AI Governance Report

Credit Risk Scoring Model

FinSure Loans Pvt. Ltd.
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1. Executive Summary

This document presents the AI Governance assessment for the Credit Risk Scoring model developed to support underwriting decisions for Education, Home, Personal, and Auto loans.

The objective of the model is to predict the probability of default for loan applicants and act as a risk-ranking mechanism for credit analysts. The key business requirement is to ensure high recall, ensuring maximum capture of potential defaulters to reduce credit loss risk.

The model meets key predictive performance and governance standards required for NBFC deployment.

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2. Business Context & Model Purpose

Category	Details
Model Type	Logistic Regression
Use Case	Predict individual credit default risk
Decision Role	Risk ranking (Analyst final approval)
Deployment	Streamlit Cloud
Target Metric Priority	Recall of defaulters
Domain	Retail lending (NBFC)

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3. Data Governance & Lineage

Aspect	Description
Dataset Type	Synthetic
Time Period	Feb 2022 – May 2024
Data Sources	Customer demographics, bureau data, loan history
Train/Test Split	37,488 train / 12,497 test
Target Definition	Default (1), Non-default (0)
PII Handling	No identifiable personal data included
Data Quality	Outlier treatment, missing value imputation, scaling applied
Security	Data used only for analytical purpose in controlled environment

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4. Feature Governance

Final Model Feature Set (based on Information Value)

Feature	IV Score	Predictive Power
credit_utilization_ratio	2.35	Suspiciously High (Leakage Check Performed)
delinquency_ratio	0.72	Strong
loan_to_income	0.48	Medium–Strong
avg_dpd_per_delinquency	0.40	Medium–Strong
loan_purpose	0.37	Medium
residence_type	0.25	Medium
loan_tenure_months	0.22	Medium
loan_type	0.16	Weak–Medium
age	0.09	Weak

Feature	IV Score	Predictive Power
number_of_open_accounts	0.08	Weak

- Leakage scan performed
- Only approved features included in final model

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5. Model Performance Validation

Key Metrics

Metric	Value	Threshold	Result
AUC	**0.98**	>0.95	Excellent
Gini Coefficient	**0.96**	>0.8	Excellent
KS Statistic	**0.8609**	(Decile 8) >0.4 & in Top 3 deciles	Acceptable
Accuracy	**0.93**	—	Strong
Recall (Class 1)	**0.94**	≥0.90	Meets Business Demand

The model is highly capable of identifying defaulters while maintaining high separation.

Classification Report (Test Data)

	precision	recall	f1-score	support
0	0.99	0.93	0.96	11423
1	0.56	0.94	0.70	1074
accuracy			0.93	12497
macro avg	0.78	0.94	0.83	12497
weighted avg	0.96	0.93	0.94	12497

- High Recall on defaults
- Lower precision on defaults → accepted trade-off based on business priority

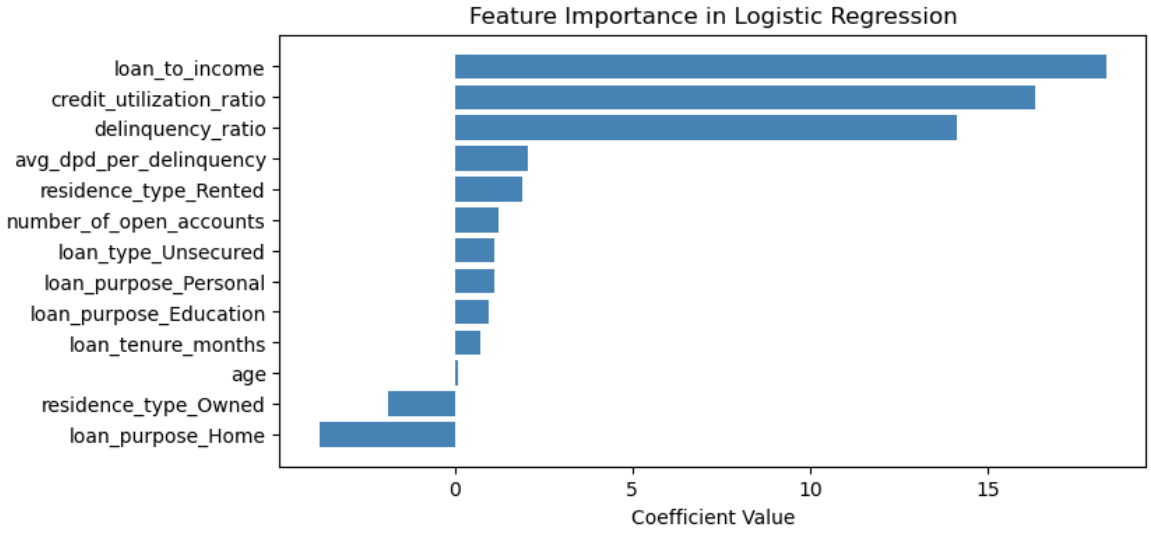
KS Table

Highest KS value of 86.09% observed in top decile bands
→ Strong early risk separation

	Decile	Minimum Probability	Maximum Probability	Events	Non-events	Event Rate	Non-event Rate	Cum Events	Cum Non-events	Cum Event Rate	Cum Non-event Rate	KS
0	9	0.82	1.00	898.00	352.00	71.84	28.16	898.00	352.00	83.61	3.08	80.53
1	8	0.21	0.82	162.00	1088.00	12.96	87.04	1060.00	1440.00	98.70	12.61	86.09
2	7	0.03	0.21	9.00	1240.00	0.72	99.28	1069.00	2680.00	99.53	23.46	76.07
3	6	0.00	0.03	5.00	1245.00	0.40	99.60	1074.00	3925.00	100.00	34.36	65.64
4	5	0.00	0.00	0.00	1249.00	0.00	100.00	1074.00	5174.00	100.00	45.29	54.71
5	4	0.00	0.00	0.00	1250.00	0.00	100.00	1074.00	6424.00	100.00	56.24	43.76
6	3	0.00	0.00	0.00	1250.00	0.00	100.00	1074.00	7674.00	100.00	67.18	32.82
7	2	0.00	0.00	0.00	1249.00	0.00	100.00	1074.00	8923.00	100.00	78.11	21.89
8	1	0.00	0.00	0.00	1250.00	0.00	100.00	1074.00	10173.00	100.00	89.06	10.94
9	0	0.00	0.00	0.00	1250.00	0.00	100.00	1074.00	11423.00	100.00	100.00	0.00

Feature Explainability

Logistic Regression coefficient interpretation used for transparency



Key Drivers:

- Higher loan-to-income → Higher default risk
- Higher credit utilization → Higher default risk
- Renters default more than owners

- Business interpretability achieved
- Model chosen for explainability vs. black-box

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6. Fairness & Ethical Governance

Aspect	Status
Sensitive Attributes	Not included (to avoid discriminatory bias)
Bias Monitoring	Recall & precision checked across feature buckets
Harm Mitigation	Analyst review ensures no auto-rejections
Transparency	Risk score + key driver insights available to analyst

- Model aligned with Responsible AI principles

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7. Operational Controls & Monitoring

Area	Governance Plan
Monitoring Frequency	Monthly
Drift Detection	Periodic IV/PSI stability checks
Retraining Triggers	Deterioration in AUC/KS beyond thresholds
Access Controls	Restricted to credit risk analytics users
Incident Response	Rollback to previous model version if required

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8. Regulatory Alignment

Compliant with:

- RBI — Principles for Responsible AI (Interpretability, Fairness, Auditability)
- Lending governance norms

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9. Risks & Mitigations

Risk	Impact	Mitigation
Over-rejection of good customers	Business loss	Analyst override
Data drift in credit behavior	Model degradation	Monthly monitoring
Feature with suspiciously high IV	Leakage possibility	Ongoing periodical validation

- Governance plan in place

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10. Conclusion & Approval Recommendation

The Credit Risk Scoring model is **Approved for implementation** within the analyst-assisted lending decision process.

The model meets all business and governance thresholds:
- High Recall
- High Separation (AUC, KS, Gini)
- Explainable
- Fairness Controls
- Operational Monitoring Ready

- Recommended as **Champion Model** for underwriting support