Project Design Phase

Problem – Solution Fit

Date	15 February 2026
Team ID	LTVIP2026TMIDS88913
Project Name	Online Payments Fraud Detection using Machine Learning
Maximum Marks	2 Marks

Problem – Solution Fit Overview:

The Problem–Solution Fit validates that a real customer problem exists and that the proposed solution effectively addresses it. For this project, the fit is evaluated across online customers, banks/payment gateways, and financial institutions who face increasing risks due to evolving online payment fraud.

Target Customers

- Online banking and digital payment users
- Banks and payment gateway companies
- Fraud detection analysts and risk managers
- Financial institutions handling high transaction volumes

Customer Problems (Key Pains)

- Increasing online payment fraud and financial losses
- Delayed detection of fraudulent transactions
- High false positives affecting genuine customers
- Lack of intelligent, adaptive fraud detection systems
- Difficulty analyzing large-scale transaction data in real-time

Proposed Solution

A Machine Learning–based Online Payment Fraud Detection System that provides:

- Real-time transaction monitoring and classification
- Behavioral pattern analysis using ML models
- Fraud probability scoring for each transaction
- Automated alerts for suspicious activities
- Dashboard for fraud trends and reporting

Problem–Solution Fit Mapping

Customer Problem	Solution Feature	Expected Impact
Delayed fraud detection	Real-time ML-based transaction classification	Faster fraud prevention and reduced losses
High false positives	Behavior-based feature engineering & model optimization	Fewer genuine transaction blocks
Large transaction volume	Automated preprocessing & scalable architecture	Efficient handling of high data load
Evolving fraud techniques	Model retraining & adaptive learning	Improved detection accuracy over time

Channels & Adoption

- Integration with bank/payment gateway systems
- Web-based fraud monitoring dashboard
- API-based integration for fintech platforms
- Pilot deployment within financial institutions

Success Metrics

- Fraud detection accuracy (Precision, Recall, F1-score)
- Reduction in false positives
- Decrease in financial losses due to fraud
- System response time (<1 second per transaction)
- User satisfaction and analyst efficiency

Future Improvements

- Deep Learning-based fraud detection models
- Real-time streaming data processing (Kafka integration)
- Mobile alert system for customers
- Cross-platform fraud intelligence sharing
- AI-based risk scoring for user profiles