Lesson 1.1 Quiz: Anatomy of a Payment

Module 1: The Cost Problem

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Digital Finance — BSc Course

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Q1: Four-Party Model Roles

In the four-party card payment model, which entity **issues the card** to the consumer?

- A The acquiring bank
- B The card network
- C The payment processor
- D The issuing bank

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Answer: (D) The issuing bank issues the card to the cardholder and bears credit risk and fraud liability.

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Q2: Settlement Definition

What is the key difference between **authorization** and **settlement** in a card payment?

- A. Authorization moves money; settlement verifies the card
- B. Authorization is batch; settlement is real-time
- C. Authorization verifies and approves; settlement transfers funds
- D. Authorization is optional; settlement is mandatory

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- (C) Authorization verifies and approves; settlement transfers funds
- (D) Authorization is optional; settlement is mandatory

Answer: (C) Authorization checks funds and approves in real time; settlement actually moves money in batch (T+1/T+2).

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Q3: Interchange Recipient

Who **receives** the interchange fee in a standard four-party card transaction?

- A The merchant
- B The card network
- C The issuing bank
- D The payment processor

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Q3: Interchange Recipient

Who **receives** the interchange fee in a standard four-party card transaction?

- (A) The merchant
- (B) The card network
- (C) The issuing bank
- (D) The payment processor

Answer: (C) Interchange flows from the acquirer to the issuing bank, compensating the issuer for credit risk, fraud liability, and the interest-free period.

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Q4: Netting Purpose

What is the primary purpose of **netting** in the settlement process?

- A. To speed up authorization responses
- B. To reduce the number and size of interbank transfers
- C. To encrypt card data during transmission
- D. To calculate interchange fees

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B. To reduce the number and size of interbank transfers
C. To encrypt card data during transmission
D. To calculate interchange fees

Answer: (B) Netting calculates the net amounts owed between banks, dramatically reducing the number of individual interbank transfers required.

Q5: MDR Calculation – Basic

A merchant pays the following fees on each transaction: interchange 1.65%, network assessment 0.13%, processor 0.10%, acquirer markup 0.25%, gateway 0.07%. What is the total Merchant Discount Rate (MDR)?

- A. 1.65%
- B. 2.00%
- C. 2.20%
- D. 2.50%

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- (A) 1.65%
- (B) 2.00%
- (C) 2.20%
- (D) 2.50%

Answer: (C) MDR $= 1.65 + 0.13 + 0.10 + 0.25 + 0.07 = 2.20\%$.

Q6: Dollar Fee on a Transaction

Using an MDR of 2.60%, how much does the merchant pay in fees on a $200 sale?

- A $2.60
- B $5.20
- C $13.00
- D $26.00

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- A. $2.60
- B. $5.20
- C. $13.00
- D. $26.00

Answer: (B) Fee $= \$200 \times 2.60\% = \$5.20$. The merchant receives $194.80.

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Q7: Effective MDR with Fixed Fees

A debit transaction has fees of 0.50% + $0.15 fixed. On a $3.00 purchase, what is the **effective** MDR?

- A 0.50%
- B 3.50%
- C 5.50%
- D 10.50%

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- (B) 3.50%
- (C) 5.50%
- (D) 10.50%

Answer: (C) Fee = \$3.00 $\times$ 0.50% + \$0.15 = \$0.015 + \$0.15 = \$0.165. Effective MDR = \$0.165 / \$3.00 = 5.50%.

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Q8: Interchange Share of MDR

If the total MDR is 2.40% and interchange is 1.70%, what percentage of the MDR does interchange represent?

- A. About 50%
- B. About 60%
- C. About 71%
- D. About 85%

Q8: Interchange Share of MDR

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- (A) About 50%
- (B) About 60%
- (C) About 71%
- (D) About 85%

Answer: (C) Interchange share $= 1.70 \ / \ 2.40 = 70.8\% \approx 71\%$.

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Q9: Settlement Timing

A merchant batches credit card transactions at the end of business on Monday. Under T+2 settlement, when will the funds arrive in the merchant's account?

- A. Monday evening
- B. Tuesday morning
- C. Wednesday (T+2 business days)
- D. Friday (T+4 business days)

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- (C) Wednesday (T+2 business days)
- (D) Friday (T+4 business days)

Answer: (C) T+2 means two business days after the transaction date. Monday + 2 business days = Wednesday.

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Q10: Working Capital Impact

A merchant processes $8,000 per day in credit card sales with T+2 settlement. How much working capital is "locked in the pipeline" at any given time?

- A. $8,000
- B. $16,000
- C. $24,000
- D. $40,000

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- (C) \$24,000
- (D) \$40,000

Answer: (B) With T+2 settlement, two days of sales are always in the pipeline: $\$8{,}000 \times 2 = \$16{,}000$.

Q11: Netting Calculation

Bank X owes Bank Y $500,000 and Bank Y owes Bank X $350,000. After bilateral netting, what is the single transfer required?

- A $850,000 (X to Y)
- B $500,000 (X to Y)
- C $150,000 (X to Y)
- D $350,000 (Y to X)

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Answer: (C) Net = $500,000 − $350,000 = $150,000 from X to Y. Netting reduced total transfers from $850,000 to $150,000.

Q12: Cross-Border Fee Estimate

A tourist makes a €100 purchase abroad. The domestic MDR is 2.2%, and the cross-border surcharges (correspondent banks + FX) add 2.5%. What is the total cost to the merchant?

- A €2.20
- B €2.50
- C €4.70
- D €7.20

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- B €2.50
- C €4.70
- D €7.20

Answer: (C) Total fee $= (2.2\% + 2.5\%) \times €100 = 4.7\% \times €100 = €4.70$.

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Q13: Small-Ticket Analysis

Two merchants both pay 0.30% + $0.10 per transaction. Merchant A averages $5 tickets; Merchant B averages $50 tickets. Which statement is most accurate?

- A. Both pay the same effective MDR
- B. Merchant A pays a higher effective MDR due to the fixed fee
- C. Merchant B pays a higher effective MDR due to the percentage fee
- D. The fixed fee is irrelevant at these transaction sizes

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Answer: (B) Merchant A: (\$0.015 + \$0.10)/\$5 = 2.30%. Merchant B: (\$0.15 + \$0.10)/\$50 = 0.50%. Fixed fees disproportionately impact small tickets.

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Q14: Interchange Cap Impact

If regulators cap interchange at 0.20% (down from 1.50%), which party in the value chain loses the most revenue?

- A. The payment gateway
- B. The card network
- C. The issuing bank
- D. The acquiring bank

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- (C) The issuing bank
- (D) The acquiring bank

Answer: (C) Interchange flows to the issuing bank. A cap from 1.50% to 0.20% directly reduces issuer revenue per transaction by 87%.

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Q15: Authorization vs. Settlement Failure

A cardholder receives an "Approved" message at the POS, but the merchant never receives the funds. At which phase did the failure most likely occur?

- A Authorization
- B Settlement
- C Both phases simultaneously
- D Neither — the POS terminal malfunctioned

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- A. Authorization
- B. Settlement
- C. Both phases simultaneously
- D. Neither — the POS terminal malfunctioned

Answer: (B) Authorization succeeded ("Approved"), so the failure occurred during the settlement (batch) phase — e.g., the transaction was not included in the batch, or a clearing error occurred.

Q16: Disintermediation Target

A FinTech startup builds a system where consumers pay merchants directly from their bank accounts, bypassing card networks entirely. Which fees does this **eliminate**?

- A. Only the gateway fee
- B. Interchange and network assessment fees
- C. All fees — bank-to-bank transfers are free
- D. Only the acquirer markup

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- (C) All fees — bank-to-bank transfers are free
- (D) Only the acquirer markup

Answer: (B) Bypassing the card network eliminates interchange (to issuer via network) and network assessment fees. Some processing/gateway fees may still apply, and the bank transfer itself may have its own (lower) cost.

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Q17: Settlement Speed Trade-off

Real-time payment systems settle instantly but lack chargeback protection. Why might a consumer **prefer** a slower card payment?

- A. Cards are always cheaper for the consumer
- B. Cards offer dispute resolution and fraud protection via the issuer
- C. Real-time payments are not available internationally
- D. Card authorization is faster than real-time payment authorization

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- (D) Card authorization is faster than real-time payment authorization

Answer: (B) Card networks provide chargeback rights and fraud protection. Real-time transfers are typically irrevocable, leaving the consumer with no recourse if goods are not delivered.

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Q18: Cross-Border Complexity

Why do cross-border card payments cost significantly more than domestic ones?

- A The card network charges higher interchange for all transactions
- B Additional intermediaries (correspondent banks, FX providers) add fees
- C Cross-border transactions bypass the payment processor
- D International merchants pay lower acquirer markups

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Answer: (B) Cross-border transactions add correspondent banks for interbank settlement across jurisdictions and FX conversion providers, each adding their own fee layer.

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Q19: Interchange Cap Policy Evaluation

A regulator argues that capping interchange at 0.20% will lower consumer prices. A bank argues it will reduce card rewards and increase annual fees. Which stakeholder's argument is **most supported** by the payment value chain analysis?

- A. The regulator — lower MDR directly reduces prices
- B. The bank — issuers will cut rewards to compensate
- C. Both have valid points — lower interchange reduces MDR but also reduces issuer revenue for rewards
- D. Neither — interchange caps have no effect on prices or rewards

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- (C) Both have valid points — lower interchange reduces MDR but also reduces issuer revenue for rewards
- (D) Neither — interchange caps have no effect on prices or rewards

Answer: (C) Both arguments have merit. Lower interchange reduces MDR (potentially lowering prices), but issuers may respond by reducing rewards or increasing cardholder fees. Empirical evidence is mixed.

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Q20: Payment Method Recommendation

A small bakery (average ticket: $4, daily volume: $800) asks you which payment acceptance strategy minimizes total cost. Based on the fee structures discussed, which recommendation is **most defensible**?

- A. Accept only credit cards for maximum consumer convenience
- B. Accept only cash to avoid all electronic fees
- C. Use a real-time transfer system (low/no per-transaction fixed fee) for small tickets, accept cards for larger purchases
- D. Accept only debit cards, which have the lowest interchange

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- (C) Use a real-time transfer system (low/no per-transaction fixed fee) for small tickets, accept cards for larger purchases
- (D) Accept only debit cards, which have the lowest interchange

Answer: (C) With $4 average tickets, fixed per-transaction fees are devastating. A real-time transfer system with no fixed fee is optimal for small tickets. Accepting cards for larger purchases preserves consumer choice where the effective MDR is reasonable.

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