Module 1 Summary: The Cost Problem

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Digital Finance — BSc Course

Key Concepts by Lesson

L1: Anatomy of a Payment

- Five-party model: cardholder, merchant, issuer, acquirer, network
- Merchant Discount Rate (MDR) = sum of all intermediary fees
- Interchange is 60–70% of MDR

L2: Economics of Intermediation

- Two-sided market theory (Rochet & Tirole)
- Interchange regulation: EU IFR caps, US Durbin Amendment
- Distributional effects on consumers, merchants, issuers

L3: Real-Time Payments & BNPL

- BNPL: merchant pays 3–8% MDR vs. 1.5–3% for cards
- BNPL provider advances funds, bears credit risk
- Conversion uplift must exceed incremental MDR cost

L4: Platform Economics

- Customer Acquisition Cost (CAC) and Lifetime Value (LTV)
- Viable fintech: $\text{LTV}/\text{CAC} > 3.0\times$
- Revenue diversification: interchange alone is insufficient

Module 1 answers: Who pays for every payment, how much, and why?

Key Formulas and Definitions

Merchant Discount Rate (MDR)

$$\text{MDR} = \underbrace{\text{Interchange}}_{\text{to Issuer}} + \underbrace{\text{Network Fee}}_{\text{to Network}} + \underbrace{\text{Processor Fee}}_{\text{to Processor}} + \underbrace{\text{Acquirer Markup}}_{\text{to Acquirer}} + \underbrace{\text{Gateway Fee}}_{\text{to Gateway}}$$

Customer Acquisition Cost

$$\text{CAC} = \frac{\text{Total Acquisition Spend}}{\text{Number of New Customers}}$$

Unit Economics Viability

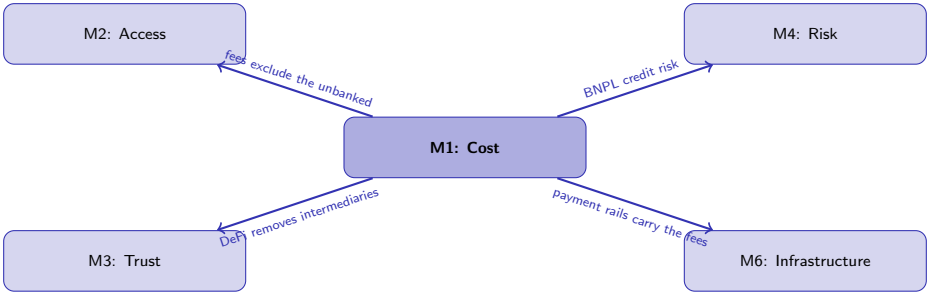
$$\text{Viable Fintech} \implies \frac{\text{LTV}}{\text{CAC}} > 3.0\times$$

BNPL Break-Even Condition

$$\text{Conversion Uplift} \times \text{Basket Size Increase} > \text{Incremental MDR Cost}$$

MDR is the central metric of Module 1 — every lesson examines who bears this cost and how to reduce it.

Connections to Other Modules



- **Cost → Access (M2):** High fees and MDR exclude small merchants and low-income consumers from the formal financial system
- **Cost → Trust (M3):** DeFi protocols eliminate intermediaries, reducing the fee stack to near-zero gas costs
- **Cost → Risk (M4):** BNPL and P2P lending shift credit risk from banks to platforms and investors
- **Cost → Infrastructure (M6):** RTGS, ACH, and SWIFT are the rails that determine settlement cost and speed

Every module in this course connects back to cost: who pays, how much, and whether technology can reduce it.