AI-Driven Delinquency Risk Insights and Recommendation Report

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1. Summary of Predictive Insights

High-Risk Customer Segments

Analysis of Geldium's dataset revealed that the following customer segments show a heightened likelihood of missing credit card payments:

- Customers with **credit utilization rates above 90%**, especially when combined with low income or unstable employment.
- Customers with **multiple missed payments in the past three months**, often displaying a recurring delinquency pattern.
- Younger customers (under age 30) with limited credit history and high debt-to-income ratios.

These groups represent ideal targets for proactive interventions and outreach strategies.

Top 3 Risk Factors

- **High Credit Utilization Ratio (>90%)**: Indicates financial overextension and a strong correlation with delinquency.
- **Recent Missed Payments**: Payment history in the past 3 months is the most reliable short-term predictor of future risk.
- **High Debt-to-Income Ratio (>0.6)**: Suggests limited repayment capacity, especially when paired with rising balances.

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2. Recommendation Framework

SMART Recommendation

Goal:
Launch a 6-week SMS and email outreach campaign targeting high-risk customers under 30 with 2+ missed payments in the past 3 months, aiming to reduce 30-day delinquency in this group by 10%.

Rationale

This recommendation is specific and actionable, focused on a segment where early interventions have high impact. By leveraging AI-driven risk scoring, Geldium can prioritize outreach efforts, reduce manual triage, and improve overall repayment behavior. The communication strategy is cost-effective, scalable, and aligns with the company's customer engagement goals.

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3. Ethical and Responsible AI Considerations

Fairness Risks and Mitigation

1. **Demographic Bias**: The model may unfairly flag certain age or income groups as high risk.
    - *Mitigation:* Regularly evaluate model performance across demographic segments using fairness metrics like disparate impact ratio.
2. **Feature Bias**: Over-reliance on correlated features (e.g., employment gaps) could reinforce systemic inequality.
    - *Mitigation:* Use interpretable models and monitor feature importance with tools such as SHAP values.

Model Transparency

To ensure responsible AI deployment:

- Present predictions to stakeholders in **plain language**, such as: *"This customer is flagged due to high credit usage and a recent missed payment, which are linked to* *higher default risk."*

- Maintain **explainability** by using transparent models (e.g., logistic regression) and including audit trails for each decision.

Conclusion

The predictive model identifies actionable risk signals that can guide collection strategies with greater precision. By focusing on high-risk segments and applying ethical AI practices, Geldium can reduce delinquency while maintaining fairness and trust. The outlined intervention is both data-informed and aligned with business priorities.