Business Report: Predictive Insights for Collections Strategy

1. Predictive Insights

Based on the predictive modeling and exploratory data analysis, the following key insights were identified:

* **Top 3 Risk Factors:**
  1. **Missed Payments:** Customers with a history of missed payments over the past 12 months are significantly more likely to become delinquent.
  2. **High Credit Utilization:** Customers using more than 75% of their available credit are at higher risk of delinquency.
  3. **Low Income with High Debt-to-Income Ratio:** Customers with lower income levels and higher debt relative to income show increased likelihood of delinquency.
* **High-Risk Customer Segments:**
  + Customers aged 25-40 with high credit card utilization and recent missed payments.
  + Unemployed or self-employed individuals with inconsistent payment histories.
  + Customers residing in urban regions with higher living costs and limited savings buffers.
* **Key Influencing Variables:**
  + Missed\_Payments, Credit\_Utilization, Income, Debt\_to\_Income\_Ratio, Credit\_Score, Employment\_Status, and recent Payment History (Month 1 to Month 6).

These insights suggest that proactive engagement with at-risk segments could reduce overall delinquency rates. Early detection combined with tailored interventions can lead to measurable improvements in payment behavior.

1. Recommendation Framework

**Restated Insight:** High credit utilization is a strong predictor of future delinquency.

**Proposed Recommendation:**

* **Specific:** Launch a targeted financial wellness outreach for customers with credit utilization above 75%.
* **Measurable:** Aim to reduce delinquency rates within this group by 10% over the next 6 months.
* **Actionable:** Implement personalized communication offering credit counseling, utilization reduction tips, financial education resources, and flexible payment plans.
* **Relevant:** Supports Geldium’s goal of reducing delinquency while enhancing customer financial health and loyalty.
* **Time-bound:** Campaign to launch within 1 month and run for 6 months with monthly performance tracking and quarterly reviews.

**Justification and Business Rationale:** Targeting high credit utilization is both feasible and impactful, as this factor is measurable, actionable, and strongly linked to delinquency. Offering proactive support aligns with Geldium’s customer-centric approach while also protecting revenue. Additionally, this approach can foster long-term relationships and improve customer retention by demonstrating care and support.

1. Ethical and Responsible AI Considerations

* **Fairness Risks:**
  1. The model could unintentionally disadvantage low-income or unemployed customers. To mitigate, ensure that interventions offer support rather than punitive actions, and consider alternative ways to assess financial stability beyond employment status.
  2. Regional or demographic biases may emerge due to skewed historical data. Mitigation involves continuous fairness audits, the use of fairness metrics like Demographic Parity, and careful feature selection to avoid proxy discrimination.
* **Explainability:** The Logistic Regression model is inherently interpretable. For each customer flagged as high risk, clear explanations (e.g., “High credit utilization and recent missed payments”) will be provided to non-technical stakeholders and to the customers themselves. Visual aids, such as risk score breakdowns, will also be used for clarity.
* **Responsible AI Approach:** The model and recommendations are designed to promote financial well-being, ensure transparency, and avoid harm. All decisions will be monitored for fairness, with the opportunity for manual review in edge cases. Data privacy will be strictly maintained, and customers will be informed about how their data is used in decision-making.

By taking these steps, Geldium can use AI insights responsibly to reduce delinquency while maintaining trust, fairness, and regulatory compliance.