Predictive Analytics Report on Customer Delinquency Risk

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Executive Summary

This report presents predictive insights into customer delinquency risk, focusing on high-risk segments identified through advanced analytics. Key findings highlight that customers under 30 with high credit utilization ($>70\%$) and multiple missed payments are at elevated risk. Recommendations include a targeted 6-week SMS outreach campaign to mitigate delinquency. Ethical considerations ensure fairness and transparency in model deployment, aligning with Geldiums commitment to responsible AI and regulatory compliance.

1 Predictive Insights

Analysis of customer data reveals critical predictors of delinquency, enabling proactive risk management. The strongest predictors include:

- Missed Payments: Customers with 2 or more missed payments in the past 6 months.

- Credit Utilization: High utilization ($>70\%$) significantly increases risk.

- Debt-to-Income Ratio: Elevated ratios correlate with higher delinquency likelihood.

- Employment Status: Unstable employment heightens risk.

- Monthly Payment Behavior: Inconsistent patterns signal potential issues.

A high-risk segment includes younger customers (<30 years) with short account tenures and below-median income, particularly when combined with inconsistent payment histories.

Key Insights Summary

2 Recommendation Framework

Restated Insight

High credit utilization ($>70\%$) combined with 2 or more missed payments is a strong predictor of delinquency, particularly among customers under 30.

Key Insight	Customer Segment	Influencing Variables	Potential Impact
High credit utilization with missed payments	Customers under 30 with 2+ missed payments	Credit Utilization, Missed Payments, Account Tenure	Target at-risk customers with tailored outreach
High debt-to-income ratio	Low-income customers with high loan balances	Debt-to-Income Ratio, Loan Balance, Income	Refine lending criteria and adjust payment plans
Frequent missed or late payments	Customers with >3 late/missed statuses in 6 months	Month 1 to Month 6 behavior patterns	Use payment behavior scoring for early intervention

Table 1: Summary of Key Predictive Insights

Proposed Recommendation

Launch a 6-week SMS outreach campaign targeting customers under 30 with credit utilization above 70% and at least 2 missed payments. The campaign will use AI-driven risk scores to trigger automated outreach workflows, aiming to reduce the 30-day delinquency rate by 10% in this segment.

SMART Criteria

- **Specific**: Targets high-risk customers aged <30 with poor credit behavior.

- **Measurable**: Aims to reduce 30-day delinquency rate by 10%.

- **Actionable**: Leverages AI-driven workflows for automated outreach.

- **Relevant**: Aligns with Geldiums goals of minimizing delinquencies and improving retention.

- **Time-bound**: Pilot to be executed over 6 weeks, with evaluation based on pre- and post-intervention delinquency rates.

Business Rationale

This low-cost, scalable intervention directly addresses a high-risk group, supporting proactive customer engagement and risk mitigation. It ensures compliance through explainable, data-driven decisions, aligning with Geldiums strategic objectives.

3   Ethical and Responsible AI Considerations

To ensure fair and transparent use of predictive models, the following risks and mitigations are proposed:

- **Fairness Risk #1**: The model may disproportionately flag young or low-income customers.

- **Mitigation**: Conduct regular audits of predictions by demographic subgroup to identify and address biases.

- **Fairness Risk #2**: Historical missed payments may reflect structural inequities.

- **Mitigation**: Incorporate contextual features, such as income shocks or employment status, to provide a more equitable assessment.

Responsible AI Practices

- Use interpretable models (e.g., logistic regression, decision trees) to enhance transparency.

- Ensure human review of all automated outputs to maintain accountability.

- Maintain compliance with fairness, transparency, and data privacy standards.

4   Conclusion

This report identifies high-risk customer segments for delinquency and proposes a targeted SMS outreach campaign to mitigate risks. By leveraging predictive analytics and adhering to responsible AI practices, Geldium can reduce delinquency rates while ensuring fairness and compliance. The 6-week pilot will provide measurable outcomes to guide future strategies.