

**Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE
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Coimbatore- 49**

**DEPARTMENT OF COMMERCE WITH INFORMATION
TECHNOLOGY**

**21UCI505 – BLOCKCHAIN AND DISTRIBUTIVE
LEDGER**

Unit-1: Digital Money to Distributed Ledgers

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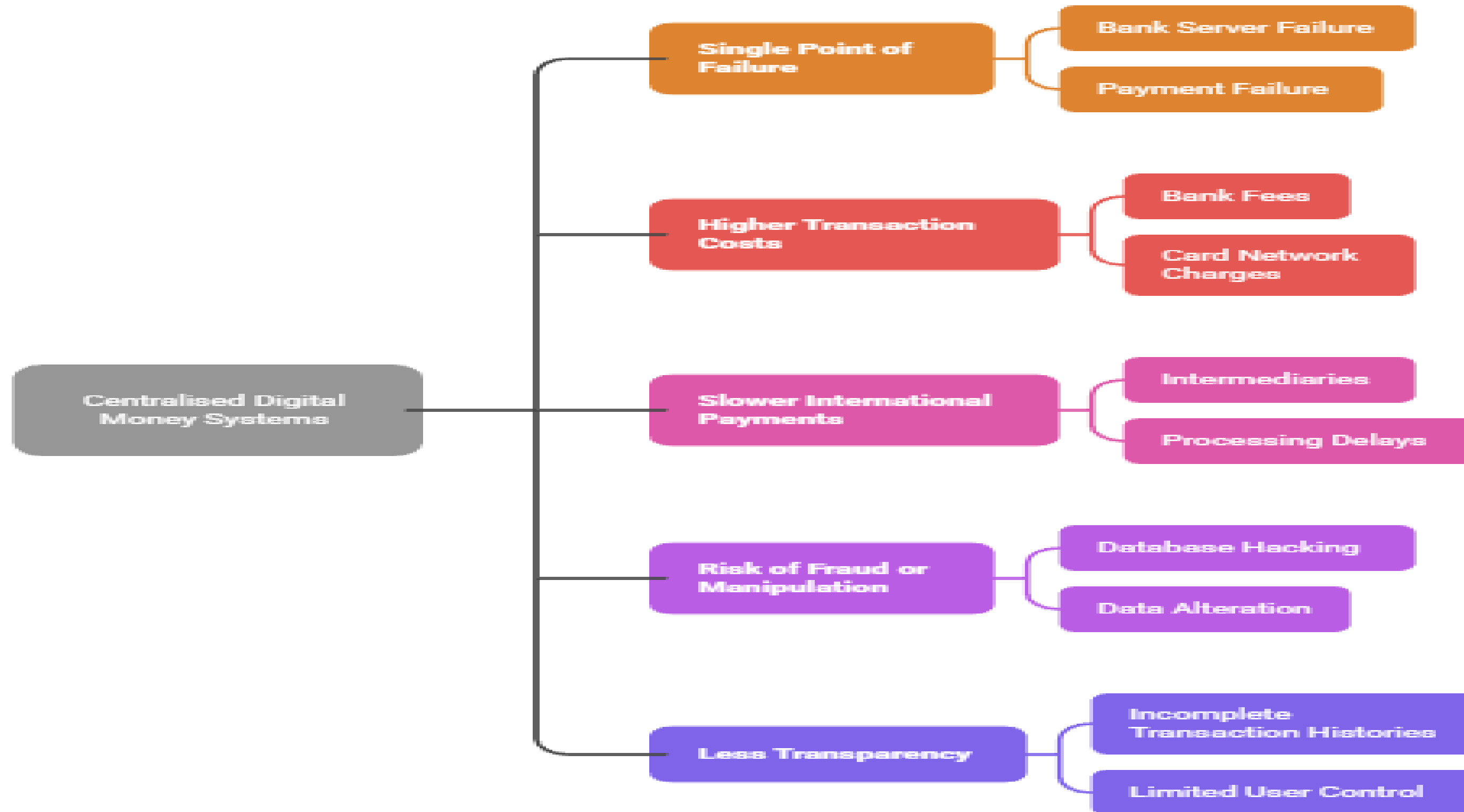
- ❑ Digital money refers to any form of currency that exists electronically, not physically.
- ❑ Examples include: Bank account balances seen in mobile banking
- ❑ UPI payments (PhonePe, GPay) E-wallets (Paytm, Amazon Pay)
- ❑ Central Bank Digital Currency (CBDC – e₹)



- No physical form
- Instant transfer
- Requires banking systems or internet
- Controlled by centralized authorities like banks or governments

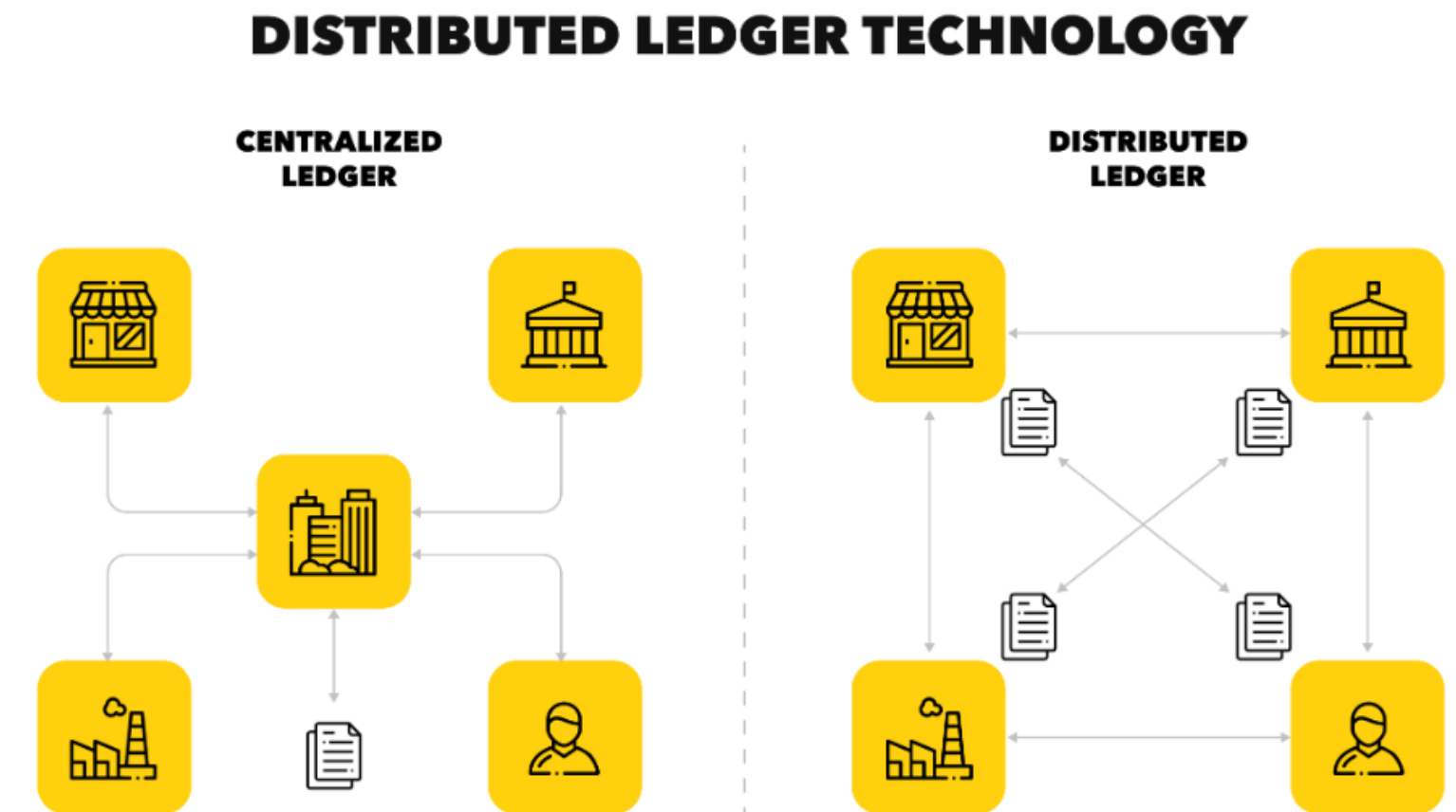
- ✓ **Single point of failure** (if bank server fails → payment fails)
- ✓ **Higher transaction costs** (banks, card networks charge fees)
- ✓ **Slower international payments** (due to intermediaries)
- ✓ **Risk of fraud or manipulation** (central database can be hacked or altered)
- ✓ **Less transparency** (users cannot see complete transaction histories)

Challenges of Centralised Digital Money Systems



Key Features:

- ✓ **Decentralized:** No single authority controls the data.
- ✓ **Shared:** Every participant (node) has a copy of the ledger.
- ✓ **Transparent:** All users can verify transactions.
- ✓ **Immutable:** Once a record is added, it cannot be tampered with.

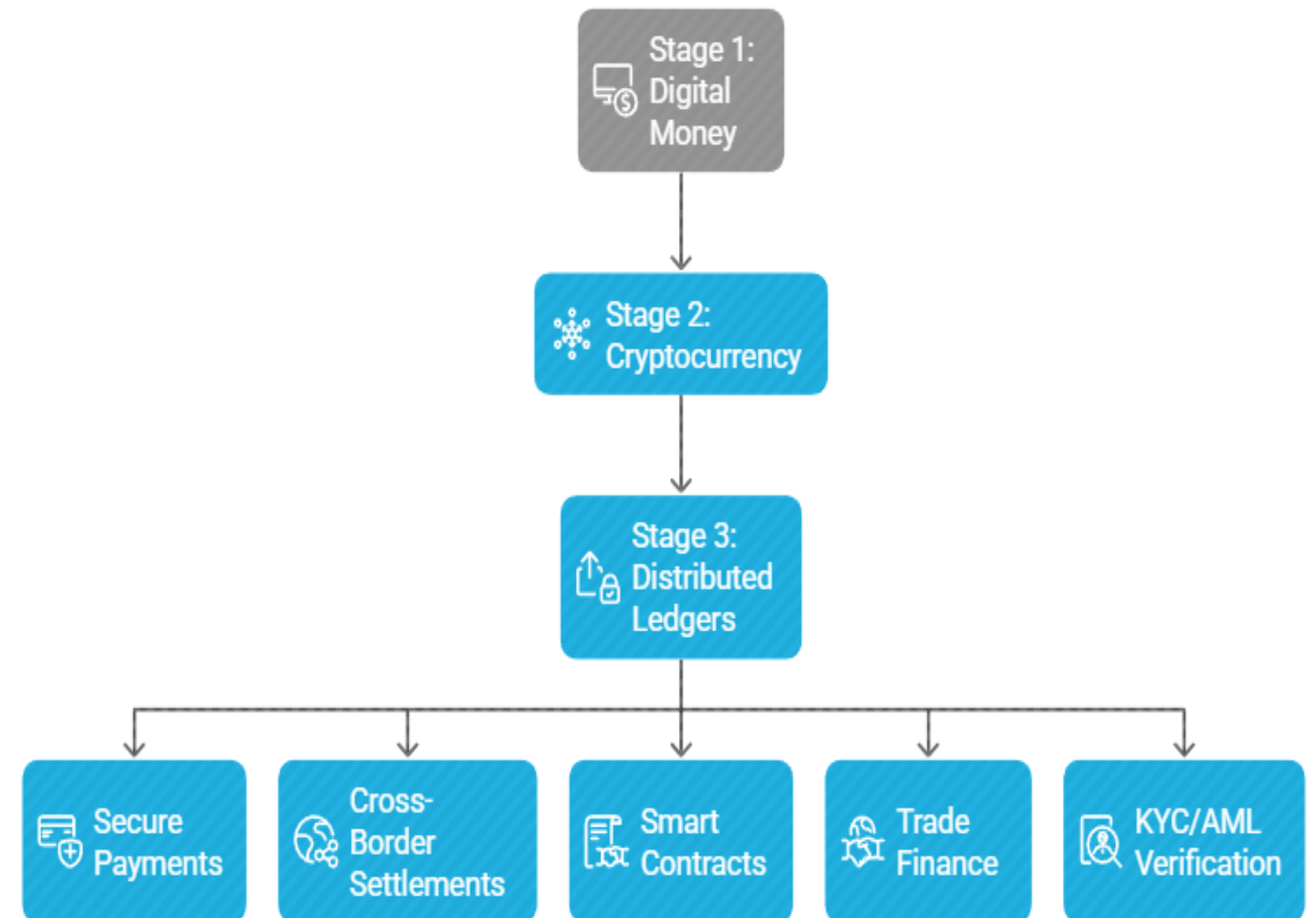


Stage 1: Digital Money

- Traditional bank-based digital currency
- Centralized control

Stage 2: Cryptocurrency (e.g., Bitcoin, Ethereum)

- Digital money without a central authority
- Runs on distributed ledger technology
- Faster, global, peer-to-peer payments



Stage 3: Distributed Ledgers in Banking and Business

Used for:

- ❖ Secure payments
- ❖ Cross-border settlements
- ❖ Smart contracts
- ❖ Trade finance
- ❖ KYC/AML verification

This stage is what modern banking calls **Distributed Ledger Technology (DLT)**.

1. Spark Retail faced payment failures mainly due to _____.

Answer: Server overload

2. The technology implemented by Spark Retail for secure transactions is _____.

Answer: Distributed Ledger Technology (DLT)

3. In DLT, data is stored across multiple _____.

Answer: Nodes

4. The tool used for automatic transaction settlement in DLT is called a _____.

Answer: Smart contract

5. The new DLT-based system helped reduce transaction costs by _____ percent.

Answer: 40%

Case Study - How Spark Retail Moved from Traditional Digital Payments to a Distributed Ledger System



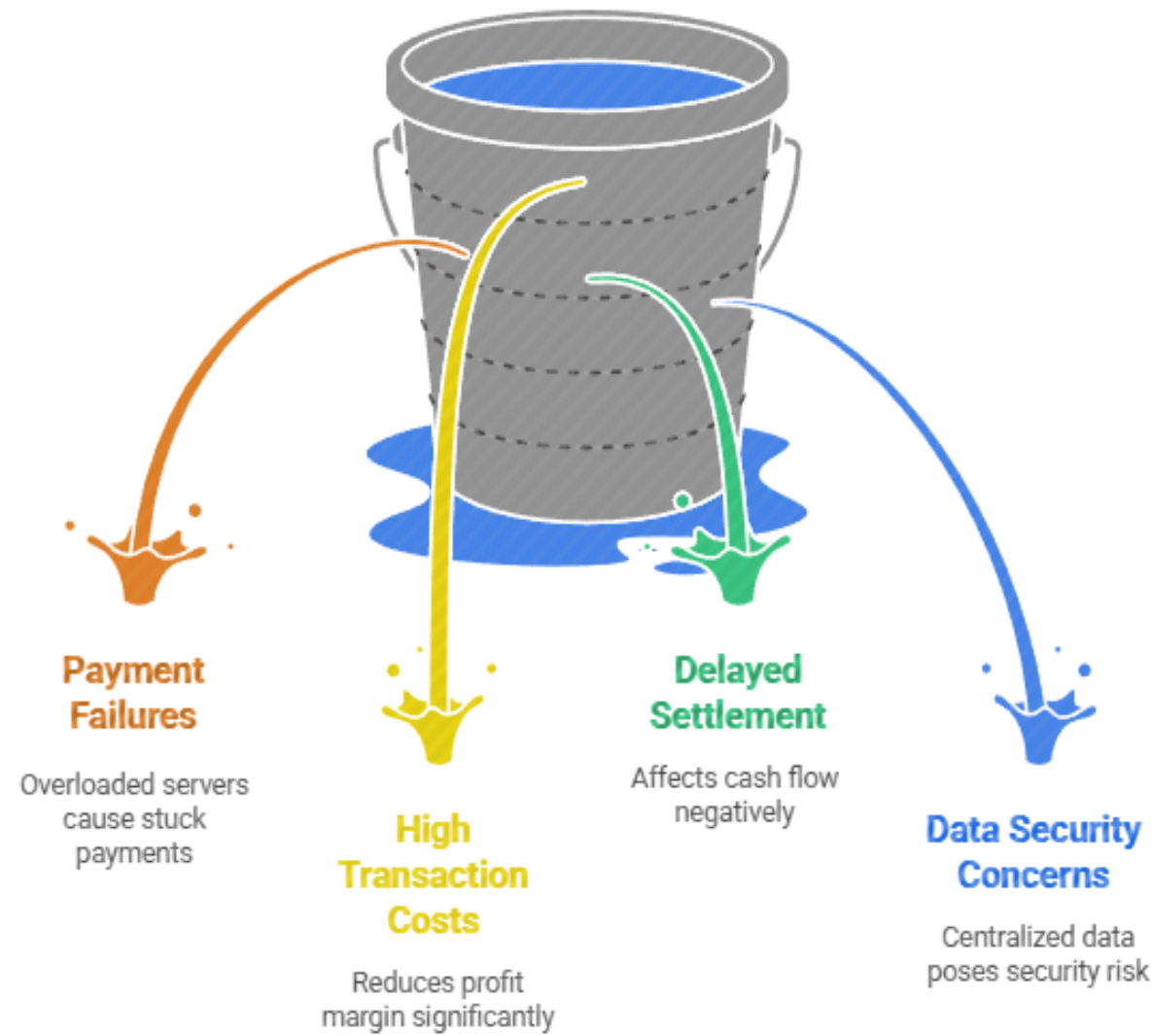
Background

Spark Retail is a mid-sized supermarket chain operating across Tamil Nadu. The company processes around **8,000 digital transactions per day** through UPI, debit cards, and mobile wallets.

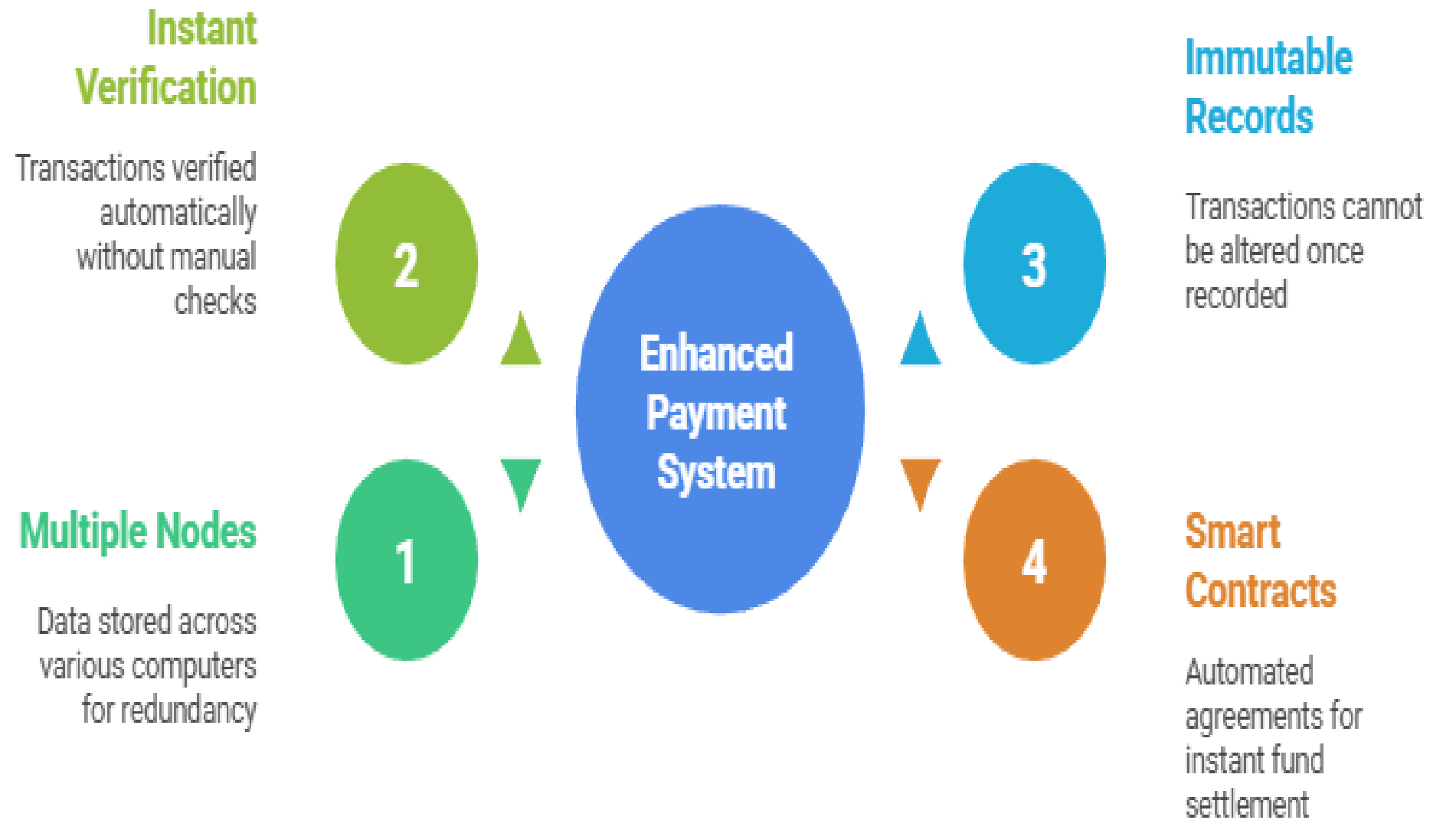
For years, their entire digital payment system depended on a **centralized bank server** and a third-party payment gateway.

Case Study - How Spark Retail Moved from Traditional Digital Payments to a Distributed Ledger System

Spark Retail Payment Challenges



Benefits of DLT in Payment Systems



RESULTS

1. 95% Drop in Payment Failures

Because the system no longer depended on one server.

2. 40% Reduction in Transaction Costs

Middlemen and gateway charges reduced.

3. Real-Time Settlement Improved Cash Flow

Daily working capital issues reduced drastically.

4. Increased Customer Satisfaction

Faster billing and zero “payment pending” cases.

5. Stronger Security

Data was tamper-proof due to distributed storage.

THANK YOU