

Retail Sales Analysis Report – Excel (Week 1)

➤ Project Objective

To analyze retail sales data from California shopping malls in order to understand **sales growth, customer behavior, revenue drivers, and churn-related patterns**, using **Excel, Power Query, SQL, and dashboarding techniques**.

➤ Week 1: Data Cleaning, Modeling & Exploratory Analysis (Excel)

✓ Data Cleaning Approach

- Removed **duplicate records and standardized column names** across datasets.
- Converted inconsistent data types:
 - Dates standardized to proper **Date format**
 - Prices, quantities, and revenue converted to **numeric values**
- Created derived columns:
 - **Revenue = Quantity × Price**
 - **Month Name & Year** extracted from invoice date
 - **Age Groups** created for demographic analysis
- Handled **missing values**:
 - Null ages grouped as **“Age Unknown”** to avoid data loss
 - Ensured no nulls in key relationship fields (customer_id, invoice_no)

✓ Data Modeling Using Power Query

- Built separate structured tables:
 - **Sales (fact table)**
 - **Customers (dimension table)**
 - **Shopping Mall (dimension table)**
- Created relationships using *customer_id* and *shopping_mall*.
- Ensured **one-to-many relationships** by:
 - Removing blank keys , Validating uniqueness in dimension tables

- Loaded clean, relational data into Excel Data Model for analysis.

customer_id	gender	age	payment_method	Age_Group	sales.price
C150594	Female	60	Cash	46-60	1200.32
C556552	Female	51	Cash	46-60	1200.32
C375325	Female	53	Cash	46-60	1200.32
C163444	Female	57	Cash	46-60	1200.32
C247049	Female	54	Cash	46-60	1200.32
C180375	Female	55	Cash	46-60	1200.32
C111251	Female	50	Cash	46-60	1200.32
C194063	Female	52	Cash	46-60	1200.32
C101897	Female	60	Cash	46-60	1200.32
C323574	Female	58	Cash	46-60	1200.32
C997987	Female	59	Cash	46-60	1200.32
C143595	Female	57	Cash	46-60	1200.32
C265780	Female	59	Cash	46-60	1200.32
C176271	Female	46	Cash	46-60	1200.32
C836040	Female	53	Cash	46-60	1200.32
C162539	Female	51	Cash	46-60	1200.32
C260142	Female	57	Cash	46-60	1200.32
C829141	Female	58	Cash	46-60	1200.32
C303567	Female	47	Cash	46-60	1200.32
C819174	Female	59	Cash	46-60	1200.32
C279089	Female	57	Cash	46-60	1200.32
C282163	Female	54	Cash	46-60	1200.32

invoice_no	customer_id	category	quantity	invoice date	price	shopping_mall	Month	Year	shopping_mall.location	Revenue
I293112	C176086	Clothing	2	1/13/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I249223	C188064	Clothing	2	1/31/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I406982	C283221	Clothing	2	1/23/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I255495	C279912	Clothing	2	1/13/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I159994	C531218	Clothing	2	1/6/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I161020	C842177	Clothing	2	1/6/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I100464	C129826	Clothing	2	1/5/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I614497	C116094	Clothing	2	1/13/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I230867	C932744	Clothing	2	1/2/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I293236	C180724	Clothing	2	1/6/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I124433	C573415	Clothing	2	1/7/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I301466	C325355	Clothing	2	1/14/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I284799	C160431	Clothing	2	1/3/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I258935	C252745	Clothing	2	1/18/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I299049	C249614	Clothing	2	1/4/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I211696	C287510	Clothing	2	1/19/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I163180	C236901	Clothing	2	1/31/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I771855	C103356	Clothing	2	1/5/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I274622	C307506	Clothing	2	1/21/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I218662	C414525	Clothing	2	1/8/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I856831	C303554	Clothing	2	1/14/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32
I565665	C151329	Clothing	2	1/12/2021	600.16	Del Amo Fashion Center	January	2021	Torrance	1200.32

➤ Dashboard



➤ Business Findings (Combined Insights)

- Sales growth is driven mainly by **Clothing category** and **mid-aged customers**.
- Certain malls consistently **outperform others**, indicating **location-based demand strength**.
- Revenue concentration suggests **dependence on specific customer segments and malls**.
- Payment preference indicates **operational reliance on cash transactions**.

➤ Improvement Suggestions Based on Analysis

1. Customer Retention

- Introduce loyalty programs for *high-value age groups (36–60)*.

2. Category Optimization

- Expand and promote **Clothing , Shoes & Technology** categories.

3. Mall-Level Strategy

- *Replicate Del Amo Fashion Center's strategies* in underperforming malls.

4. Digital Payments

- Promote **card and digital payments** to improve transaction efficiency.

5. Churn Monitoring

- *Track inactive customers* quarterly to identify churn early.

➤ Conclusion

The Excel analysis enabled effective **cleaning, structuring, and exploration** of retail sales data using **Power Query** and **Pivot Tables**. Key metrics such as revenue, orders, and customer demographics were analyzed to identify **top-performing malls and product categories**. The analysis revealed that sales are driven by **specific locations and customer segments**, with noticeable variation across **age groups** and **payment methods**. Overall, Excel provided clear, actionable insights and formed a strong foundation for further SQL and RFM analysis.