

**Task 3 – Business Summary Report: Predictive Insights for Collections Strategy**

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## 1. Summary of Predictive Insights

Geldium's portfolio is steady on the surface, but a small set of stress signals tells us exactly where to focus to keep customers solvent and the ledger clean. Think of this as the trailer before the feature: here are the three scenes that matter most right now.

- Key Features Selected (Top 5 based on EDA analysis):
- Delinquency base rate is 16%, so every 10-point lift in recall materially reduces losses; precision must stay acceptable to avoid over-contacting good customers.
- Highest-risk patterns combine payment behavior and stress signals: utilization above 60%, debt-to-income above 0.4, and recent missed payments sharply increase risk compared to the baseline.
- Protective factors: longer tenure and stronger credit scores dampen risk; short-tenure customers with moderate scores are more volatile and merit closer monitoring.

Key Insight	Customer Segment	Influencing Variables	Potential Impact
Customers with utilization > 60% and 1–2 missed payments show ~2–3x higher delinquency likelihood than baseline	Revolving users with rising balances	Credit_Utilization, Missed_Payments, Debt_to_Income_Ratio	Prioritize early, empathetic outreach to contain roll rates
Short-tenure customers (< 12 months) with mid-tier credit scores are more likely to slip into delinquency during balance growth phases	Newer accounts building history	Account_Tenure, Credit_Score, Loan_Balance trend	Add welcome-to-stability nudges and spending guardrails



High debt-to-income ( $> 0.4$ ) plus utilization $> 50\%$ signals liquidity stress even without prior misses	Mixed-age, working customers	Debt_to_Income_Ratio, Credit_Utilization, Income	Offer limit soft caps and payment plan options before first miss
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## 2. Recommendation Framework

The insight is clear; now the move needs to be crisp. This framework turns the risk signal into a controlled pilot the team can run, measure, and either scale or stop with confidence.

**Insight:** Customers with utilization  $> 60\%$  and at least one missed payment are roughly 2–3x more likely to become 30-day delinquent than the 16% baseline.

**Recommendation:** Pilot a targeted, human-backed outreach program to this segment.

- Specific: Identify customers with utilization  $> 60\%$  and 1–2 missed payments in the last 90 days; exclude those already in hardship programs.
- Measurable: Target 10% relative reduction in 30-day delinquency rate for this segment and a  $<5\%$  increase in false-positive contacts (non-delinquent customers contacted).
- Actionable: Use existing CRM to trigger a 3-touch sequence (SMS + email + agent call) offering payment plan options and utilization coaching; integrate a simple hardship self-assessment form.
- Relevant: Focuses on the highest lift segment with clear financial upside while keeping customer experience front and center.
- Time-bound: Run a 6-week pilot; evaluate weekly; decide on scale-up in week 7 based on delinquency, contact success, and opt-out rates.

### Justification and Business Rationale:

- Concentrates resources on the segment with the steepest risk gradient, improving recall without a large precision penalty.
- Uses transparent, explainable triggers (utilization, missed payments) aligned with regulatory expectations.



- Blends digital nudges with human follow-up to preserve customer goodwill and reduce roll rates before they become charge-offs.

### 3. Ethical and Responsible AI Considerations

No recommendation sticks without trust. The checks below keep the program fair, explainable, and proportionate so the outreach helps customers rather than surprises them.

- Bias and fairness: Monitor performance by age bands and income bands to ensure the outreach trigger does not disproportionately target specific demographics; review coefficients to remove proxy variables if disparities emerge.
- Explainability: Provide customers a plain-language reason for outreach (“recent missed payment and high balance utilization”) and the option to contest or clarify their status.
- Proportionality and consent: Outreach offers support and self-service plans rather than punitive actions; all messages should include clear opt-out choices.
- Privacy and minimization: Limit feature use to necessary financial variables; log access and ensure data retention follows policy.
- Human oversight: Flag high-risk cases for agent review before any limit change; require periodic model and threshold reviews to detect drift.