

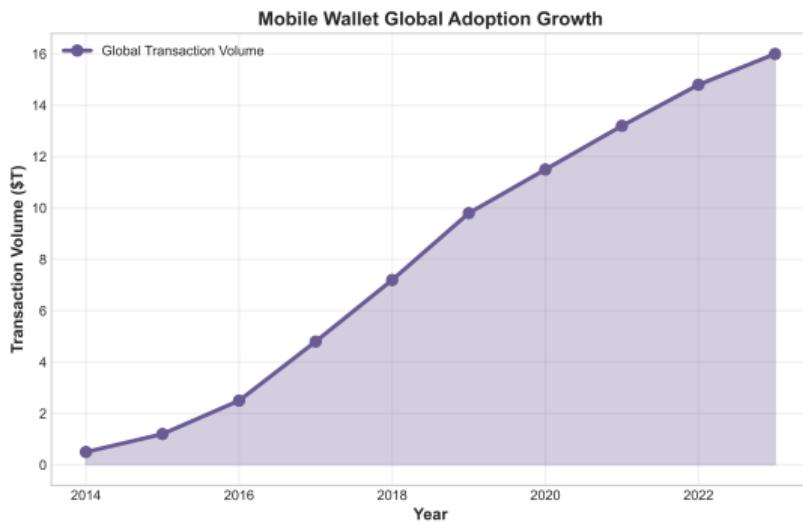
Lesson 3: Digital Payments II – Mobile Wallets

Module 1: FinTech Fundamentals

Digital Finance

Evolution of Payments

- Cash → Cards → Mobile
- 2014: Apple Pay launch
- 2023: \$16T global volume
- Smartphone = payment terminal

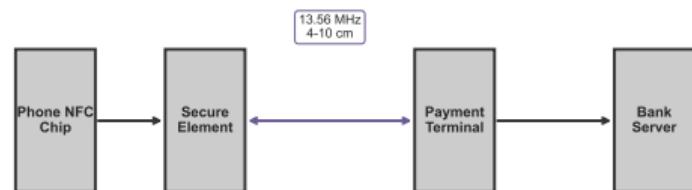


Near Field Communication (NFC) Technology

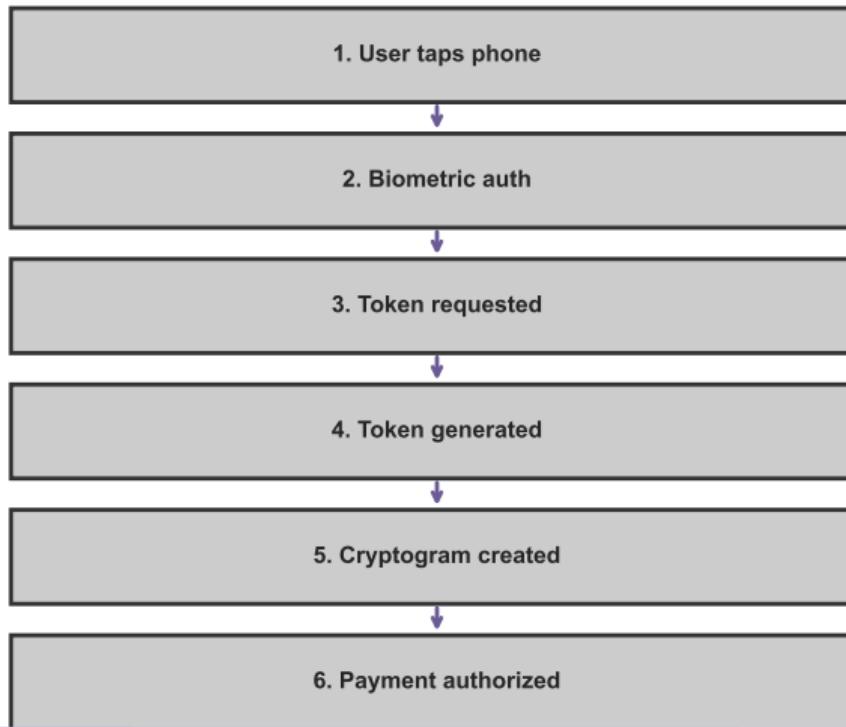
Technical Foundation

- 13.56 MHz radio frequency
- Range: 4-10 cm proximity
- EMV tokenization standard
- Secure Element (SE) storage

NFC Technology Architecture



Apple Pay Transaction Flow



Dynamic Token Generation

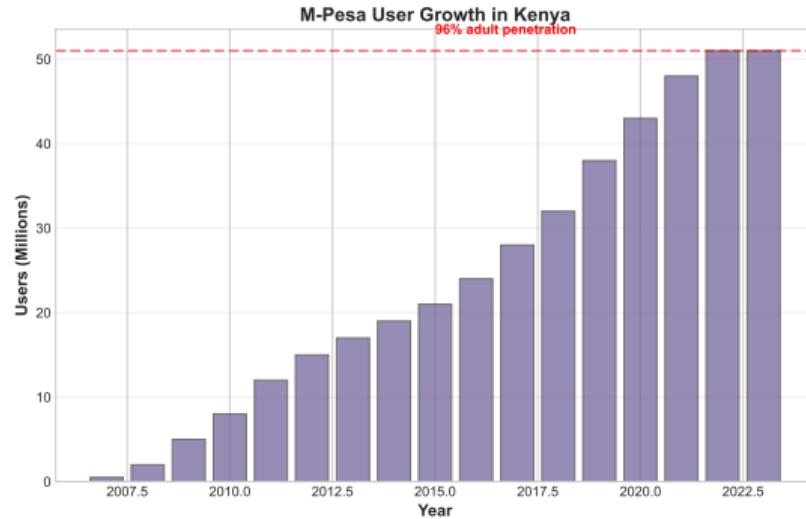
- PAN replaced by token
- One-time cryptogram
- Device-specific identifier
- Reduces fraud by 98%

figures/tokenization_process.pdf

M-Pesa: Mobile Money Pioneer

Kenya Success Story

- Launch: 2007 by Safaricom
- 51M users (2023)
- 96% adult penetration
- SMS-based transactions

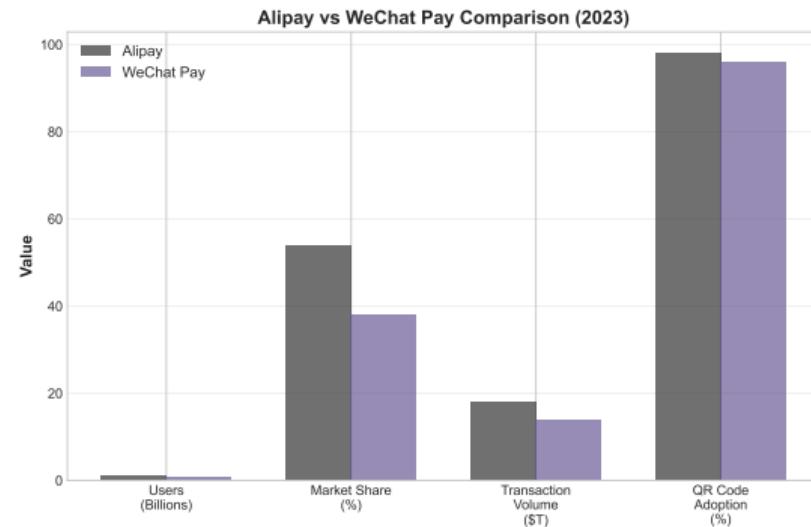


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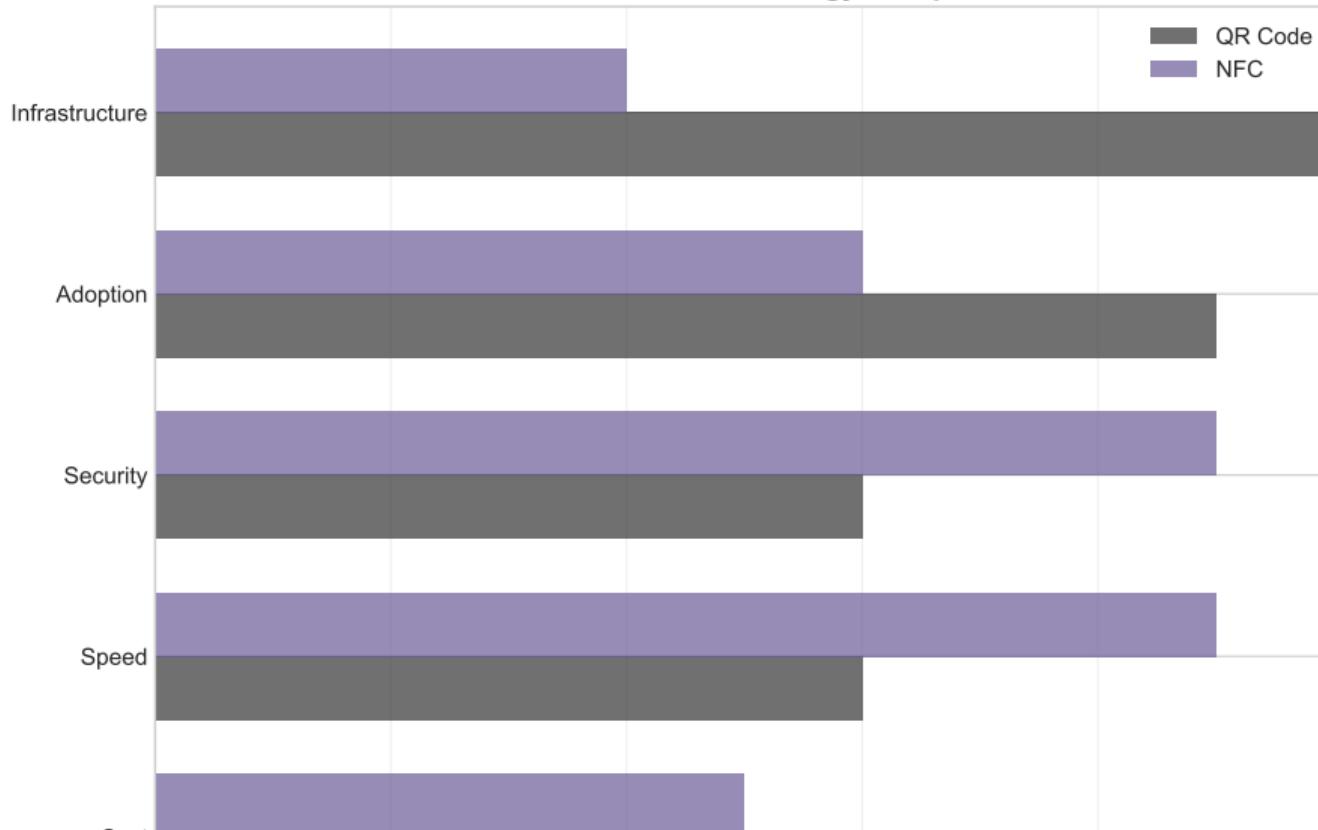
Alipay and WeChat Pay Dominance

Chinese Market Leaders

- Alipay: 1.3B users
- WeChat Pay: 1.0B users
- QR code-based
- 92% mobile payment share



QR Code vs NFC Technology Comparison

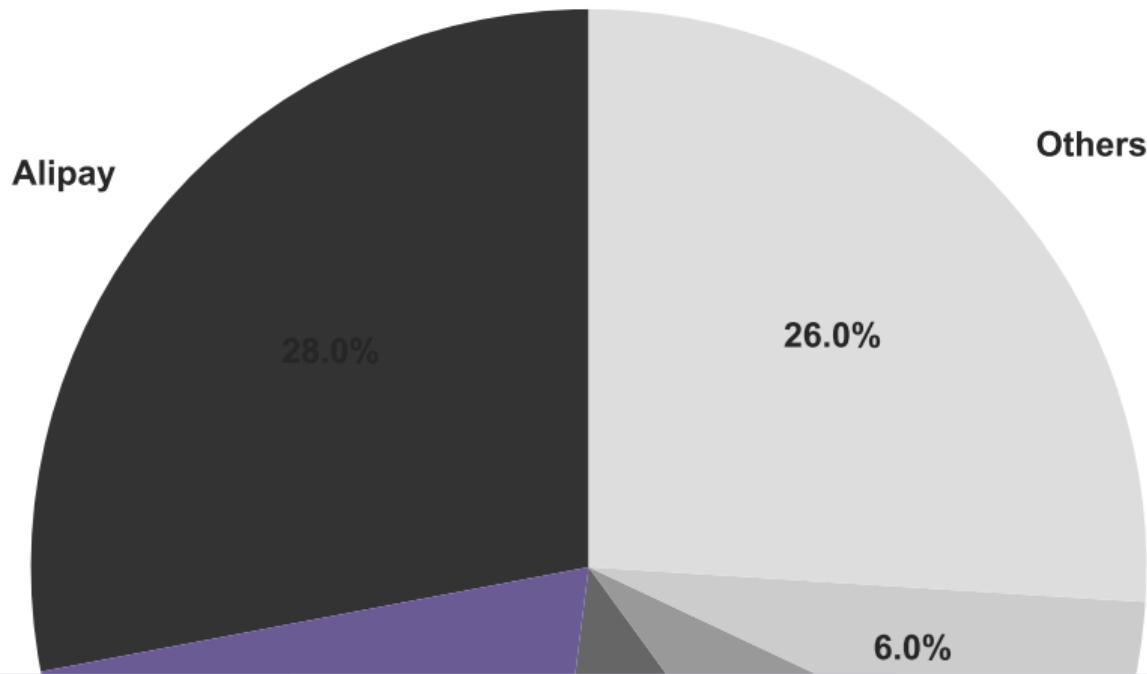


WeChat Ecosystem

- Messaging + Payments
- E-commerce integration
- Mini-programs platform
- 1M+ services embedded

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Global Mobile Wallet Market Share (2023)



Revenue Streams

- Transaction fees (0.15%-3%)
- Data monetization
- Cross-selling services
- Merchant partnerships

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Infrastructure Bypass

- Skip card infrastructure
- Mobile-first adoption
- Agent network model
- Financial inclusion impact

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Global Fragmentation

- Cross-border restrictions
- Data localization laws
- Licensing requirements
- Interoperability gaps

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Next Generation

- IoT payment devices
- Wearables integration
- Biometric authentication
- CBDC compatibility

`figures/future_wallet_timeline.pdf`

- **Technology:** NFC for proximity, QR codes for scalability
- **Regional Patterns:** Super-apps in Asia, NFC in West, SMS in Africa
- **Business Models:** Transaction fees + ecosystem monetization
- **Security:** Tokenization reduces fraud dramatically
- **Impact:** Financial inclusion through mobile-first design