

Lesson 1: Introduction to Fintech

Module 1: Fintech and Innovation

Digital Finance Course

December 12, 2025

What is Fintech?

Definition:

- Financial Technology (“Fintech”)
- Technology-enabled financial services innovation
- Intersection of finance, technology, and business models

Core Characteristics:

- Customer-centric design
- Digital-first approach
- Data-driven decision making

Not Just About Technology:

- Business model innovation
- User experience transformation
- Market structure disruption

Evolution of Term:

- Pre-2000s: Back-office technology
- 2010s: Startup-driven disruption
- 2020s: Embedded finance, DeFi

Key insight: Fintech is about reimagining financial services, not just digitizing existing processes.

Era 1 (1866-1967): Foundation

- 1866: First transatlantic cable
- 1918: Fedwire launch
- 1950: First credit card (Diners Club)
- 1967: First ATM (Barclays, London)

Era 2 (1967-2008): Digitization

- 1973: SWIFT established
- 1994: First online banking
- 1998: PayPal founded
- 2007: First iPhone launched

Era 3 (2008-Present): Disruption

- 2008: Global Financial Crisis
- 2009: Bitcoin whitepaper
- 2015: Neobank explosion
- 2020: Embedded finance rise
- 2023: Generative AI in finance

Key Inflection Point:

- Post-2008: Trust erosion in banks
- Smartphone enabling mobile-first services

The 2008 financial crisis was the catalyst for the modern fintech revolution.

Technology Enablers:

- Cloud computing infrastructure
- Mobile ubiquity (5B+ smartphones)
- API economy and microservices
- AI and machine learning

Regulatory Drivers:

- Open banking mandates (PSD2)
- Sandbox frameworks (FCA, MAS)
- Digital identity standards (eIDAS)

Market Forces:

- Millennial and Gen Z preferences
- Underbanked populations (1.4B globally)
- COVID-19 digital acceleration
- Network effects and platform economics

Economic Factors:

- VC investment driving innovation
- Cost pressure on incumbents
- Declining transaction costs

Multiple forces converged post-2008 to create the perfect environment for fintech disruption.

Core Players:

- Fintech startups (Stripe, Revolut, Wise)
- Incumbent banks (JPMorgan, DBS)
- Big Tech (Apple, Google, Ant Group)
- Payment networks (Visa, Mastercard)

Enablers:

- Infrastructure (Plaid, Adyen)
- Core banking (Mambu, Thought Machine)
- Cloud providers (AWS, Azure, GCP)

Capital Providers:

- Venture capital (Sequoia, a16z)
- Private equity (KKR, Blackstone)
- Corporate venture arms

Support Infrastructure:

- Regulators (ECB, Fed, FCA, BaFin)
- Accelerators (Y Combinator, Techstars)
- Professional services

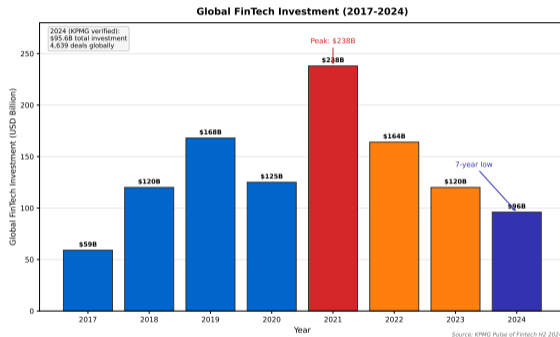
Fintech success depends on a complex ecosystem of players, enablers, and capital.

Investment Trends (2024):

- 2024: \$95.6B global investment
- Down from \$119.8B in 2023
- Peak 2021: \$238B (crypto boom)
- 7-year low reflects market correction

Regional Distribution (2024):

- Americas: 52% of investment
- EMEA: 27% of investment
- APAC: 21% of investment



2024 marks a return to fundamentals: profitability over growth at any cost.

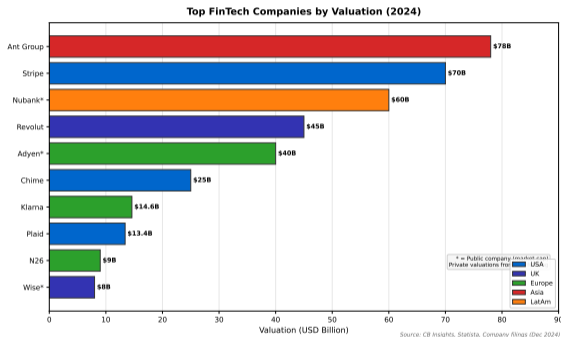
Top Fintech Valuations (2024)

Global Leaders:

- Ant Group: \$78B (China)
- Stripe: \$70B (USA)
- Revolut: \$45B (UK)
- Chime: \$25B (USA)
- Nubank: \$60B (Brazil, public)

Notable Changes:

- Klarna: \$6.7B (down from \$46B)
- Many 50-70% valuation cuts
- Shift to profitability metrics



Valuations have corrected significantly from 2021 peaks as investors demand profitability.

Digital Payments:

- Payment processors (Stripe, Adyen, Square)
- Mobile wallets (Apple Pay, Google Pay, Alipay)
- Cross-border (Wise, Remitly)
- BNPL (Klarna, Affirm, Afterpay)

Market Dynamics:

- Shift from cash to digital (80% by 2025)
- Real-time payments (FedNow, SEPA Instant)
- Embedded payments growing

Key Innovations:

- QR code payments (WeChat Pay, Paytm)
- Contactless NFC technology
- Account-to-account (A2A) payments

European Context:

- PSD2 enabling third-party access
- Strong Customer Authentication (SCA)
- Digital euro development (ECB)

Payments is the largest and most mature fintech category, driving financial inclusion globally.

Neobanks/Challenger Banks:

- Mobile-first current accounts
- No physical branches
- Examples: Revolut, N26, Monzo, Chime
- EU: 35M+ neobank customers (2024)

Alternative Lending:

- P2P lending (Funding Circle)
- SME financing (Kabbage)
- Invoice financing (BlueVine)

Business Models:

- Freemium basic accounts
- Premium subscriptions (5-15 EUR/month)
- Interchange from card spending
- FX margin on currency exchange

Technology Advantages:

- Lower CAC (\$10-50 vs \$200-400)
- Instant account opening (3-5 min)
- AI-driven underwriting

Neobanks achieve 10x lower customer acquisition costs through digital channels.

Robo-Advisors:

- Automated portfolio management
- Algorithm-based asset allocation
- Betterment, Wealthfront, Scalable Capital
- AUM: \$2.5 trillion globally (2024)

Commission-Free Trading:

- Zero-fee stock trading (Robinhood)
- Fractional shares investing
- Revenue from PFOF and interest

Fee Comparison:

- Traditional advisor: 1.0%-2.0% AUM
- Robo-advisor: 0.25%-0.50% AUM
- Hybrid model: 0.50%-0.75% AUM

Investment Products:

- ETF-based portfolios
- ESG/thematic investing
- Tax-loss harvesting
- Cryptocurrency access

Robo-advisors democratize wealth management with fees 75% lower than traditional advisors.

Business Model Innovations:

- P2P insurance (Lemonade, Friendsurance)
- Usage-based insurance (Root, Metromile)
- On-demand insurance (Cuvva, Trov)
- Embedded insurance (Qover)

Technology Applications:

- AI claims processing (90% automation)
- IoT risk monitoring (telematics)
- Parametric insurance (auto payouts)

Market Impact:

- Global InsurTech investment: \$8B (2024)
- Digital insurance penetration: 25%
- Incumbents partnering vs competing

Product Examples:

- Pay-per-mile auto insurance
- Cyber insurance for SMEs
- Crop insurance with satellite data
- Flight delay parametric coverage

InsurTech uses IoT and AI to shift from reactive claims to proactive risk prevention.

RegTech Solutions:

- KYC/AML automation (Onfido)
- Transaction monitoring (Featurespace)
- Regulatory reporting (Suade)
- Risk management (Quantexa)

Cost Savings:

- Compliance: 4%-10% of revenue
- RegTech reduces by 30%-50%
- Manual KYC: \$50-100/customer
- Automated KYC: \$5-15/customer

Infrastructure/BaaS:

- Core banking (Mambu, Thought Machine)
- Banking-as-a-Service (Solarisbank)
- Payment infrastructure (Plaid)
- Identity verification (Jumio)

Enabling Technologies:

- NLP for regulation parsing
- ML for anomaly detection
- Graph analytics for networks

RegTech enables 80% cost reduction in compliance while improving accuracy.

Cost Structure:

- Bank cost-to-income: 55%-65%
- Fintech cost-to-income: 35%-50%
- Branch network vs cloud
- Legacy IT vs modern stack

Customer Acquisition:

- Bank CAC: \$200-\$400
- Fintech CAC: \$10-\$50
- Viral growth and referrals

Fintech Advantages:

- Speed: Account in minutes vs days
- UX: Mobile-first, intuitive design
- Pricing: Lower fees, better FX
- Innovation: Rapid iteration

Bank Advantages:

- Trust and brand recognition
- Full license and deposit insurance
- Diversified revenue streams
- Physical presence for complex needs

Fintechs win on cost and UX; banks retain trust and regulatory advantages.

Apple:

- Apple Pay (500M+ users globally)
- Apple Card (Goldman partnership)
- Apple Pay Later (BNPL)
- Savings account (4.15% APY)

Google:

- Google Pay (150M+ users)
- Google Wallet integration
- Limited banking ambitions



Source: BIS, Company reports (2024)

Big Tech leverages existing user bases and trust to enter financial services.

Ant Group (Alipay):

- 1.3 billion users globally
- Payments + commerce + finance
- Yu'e Bao money market fund
- Regulatory crackdown 2021-2023

Tencent (WeChat Pay):

- 900 million users
- Embedded in WeChat ecosystem
- Social + payments integration

Super-App Model:

- Single app for all financial needs
- Payments, lending, insurance, wealth
- Social commerce integration
- Data advantage from ecosystem

Global Adoption:

- Grab (Southeast Asia)
- Paytm (India)
- Revolut pursuing similar model

The super-app model from China is being adapted globally, combining finance with commerce.

Business Challenges:

- Path to profitability (most still loss-making)
- Customer retention and churn
- Scaling while maintaining economics
- Competition from Big Tech

Technology Risks:

- Cybersecurity threats
- System outages and downtime
- Third-party vendor dependency
- AI bias and fairness

Regulatory Risks:

- Licensing requirements
- Capital adequacy rules
- Consumer protection mandates
- Cross-border complexity

Market Risks:

- Interest rate sensitivity
- Credit risk in lending
- Valuation corrections (2022-2024)
- Funding winter and VC pullback

Profitability remains the key challenge: only 5% of neobanks are profitable globally.

Leading Markets (2024):

- UK: \$9B investment, 2,500+ fintechs
- Germany: \$2.5B, focus on B2B
- France: \$2.2B, strong InsurTech
- Netherlands: \$1.8B, payments hub
- Sweden: \$1.5B, Klarna home

European Champions:

- Revolut (UK, \$45B valuation)
- Adyen (Netherlands, \$40B market cap)
- N26 (Germany, \$9B)
- Wise (UK, \$8B market cap)

Regulatory Environment:

- PSD2: Open banking mandate
- MiFID II: Investment services
- GDPR: Data protection
- MiCA: Crypto-asset regulation
- DORA: Digital operational resilience

Competitive Dynamics:

- Fragmented market (27 countries)
- Cross-border passporting
- Emerging hubs (Estonia, Lithuania)

The UK remains Europe's fintech capital, but Brexit complicates EU market access.

Emerging Trends:

- Embedded finance: Finance in non-financial apps
- Open finance: Beyond banking to all products
- Real-time everything: Payments, credit, FX
- Generative AI: Personalized advice, fraud

Technology Evolution:

- Central Bank Digital Currencies (CBDCs)
- Quantum-resistant cryptography
- Biometric authentication standards

Market Consolidation:

- M&A activity increasing
- Bank acquisitions of fintechs
- Platform aggregation (super-apps)
- Vertical integration strategies

Regulatory Evolution:

- Harmonized EU fintech regulation
- AI governance frameworks
- ESG integration in fintech
- Consumer protection enhancements

Embedded finance is projected to be a **\$7 trillion** market by 2030.

Core Concepts:

- Fintech = Technology-enabled financial innovation
- Driven by mobile, cloud, AI, and regulation
- Ecosystem of startups, banks, Big Tech
- Multiple categories: Payments, banking, wealth, insurance

Market Reality (2024):

- \$95.6B investment (down from peak)
- European leaders: Revolut, Adyen, Wise
- Path to profitability remains challenging

Critical Success Factors:

- Customer experience and trust
- Unit economics and scalability
- Regulatory compliance
- Sustainable business models

Looking Ahead:

- Embedded finance as dominant model
- Consolidation and maturation
- Collaboration over disruption
- AI-driven personalization

Fintech has moved from disruption to collaboration; the winners will combine innovation with profitability.

Lesson 2: Digital Payments I – Fundamentals

We will explore:

- Payment lifecycle and infrastructure
- Card networks (Visa, Mastercard)
- Interchange fees and economics
- ACH and SEPA payment systems
- Payment processing value chain