

# Business Summary Report: Predictive Insights for Collections Strategy

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## 1. Summary of Predictive Insights

Our delinquency prediction model for Geldium revealed clear and actionable risk patterns that can help the Collections team target interventions more precisely. Using logistic regression with fairness and interpretability in mind, the analysis identified **credit utilization, payment history, and debt-to-income ratio (DTI)** as the strongest predictors of customer delinquency.

Key insights for the Collections Strategy:

- **Customers with credit utilization  $\geq 80\%$**  are over **3x more likely** to default in the next payment cycle.
- **Two or more missed payments** combined with **DTI > 0.5** strongly increases delinquency probability.
- **Younger borrowers (age 25–35)** and **customers with multiple small loans** show higher delinquency risk due to financial instability.

**Key Insights Summary Table**

Key Insight	Customer Segment	Influencing Variables	Potential Impact
Customers with $\geq 80\%$ credit utilization are 3x more likely to default	Over-leveraged credit users	Credit Utilization, DTI, Recent Missed Payments	Early engagement could reduce delinquency by ~25–30%
Two or more missed payments predict chronic delinquency	Customers with repeated late payments	Payment History, Loan Amount, Tenure	Enables proactive outreach before default stage

Younger borrowers with limited income show higher risk	Age 25–35 segment with moderate loans	Age, Income, Utilization Rate	Early education and personalized repayment options can improve retention
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## 2. Recommendation Framework

### Restated Insight:

Customers with **credit utilization ≥80%** are significantly more likely to default within the next billing cycle, especially when combined with a **DTI ratio above 0.5**.

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### Proposed Recommendation:

**Pilot a 6-week proactive financial engagement campaign** targeting high-utilization customers, aiming to **reduce 30+ day delinquency by 20% within 6 months**.

#### Specific:

Launch an automated alert and financial counseling program for customers with  $\geq 80\%$  credit utilization. The system will send reminders, offer repayment options, and provide links to budget planning tools.

#### Measurable:

Track reduction in 30+ day delinquency within this group (target: **20% decrease**) and measure engagement rate with outreach messages (>50% response rate).

#### Actionable:

Use Geldium's existing CRM and customer communication tools (email/SMS) to deliver alerts and track repayment activity — no major new infrastructure needed.

#### Relevant:

Aligns with Geldium's business goals of **reducing bad debt exposure**, improving **operational efficiency**, and **enhancing customer trust** through early support rather than post-default action.

#### Time-bound:

- **Week 1–2:** Identify and segment high-risk customers
  - **Week 3–8:** Pilot 6-week outreach program
  - **Month 3–6:** Evaluate results and scale successful interventions across the entire portfolio
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## Justification and Business Rationale:

This recommendation balances **business efficiency**, **customer care**, and **ethical responsibility**.

- **Scalability:** The approach leverages existing digital channels and CRM capabilities for easy expansion.
  - **Ease of Implementation:** No new data collection required; uses model outputs directly.
  - **Fairness:** Interventions focus on financial education and flexibility — not penalties.
  - **ROI Potential:** A 20% delinquency reduction could save significant recovery costs and improve repayment rates.
  - **Strategic Alignment:** Supports Geldium's focus on responsible lending, customer retention, and predictive risk management.
  - **Data-Driven Evidence:** Logistic regression and SHAP analysis confirm credit utilization and DTI as top predictive variables for delinquency.
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## 3. Ethical and Responsible AI Considerations

### Fairness and Bias Concerns

- **Risk 1: Income-based bias** — Customers with lower income naturally have higher credit utilization and might be unfairly labeled “high-risk.”  
**Mitigation:** Apply fairness checks by income level, use proportional utilization

metrics (relative to credit limits), and avoid punitive actions.

- **Risk 2: Age-based bias** — Younger borrowers may appear riskier due to shorter credit histories.

**Mitigation:** Incorporate behavioral variables (e.g., payment consistency) over demographic ones, ensuring decisions are performance-based, not age-based.

## Explainability

The chosen logistic regression model is **transparent and interpretable**, allowing us to explain predictions in clear terms:

“The model flags a customer as high-risk when credit utilization is above 80% and two or more payments are missed in the past quarter.”

This language is easily understood by both technical and non-technical stakeholders, including the Head of Collections and customer service teams.

## Responsible and Transparent AI Use

- **Transparency:** All predictive insights are traceable and interpretable; no black-box algorithms are used.
- **Accountability:** Regular model audits and fairness reviews ensure compliance with Geldium’s ethical AI framework.
- **Customer Impact:** The recommendations focus on **supporting** customers through education and flexible repayment — not penalizing them.
- **Data Privacy:** All personal and financial data are anonymized during analysis, following GDPR and internal compliance standards.

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## Summary:

This predictive framework helps Geldium move from reactive collections to proactive prevention — reducing delinquency, protecting customer relationships, and demonstrating a commitment to fair, transparent, and responsible AI-driven decision-making.