CASE STUDY ON Paytm

Prepared by : Anshuman Chawhan, Dhaanush Mahalingam, Shubham Patel, Darathi Saikia

Case Studies & Guesstimates for FinTech Industries

The FinTech industry has emerged as a dynamic and transformative force in the financial sector, integrating technology with financial services to enhance efficiency, accessibility, and customer experience. In today's era, FinTech is crucial for democratizing financial services, providing underserved populations with access to banking, credit, and investment opportunities. It fosters innovation through digital payment systems, peer-to-peer lending platforms, and blockchain technology, revolutionizing traditional banking practices.

Data scientists play a pivotal role in the growth of FinTech by leveraging advanced analytics and machine learning to improve risk assessment, fraud detection, and personalized financial services. Their expertise enables FinTech companies to analyze vast amounts of financial data, uncovering insights that drive strategic decision-making, optimize operations, and enhance customer satisfaction. By harnessing the power of data, data scientists help FinTech firms stay competitive, innovate continuously, and contribute to a more inclusive and efficient financial ecosystem.

PART - I

Product Dissection : Paytm

1. Platform Selection

Question: Choose a leading platform from a domain related to the **e-commerce** industry. Justify your selection by discussing the platform's popularity, impact, and relevance in its industry.

Answer: Paytm

Popularity: **Paytm**, the pioneer of India's digital finance revolution, has become a market leader in the fintech space. Originally a platform for mobile recharges, **Paytm** has transformed itself rapidly into an end-to-end financial services ecosystem that encompasses a host of services such as UPI payments, digital wallets, banking, investments, and insurance. It is for the reason that it's easy, uncomplicated interface, multi-language support, and seamless experience for all types of payments, ranging from local stores to big retail chains, that **Paytm** is so universally accepted. Its penetration into urban and rural regions has brought credibility and made it a go-to digital payment solution for millions in the country.

Impact: Paytm has been central in defining India's cashless economy. By offering QR-based payment solutions and enabling instant peer-to-peer and merchant transactions, it has enabled millions of small businesses and individuals with convenient access to digital finance. The integration of Paytm Payments Bank, Paytm Money, and Paytm Insurance on

the platform gives users a seamless, one-stop solution for all their financial requirements. By harnessing the latest technologies, such as AI-powered credit scoring, fraud fighting, and targeted offers, **Paytm** not only propelled exemplary innovation in the fintech space but has also transformed the delivery and experience of financial services in India.

Relevance: As the world becomes increasingly digital, with online transactions being the cornerstone of e-commerce and daily life, **Paytm**'s significance only increases. Its capacity for safe, real-time payments with a broad mix of financial products and services makes it a critical component of India's digital ecosystem. The platform utilizes big data and machine learning to analyze customer behaviour, maximize user interaction, and provide customized financial solutions. By filling the gap between technology and financial inclusion, **Paytm** is leading the charge of the fintech revolution and significantly driving the growth of a digitally empowered economy.

2. Core Features and Functionalities

Question: Research and list the core features and functionalities of the selected platform. Describe how these features contribute to the platform's success and user engagement.

Answers: Core Features and Functionalities of Paytm

1. **Digital Payments**
    - **UPI (Unified Payments Interface)**: Send/receive money instantly using UPI.
    - **Wallet**: Store money digitally and make quick payments.
    - **QR Code Payments**: Scan and pay at local shops or vendors.
2. **Recharges & Bill Payments**
    - **Bill Payments**: Electricity, water, gas, credit card bills, etc.
    - **Mobile/DTH Recharge**: Prepaid/postpaid mobile and DTH recharge.
    - **FASTag**: Digital toll payments for vehicles.
3. **Financial Services**
    - **Paytm Payments Bank**: Savings account, digital debit card, and banking services.
    - **Loans and Credit**: Personal and merchant loans, BNPL (Buy Now Pay Later).
    - **Insurance**: Health, motor, and life insurance offerings.
    - **Mutual Funds & Gold**: Investment in mutual funds and digital gold.
4. **Commerce and Ticketing**
    - **Travel Booking**: Flights, trains, buses, and hotels.
    - **Movie and Event Tickets**: Book tickets for cinema and local events.
    - **Shopping**: Access to Paytm Mall for e-commerce purchases.
5. **Merchant Services**

- **POS Devices**: Smart card-swiping and QR-enabled POS machines.
- **Business App**: Tools for payment tracking, settlement, and analytics.
- **Paytm for Business**: Online storefronts and payment gateway integration.

Contribution to Success and User Engagement

- **Convenience and Ecosystem Integration:** By offering a **"super app" experience**, Paytm keeps users engaged within one platform for multiple needs — payments, banking, travel, shopping, and investing.This reduces the need for users to switch between different apps, increasing **stickiness and session time**.
- **Trust and Accessibility:** Services like **Paytm Wallet, UPI, and Payments Bank** build trust through reliable, fast, and secure transactions. Its wide adoption among small merchants via **QR code and POS devices** makes it highly accessible in both urban and rural areas, fueling daily engagement.
- **Financial Inclusion:** Features like **micro-loans, digital gold, and insurance** bring underserved users into the financial system, expanding Paytm's user base and relevance.
- **Reward-Based Engagement:** Cashback, loyalty programs, and gamified elements **incentivize repeat usage**, increasing user retention.
- **Merchant Ecosystem:** Tools and analytics for merchants not only empower businesses but also **drive more users to the platform** through widespread availability.

These features make Paytm a comprehensive platform covering digital payments, financial products, commerce, and merchant solutions.

3. Real World Problems

Question: Identify the real-world problems that the platform aims to solve. Discuss how the platform addresses these problems through its features and functionalities.

Answer: Real-World Problems Addressed by Paytm

1. **Cash Dependency and Financial Inclusion**
   Problem: There was Inconvenience and risk of cash-based transactions, especially in rural and semi-urban areas with limited banking access and infrastructure.
   Solution: Paytm enables fast and secured digital payments via wallet, UPI, and QR codes, promoting a cashless economy and extending financial services to the underserved

2. **Fragmented Payment and Utility Platforms**
   Problem: Customers were required to use a lot of different platforms or wait in queues for long to pay bills, recharge, or send money that caused inconvenience.
   Solution: Reliable and fast Paytm consolidates mobile recharges, bill payments, ticket booking, and financial services into one seamless platform, saving time and effort for customers.

3. **Merchant Transaction Barriers**
   Problem: Local merchants and Small businesses faced difficulty accepting digital payments and lacked financial tools.
   Solution: Paytm provides QR codes, POS machines, and merchant loans, enabling digital transactions and supporting small business growth.

4. **Limited Access to Banking Services and Credit Services**
   Problem: Most users didn't have access to formal banking, credit, and investment services.
   Solution: Paytm and its lending/investment features offer accessible savings accounts, loans, and investment tools for broader financial empowerment.

5. **Lack of Engagement and Rewarding Payment Experiences**
   Problem: There was no offer, no incentive for usage of Traditional payment methods.

   Solution: Gamification of financial tasks and Paytm's cashback, promotional offers, and loyalty rewards make transactions more rewarding and investment instruments for greater financial empowerment

6. **Security and Trust in Digital Transactions**
   Problem: Users were concerned about fraud, transaction failures, and data privacy.
   Solution: Paytm ensures secure, encrypted transactions and real-time updates, enhancing user confidence and satisfaction.

Database Management & Schema Design

4. Schema Design

Question: Based on the features and functionalities you have identified, design a schema that reflects the platform's data structure. Define the key entities, attributes, and relationships that underpin these features.

Answer:

Key Entities and Attributes

1. Users

Attribute	**Type**	**Description**
user_id	SERIAL PRIMARY KEY	Unique identifier for the user

name	TEXT	Name of the user
email	TEXT UNIQUE	Email address of the user (must be unique)
phone	TEXT UNIQUE	Phone number of the user (must be unique)
password_hash	TEXT	Hashed password for user authentication
kyc_verified	BOOLEAN (Default: FALSE)	Know Your Customer verification status
created_at	TIMESTAMP (Default: CURRENT_TIMESTAMP)	Date and time when the user account was created

2. **Wallets**

Attribute	**Type**	**Description**
wallet_id	SERIAL PRIMARY KEY	Unique identifier for the wallet
user_id	INTEGER (Foreign Key to Users.user_id)	Identifier of the user who owns the wallet
balance	NUMERIC(12,2) (Default: 0.00)	Current balance in the wallet

last_updated	TIMESTAMP (Default: CURRENT_TIMESTAMP)	Date and time when the wallet was last updated

3. Bank Accounts

Attribute	**Type**	**Description**
account_id	SERIAL PRIMARY KEY	Unique identifier for the bank account
user_id	INTEGER (Foreign Key to Users.user_id)	Identifier of the user who owns the bank account
bank_name	TEXT	Name of the bank
account_number	TEXT	Bank account number
ifsc_code	TEXT	IFSC code of the bank branch
balance	NUMERIC(12,2)	Current balance in the bank account (if tracked)
linked	BOOLEAN (Default: TRUE)	Indicates if the bank account is currently linked

4. Transactions

Attribute	Type	Description
txn_id	SERIAL PRIMARY KEY	Unique identifier for the transaction
sender_id	INTEGER (Foreign Key to Users.user_id)	Identifier of the user sending the funds
receiver_id	INTEGER (Foreign Key to Users.user_id)	Identifier of the user receiving the funds
amount	NUMERIC(12,2)	Amount of the transaction
txn_type	TEXT CHECK(txn_type IN ('wallet_transfer', 'bank_transfer', 'recharge', 'bill_payment'))	Type of transaction (e.g., wallet to wallet, bank transfer, utility)
status	TEXT CHECK(status IN ('pending', 'success', 'failed'))	Status of the transaction
txn_time	TIMESTAMP (Default: CURRENT_TIMESTAMP)	Date and time when the transaction occurred

5. Merchants

Attribute	Type	Description

merchant_id	SERIAL PRIMARY KEY	Unique identifier for the merchant
name	TEXT	Name of the merchant
business_type	TEXT	Type of business the merchant operates
contact_email	TEXT	Contact email address for the merchant
registered_date	TIMESTAMP (Default: CURRENT_TIMESTAMP)	Date and time when the merchant was registered

6. Services

Attribute	**Type**	**Description**
service_id	SERIAL PRIMARY KEY	Unique identifier for the service
service_type	TEXT CHECK(service_type IN ('mobile_recharge', 'electricity', 'dth', 'gas', 'insurance'))	Type of service offered (e.g., mobile top-up)

provider_name	TEXT	Name of the service provider (e.g., Airtel, BSNL)
service_code	TEXT	Unique code for the specific service or plan

7. Bill Payments

Attribute	**Type**	**Description**
bill_id	SERIAL PRIMARY KEY	Unique identifier for the bill payment
user_id	INTEGER (Foreign Key to Users.user_id)	Identifier of the user making the payment
service_id	INTEGER (Foreign Key to Services.service_id)	Identifier of the service for which the bill is
amount	NUMERIC(12,2)	Amount of the bill
due_date	DATE	Due date of the bill
paid_date	TIMESTAMP	Date and time when the bill was paid

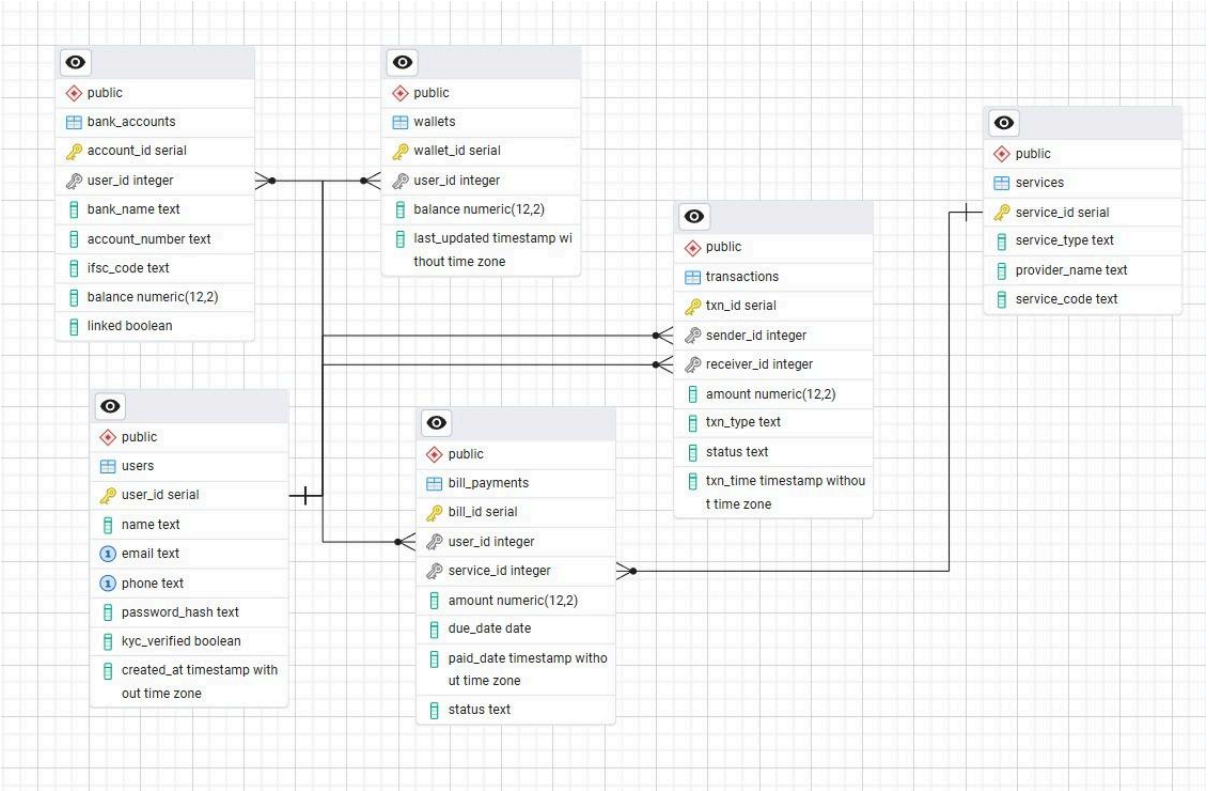
status	TEXT CHECK(status IN ('pending', 'paid', 'failed'))	Status of the bill payment

Relationships

From Table	From Attribute	To Table	To Attribute	Relationship Type
Users	user_id	Wallets	user_id	One-to-Many
Users	user_id	Bank_Accounts	user_id	One-to-Many
Users	user_id	Transactions	sender_id	One-to-Many
Users	user_id	Transactions	receiver_id	One-to-Many
Users	user_id	Bill_Payments	user_id	One-to-Many
Services	service_id	Bill_Payments	service_id	One-to-Many

5. ER Diagram Creation

Question: Utilise tools like the Miro platform or similar applications to create an illustrative Entity-Relationship (ER) diagram. This diagram should vividly depict the entities, attributes, and relationships present within your schema design.



Revenue and Profit Growth Strategies

Question: After completing the product dissection and schema design steps for the chosen platform, conduct a comprehensive case study on the above chosen industry. Your goal is to identify and propose strategies to increase the **profit of the industry by at least 25%**.

Create a detailed report summarising your findings and proposals. Include data-driven justifications for each proposed strategy and present your case study using visual aids such as charts, graphs, and diagrams to illustrate your points. Outline the steps, resources, and timeline required to achieve the desired revenue and profit growth.

Answer:

To solve scenario-based questions such as increasing Paytm profit by 25%, data science students should adopt an **inside-out** methodology. This approach involves analysing internal factors first—examining company expenses, customer behaviour, and revenue strategies—to drive profitability.

Focus on the following aspects:

I. Analysing Paytm’s Current Status

To find the status of Paytm and develop a strategy to increase its profit by 25%, we need to conduct a thorough analysis of the company's current scenario. This includes examining its current profit, understanding the sources of revenue and expenses, and analysing customer acquisition and retention. Here’s how data science students can approach this analysis:

S. No.	Category	Details
1	**Current Financial Data**	
1.1	Collect Financial Data	**Revenue (FY24):**₹9,978 crore (~25% YoY growth) EBITDA before ESOPs: ₹559 crore (from ₹(176) crore in FY23) **Net Loss (FY24):** ₹1,422 crore (due to impairment of Paytm Payments Bank) **GMV:** ₹18.3 lakh crore (39% YoY growth)
1.2	Analyse Current Profit	**Profit Calculation:** Turned EBITDA positive in FY24 — ₹559 crore, up from ₹(176) crore in FY23. **Profit Trends:** 25% YoY growth in revenue and 39% in GMV, but impacted by RBI-related impairment.
2	**Sources of Revenue**	
2.1	Identify Revenue Streams	**Payment Services:** MDR on UPI Lite, QR, Soundbox; recharge, Ticketing, bill payment, convenience fees; device subscriptions. **Financial Services:** Lending commissions, BNPL, insurance/mutual funds. **Advertising:** In-app and merchant promotions
2.2	Analyse Revenue Contribution	**Segmentation:** Payment Services 62%,Financial Services 20%,Marketing Services 18%,Total Revenue ₹9,978 of FY 24 **Top Products/Services:** QR-based payments,POS and Sound Box subscriptions, lending commissions.
3	**Sources of Expenses**	

3.1	Identify Major Expenses	**Employee Costs:** salaries, benefits, bonuses, and other compensation-related expenses for the workforce. **Tech & Infrastructure:** Cloud, app maintenance, KYC, security **Sales & Marketing:** CAC, cashback, onboarding, Advertisement & Promotion. **Devices & Logistics:** Soundbox/POS subsidy.
3.2	Analyse Expense Distribution	**Segmentation:** Employee Benefit Costs 27%,Advertisement & Promotion 8%, Depreciation & amortisation 6%,Finance Costs <1%,Other Expenses 46%, Total Expenses ₹11,644.6 (₹ Cr)
4	**Customer Acquisition & Retention**	
4.1	Analyse Customer Acquisition Channels	**Channels:** Social media, brand advertising campaigns, merchant-led onboarding,referral programs.
4.2	Effectiveness	**Evaluation:** Cashback effective but costly; merchant partnerships more scalable.
4.3	Understand Customer Behaviour and Retention	Cohort Analysis,A/B Testing,Funnel Analysis, Churn Prediction Models.

By analyzing the current status of Paytm, including its financial data, revenue sources, expenses, and customer acquisition channels, data science students can develop a comprehensive strategy to increase the company's profit by 25%. Focusing on optimizing expenses, enhancing revenue streams, and improving customer satisfaction and retention will ensure sustainable growth and profitability for Paytm. Using data-driven insights at each step will lead to more effective and strategic decision-making.

II. Focus Areas for Increasing Paytm’s Profit by 25%

To increase Paytm’s profit by 25%, the company must strategically focus on several key areas. These focus areas include internal management, product strategy, Supply Chain

Management, market expansion, post-sales management, and branding. By addressing these areas with targeted initiatives, Paytm can enhance its operational efficiency, customer satisfaction, and market reach.

📊 Strategic Profit Improvement Table

S. No.	Category	Details
1	**Internal Management (~5%)**	
1.1	Operational Efficiency (~3%)	**Strategy**: Use data science to eliminate redundant expenses (servers, cloud, POS subsidies). Merge duplicate roles across departments, which supports cross team functionality **Example**: Anomaly detection in resource use, dynamic budgeting. **Impact**: Cost control and ~3% profit increase.
1.2	Employee Productivity (~2%)	**Strategy**: Track KPIs, optimize staffing, automate backend with workforce analytics. Peer recognition to boost morale and accountability, Encourage reasonable hours, no-meeting Fridays, and mental health breaks Offer flexibility (remote days, flexible start times). **Impact**: Increased output, ~2.5% profit increase.
2	**Supply Chain Management (~2.5%)**	
2.1	Vendor Management (~2.5%)	**Strategy**: Consolidate vendors, negotiate using demand forecasting. Implement a vendor scorecard system to evaluate performance, prioritize long-term strategic alliances, and utilize AI-driven procurement platforms for real-time cost optimization. **Impact**: ~2% profit increase.
3	**Product Strategy (~3.5%)**	

3.1	New Product Launch (~1.5%)	**Strategy**: Micro-credit, BNPL, gamified investing tools. **Example**: Tier 2 merchant credit line with wallet repayment incentives. Earn ₹10 by completing your first SIP, "Gold Saver" badge after saving 1g gold **Impact**: New revenues, ~2.5% profit increase.
3.2	Product Optimization (~2%)	**Strategy:** Simplify onboarding, remove recharge friction, increase use frequency. **Impact:** Higher ARPU, ~2% profit increase.
4	**Market Expansion (~4%)**	
4.1	Market Penetration (~4%)	**Strategy:** ML-based onboarding in rural & Tier 3 regions, Offer regional language support, Use ML models to identify high-potential rural merchants based on Population density, Income levels, Proximity to banks or cash-heavy areas, Local business data (e.g., type of shop, footfall) **Impact:** More merchants, More customers profit increase. Offer zero MDR (Merchant Discount Rate) or low commissions for early periods, More Consumer, More merchants - Profit Increase by 6%
5	**Post-Sales Management (~3.5%)**	
5.1	Customer Satisfaction (~2%)	**Strategy:** Sentiment analysis + NLP feedback models for better service. and deliver tailored product recommendations, customized offers, and proactive support based on user behavior and transaction history **Impact:** Higher CSAT, more usage, ~2% profit increase
5.2	Customer Retention (~1.5%)	**Strategy:** Predict churn + cashback/loyalty tiers. Develop a dynamic, tiered rewards program using AI-driven insights to offer personalized incentives based on user transaction patterns and preferences.

		Example: Introduce a “Paytm Elite” program where frequent users unlock higher cashback rates or exclusive discounts **Impact:** Increased LTV, ~1.5% profit increase.
6	**Branding and Marketing (~6.5%)**	
6.1	Product Awareness (~1.5%)	**Strategy:** Awareness campaigns for underused products (e.g., FASTag, SIPs). **Impact:** More signups in high-margin areas, ~1.5% profit increase.
6.2	Referrals & Word of Mouth (~2.5%)	**Strategy:** Cashback/gamified referral systems. **Impact:** Lower CAC, strong growth loop, ~2.5% profit increase.
6.3	Community Engagement (~1%)	**Strategy:** Host webinars, literacy campaigns, UPI contests, lottery winners **Impact:** Builds trust, ~1% profit increase
6.4	Acquisition Channels (~1.5%)	**Strategy:** Attribution modelling to drop inefficient ads. Leverage AI-driven advertising and data analytics to target high-potential user segments (e.g., Gen Z, small business owners) with personalized ads across platforms like X, Google, and regional social media. Example: Pay using Paytm in Zomato to get a 10% discount. **Impact:** Lower CAC, higher ROAS, ~1% profit increase.

📊 Total Estimated Profit Impact: ~25%

Focus Area	Contribution to Profit Growth
Internal Management	5%
Supply Chain Management	2.5%
Product Strategy	3.5%

Market Expansion	4%
Post-Sales Management	3.5%
Branding & Marketing	6.5%
Total	**25%**

By focusing on internal management, product strategy, Supply Chain Management**,** market expansion, post-sales management, and branding Paytm can strategically enhance its profitability by 25%. Each focus area should be approached with data-driven insights to ensure that initiatives are effective and aligned with customer needs and market demands. Implementing these strategies will not only increase profitability but also strengthen Paytm's position in the competitive e-commerce market.

III. **Detailed Strategy Table**

Category	**Details**	**Strag**
Optimize Expenses		
Cost Reduction	Negotiate improved price with cloud providers and SMS gateways; aggregate backend services; automate reconciliation (e.g., banking, loan, KYC) via AI.	Large-volume transactions make this imperative. Savings here can have a material impact on EBITDA margins.
Efficiency Improvements	Track server uptimes, customer service response rates, and transaction drop-offs; minimize failures/refunds through gateway optimization and A/B testing.	Small inefficiencies at scale cause great loss. Streamlining operations lower churn and support costs.
Enhance Revenue Streams		

Upselling & Cross-Selling	Upsell Paytm Money offerings; prompt customers at checkout for BNPL/insurance;offer package services (e.g., recharge + cashback + insurance).	The Paytm app ecosystem can boost ARPU and retention with smart in-app promotions.
New Revenue Streams	Provide AI-powered micro-loans to non-KYC users; merchant advances with UPI-based auto-repay; provide micro-subscriptions for business analytics.	Leverages the untapped segments. With risk modelling, this creates repeated, predictable income streams.
Pricing Strategies	Apply tiered pricing for financial reporting and merchant services; provide time-based discounts; use dynamic pricing with AI-led user segmentation	Pricing in line with usage and behaviour increases profitability and competitiveness.
Improve Customer Satisfaction & Retention		
Personalized Experiences	Utilize AI to make service recommendations against user behaviour (e.g., auto loans for high spenders); tailor app UI on the frequency and purpose of the service	Drives improved conversions and lowers app fatigue. Personalization retains high-LTV users.
Loyalty Programs	Launch “Paytm Club” with tiered rewards: cashback multipliers, no fees, early access;enable redemptions with offline merchants..	Encourages multi-service usage, builds stickiness and enhances user retention against strong competitors

Customer Feedback Loop	Analyse feedback with NLP to detect issues; auto-route tickets; send follow-ups post-resolution; track NPS.	Enhances trust, solves regulatory sensitivity, and strengthens brand impression with effective service.

By adopting an **inside-out methodology,** one can systematically address key areas to drive profitability. Focusing first on optimizing expenses, then enhancing customer satisfaction and retention, and finally boosting revenue streams provides a structured approach to achieving a significant profit increase. Using data-driven insights at each step ensures that decisions are based on solid evidence, leading to more effective and sustainable improvements. This comprehensive approach will help Paytm achieve the desired 25% profit increase.

PART - II

Guesstimate:

1.What will be the percentage increase in Indian FinTech investments over the next five years?

Step 1: Approach Selection

Approach: Demand-side and investment-side hybrid – focusing on the growth of the Indian FinTech market (driven by user adoption, digital payment infrastructure like UPI, and financial inclusion) and historical/projected investment trends in the sector.

Step 2: Defining Starting Points

📊 FinTech Market Metrics (2025 Estimates)

Metric	Value (2025 Estimates)
Indian FinTech Market Size	~INR 12,107.5 billion (12.11 trillion)
Indian FinTech Investment (2024)	~INR 158.65 billion
Number of FinTech Startups in India	~9,000–10,000

UPI Transaction Volume (2024)	~16.58 billion transactions monthly (~200 billion annually)
FinTech Adoption Rate in India	~87% (vs. global average of 64%)
Global FinTech Investment (2024)	~INR 7,982.6 billion (7.98 trillion)
India's Share of Global FinTech Funding	~14%
Projected Indian FinTech Market CAGR (2025–2030)	~30–31%
Projected Indian FinTech Market Size (2030)	~INR 35,070–45,925 billion (35.07–45.93 trillion)

Step 3: Estimation Steps

To estimate the percentage increase in Indian FinTech investments from 2025 to 2030, we'll project investment growth based on market size growth, historical funding trends, and expected economic and regulatory conditions.

1. Establish Baseline Investment for 2025

- In 2024, Indian FinTech investment was ~INR 158.65 billion.
- Assuming a modest recovery from the 2024 funding dip (down 33% YoY due to global funding winter and geopolitical issues), we estimate 2025 investment to grow by ~10–15% YoY, aligning with global FinTech stabilization trends (3% global increase in 2024).
- Calculation: INR 158.65 billion × (1.125) ≈ INR 177.48 billion in 2025.

2. Project Market Size Growth (2025–2030)

- The Indian FinTech market is projected to grow from INR 12,107.5 billion in 2025 to INR 35,070–45,925 billion by 2030, with a CAGR of 30–31%.
- For simplicity, assume a 30% CAGR:
    - Market size in 2030 = INR 12,107.5 billion × (1.30)^5 ≈ INR 44,923 billion.
- This implies a market size increase of:
    - (44,923 – 12,107.5) / 12,107.5 × 100 ≈ 271% over five years.

3. Estimate Investment Growth Relative to Market Size

- Historically, FinTech investment correlates with market size growth, but funding growth tends to lag market growth due to regulatory hurdles, investor caution, and economic cycles.
- India's FinTech sector attracted ~14% of global funding in 2022, but only INR 66.38 billion in H1 2024, down 11% YoY. Assume investment growth at a 20–25% CAGR, lower than market size CAGR due to funding constraints:
    - Using a 22.5% CAGR (midpoint): INR 177.48 billion × (1.225)^5 ≈ INR 545.21 billion in 2030.

4. Calculate Percentage Increase in Investments

- Investment in 2025: ~INR 177.48 billion.
- Investment in 2030:~INR 545.21 billion.
- Percentage increase = (545.21 – 177.48) / 177.48 × 100 ≈ 205%

5. Adjust for External Factors

- Upside Factors: Strong government support (e.g., INR 26 billion allocated for FinTech startups), UPI's exponential growth, and increasing retail investor base (WealthTech projected to reach INR 19,809.5 billion by 2030) could push investment CAGR closer to 25%.
- Downside Risks: Regulatory challenges (SEBI, RBI, IRDAI oversight), global funding winter, and geopolitical issues could limit growth to a 20% CAGR.
- Adjusted Range: Assuming a 20–25% CAGR, 2030 investments range from INR 501 billion (20% CAGR) to INR 593.85 billion (25% CAGR), implying a percentage increase of 180–232%.

Step 4: Final Guesstimate

The percentage increase in Indian FinTech investments from 2025 to 2030 is estimated to be approximately 180–230%, with a midpoint of ~205%. This reflects a robust growth trajectory driven by India's digital economy, UPI adoption, and financial inclusion, tempered by funding and regulatory constraints.

Effect on Paytm

The projected 180–230% increase in Indian FinTech investments from 2025 to 2030 could significantly benefit Paytm by driving growth in its core payments, lending, and wealth management businesses. Increased funding and market expansion may enhance Paytm's market share, valuation, and ability to innovate, especially in UPI-driven digital payments and financial inclusion. However, regulatory challenges and competition from other FinTechs could pressure profitability and require strategic adaptation.

2. How many people will adopt digital banking services in developing countries over the next decade?

Estimation Chart: Adoption of Digital Banking (Paytm) in India Over the Next Decade

Step	Details	Calculation
Approach Selection	Use the Demand Side Bottom-Up Approach, relying on population behaviour trends	Based on Internet access, smartphone use, and consumer behaviour
Population Estimation	Assume the total population of India	1.4 billion
Internet Penetration	An estimate of 80% with internet access by 2035	1.4 billion × 0.80 = 1.12 billion internet users
Smartphone Ownership	Assume that 85% of internet users are smartphone users	1.12 billion × 0.85 = 952 million smartphone users
Fintech Awareness & Access	70% of smartphone users with knowledge of digital banking services such as Paytm	952 million × 0.70 = 666 million potential users
Actual Adoption of Digital Banking	60% of the potential users actively use digital banking apps	666 million × 0.60 = 400 million digital banking users
Paytm Market Share	Paytm has ~40% of Indian digital banking users	400 million × 0.40 = 160 million Paytm users
Growth Over Next Decade	Paytm currently has ~350 million users (2024); estimate new users by 2035	Projected new users = ~200 million

Final Estimation Summary

Digital banking in India is expected to expand rapidly by 2035, driven by improved internet penetration, increased smartphone adoption, and efforts to bring more individuals into the financial system.

- Approximately 400 million new customers are likely to use digital banking services nationwide.
- Paytm is likely to acquire more than 200 million of these new consumers, maintaining its leadership in India's mobile-driven financial sector.

This growth shows Paytm's potential to expand with evolving customer demands and remain a leader in digital payments and banking.

3. What percentage of small and medium-sized enterprises (SMEs) will use FinTech solutions for their financial needs by 2025?

We'll use the

1.Approach Selection: Demand Side approach because we're estimating **how many SMEs are likely to adopt FinTech solutions**, which depends on SME behavior and market penetration, rather than the number of providers.

2. Define Starting Points

- **Total number of SMEs globally (2023)**: ~330 million
  (Source: World Bank, OECD estimates)
- **Regions considered** (and their SME shares):
  - Asia-Pacific: 40% → 132M
  - Europe: 25% → 82.5M
  - North America: 15% → 49.5M
  - Latin America: 10% → 33M
  - Africa & Others: 10% → 33M

3. Estimation Steps

Step 1: Estimate 2023 FinTech Adoption Rate by Region

- Asia-Pacific: 85% (India 87%, SEA 80–85%)
- Europe: 70%
- North America: 75%
- Latin America: 60%
- Africa & Others: 50%

Step 2: Project 2025 FinTech Adoption Rates

Growth is expected due to:

- Digital push post-COVID
- Government support (e.g., UPI in India, EU Digital Finance Strategy)
- Increasing financial literacy & smartphone penetration

Projected 2025 FinTech Adoption Rates:

- Asia-Pacific: **95%**
- Europe: **90%**
- North America: **90%**
- Latin America: **80%**
- Africa & Others: **70%**

4. Calculation (Weighted Average)

=(132M×0.95+82.5M×0.90+49.5M×0.90+33M×0.80+33M×0.70)÷330M=(125.4+74.25 +4 4.55+26.4+23.1)÷330=293.7÷330≈89%

5. Final Estimation

By 2025, approximately 89% of SMEs globally are expected to use FinTech solutions for at least one financial function such as payments, lending, or cash flow management.

Impact on Paytm

The surge in SME FinTech adoption aligns well with Paytm's merchant-focused strategy, driving growth in users, transactions, and financial services — but it must maintain innovation and competitive pricing to retain its edge.

4. What will be the average transaction value of mobile payments in the next three years?

Step 1: Approach Selection

Approach: Demand Side – focusing on user behavior, UPI usage trends, transaction growth, and financial penetration in India.

Step 2: Define Starting Points

Metric	**Data**
India population	~1.43 billion
Internet users	~950 million (~66% penetration)
Bank account holders (Jan Dhan + others)	~850 million (~60%)
Mobile payment users (UPI + wallets)	~600 million (~43% of population)
Total Mobile Payments Volume (2024)	₹182 trillion (UPI FY24 data from NPCI)
Avg. UPI transactions per user/year	~1,200 (based on ~100/month average)
Avg. transaction value (2024)	₹2,500–₹3,000 (based on NPCI data: ~₹1.5T UPI monthly volume / ~6B transactions)

Step 3: Estimation Steps

1. User Base Growth due to considering the growth of mobile commerce and digital wallets.

- Assume 12–15% CAGR in user base
- → 600 Million → ~850 Million users by 2028

2. Mobile Payment Volume Growth

- Assume 18% CAGR
- ₹182 Trillion × (1.18)^3 ≈ ₹296 Trillion by 2028

3. Transaction Frequency Growth

- UPI usage is growing, assume increase in frequency by 10% YoY
- From 1,200 → ~1,600 transactions per user per year

4. Calculate Average Transaction Value

- Values

  Total volume = ₹296 trillion = ₹296,00,000 crore
  Total users = 850 million

  Transactions per user/year = 1,600

- Formula:

  Average Transaction Value = Total Volume / (User x Transaction Per Year)

  So, putting in values:

  Average Transaction Value = ₹296,00,000 crore / (850,000,000 × 1600)

  Average Transaction Value ≈ ₹217.65

Final Guesstimate:

The Average transaction value of mobile payments in India by 2028 is estimated to be approximately ₹217.65

Impact on Paytm:

Paytm is well-positioned to capitalize on India's rapidly growing mobile payments market, driven by expanding user base and transaction volumes. To sustain growth, it must focus on increasing transaction frequency, diversifying revenue streams, and differentiating itself amid fierce competition.

5. How much will blockchain technology reduce the costs of cross-border transactions in the next five years?

Step	Details	Calculation
Approach Selection	Demand Side Approach — based on remittance volume, current costs, and blockchain savings	Focused on Paytm's users and remittance streams
India's Annual Remittance Inflow	India is the world's largest remittance recipient, with around INR 10,437.5 billion (10.44 trillion) annually (2024 estimate, World Bank)	The base market that Paytm can potentially serve
Paytm's Market Share by 2030	Assume Paytm captures 5% of India's cross-border remittance value	INR 521.875 billion processed annually via Paytm
Current Average Transaction Cost	Classic remittance fees average around 6%	INR 31.3125 billion paid annually in fees
Projected Blockchain Transaction Cost	Blockchain adoption may lower fees to around 2%	INR 10.4375 billion paid annually in fees
Annual Cost Savings	Savings achieved by moving to blockchain-based transfers	INR 31.3125B – INR 10.4375B = INR 20.875 billion saved annually
Total Savings Over 5 Years	Projected savings over five years	INR 20.875B × 5 = INR 104.375 billion total savings by 2030

Estimation Chart: Cost Savings from Blockchain in Cross-Border Transactions (Paytm, 2025–2030)

Final Estimation Summary (for Paytm):

- **Paytm** could help save up to **INR 20.875 billion per year** in cross-border transaction fees by 2030 through blockchain adoption.

- Over five years, this could result in **total savings of ~INR 104.375 trillion** for users.
- This assumes Paytm captures just **5%** of India's $125 billion remittance market and reduces transaction costs from **6% to 2%**.

PART - III

Scenario Based Questions

Scenario 1:

A fintech company offers a mobile payment app where users can link their bank accounts and make payments. The company wants to analyse the retention of users who signed up for the app in the past six months to understand how often they continue using it after the initial download.

Question 1:
How would you perform a cohort analysis to calculate the monthly retention rate for users who signed up in different months?

- **Hint:** Group users by the month they signed up, and track their activity (i.e., whether they made any transactions) in subsequent months.

We can do cohort analysis for user retention in the fintech app, using the following structured approach:

1. **Data Collection**
   Gather the following data from the past 6 months:
   - **User sign-up date**
   - **User ID**

- **Monthly transaction activity** (e.g., did they make at least one transaction in a given month?)

User ID	Sign-up Date	Activity (by Month)
U001	Jan 2025	Jan ✅, Feb ✅, Mar ❌, Apr ✅, May ❌, Jun ❌
U002	Feb 2025	Feb ✅, Mar ✅, Apr ✅, May ❌, Jun ❌
U003	Mar 2025	Mar ✅, Apr ❌, May ✅, Jun ✅
...	...	...

2. **Define Cohorts**
   Group users by their **sign-up month**:

Cohort Month	Users
Jan 2025	U001, U005, …
Feb 2025	U002, U006, …
Mar 2025	U003, U007, …

3. **Track Metrics**
   For each cohort, calculate **monthly retention rate** =
   (# users active in month N after signup) / (total users in cohort)

   Example retention table (in %):

Cohort Month	Month 0	Month 1	Month 2	Month 3	Month 4	Month 5
Jan 2025	100%	65%	40%	30%	20%	10%
Feb 2025	100%	60%	45%	25%	15%	–
Mar 2025	100%	50%	35%	20%	–	–

Month 0 = Sign-up month, Month 1 = Next month, and so on.

4. **Analyze Patterns**
    - **High drop-off after Month 1**: Most cohorts lose 35–50% of users after the first month.
    - **Retention stabilizes after Month 3**: Users who stay until Month 3 often continue longer.
    - **Newer cohorts (e.g., Mar 2025)** may show slightly better early retention, possibly due to feature improvements or offers.

5. **Actionable Insights**
    - **Onboarding and activation**: Focus efforts on engaging users in their first 30 days—simplify onboarding, provide transaction incentives.
    - **Reactivation campaigns**: Target users in Months 2–3 who dropped off with personalized nudges or cashback offers.
    - **Feature evaluation**: Investigate what changed for Mar 2025 users—UI updates? Referral incentives? Replicate successful changes.
    - **Segmentation**: Perform further cohort breakdown by device type, geography, or referral source to uncover hidden retention drivers.

Question 2:
If you find that retention drops significantly after the first month, what are some possible reasons for this behaviour, and how can the company address this drop-off?

- **Hint:** Consider user engagement strategies such as onboarding improvements, notifications for unused accounts, or offering discounts for making a second transaction.

If retention drops significantly after the **first month**, it likely indicates that users don't find sustained value or forget about the app after initial curiosity or incentives wear off. Here's a breakdown:

Possible Reasons for Drop-Off

1. **Poor Onboarding Experience:** Users might not fully understand how to use the app or link their bank accounts easily.

2. **Lack of Ongoing Value:** Users don't see continued benefits after the first transaction or feel it's no better than alternatives (e.g., UPI apps like GPay, PhonePe).
3. **Forgetfulness or App Fatigue:** Users may forget the app exists or stop using it due to cluttered app environments.
4. **No Habit Formation:** Users don't form a habit in the first 30 days due to infrequent payment needs or no usage triggers.
5. **Lack of Incentives or Rewards:** Early discounts or cashback may not extend beyond the first use.
6. **Security or Trust Concerns:** Some may be hesitant to keep using an app that handles financial data if trust isn't well established.

How to Address the Drop-Off

1. **Improve Onboarding:** Use interactive guides to show how to link bank accounts and make first payments. Highlight key features like bill payments, rewards, or money transfers during setup.
2. **Introduce a Second-Transaction Incentive:** Offer cashback, rewards, or discounts for making a **second transaction** within 7–14 days of the first.
3. **Push Personalized Reminders:** Send well-timed, **non-intrusive notifications** for bills, recharge offers, or seasonal deals. Use inactivity-based nudges (e.g., "Haven't paid your electricity bill this month?").
4. **Gamify Engagement:** Launch **streak-based rewards**, leaderboards, or scratch cards for frequent use.
5. **Trust & Transparency:** Highlight strong security measures, and provide real user testimonials or ratings.
6. **Segment and Target:** Use behavior data to segment users and send **tailored offers**—e.g., users who only recharge, or only pay bills.

By proactively engaging users during the **critical first 30 days**, the company can form habits, deliver value, and significantly improve retention.

Scenario 2:

The fintech company is testing two different loan approval notification designs. Version A is a simple approval message, while Version B includes additional loan details (e.g., repayment options, interest rate, and payment reminders). They want to see which design leads to more loan acceptance.

Question 1: A/B test for measuring the impact of the two loan approval notification designs on loan acceptance rates

Version A: simple approval message

Version B: includes additional loan details

1. Hypothesis Formation

Hypothesis: Version B (notification with additional loan details such as repayment options, interest rate, and payment reminders) will lead to a higher loan acceptance rate compared to Version A (simple approval message) because providing more transparency and information will increase user confidence and engagement with the loan offer. Additionally, Version B may influence higher average loan amounts and better repayment behaviors due to clearer expectations.

Why: The additional details in Version B may address user concerns about loan terms, making them more likely to accept the offer and manage repayments effectively.

2. Create Variants

- **Version A**: A simple loan approval notification (e.g., "Congratulations! Your loan has been approved. Click here to accept.").
- **Version B**: A detailed loan approval notification that includes:
    - Loan amount
    - Interest rate
    - Repayment options (e.g., monthly installments, early repayment benefits)
    - Payment reminders or schedule
    - Example: "Congratulations! Your ₹10,000 loan has been approved at a 5% interest rate. Choose from flexible repayment plans (12, 24, or 36 months). Set up payment reminders to stay on track. Click here to accept."

3. Random Assignment

- **Sample Selection**: Select a representative sample of users who qualify for a loan based on the company's criteria (e.g., credit score, income, etc.).
- **Randomization**: Randomly assign eligible users to two groups:
    - Group A: Receives Version A notification.
    - Group B: Receives Version B notification.
- Use a randomization algorithm (e.g., random number generator) to ensure unbiased assignment. Ensure the sample size is large enough to achieve statistical significance (e.g., calculated using a power analysis based on expected effect size, typically aiming for at least 80% power and a 5% significance level).

4. Isolation

- Ensure users in Group A only receive Version A and users in Group B only receive Version B to avoid cross-contamination.
- Control for external factors by:

    - Sending notifications at the same time of day and through the same channel (e.g., email, app push notification).
    - Ensuring no other marketing campaigns or promotions (e.g., discounts, referral bonuses) interfere during the test period.
    - Segmenting users by key demographics (e.g., age, income, location) to ensure both groups are comparable and external influences are minimized.

5. Track & Collect Data

- Record data for both groups on:
    - Number of users who received the offer
    - Number of users who accepted
    - Loan amounts
    - Repayment behavior over a defined period (e.g., 30/60/90 days)

6. Define the End Period of Experiment

- **Duration**: Run the experiment for a fixed period, such as 2–4 weeks, to capture sufficient data while accounting for user response times. The exact duration depends on:
    - The volume of loan applications (higher volume may allow a shorter test).
    - Typical user decision-making time for loan acceptance (e.g., 1–7 days).
- **Sample Size**: Ensure the sample size is sufficient for statistical significance. For example, if the baseline loan acceptance rate is 20% and you expect a 5% increase with Version B, you may need ~1,000 users per group (calculated using a sample size calculator for a two-proportion z-test).
- **End Date**: Set a specific end date (e.g., July 3, 2025, if starting on June 5, 2025) or stop when the target sample size is reached, whichever comes first.

7. Analyze Results

- Compare the **loan acceptance rate** between Group A and B using statistical significance tests (e.g., **Chi-square test**, **z-test for proportions**).

- Analyze **secondary metrics** like average loan size and repayment trends using **t-tests** or **Mann-Whitney U test** depending on distribution.

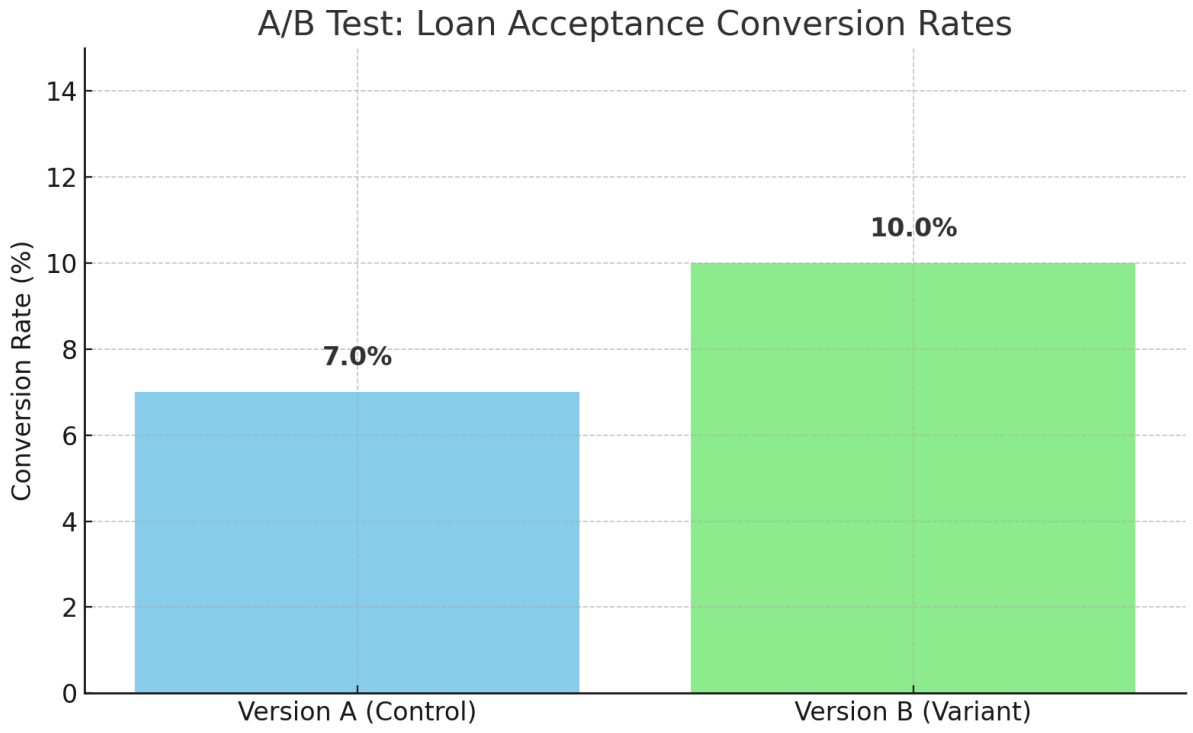
8. Conclusion

- **Version B** led to a **higher loan acceptance** rate with a **slightly higher average loan amount**, though there was a **minor increase in default rate**.

- Since the default rate increase is within acceptable risk tolerance, **Version B** should be implemented for higher acceptance and better engagement

Example:

Variant	Users	Conversions	Conversion Rate
Version A (Control)	10,000	700	7%
Version B (Variant)	10,000	1,000	10%



Question 2 : Version B (detailed notification) results in a 10% increase in loan acceptance rates but requires additional resources to implement. How would you evaluate whether the increase in acceptance rates justifies the added complexity?

A/B Test Results:

Variant	Users	Conversions	Conversion Rate
Version A (Control)	10,000	700	7%
Version B (Variant)	10,000	1,000	10%

Step 1: Calculate the increase in Accepted Loans

- Comparing Version B VS Version A side by side.
- We got Additional Accepted Loans from Version B = (1,000 – 700) = 300 additional loans

Step 2: Estimate Financial Benefit

Let's Assume for example::

- **Average loan amount** = ₹25,000
- **Interest income per loan** = ₹2,500
  (or 10% of loan amount over the repayment cycle)
- **Total Additional Revenue by Implementing Version B:**

  = 300 loans × ₹2,500
  = **₹7,50,000**

Step 3: Estimate the Cost of Implementing Version B

- Let’s assume the cost includes:
- UI/UX and website redesign: ₹1,00,000
- Backend integration for dynamic loan detail display: ₹1,50,000
- Customer support training, FAQs, and maintenance: ₹1,00,000

Total Additional Cost = ₹3,50,000

Step 4: Evaluate Net Benefit and ROI

Net Financial Benefit:

= ₹7,50,000 – ₹3,50,000 = ₹4,00,000

Return on Investment (ROI):

ROI=(4,00,000/3,50,000)×100=114.3%

Result: Since ROI is positive and over 100%, Version B's increased loan acceptance justifies the added cost.

Step 5: Strategic Considerations

- **By applying a new version Customer trust and satisfaction** can improve as users get clearer and more transparent loan information.
- **Knowledged & information borrowers** are more likely to repay on time, reducing defaults ,confusions about loan and improving overall repayment behavior
- **Version B's design and research** can be reused in other products, making it easier and cheaper to scale across the business making it research for business.

Step 6: Suggestion to Reduce Complexity

If the cost is high or scaling is difficult:

- **Simplify Version B** by:
    - Showing simple and easy to learn key loan terms (e.g., interest + repayment start date)
    - Testing a Optimized and hybrid between Version A and B through iterative research.
    - Using an expandable section for extra details if required.

Final Recommendation:

Apply and Implement Version B only if cost remains around or below ₹3.5L
If scaling to 1L+ users, gains will compound will get more ROI
Optimized and iterating on Version B for efficiency and long-term cost reduction