# Marketing ROI Optimization: Data-Driven Precision in Term Deposit Subscriptions

Transforming Direct Marketing from Volume-Based to Value-Based Outreach

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Strategic Problem Framing: The ROI Conflict

The Problem: High Operational Costs

- "Call Fatigue" leads to diminishing returns.
- Low-yield customer segments drain resources.

The Statistical Solution

A framework for identifying:

- "Alpha Segment": High conversion potential.
- "Money Pit": High cost, low return.

Core Objective: Surgical Deselection

- Stop calling the bottom 3% of high-waste leads.
- Reallocate effort for a projected 15% revenue lift.

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Metric Analysis: Age, Job, & Education

Chi-Square analysis confirms **Job** and **Education** are significant predictors of deposit subscription ($p < 0.05$).

Job (Conversion Lift)

- **Students:** +27.3% lift over baseline
- **Retired:** +18.9% lift over baseline

Education (Academic Advantage)
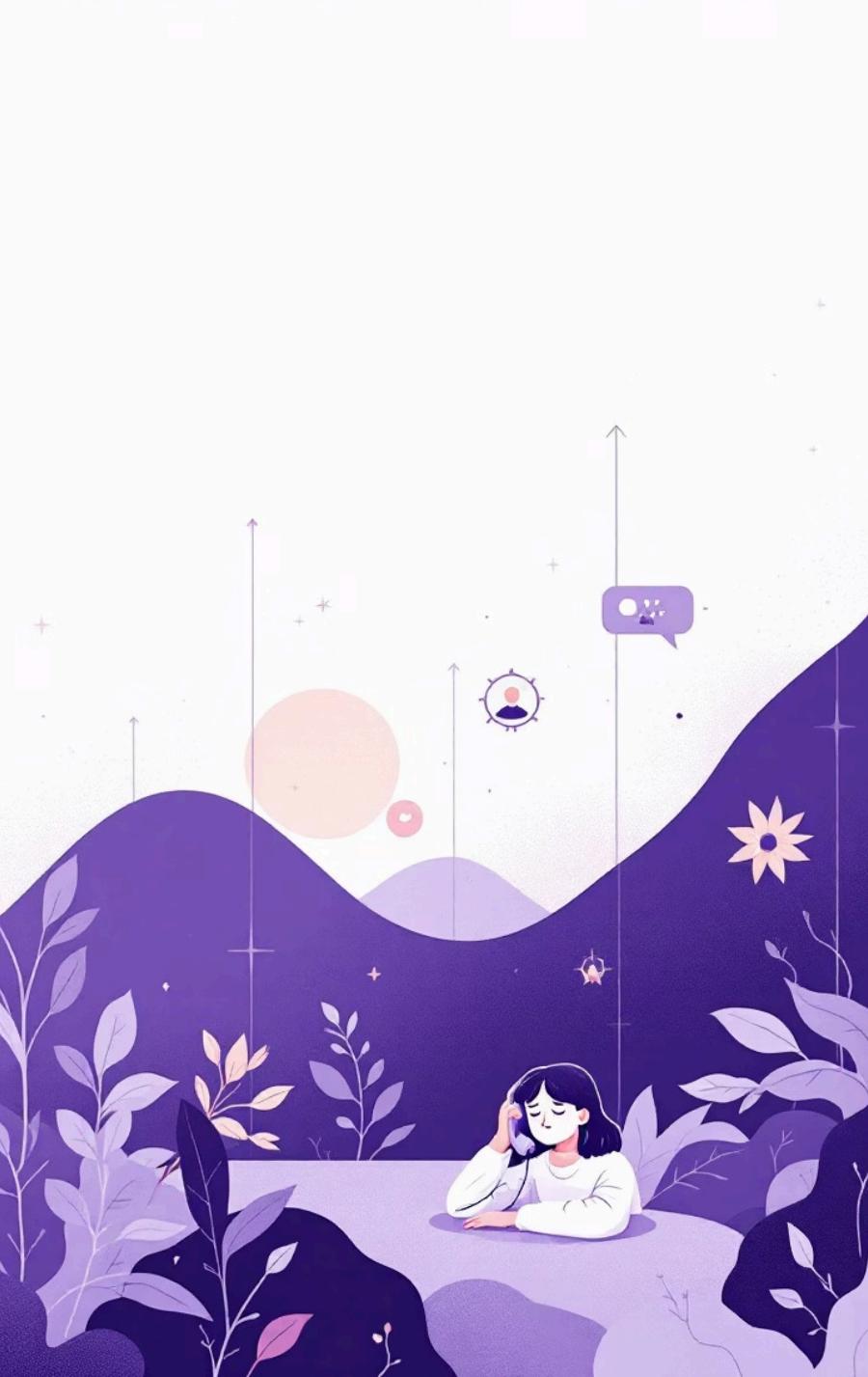
Tertiary-educated leads convert at a significantly higher 54.1%.

Age Profile

Top performers are concentrated in "Life-Stage Bookends" — young students and retired seniors.

Underperformers such as blue-collar workers (-10.9% lift) and service industry employees (-7.5% lift) require significantly higher effort for lower returns, highlighting areas for strategic reallocation of resources.

Identifying the 'Call Fatigue' Threshold

Non-linear regression reveals the **5th contact attempt** as the critical inflection point for diminishing returns.

1st Attempt

53.4% Success Rate

5th Attempt

36.7% Success Rate

Attempt > 5

Rate crashes to 23.1%

Business Impact

Every call made after the 5th attempt is **300% less efficient** than a first call to a fresh lead.

The Ideal Customer Profile: Alpha vs. Money Pit

The Alpha Profile

- Single
- Student/Retired
- Tertiary Education
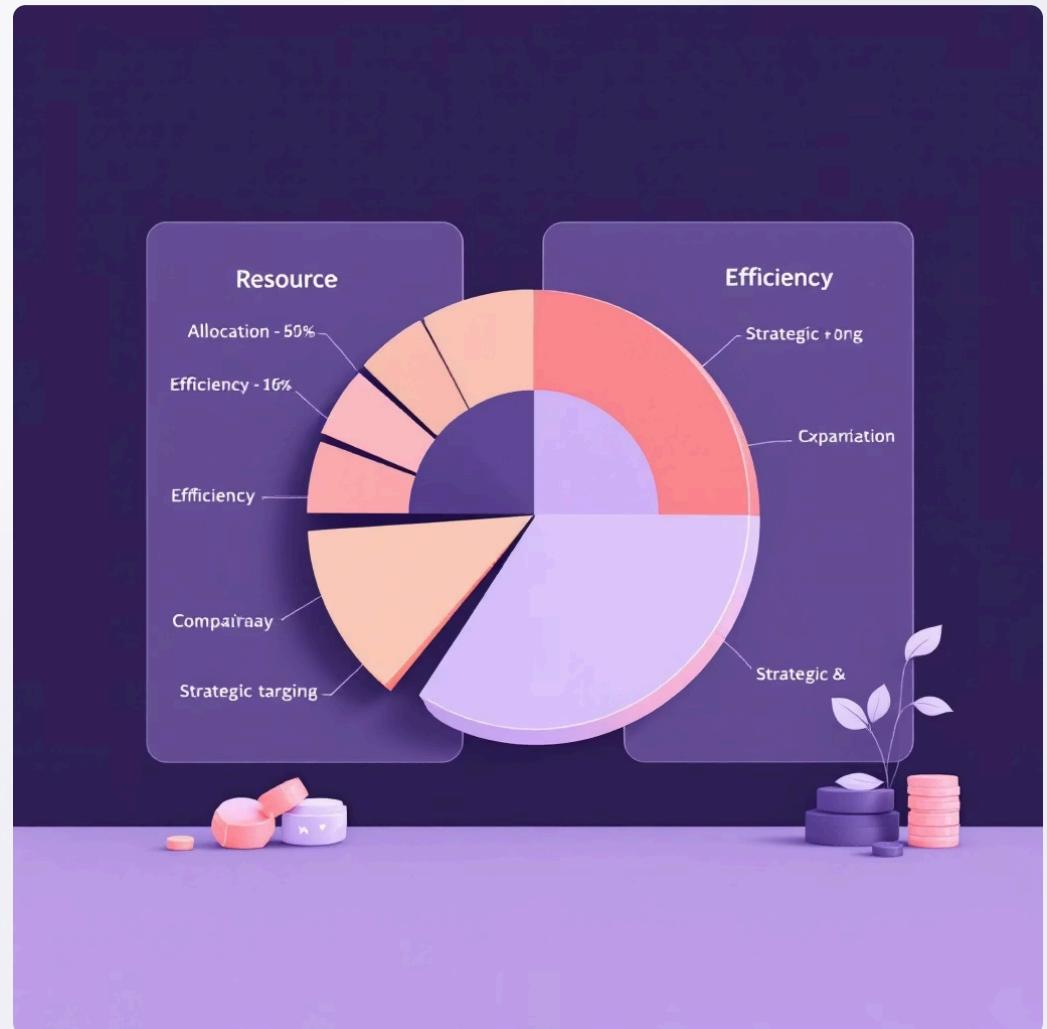
Comparative Resource Consumption

- **Alpha Segment:** 3.0 calls per deposit
- **Money Pit (5+ Calls & Prev. Failure):** 30.8 calls per deposit

Strategic Verdict
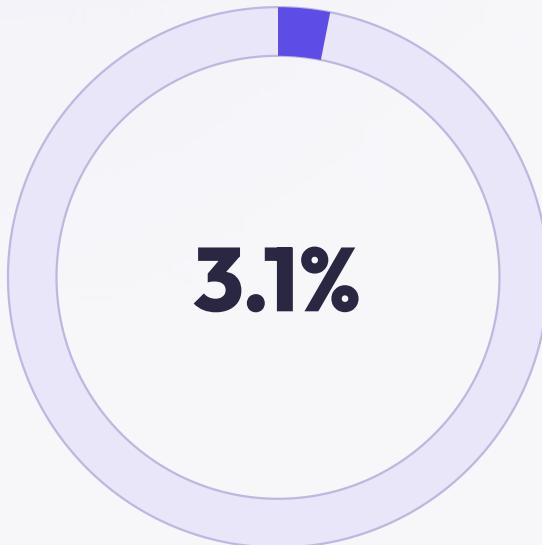
The Alpha segment is **10x more efficient** than the Money Pit.

Investing 1,000 hours in the 'Money Pit' yields only 32 deposits, while the same hours on the 'Alpha' segment generates 333 deposits, demonstrating a clear path to exponential efficiency gains.
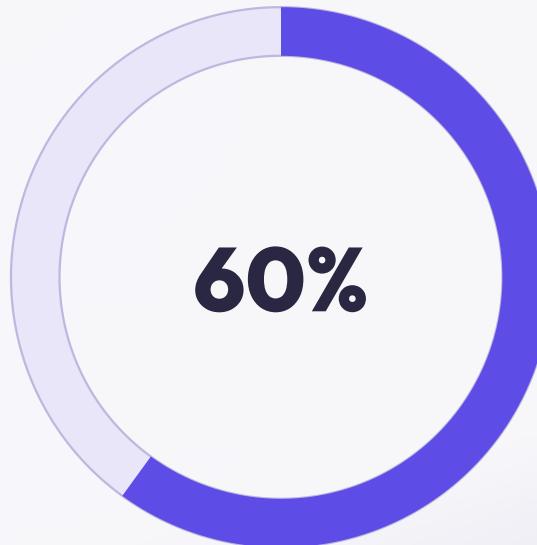
Business Impact & Cost Savings

Moving from blanket cuts to surgical precision dramatically improves ROI.

3.1%
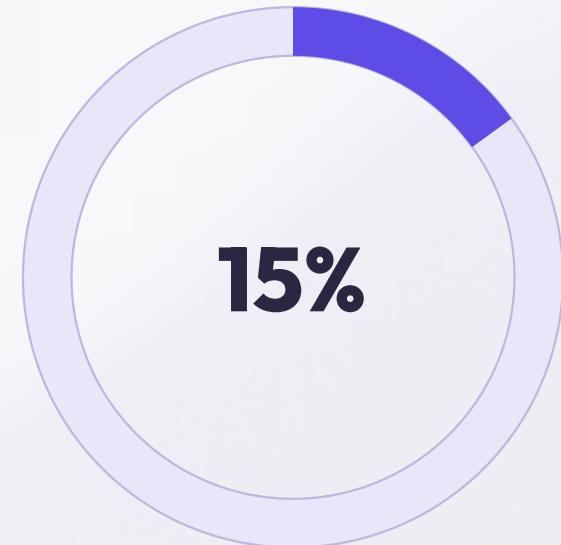
Effort Saved

Total call volume reduction

60%

CPA Reduction

Improvement in acquisition cost

15%

Revenue Impact

Net increase in total deposits

By eliminating the "Money Pit" (the bottom 3.1% of high-waste volume), we achieve significant savings and revenue growth.

This represents a Sensitivity Analysis. We are trading 31 low-probability calls for 10 high-probability ones.

Technical Guardrails: Predictive Modeling Integrity

Ensuring the robustness and actionability of our predictive models.

Constraint 1: No Data Leakage
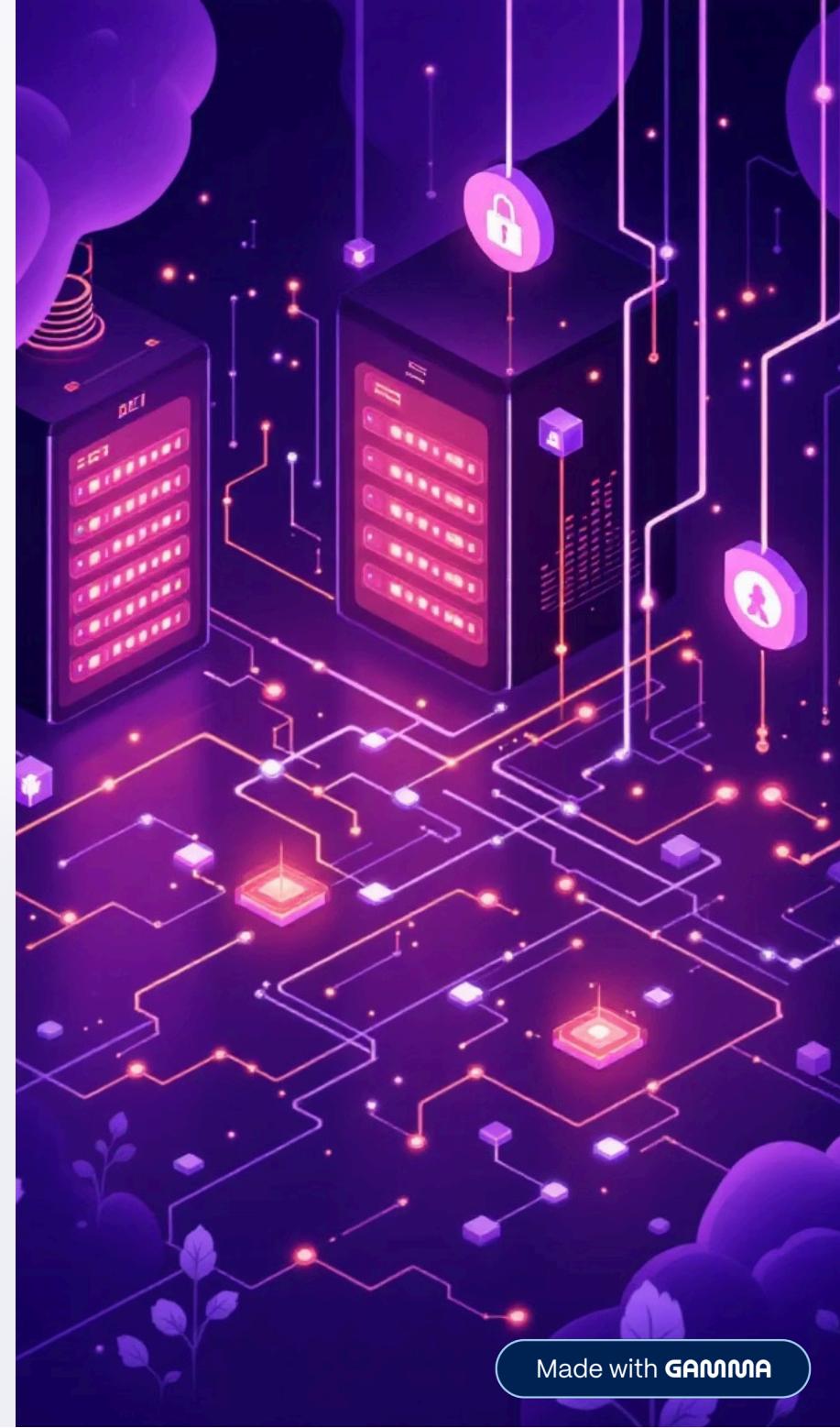
Explicitly **excluded 'Duration'** from all predictive modeling. 'Duration' is only known after a call and cannot be used for predictive selection.
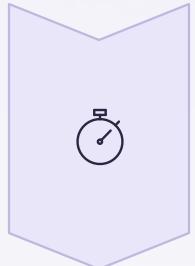
Constraint 2: Granularity

Analysis conducted at **Department-level** to ensure institutional scalability and consistent operational policy.

By excluding duration, we ensure our model is realistic and actionable for real-world outreach where the call length is unknown.

Actionable Roadmap
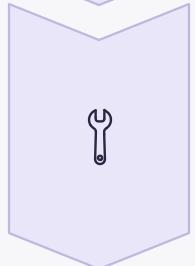
Phase 1 (Immediate)

Implement a **Hard Cap** at 5 contact attempts to stop resource bleeding.

Phase 2 (30 Days)

Integrate **"Alpha Lead Scoring"** (Single, Tertiary, Student/Retired) into the CRM.

Phase 3 (60 Days)

Script optimization for "Blue-collar/Married" segments to improve their 26% conversion floor via **A/B testing**.

Data without action is overhead. We move from Descriptive Analytics (what happened) to Prescriptive Strategy (what we will do).