 06, 2025, 06:00:00 AM IST

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https://economictimes.indiatimes.com/tech/technology/digital-payment-firms-in-a-no-win-game-as-margins-hit-rock-bottom/articleshow/121656015.cms?from=mdr

PPI:Pre-Paid Instrument

- Stored value. Cards/ digital wallets.

- Issued by banks, NBFCs, Payment System Operators

- Issued after KYC. No interest paid on PPI balance.

- PhonePe. Gpay/Paytm wallet.

- In **some PPIs**, cash loading upto INR 50,000 per month also possible.

- Special Types viz. PPIs for Mass Transit System. Metro Card

- Enable 'Embedded Payments'.

https://www.npci.org.in/what-we-do/upi/ppi-apps

Making Online Payments Safer

Mastercard has announced plans to remove the 16-digit number from their credit and debit cards by 2030 in a move designed to stamp out identity theft and fraudulent use of cards.

The numbers currently used to identify cards will be replaced with tokenisation and biometric authentication

Tokenization

- Security technique to replace sensitive payment information like credit card numbers with a unique, random set of characters. 16 digits.

- Safely stored and transmitted/useless for hackers.

- Can be saved in your phone, merchant website/app or with PA

- Only card issuers and card networks are allowed to store card details.

- **Cryptograms** give another layer of security- Your device or online merchant account generates a one time code for every trxn. This unique value helps verify that the trxn is coming from the specific device or merchant and is authentic.

Tokenization: How

One-Time Setup

- You add ICICI Bank Mastercard credit card to PhonePe app

- **Token Requester**: PhonePe requests token from Mastercard.

- Mastercard inform ICICI Bank which verifies your details

- **Token Issuer:** Mastercard issues a unique token (might authenticate using OTP etc.). PhonePe+Phone.

- Can PhonePe store your credit card details? No. Only token is stored

- Initiate Payment: Tap phone/ In App
    - Cryptogram generated. Send token + cryptogram
    - Mastercard detokenizes. ICICI Bank approves
    - Trxn completed as per process discussed earlier

Current Issues: UPI
– Market Structure/Shares
– MDR

Market Shares: May '25

- PhonePe - 47%, Google Pay - 37%, Paytm - 7%. Rest: 9%

- Is this a problem? Why?

- Why does this happen?

Solution:

- 2020: NPCI recommended a cap of 30%. Gave 2 years to comply

- Extended till Dec 2024.

- Further extended till Dec 2026

- Will this solution work?

MDR on UPI

- What is the current MDR on UPI trxns? On card trxns?
- Central Govt pays incentives to make up.
- ONLY for UPI (Person to Merchant – P2M) transactions of up to **₹2,000**

Cabinet approves UPI incentive of ₹1,500 crore to banks

A 0.15% incentive on small transactions by small merchants has been approved, with a share of the incentive only payable if a bank's UPI systems are reliable

Updated - March 20, 2025 07:45 am IST – New Delhi

THE HINDU BUREAU

Year-wise Government Incentive Payout
(In ₹ Crore)

Year	Amount
2021-22	1,389
2022-23	2,210
2023-24	3,631

MDR on UPI

Govt may bring back MDR on UPI payments above Rs 3,000; small transactions to stay free: Report

Business Today Desk
Updated Jun 11, 2025 8:19 PM IST

No MDR Will Be Charged On UPI Transactions: FinMin

MDR is the cost paid by a merchant to a bank for accepting payment from their customers via digital means. The merchant discount rate is expressed in percentage of the transaction amount

PTI
Updated on: 12 June 2025 5:45 pm

Paytm shares fall 10%: What is MDR and why fintech players want government to introduce it?

ET Online • Last Updated: Jun 12, 2025, 01:33:00 PM IST

- Lowered Govt incentive. Is Zero MDR a problem?
- What should be done?

PhonePe IPO

https://bfsi.economictimes.indiatimes.com/articles/fintech-shares-plummet-as-centre-confirms-no-mdr-on-upi-payments/121841481

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Thank You!