Business Summary Report: Predictive Insights for Collections Strategy

# 1. Summary of Predictive Insights

**Top 3 Risk Factors Affecting Delinquency:**

* **Missed Payments:** A history of late or missed payments strongly predicts future delinquency.
* **Credit Utilization:** Higher usage of available credit is a key indicator of repayment difficulties.
* **Debt Burden & Financial History:** Low credit scores and high debt-to-income ratios highlight financial risk

**Key Insights Summary Table:**

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| --- | --- | --- | --- |
| Key Insight | Customer Segment | Influencing Variables | Potential Impact |
| Customers with high missed payments are at greatest risk of delinquency | Customers with 3+ missed payments in the last 6 months | Missed Payments, Credit Score, Debt-to-Income Ratio | Early intervention through payment restructuring or financial assistance can reduce default rates |
| High credit utilization is a strong predictor of delinquency | Customers using over 70% of their credit limit | Credit Utilization, Loan Balance, Account Tenure | Offering customized credit limits or repayment incentives can help reduce financial strain |
| Low credit score combined with high debt-to-income ratio increases risk | Customers with credit scores below 400 and debt-to-income ratios above 40% | Credit Score, Debt-to-Income Ratio, Employment Status | Implementing financial counselling and alternative payment solutions can improve repayment ability |

# 2. Recommendation Framework

* **Restated Insight:** Customers with **high credit utilization (>70%)** are significantly more likely to become delinquent, indicating financial strain and difficulty in managing repayments.
* **Proposed Recommendation:** Implement a **credit utilization monitoring system** that identifies high-risk customers and offers proactive repayment plans.
* **SMART Goal:** By the end of **Q2 2025**, Geldium Finance will reduce delinquency rates among **high credit utilization customers (>70%)** by **15%**, through **automated alerts and tailored repayment assistance programs**.
* **Specific:** Targeting customers with **high credit utilization (>70%)**, providing automated alerts and personalized repayment assistance.
* **Measurable:** Achieving a **15% reduction in delinquency rates**, tracking success through financial and engagement metrics.
* **Actionable:** Implementing **real-time monitoring**, automated customer notifications, and structured repayment plans.
* **Relevant:** Directly addresses a major **risk factor** for delinquency, improving financial stability for high-risk customers.
* **Time-bound:** Completing the initiative **by the end of Q2 2025**, ensuring timely intervention and measurable impact.
* **Justification & Business Rationale:** Proactively addressing high credit utilization allows Geldium to **minimize default rates**, improve customer financial stability, and optimize collection efforts. Offering structured repayment solutions ensures **better loan recovery outcomes** while maintaining customer satisfaction.

# 3. Ethical and Responsible AI Considerations:

**Fairness and Bias Risks:**

Predictive models must ensure fair treatment across customer groups to prevent discriminatory outcomes. Two key fairness risks identified in the delinquency prediction model are:

1.Bias in Credit Score & Income Predictions:

* Risk: Customers with lower incomes or historically lower credit scores may be disproportionately classified as high-risk, reinforcing systemic financial inequalities.
* Mitigation: Implement fairness-aware algorithms, such as equalized odds adjustments, and regularly audit model predictions to ensure demographic neutrality.

2.Employment Status Impact on Delinquency Prediction

* Risk: Customers categorized as "Unemployed" or "Self-Employed" may face unfair treatment if the model relies too heavily on employment status to assess risk.
* Mitigation: Use alternative indicators of financial stability (e.g., savings, payment behavior) rather than solely relying on employment status as a predictor.

**Explainability & Transparency:**

To ensure stakeholders understand model predictions, we prioritize:

* Feature importance analysis: Use SHAP values to show why a customer was flagged as high risk.
* Clear communication: Provide customer-friendly explanations such as: > "Your delinquency risk increased due to multiple missed payments and high credit utilization."
* Dashboard insights: Develop interactive visuals for decision-makers to track delinquency patterns.

**Responsible Financial Decision-Making**:

The recommendation supports ethical AI use by:

* Proactively assisting customers with financial challenges rather than penalizing them immediately.
* Reducing false positives in delinquency classification, ensuring only truly at-risk customers receive intervention.
* Encouraging transparency in credit risk evaluations, helping customers understand and improve their financial standing.

**Additional Ethical Principles Considered:**

* Transparency: Maintain audit logs to ensure explainability in predictions.
* Accountability: Conduct ongoing fairness audits to prevent bias drift over time.
* Data Privacy: Secure sensitive financial data and comply with regulatory standards.

By incorporating fairness checks, explainable AI techniques, and ethical considerations, the model ensures responsible, transparent, and unbiased delinquency risk assessment for Geldium Finance.