



Optimizing E-commerce Performance

Data-driven strategies to reduce e-commerce returns and boost net sales for the business.

The True Price Tag of Returns

- **36% Overall Return Rate**
Resulting in €179,691 in net sales loss for the analyzed period
- **Top Return Reasons**
"Wrong Size" (17%) and "Fit Not Right" (16%) are the predominant drivers
- **High-Return Product Categories**
Shoes (51%) and Lingerie (48%) exhibit disproportionately high return rates
- **Customer Behavior Impact**
First-time buyers have a 40% return rate, compared to 34% for repeated buyers and 32% for premium members
- **Quantified Impact of Solutions:**
Significant drop (5-10%) in return rates and €25K-€50K net sales recovery.

So, what does this 36% return rate *actually* look like on the ground?

The €179,691 hole in the Pocket

Gross Sales

€392,018

Net Sales

€212,327

Total Orders

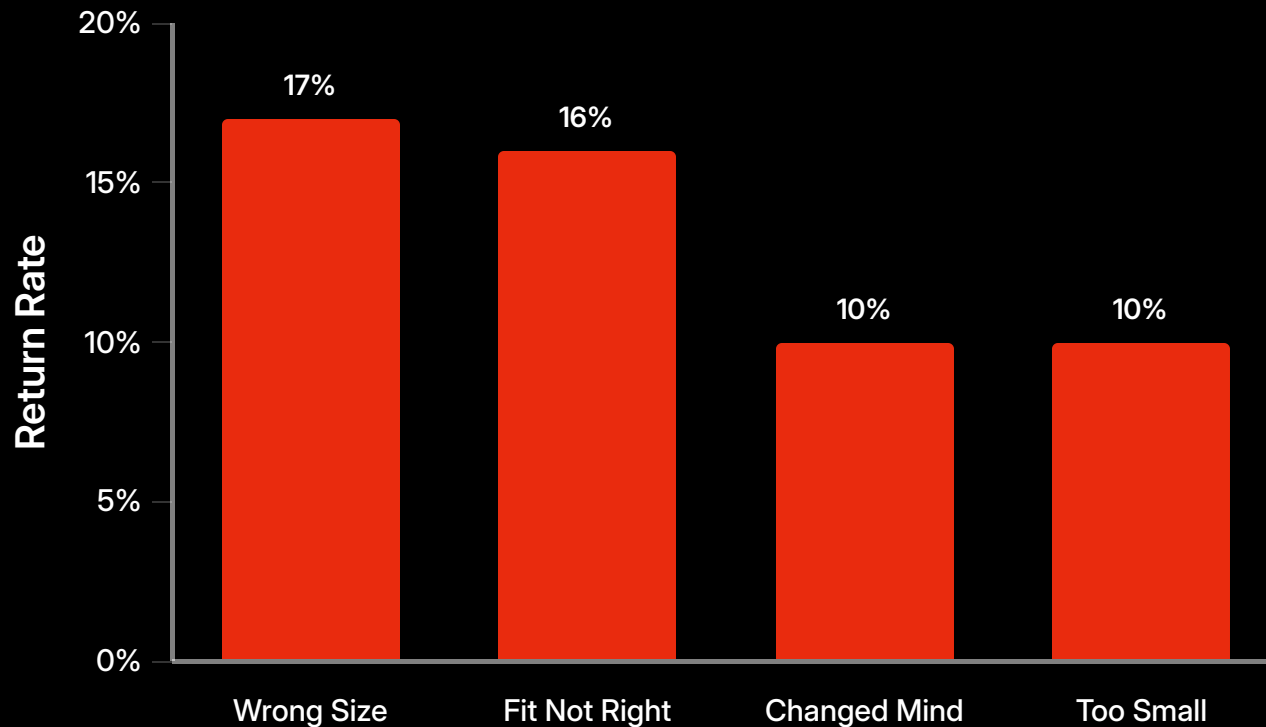
10,000

Returned Orders

3,598

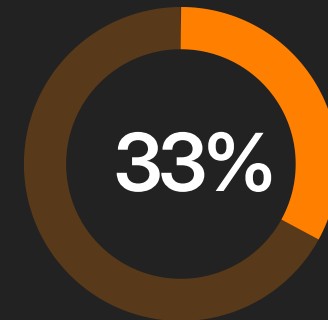
It's not just about lost sales. It's about...

Why They're Sending It Back: The 'Fit Issue' Epidemic



€179,691

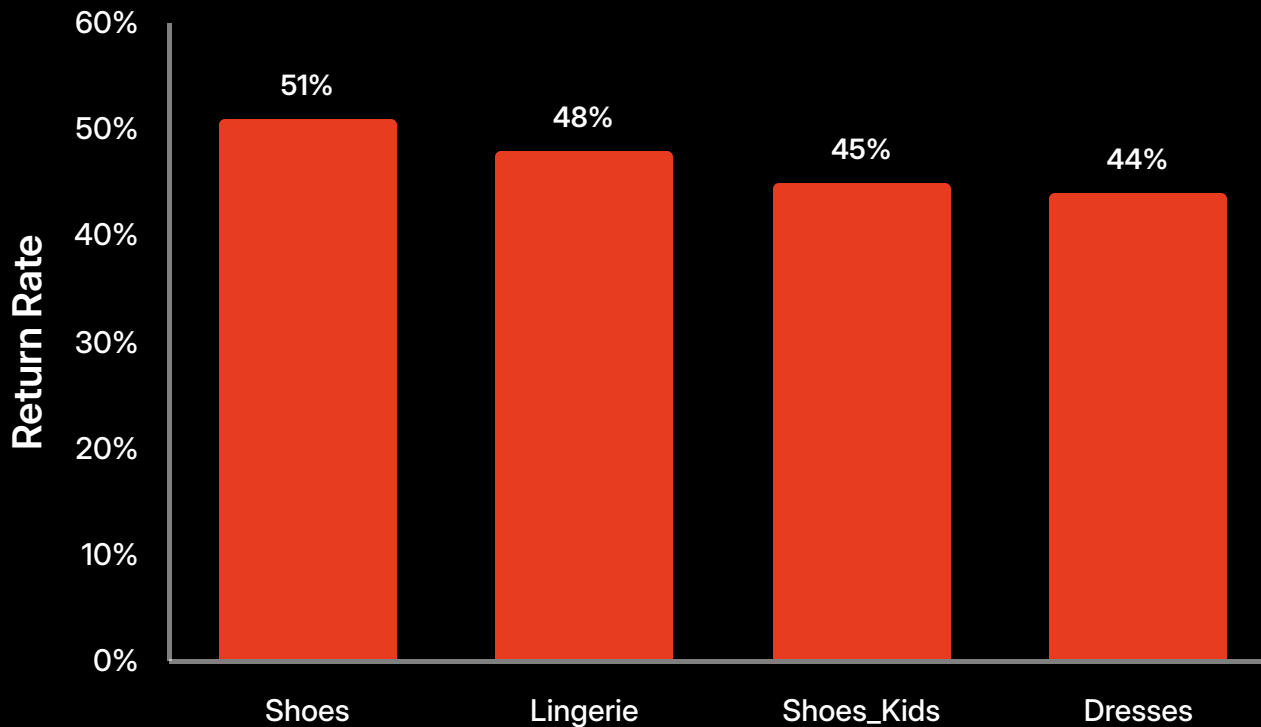
Lost due to returns



Size/fit Issues

But which products are the worst offenders?

The 'Return Hot Zones' of the Inventory

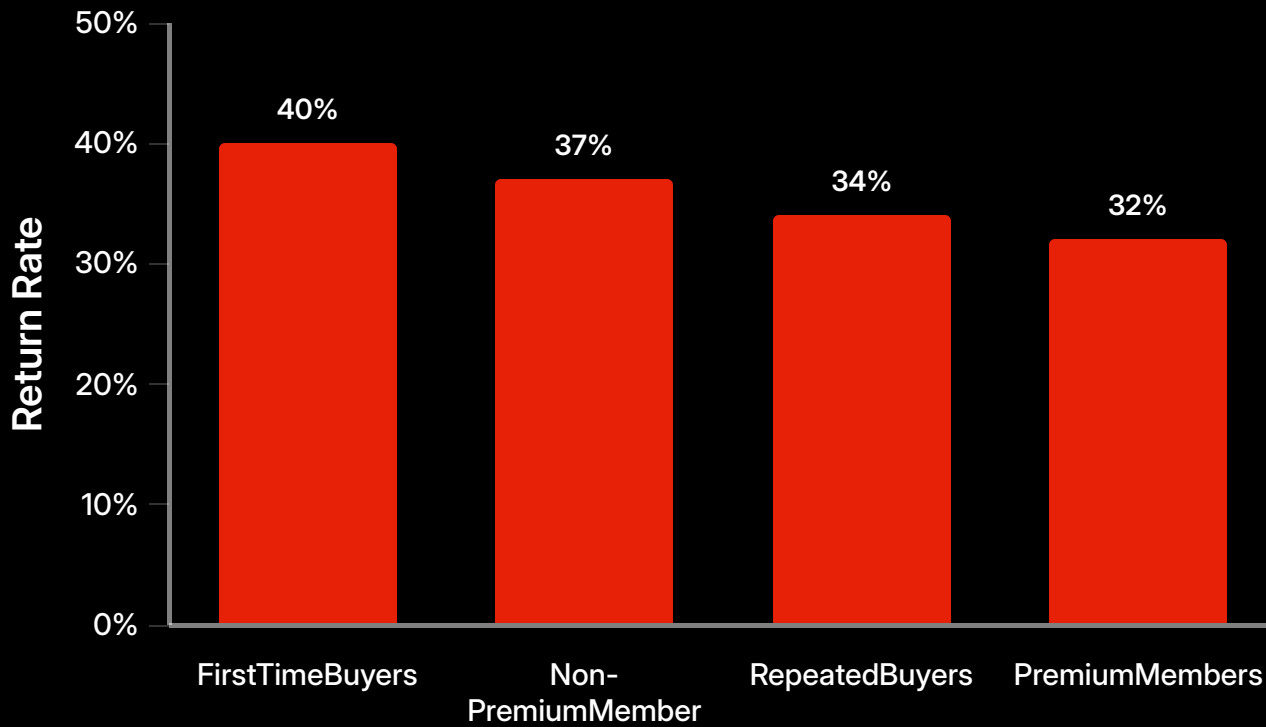


Return rates significantly above the 36% overall average

Issues related to fit guidance and product information

What are the high-value customers doing differently?

New Buyers, New Returns

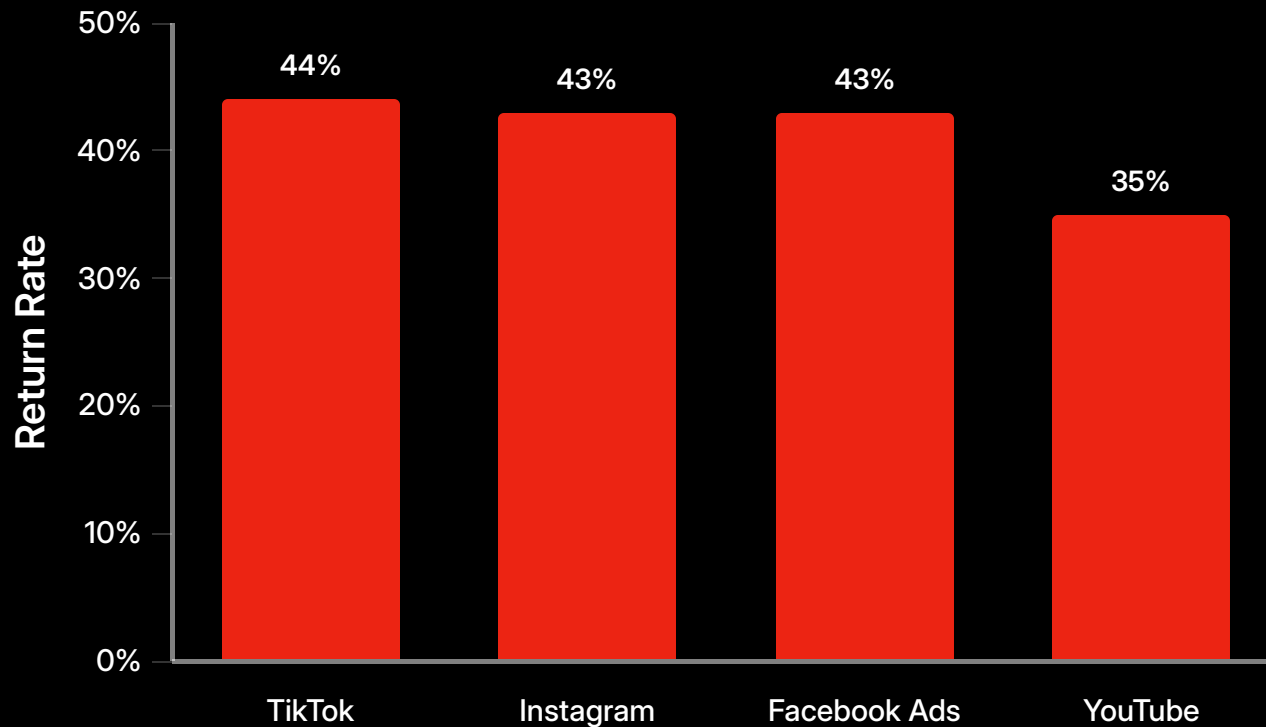


First-time buyer status
is a significant
predictor of returns.

Higher CLV = Lower
return likelihood.

Are the marketing budgets contributing to the problem?

Marketing Blind Spots: Are You Paying for Returns?

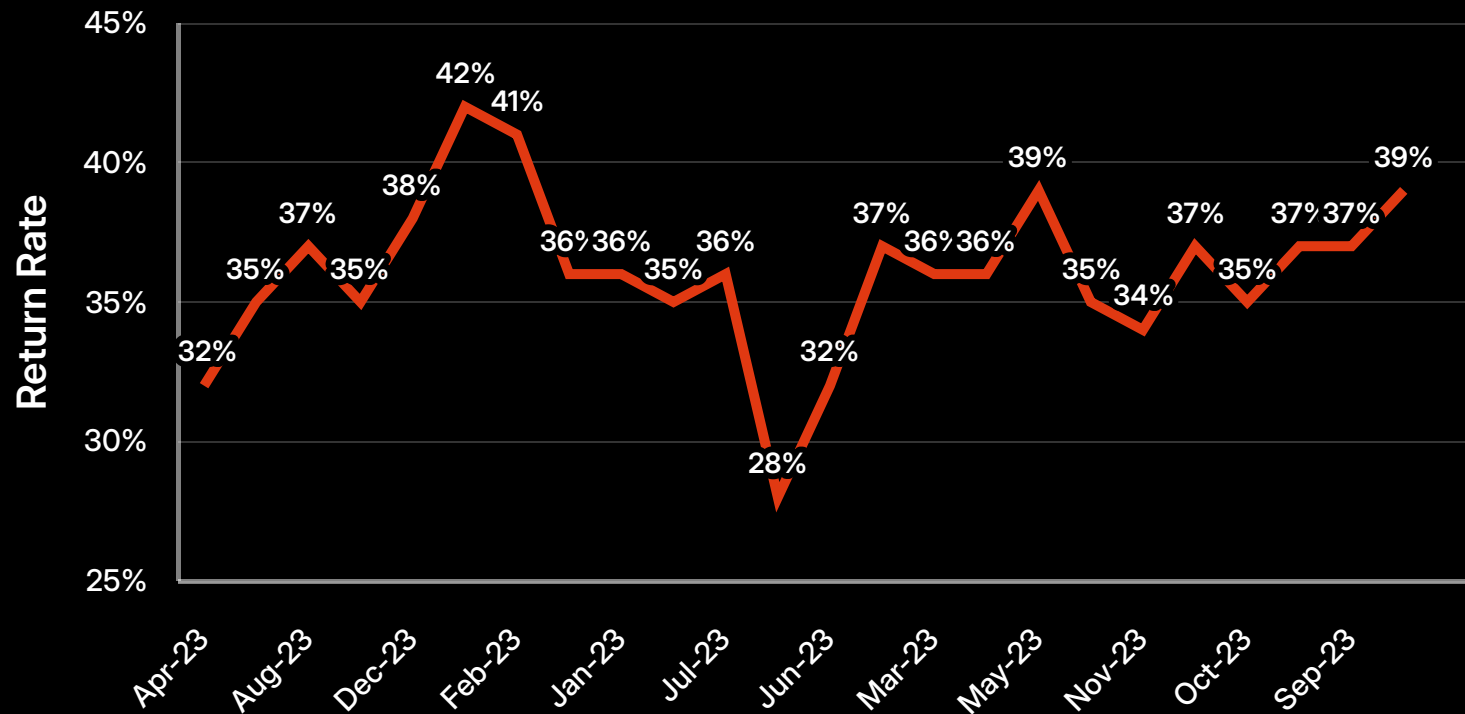


**Significant disparities
in return rates across
marketing channels**

**Inefficient customer
acquisition and wasted
marketing investment**

The Hidden Costs: Beyond Just Lost Sales.

When do most hit return



**The Annual Return
Wave: Post-
Holiday Tsunami**

**Creates 'bullwhip
effect' on logistics &
customer service.**

How to turn these insights into profit?

Robust Analysis: SQL, Statistical Validation & Predictive Modeling

Efficient Data Aggregation & Transformation

Leveraged Excel and SQL for data preparation tasks such as complex joins and key metric construction (e.g., Customer Lifetime Value, Return Rate by Category/Channel)

Robust Statistical Validation

Applied Chi-squared tests to confirm statistically significant relationships between return rates and key factors like product category and marketing channels.

Predictive Modeling for Return Forecasting

Developed a Random Forest model to predict return likelihood, achieving strong performance: Accuracy: 76.75%, Precision: 72.68%, ROC AUC: 0.78

Revolutionizing Fit Confidence: Beyond Basic Sizing

- Implement an AI-Powered Virtual Stylist/Fit Assistant with Body Scan Integration:
- Curated "Real Customer" Fit Reviews with Body Metrics:
- "Fabric Story" Descriptions & Draping Videos:
- Interactive, Category-Specific Fit Guides for "Hot Zones":

5% to 8% reduction in returns driven by size and expectation discrepancies, potentially recovering €10,000 to €20,000 in net sales per analysis period, and improving overall customer trust.

Smart Spend: Optimizing Marketing for Net Profitability

- **Introduce "Return-Adjusted CPA" for Marketing Budget Allocation**
- **Channel-Specific Content Optimization Based on Return Drivers**
- **Personalized Post-Acquisition Engagement**

By shifting the focus from Gross Merchandise Value (GMV) to Net Sales and Customer Lifetime Value (CLV), the company can optimize marketing channel allocation, reduce costs associated with high-return channels, and improve overall profitability and customer loyalty.

Nurturing Loyalty: Tailored Engagement for Every Customer Journey

- "Wardrobe Builder" Service for High-CLV Customers & Premium Members
- "Fit-First" Onboarding for First-Time Buyers
- "Returns Feedback Loop" with Gamified Loyalty Rewards

A 3% to 5% reduction in returns from high-risk customer segments, contributing to enhanced customer loyalty and overall net sales growth

Proactive Loss Prevention & Navigating the Return Tsunami

- Establish a Dedicated "Returns Intelligence" Task Force
- Pre-Holiday "Gift Fit & Style Guide"
- Implement a "Sustainable Returns" Program with Alternative Incentives
- Gamified Exchange & "Keep it and get x%" Options

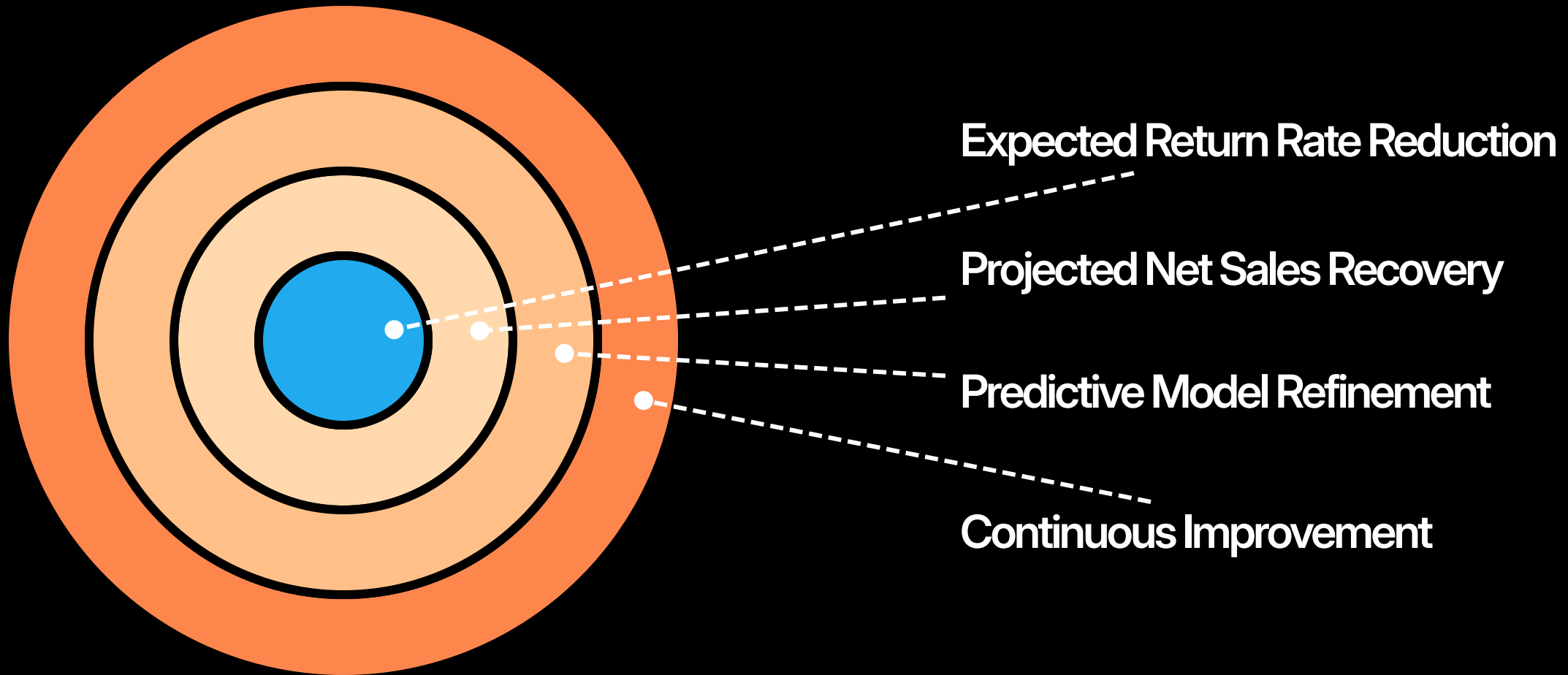
Operational cost reductions of 10% to 15% for return processing, significant improvements in inventory management efficiency³¹, and potential savings on return processing costs ranging from €4,783 (conservative) to over €17,800 (optimistic) with associated ROIs between 10% and 15%

Scenario Analysis Model

Return Rate Reduction vs. ROI

Scenario	Return Rate Reduction	ROI
Base case	0%	-
Optimistic	30%	15%
Realistic	18%	14%
Conservative	8%	10%

Overall Business Impact & Future Work



Core Competencies & Tools

Excel

SQL

Tableau

Python

Strategic Thinking

Problem Solving and Storytelling

Business Acumen

Cross-functional Collaboration

Leveraging AI for enhanced analytical workflow and strategic communication



Done by: Harshitha Chandra Mouli

Data and Business analyst

harshithackashyap@gmail.com