Customer Retention & Repurchase Analysis

End-to-End Data Analytics Project using SQL + Power BI

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Project Background & Objectives

Data Source

UCI Online Retail Dataset from a UK-based online retail company.

Business Context

Analyzing customer purchasing behavior to identify trends and opportunities.

Analysis Goals

- Analyze retention and repurchase trends.
- Identify high-value customers.
- Recommend strategies to enhance Customer Lifetime Value (CLV).

Data Cleaning & Modeling Logic

Initial Data Processing

1

- Removed ~25% of orders with NULL CustomerIDs.
- Excluded returns and stock adjustment entries.

SQL Table Construction

2

- Built monthly customer behavior tables.
- Developed customer lifecycle tables.

Final Fact Tables

3

- customer_retention_monthly_summary
- customer_lifecycle_summary

Extract

SQL Examples & Modeling Highlights

SQL Snippet: Retention Flag

```
CASE WHEN prev_monthly_revenue IS NULL THEN
0 ELSE 1 END AS is_retained
```

This SQL logic defines a boolean flag to identify retained customers based on their previous month's revenue, crucial for retention rate calculations.

Modeling Highlights

- `TIMESTAMP_DIFF` for precise tenure calculation, capturing customer longevity.

- `ROW_NUMBER()` to accurately capture the customer's latest status and lifecycle stage.

- Retention and new customer ratios computed via window functions, linking to prior month's data.

Dashboard Page Overview
Customer Overview & Geographic Map
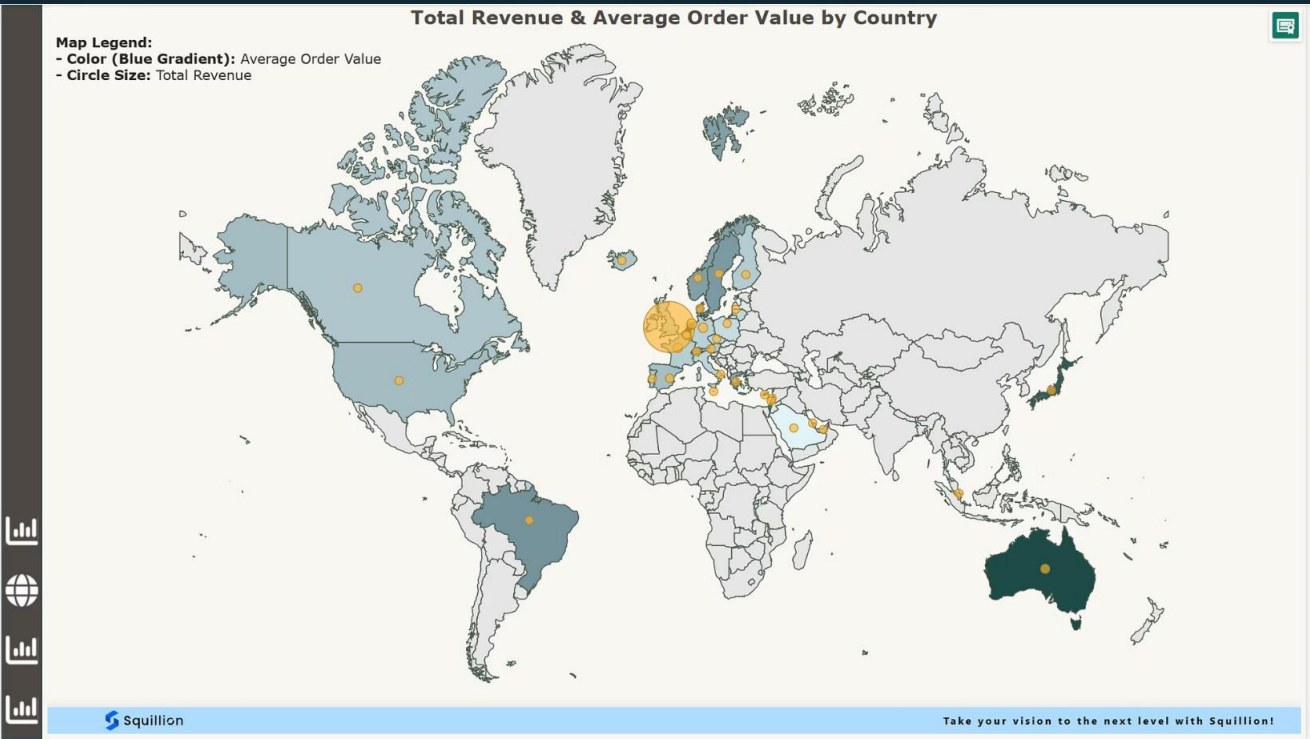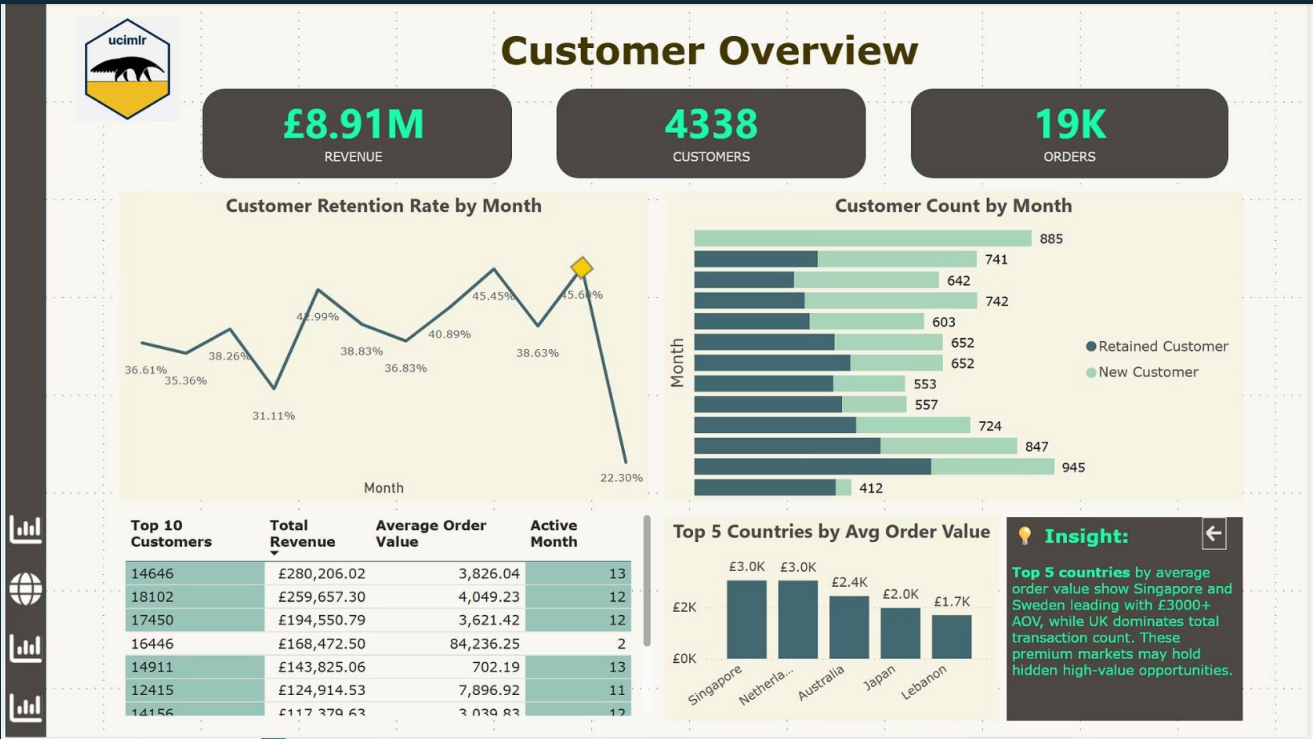
Customer Overview: Displays key performance indicators (KPIs) and overall customer retention trends, providing a high-level snapshot of customer health.

Geographic Map: Identifies high-value countries by revenue and customer activity, highlighting regions like Singapore for potential focus.

Dashboard Page Overview

Lifecycle Analysis & Value/Repurchase

Lifecycle Analysis: Visualizes the distribution of customers across different lifecycle stages (e.g., New, Active, Churned) and provides insights into their behavior within each stage.
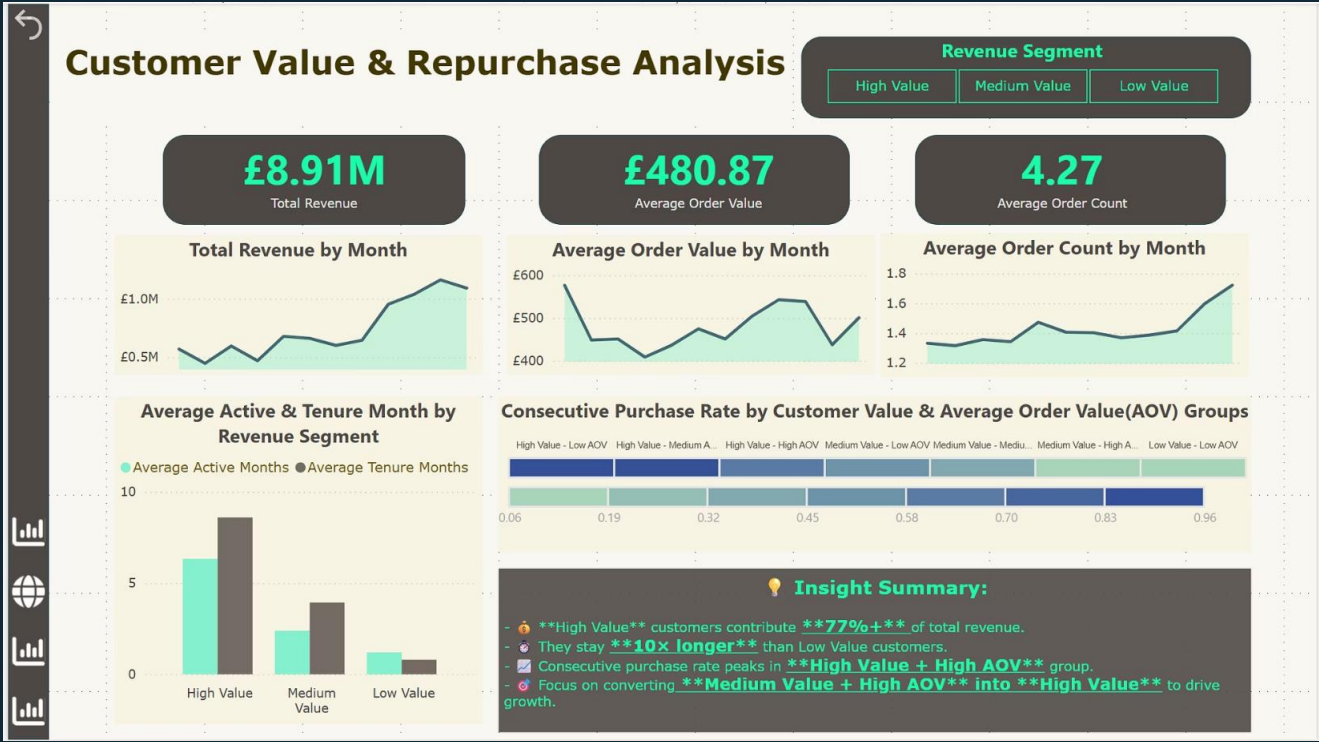
Value & Repurchase: Categorizes customers into value groups, analyzes repurchase trends, and identifies characteristics of churned customers to inform retention strategies.

Key Insights Summary

Customer Growth

Retention rates show monthly fluctuations but an overall upward trend, leading to a significant increase in total customer count.

Medium Value Customers

These customers contribute substantially to revenue, yet exhibit lower retention rates, indicating an area for improvement.

Loyal Customers

Loyal customers generate higher revenue per customer and are identified as a critical segment for focused retention efforts.

High-Potential Markets

Countries like Singapore and Sweden demonstrate high Average Order Value (AOV), signaling strong market potential for expansion.

Recommendations & Next Steps

1

Enhance New Customer Experience

Implement strategies to improve the initial onboarding and engagement of new customers, guiding them effectively into Early and Active stages.

2

Target High-Potential Customers

Focus marketing and engagement efforts on converting Medium Value customers with high AOV into loyal, repeat purchasers.

3

Explore Market Expansion

Invest in growth opportunities within countries demonstrating high AOV, leveraging their existing potential for market expansion.

My Role & Project Value

- **Technical Skills**: SQL, DAX, Power BI, JSON Theme for advanced visualizations.

- **Capabilities**: Business insights, data modeling optimization, interactive design, chart beautification.

- **Growth**: Overcame challenges in precise modeling and cross-tool collaboration.

- **Value**: Delivered an end-to-end data analytics project independently, showcasing full project ownership.