

# Data Pipeline Report

**File:** online\_retail\_customer\_churn.csv | **Timestamp:** 2025-08-23T19:24:23.334441

## 1. Data Validation Summary

|                      |     |
|----------------------|-----|
| Total Rows           | 100 |
| Total Columns        | 9   |
| Missing Values Found | 0   |
| Duplicate Rows Found | 0   |

## 2. Feature Engineering Summary

**Columns Dropped:** Customer\_ID  
**Columns Created:** ReturnRate, PurchaseFrequency, SupportCallRatio

## 3. Exploratory Data Analysis

*Correlation Heatmap*



## 4. Final Processed Data

Shape of Final DataFrame: (100, 11)

***Processed DataFrame Head:***

| Age   | Years_as_Customer | Annual_Income | Total_Spend | Num_of_Purchases | Num_of>Returns | Num_of_Support_Contacts |
|-------|-------------------|---------------|-------------|------------------|----------------|-------------------------|
| 1.38  | -0.47             | -1.51         | -0.09       | -0.99            | 0.67           | 0.73                    |
| -1.57 | -0.06             | -1.03         | -1.72       | 0.07             | -1.55          | -0.68                   |
| -1.3  | -0.06             | 0.56          | -0.62       | 1.59             | 1.41           | 0.73                    |
| 0.71  | 0.35              | 1.53          | 0.78        | -1.74            | -1.92          | 1.43                    |
| 0.57  | -0.47             | -0.9          | 0.31        | -0.84            | 0.3            | 0.02                    |