AI Project

Week 2 – Retail Analysis with Cursor AI
(E-commerce Dashboard)

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Guideline

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- Tool Used
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- Part 2 – RFM Customer Segmentation
- Part 3 – Return Analysis
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Project Overview

Transforming raw e-commerce data into actionable business insights through an interactive **dashboard** using **Cursor AI**.

Objectives:

- Build a data-driven **dashboard** to monitor key business metrics (Revenue, Return Rate, AOV, ARPU).
- Perform customer segmentation using RFM analysis.
- Identify high-return-risk products and customer behavior patterns.

Key Results:

- Processed **500k+ order records**, automated data cleaning and segmentation by **Cursor AI**.
- Produced 2 Python scripts to show KPI dashboard and visualization result on Streamlit webpage.
- Enabled **real-time decision support** through visual insights.

Tool Used

Part 1 – KPI Monitoring

Metrics(KPI Card):
Revenue/Orders/Customer: Tracks month-over-month performance and seasonal trends.
AOV / ARPU: Evaluates purchasing efficiency and customer value.
Return: Detects product quality or logistics issues.

Visualization Layout:
MoM trend charts.

Part 2 – RFM Customer Segmentation

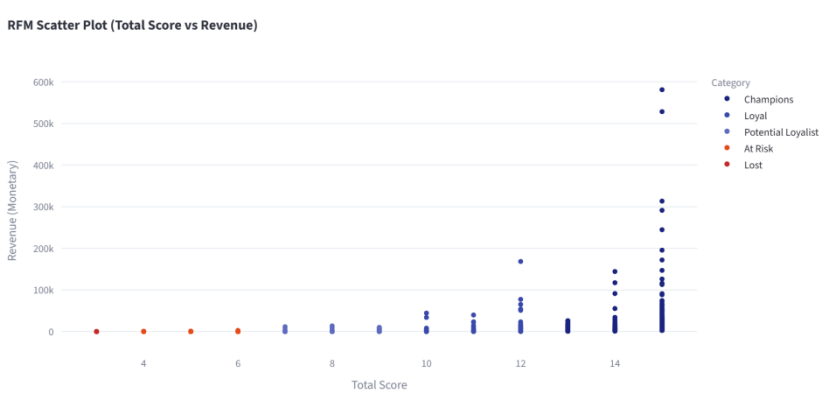
Method:
Recency (last purchase date),
Frequency (purchase count),
Monetary (spending).

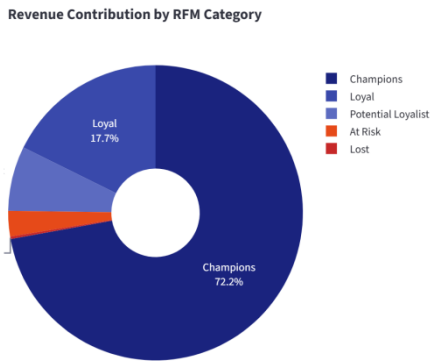
Segmented into: **Champions, Loyal, Potential Loyal, At Risk, Lost**.

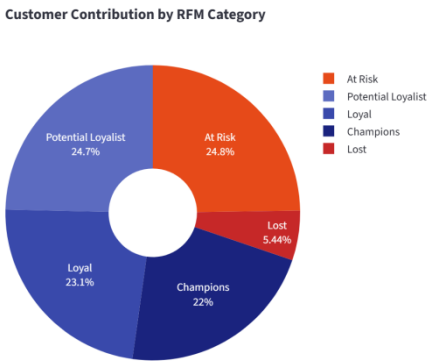
Techniques:
Quartile-based scoring (R, F, M → 1–15).
Combined segmentation logic with Streamlit filters.

Part 2 – RFM Customer Segmentation

RFM Scatter Plot (Total Score vs Revenue)





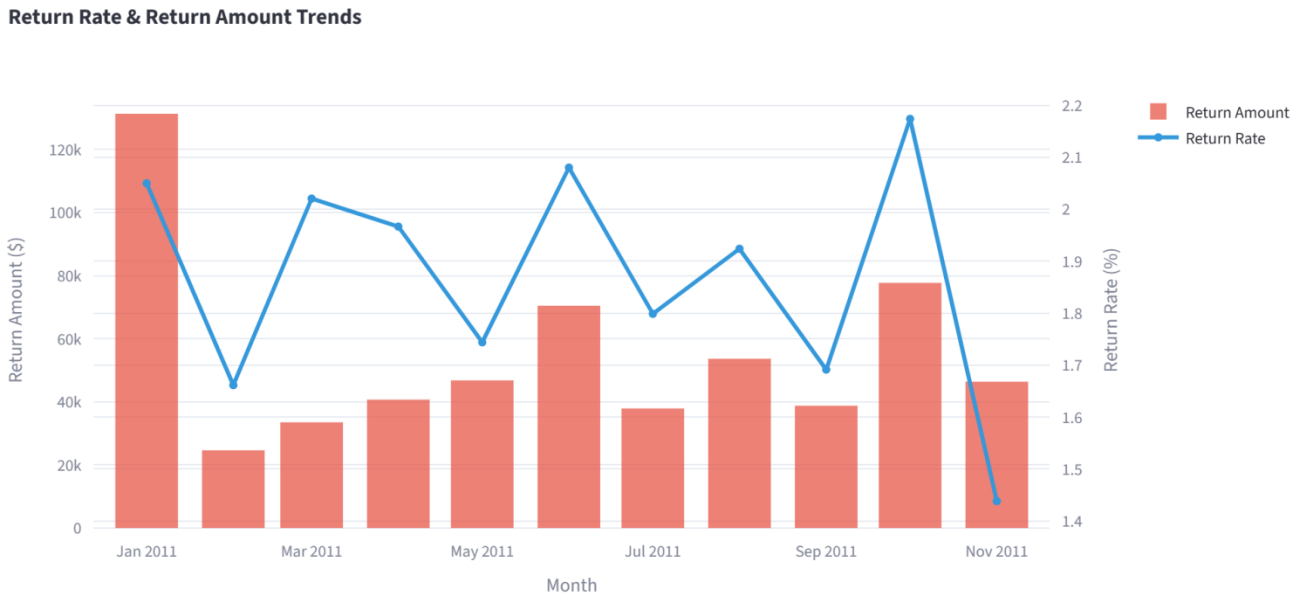


Visualization Options:

Scatter Plot (Recency vs Frequency, colored by Monetary).

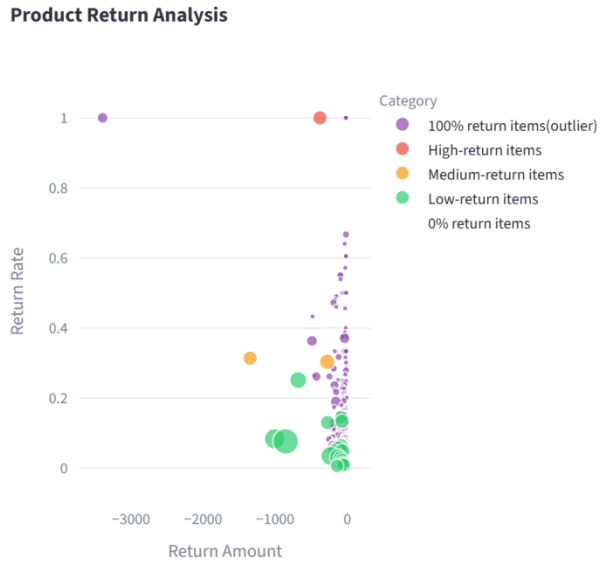
Bar chart (segment count and revenue contribution).

Part 3 – Return Analysis



Method:
Analyze return amount and return rate by showing trend
Techniques:
Categorized by return rate and return amount.
Combined segmentation logic with Streamlit.

Part 3 – Return Analysis



📈 **Visualization Options:**
Scatter Plot (Return Rate vs Return Amount, colored by Category)
In **Product** and **Customer** level.

Insights & Findings

Customer Insights:

- Top 20% of customers contribute **over 70%** of total revenue.
- “Loyalty” and “Potential Loyalty” customers suggesting promoting program.
- “At Risk” customers suggesting retention opportunities.

Operational Insights:

- Revenue spikes observed in **September - November**, indicating rising order and customers.
- AOV decreased, ARPU increased, indicating that customers are purchasing smaller baskets more frequently. This suggests improved customer engagement and retention.
- Return spikes observed in **October**, indicating possible fulfillment or product issues.
- **GUEST** customer which CustomerID = blank unidentified customer system issue suggesting gather other data for investigation.

Next Steps

Analytical Expansion(Advanced Analytics):

- Add **Anomaly Detection** (Isolation Forest / Z-score) for revenue and return patterns.
- Implement **Customer Lifetime Value (CLV)** prediction using lifetimes package.
- Conduct **Cohort Analysis** to visualize customer retention.
- Analyze **Segment Migration Flow** (Loyal → At Risk → Lost) using Sankey chart.

Visualization Upgrade:

- Integrate with Power BI or Streamlit Cloud for dynamic sharing.
- Add slicer for filtering.
- Add “Actionable Insights Panel” for auto-generated business suggestions.

Cursor AI Interface