**Predictive Model Plan**

**1. Model Logic**

Predict whether a customer will become delinquent (miss loan repayments) based on financial and behavioral data.This model analyzes a customer’s financial behavior and risk indicators to predict if they are likely to become delinquent. If 1= Deliquent and 0= Not deliquent

i.Data Preparation



ii.Feature selection



iii.Train test split



iv.Model Training



v.Model Evaluation



vi.Interpretation and output



**2. Justification for Model Choice**

I selected Logistic reggression model type because,  
- Accuracy: Good baseline for binary classification. It also provides probabilistic ouputs which are useful for decision.  
- Transparency: In financial domain, interpretability is critical. This model shows how risks score are calculated.  
- Ease of use or implementation: It is simple to deploy, requires minimal tuning compared to complex models like neural and run efficiently in low compute environments.  
- Relevance for financial prediction: Accepted by regulators and auditors due to its straightforward math and logic.and It allows Geldium to adopt industry best practices without introducing black-box AI.  
- Suitability for Geldium’s business needs: It is accurate, trustworthy, and easy to explain to non-technical persons also fulfill low cost and high reliability.

**3. Evaluation Strategy**  
- I used metrices are as follows:

Metrices Why to use

Accuracy Measures overall correctness of predictions, but can be misleading with imbalance

Precision Tells us how many predicted delinquents were actually delinquent (avoid false alarms)

Recall Shows how well we captured all actual delinquents (avoid missing real risk)

F1 Score Balances precision and recall (useful when one cannot be sacrificed for the other)

AUC-ROC Measures the model's ability to distinguish between classes across all thresholds  
- 1.High Precision, Low Recall: Model is conservative, flags only clear risks 2.High Recall, Low Precision: Model flags more potential risks (but may falsely target good customers) 3.F1 Score helps us balance this trade-off 4.AUC > 0.80 generally indicates a strong model for distinguishing delinquent from non-delinquent customers  
- We can analyze model performance across subgroups such as income level,employment status(employed vs unemployed),age ranges(young vs senior)  
- Ethical considerations: 1.Customer Rights: Customers have a right to know how and why they’re being flagged. 2.Transparency: We will ensure the model is explainable and decisions are documented. 3.Avoiding Harm: The model should not unfairly deny services or apply pressure based on 4.flawed assumptions (e.g., punishing someone for being unemployed). 5.Human Oversight: AI should assist — not replace — human decision-making in financial judgment.

The evaluation is multi-dimensional focuses on fairness,accountabiltiy and ensure that model is effective,ethical, and aligned.