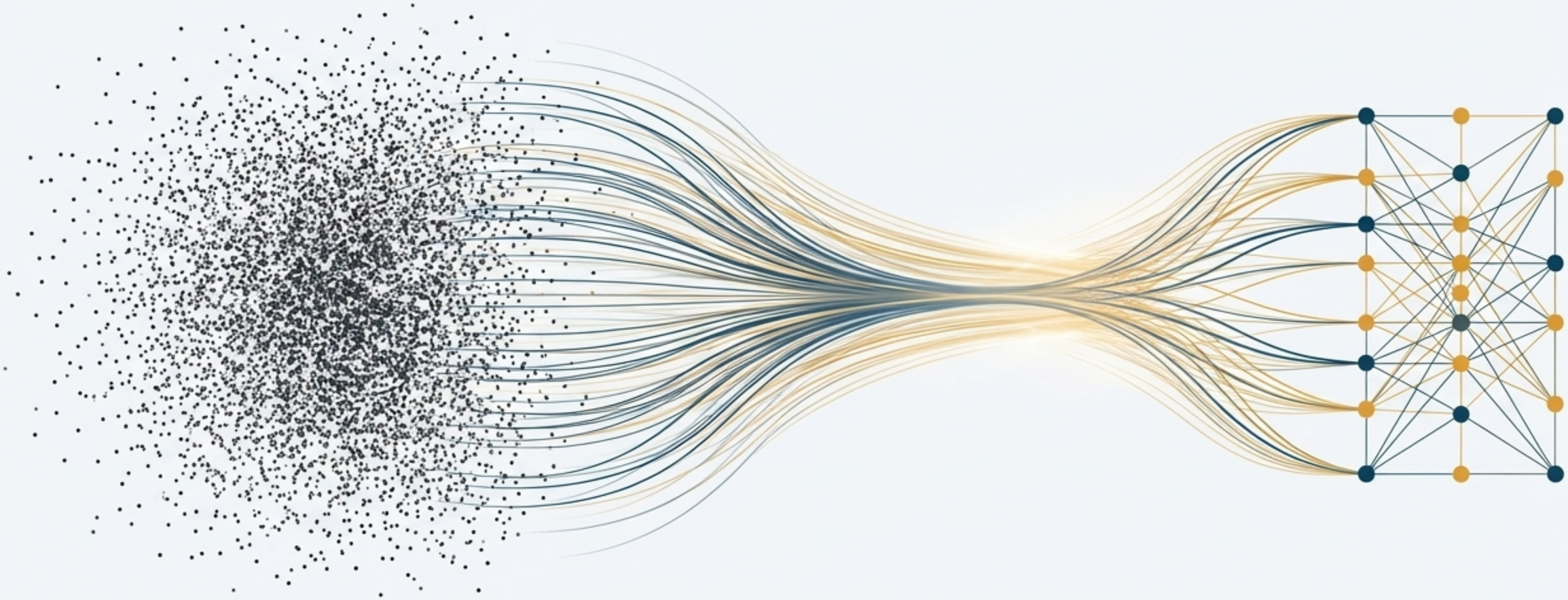
From Data to Decisions

Building an Intelligent Customer Value Engine



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A Hidden Opportunity in 541,909 Transactions

> "As a **product manager**, I want an **analytical dashboard** to leverage insights **from 541,909 transactions**, enabling marketing teams to make **informed,** data-driven decisions."

The Current State

- Massive, valuable data remains unused.

- Marketing decisions are based on intuition, not evidence.

- Opportunities for growth are being missed.

The Goal

- Empower our marketing team with a powerful tool to transform data into strategic action and measurable growth.

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The Solution: An Intelligence Dashboard to Turn Insights into Profit

Instant CLV Forecasting: Predict the future value of any customer on demand.

Dynamic Customer Segmentation: Automatically group customers into smart, actionable segments.

Marketing Campaign Simulation: Simulate the performance and measure the potential ROI of campaigns before launch.

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Chapter 1: Building a Foundation of Trusted Data

Raw Data

Starting with 541,909 raw transactions.

Data Cleaning

Addressed ~135,000 records with missing IDs and removed canceled orders.

Feature Engineering

Calculated key RFM metrics (Recency, Frequency, Monetary).

Clean Dataset

A reliable asset, ready for analysis and modeling.

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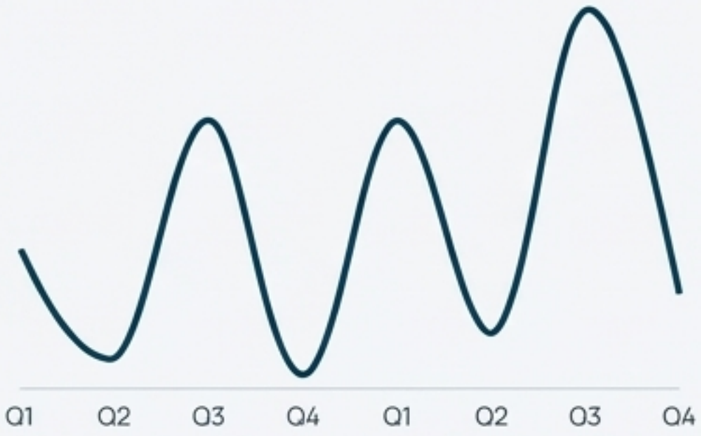
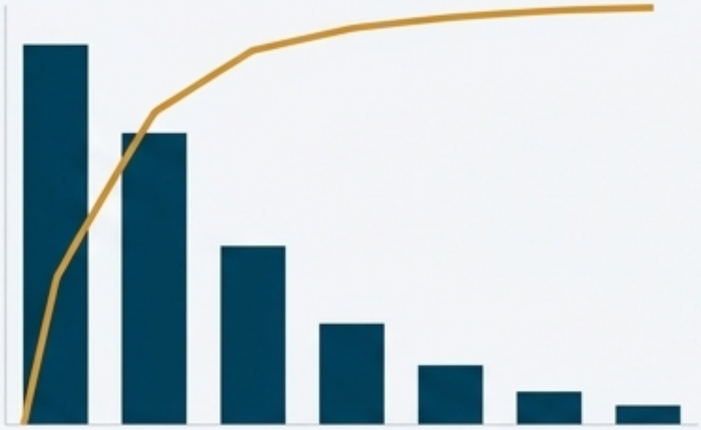
Chapter 2: What the Data Immediately Revealed

Seasonal Trends



We identified clear peak purchasing periods, allowing for targeted seasonal campaigns.

The 80/20 Rule



A small group of high-value customers drives the vast majority of our revenue.

Geographic Focus

The United Kingdom is our core market, representing the bulk of transactions.

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Chapter 3: Predicting Future Customer Value

Key Drivers of CLV

Recency
(How recently they purchased)

Frequency
(How often they purchase)

Monetary
(How much they spend)

Predicted CLV

Model Performance

Model	MAE	MSE	R^2 Score
Linear Regression (LR)	**739**	**7.2M**	**66.9%**
Random Forest (RF)	833	12.3M	43.7%
XGBoost (XGB)	762	12.2M	44.0%

Linear Regression was selected as our core model. It provides the strongest predictive performance (R^2 of 66.9%) and is highly interpretable, allowing us to clearly understand the key drivers of customer value.

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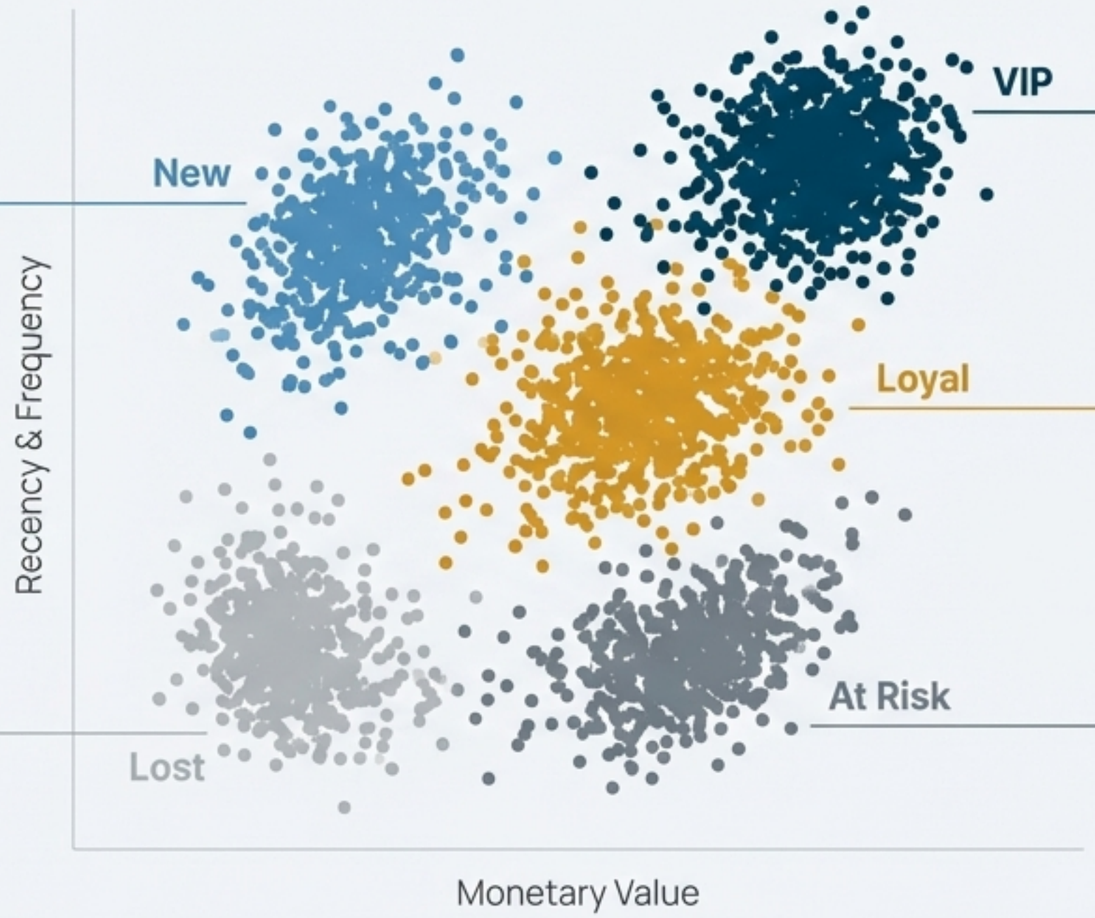
Chapter 4: Transforming Numbers into Customer Personas

New: Recent customers with high potential who need to be nurtured into Loyal or VIP status.

Lost: Inactive customers with the lowest recency, frequency, and monetary scores.



VIP: Our most active, recent, and high-spending customers. The core of our business.

Loyal: Consistent customers who are still valuable but may show signs of declining activity.

At Risk: High-value customers who have not made a purchase in a long time. Need immediate reactivation.

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Your Command Center for Customer Intelligence

One interactive tool to search, segment, analyze, and simulate.

A Tour of Your New Toolkit

1. Instant Customer Search

Look up any customer by ID to instantly see their predicted CLV, behavioral profile, and current segment.

2. Interactive Segment Explorer

Visually dive into each of the 5 segments. Understand their collective spending habits, purchase frequency, and value.

3. Advanced RFM Analysis

Use interactive filters to analyze the entire customer base by Recency, Frequency, and Monetary scores.

Campaign ROI Simulator

Model marketing campaigns by selecting a target segment and cost. Get an instant projection of your expected Return on Investment.

5. Targeted List Export

Generate and download a clean list of customers from any segment or filter with a single click.

6. Customer Behavior Visuals

Access dynamic charts and graphs that bring real-time customer activity and trends to life.

Model Performance Monitor

View the live accuracy scores of our predictive models, ensuring you can always trust the insights you receive.

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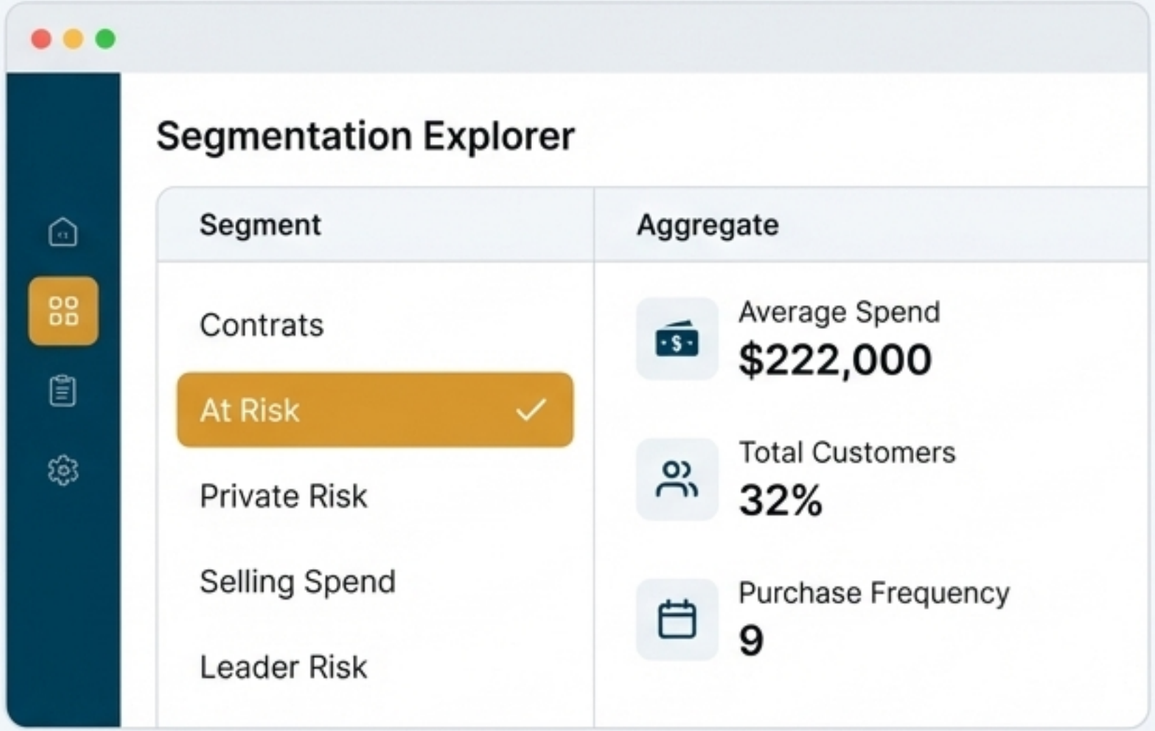
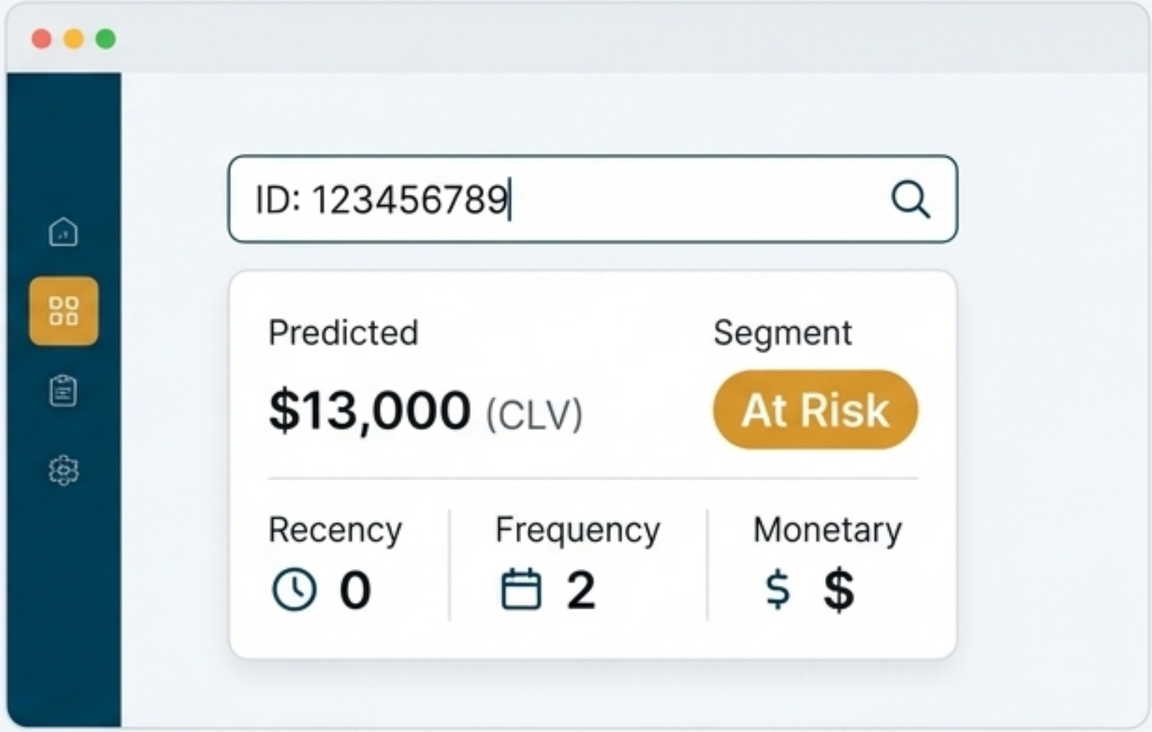
Spotlight: Go from Macro to Micro in Seconds



Segmentation Explorer



Customer Lookup

Instantly understand any customer's value and behavioral profile, empowering your sales and support teams with deeper insights in every interaction.

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Spotlight: Strategic Foresight with the Campaign Simulator

Plan your marketing campaigns with predictable ROI *before* spending a single dollar.

Campaign Simulator

Inputs Section

Target Segment

At Risk

Proposed Cost

$50,000

Run Simulation

Outputs Section

Projected ROI

+250%

Projected Revenue

$175,000

Example Scenario

Action: Target the 'At Risk' segment with a $50,000 reactivation campaign.

Result: The simulator projects a **+250% ROI**, generating **$175,000** in expected revenue.

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The Transformation: From Chaos to Clarity

541,909 raw transactions.
Decisions based on intuition.
Lost opportunities.

Instant insights.
Data-driven targeting.
Maximized return on investment.

We have transformed our data from a passive archive into an active strategic asset that drives business growth.

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Your New, Smarter Workflow

1

Identify

Use the dashboard to pinpoint a strategic opportunity.

Example: *Identify "At Risk" customers.*

2

Target

Filter and export a targeted list for your campaign with one click.

Example: *Launch a reactivation campaign for this specific segment.*

3

Measure & Optimize

Use the dashboard to monitor campaign results and track changes in segment behavior.

Example: *Measure the campaign's success and ROI in real-time.*

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Meet the Architects

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We’ve Turned Our Data Into Our Most Powerful Strategic Asset.

Now, let’s use it to drive the future of our growth

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