

24 HOUR AI HACKATHON

VISA

Problem Statement 1: AI-Powered Modernization of Payment Reporting Systems

ABOUT OUR OBJECTIVE :

Create an AI-powered reporting platform that transforms traditional payment reports into intelligent, interactive, and insight-driven systems for financial institutions.



DESCRIPTION:

Extracting intelligence and insights from standardized payment reports.

Enabling natural language interaction with reports through AI-driven assistants.

Transforming static reports into dynamic, visual, and insight-rich dashboards.

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Card schemes such as Visa and Mastercard generate a wide range of standardized reports for banks and financial institutions across services like authorization, clearing, and settlement. While many of these reports are publicly available, they are often static, complex, and difficult to analyze at scale. This challenge invites participants to use Generative AI to modernize payment reporting by:

TASKS:

The Execution Roadmap: From Static Data to Intelligent Insights

REPORT DISCOVERY AND UNDERSTANDING:

- Discover publicly available payment and settlement report examples online.
- Analyze report structures, formats, and key metrics.

AI-DRIVEN ANALYSIS STRATEGY:

- Design an approach using RAG, AI agents, MCP servers, and large language models to process and understand reports.
- Support analysis across multiple report types and formats.

INSIGHTS, FORECASTING, AND INTELLIGENCE:

- Use AI to generate insights, trends, and forecasts based on report content.
- Enable cross-analysis across different reports (e.g., authorization vs settlement).

INTERACTIVE REPORTING PLATFORM:

- Build an intelligent chatbot that allows users to ask questions about reports in natural language.
- Develop AI-generated dashboards and visualizations that are scalable and customizable across different clients and report types.

OUR SOLUTION : **PAYREO AI**

Transforming Complex Payment Reports
into Conversational Intelligence

Content Structure :

The Vision :

PaymentIQ is an AI-powered platform that revolutionizes how financial institutions interact with payment reports. Instead of spending hours decoding static PDFs and spreadsheets, users simply ask questions in natural language and receive instant, accurate insights.



THE DIFFERENCE

What Makes PaymentIQ Different:

- Traditional BI Tools → PaymentIQ
- Static dashboards → Conversational interface
- Pre-built reports → Dynamic, AI-generated insights
- Manual data preparation → Automatic ingestion & parsing
- Reactive analysis → Proactive anomaly detection
- Technical expertise required → Natural language interaction



KEY FEATURES

- **1. Intelligent Report Ingestion:**

Scalability for different formats of payment report

- **2. Natural Language Query Interface :**

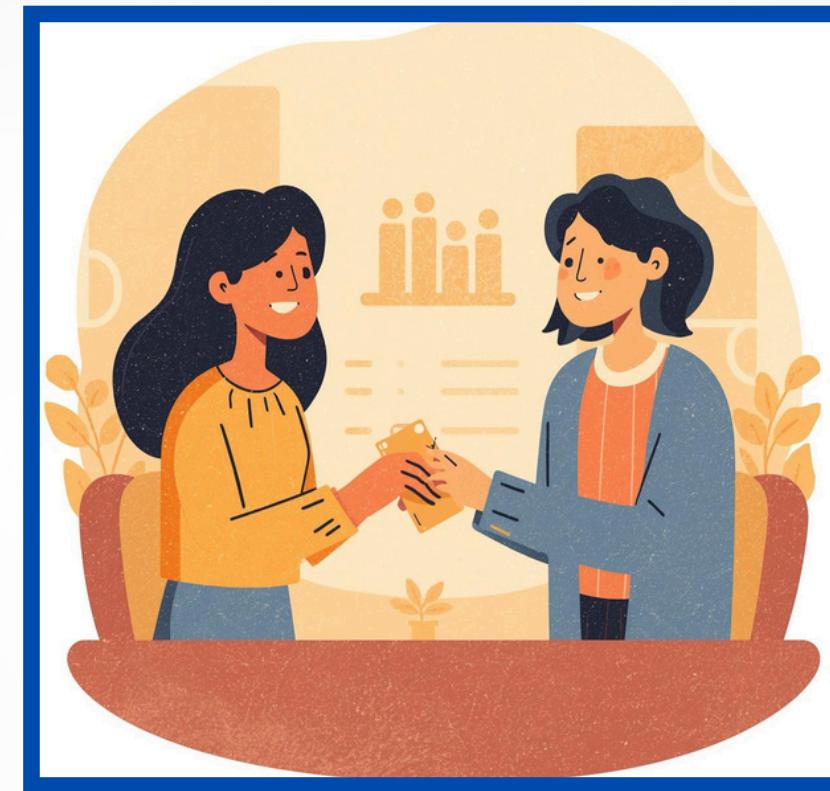
Conversational AI chatbot enabling plain-English questions about payment data

- **3. RAG-Powered Knowledge Retrieval :**

Vector database architecture with semantic search capabilities.

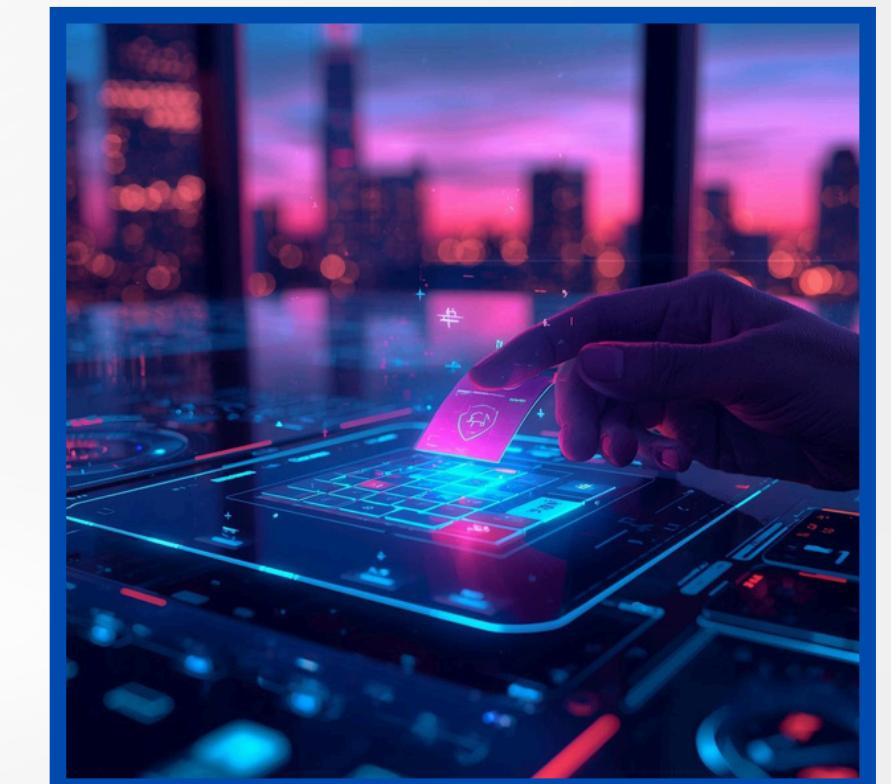
- **4. Automated Dashboard Generation :**

Dynamic visualization engine creating customized dashboards based on report content.



- **6. Cross report Analysis:**

Correlates data across multiple report types and time periods



THREE CORE PILLARS OF PAYREO AI:

1. Universal Data Intelligence

Automatically ingests reports from any card scheme (Visa, Mastercard, Amex)

Converts complex PDFs and spreadsheets into a standardized, queryable format

Creates a "Universal Data Standard" regardless of source format

Built-in synthetic data generator for testing and training

2. Hybrid Intelligence Engine

Combines the power of understanding (RAG for text/rules) with precision calculation (code execution for numbers)

Router-based architecture that intelligently directs queries to the right processing engine

Learns payment domain terminology and financial workflows

Secure MCP server integration for enterprise-grade data access

3. Proactive Analytics & Forecasting

Doesn't just answer questions—anticipates what you need to know

Automated health checks detect anomalies before they become problems

Real-time trend analysis and 30-day forecasting

Cross-report correlation for comprehensive insights

PAYREO AI **KEYFEATURES :**

FEATURE 1: Intelligent Report Ingestion

Universal Data Intelligence Automatically ingests reports from any card scheme (Visa, Mastercard, Amex) converts complex PDFs and spreadsheets into a standardized, queryable format creates a "Universal Data Standard" regardless of source format Built-in synthetic data generator for testing and training.

FEATURE 2: Natural Language Query Interface

Conversational AI Chatbot

Simple Questions, Powerful Answers: Instead of learning complex query languages or navigating through multiple menus, users simply type or speak their questions naturally.

FEATURE 3: RAG-Powered Knowledge Retrieval

Provides accurate, contextual answers by combining AI with a comprehensive knowledge base of payment rules, card scheme regulations, and industry documentation—ensuring responses are grounded in real information, not AI guesses.

Vector Database Architecture with Semantic Search

RAG (Retrieval Augmented Generation) connects AI to a vast library of payment domain knowledge, making expert information instantly accessible through natural language.

FEATURE 4: Automated Dashboard Generation

Dynamically creates customized, interactive dashboards tailored to your report content and user needs—eliminating hours of manual dashboard design and configuration.

Dynamic Visualization Engine

Instead of static, pre-built dashboards, PayreoAI uses AI to automatically generate the perfect dashboard for each report and user role in real-time.

PAYREO AI **KEYFEATURES :**

FEATURE 5: AI-Driven Insights Extraction

Autonomously analyzes payment data to proactively identify critical patterns, anomalies, and trends—delivering actionable insights before you even ask, transforming reactive reporting into proactive intelligence.

Autonomous Pattern Recognition

PayreoAI continuously monitors your payment data, automatically detecting issues, opportunities, and trends that would take human analyst's hours or days to uncover.

FEATURE 6: Cross-Report Analysis

Correlates data across multiple report types and time periods to provide comprehensive, end-to-end visibility into transaction lifecycles—uncovering insights impossible to see when analyzing reports in isolation.

Intelligent Data Correlation Engine

PayreoAI doesn't just analyze individual reports—it creates a unified intelligence layer by linking related data across authorization, clearing, settlement, chargeback, and fee reports to reveal the complete payment story.

SECURITY & COMPLIANCE

1. Data Privacy Controls:

Payment reports contain highly sensitive data's like Card numbers (even partial), Customer names and addresses, Merchant IDs and business details. These data could be Stolen by hackers or Accidentally exposed. Thus it is important to maintain data anonymity by removing or hiding personally identifiable information (PII) so you can't identify individuals.

2. Role-Based Access Control:

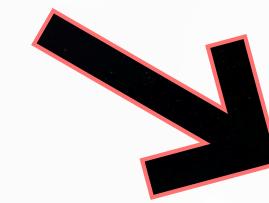
The highly sensitive data's present in payment reports can be misused by employees as well. This can be prevented by giving different people different permissions based on their job role. Thus Role-Based Access Control is a must.

3. Comprehensive Audit Logging:

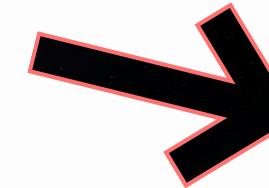
Complete activity tracking including queries, data access, exports, and configuration changes. Tamper-proof logs for regulatory reporting. This can be used to ensure that no data tampering takes place and in the case of a privacy breach the activity preceding to the breach can be tracked back to the individual or point of breach.

TECHNOLOGY STACK

FRONTEND (Python-Based)
Streamlit



API LAYER (Python)
FastAPI + Unicorn



AI/ML LAYER (Python)
Anthropic Claude API +
LangChain + RAG

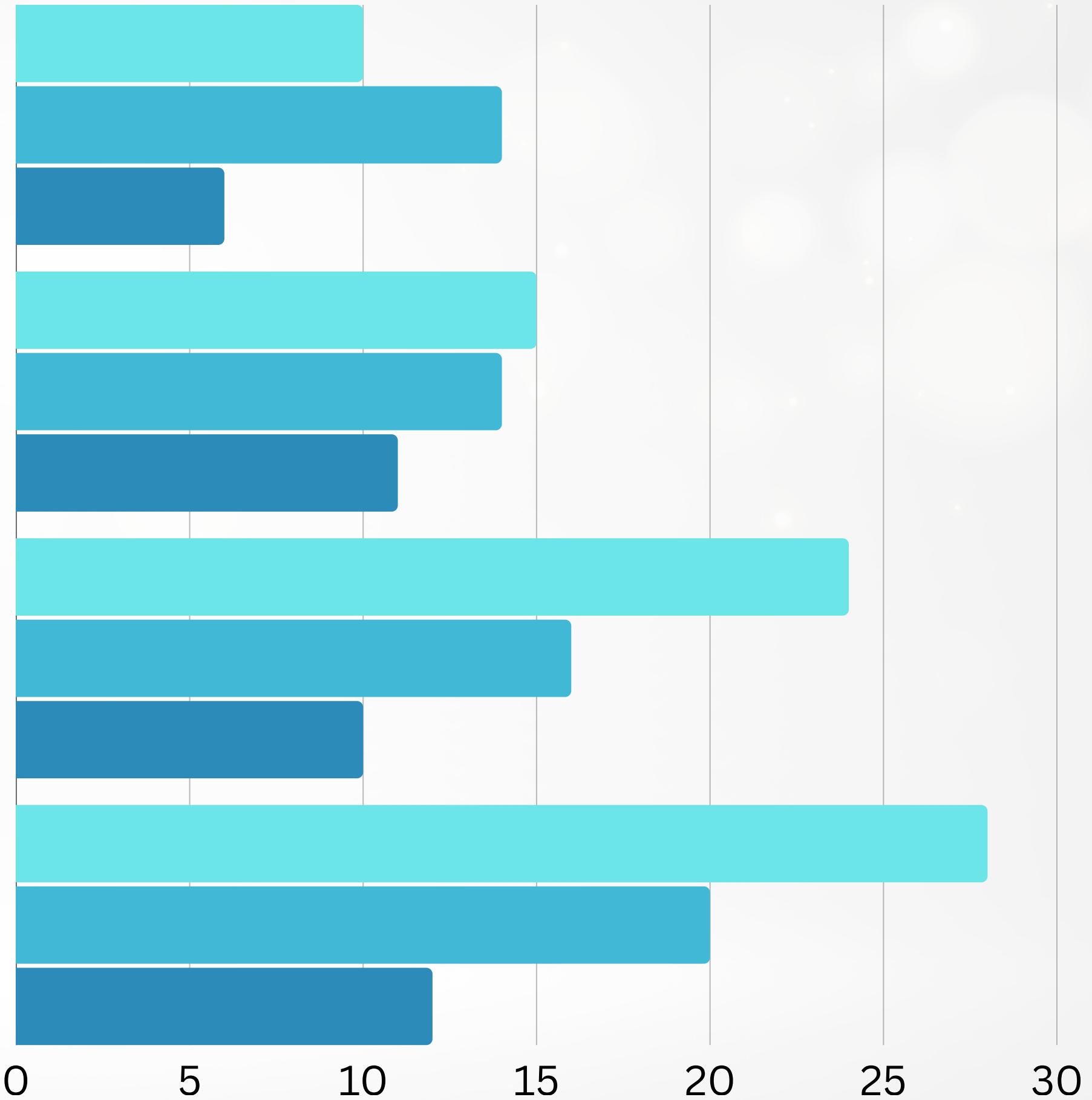


DATA LAYER (Python)
ChromaDB +
SQLite/PostgreSQL + Pandas

OUR YEARLY BUSINESS IMPACT

Driving Efficiency & Financial Clarity Proves time savings, zero errors, and smarter banking.

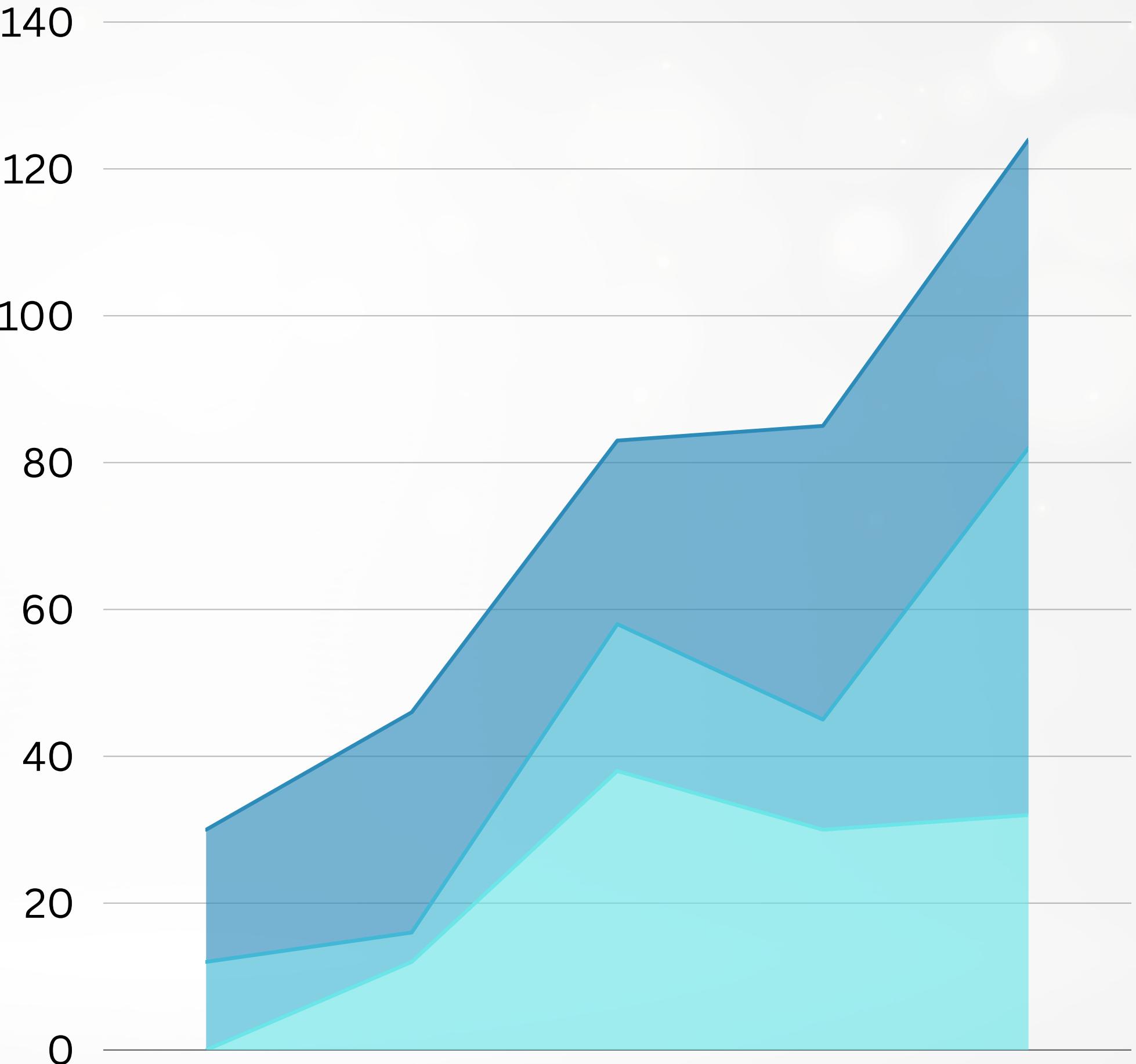
- Turn Hours into Seconds: Cuts report time 70%—instant decisions.
- Eliminate Manual Risk: Ends 3–5% spreadsheet mistakes.
- Optimize Workforce: Saves 15–20 hours/week for strategy.
- Liquidity Management: Finds stuck payments fast for smooth cash.



MARKET OPPORTUNITY :

A Multi-Trillion Dollar Data Challenge Massive data mess—huge chance to lead.

- Massive Transaction Volume: 250B+ Visa/MC deals yearly = big chaos.
- High Growth Sector: \$15T payments by 2027 demand automation.
- Target Market: 15,000+ banks ditching legacy tech.
- Modernization Gap: Old tools? AI first-movers dominate.

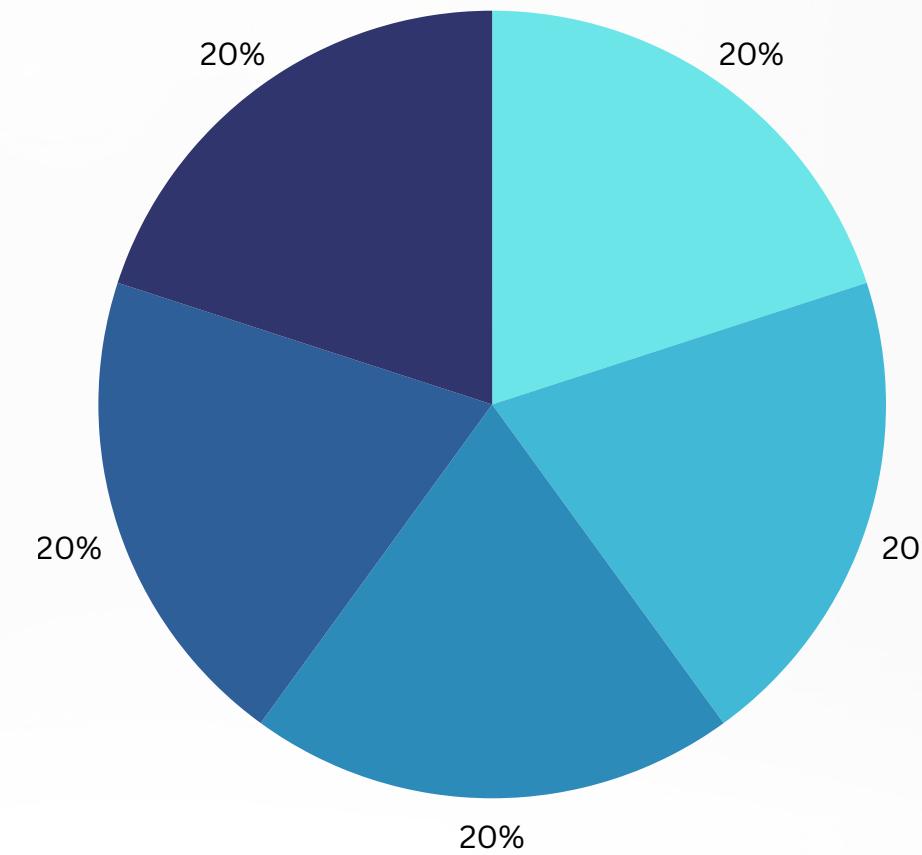


FUTURE ROADMAP

Vision for 2026 and Beyond
Phased upgrades for total payment mastery.



Phase 1: Syncs reports—100% accurate.



Phase 2: AI forecasts spikes (90%+ precision).

- Phase 3: Auto-fixes failed transactions.
- Phase 4: Full dashboard (UPI, RuPay included).

THANK YOU

GITHUB REPO

CLICK ON THE BUTTON TO VISIT THE REPO