Business Summary Report: Predictive Insights for Collections Strategy

# 1. Summary of Predictive Insights

Drawing from the Exploratory Data Analysis (Task 1) and the predictive modeling approach (Task 2), the following key patterns were identified:

* Customers below the age of 30 who have missed two or more payments and maintain a credit utilization rate above 50% exhibit a considerably higher likelihood of becoming delinquent.
* A debt-to-income ratio exceeding 0.5 is strongly associated with delayed or missed repayments.
* Accounts with a tenure of less than 12 months are generally linked to weaker repayment reliability.

**Key Insights Summary Table:**

| **Key Insight** | **Customer Segment** | **Influencing Variables** | **Potential Impact** |
| --- | --- | --- | --- |
| Customers with elevated credit usage and repeated missed payments face the highest delinquency risk. | Age < 30, 2+ missed payments, credit utilization > 50% | Missed Payments, Credit Utilization, Age, Debt-to-Income Ratio | Proactive engagement with this group could potentially lower 30-day delinquency rates by over 10%. |

# 2. Recommendation Framework

**Restated Insight:**  
Customers below 30 years of age with two or more missed payments and credit utilization exceeding 50% are at a notably elevated risk of delinquency.

**Proposed Recommendation:**  
Implement a 6-week SMS-based engagement campaign aimed at this high-risk group to achieve at least a 10% reduction in 30-day delinquency.

**SMART Breakdown:**

* **Specific:**  
  Focus on individuals under 30 who have missed two or more payments and have a credit utilization rate above 50%.
* **Measurable:**  
  Monitor the decline in 30-day delinquency rates with the goal of achieving a minimum 10% reduction.
* **Actionable:**  
  Leverage the current SMS communication system to initiate targeted outreach.
* **Relevant:**  
  This initiative aligns with Geldium’s strategic objective of minimizing delinquency and encouraging better repayment habits.
* **Time-bound:**  
  The campaign is scheduled to run for a total duration of 6 weeks.

**Justification and Business Rationale:**  
This focused intervention is backed by data, low-cost, and scalable. It allows Geldium to directly engage with a vulnerable customer segment in a timely manner. The approach is expected to generate substantial improvements in delinquency metrics while supporting customer retention and trust.

# 3. Ethical and Responsible AI Considerations

* **Potential Bias:**  
  There is a risk that the model may misclassify or under-represent certain demographic groups due to imbalances in historical data, such as biases related to income or geographic location. Conducting fairness assessments is essential to mitigate this.
* **Model Explainability:**  
  Logistic regression offers transparent and interpretable outputs, making it easier for business teams to understand how risk scores are derived.
* **Responsible Use of Predictions:**  
  All model-generated outputs are subject to human oversight before any decisions are made. The SMS outreach is intended to be helpful and non-punitive.
* **Additional Ethical Principles:**  
  Transparent features, anonymized data, and ongoing monitoring ensure ethical, accurate, and privacy-respecting model performance.