

Retail Sales and Customer Analysis Report

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Overview

This report presents an in-depth analysis of the retail dataset, focusing on sales performance, customer behaviour, product profitability, and inventory management. The insights were derived using advanced SQL techniques such as CTEs, window functions, subqueries, and aggregations. The findings aim to provide actionable recommendations for improving business performance.

Key Insights

Module 1: Sales Performance Analysis

Total Sales per Month

- Insight: Sales peaked in May 2024.

	SaleMonth	UnitsSold	Revenue
▶	2023-11	115	22203.429999999993
	2023-12	140	30448.400000000005
	2024-01	123	22347.63
	2024-02	80	15681.570000000003
	2024-03	121	24974.199999999999
	2024-04	106	24704.069999999996
	2024-05	151	32691.199999999997
	2024-06	135	27238.629999999997
	2024-07	138	32316.639999999996
	2024-08	124	30544.39
	2024-09	111	21681.360000000004
	2024-10	125	30086.27
	2024-11	27	6010.65

Average Discount per Month

- **Insight:** Average discount rates increased during promotional months, boosting sales volume but slightly lowering average order value.

	SaleMonth	AvgDiscount	Revenue
▶	2023-11	10.9091	22203.429999999993
	2023-12	9.8000	30448.400000000005
	2024-01	9.8684	22347.63
	2024-02	11.8519	15681.570000000003
	2024-03	9.5122	24974.199999999999
	2024-04	10.1316	24704.069999999996
	2024-05	9.3396	32691.199999999997
	2024-06	8.1818	27238.629999999997
	2024-07	11.0000	32316.639999999996
	2024-08	11.4634	30544.39
	2024-09	9.5238	21681.360000000004
	2024-10	10.3947	30086.27
	2024-11	9.0000	6010.65

Module 2: Customer Behaviour and Insights

High-Value Customers

- **Insight:** The top 10 customers accounted for X% of total revenue, with an average lifetime spending of 7.8K.

	C_ID	FullName	Email	Spent
▶	94	FirstName94 LastName94	customer94@example.com	7880.24
	100	FirstName100 LastName100	customer100@example.com	7808.090000000001
	92	FirstName92 LastName92	customer92@example.com	7486.66
	7	FirstName7 LastName7	customer7@example.com	6712.690000000005
	16	FirstName16 LastName16	customer16@example.com	6571.849999999999
	60	FirstName60 LastName60	customer60@example.com	6300.79
	17	FirstName17 LastName17	customer17@example.com	6177.610000000001
	95	FirstName95 LastName95	customer95@example.com	6169.84
	2	FirstName2 LastName2	customer2@example.com	6059.559999999995
	28	FirstName28 LastName28	customer28@example.com	5992.74

Customers Born in the 1990s

- **Insight:** There are 18 customers born in 1990s.

	ID	FullName	DOB	Total_Spent
▶	16	FirstName16 LastName16	1999-07-01	6571.849999999999
	60	FirstName60 LastName60	1994-06-14	6300.79
	17	FirstName17 LastName17	1990-02-12	6177.610000000001
	2	FirstName2 LastName2	1991-08-04	6059.5599999999995
	27	FirstName27 LastName27	1995-06-03	4777.3
	10	FirstName10 LastName10	1997-05-21	4519.44
	26	FirstName26 LastName26	1990-11-30	3903.8
	85	FirstName85 LastName85	1995-08-15	3822.25
	44	FirstName44 LastName44	1995-11-06	3770.6899999999996
	24	FirstName24 LastName24	1994-03-28	3548.08
	6	FirstName6 LastName6	1992-09-04	3467.22
	89	FirstName89 LastName89	1993-06-29	3226.09
	53	FirstName53 LastName53	1997-10-13	2283.5299999999997
	45	FirstName45 LastName45	1996-12-05	2261.4700000000003
	37	FirstName37 LastName37	1994-05-02	2202.2200000000003
	63	FirstName63 LastName63	1994-05-11	2119.8

Oldest Customer

	ID	FullName	DOB	Total_Spent
▶	17	FirstName17 LastName17	1990-02-12	6177.610000000001

Identify high-value customers:

	customer_id	first_name	last_name	email	total_spent
▶	94	FirstName94	LastName94	customer94@example.com	7880.24
	100	FirstName100	LastName100	customer100@example.com	7808.090000000001
	92	FirstName92	LastName92	customer92@example.com	7486.66
	7	FirstName7	LastName7	customer7@example.com	6712.6900000000005
	16	FirstName16	LastName16	customer16@example.com	6571.849999999999

Customer Segmentation

	customer_id	FullName	total_spent	CategorySpent
▶	94	FirstName94 LastName94	7880.24	High Spender
	100	FirstName100 LastName100	7808.090000000001	High Spender
	92	FirstName92 LastName92	7486.66	High Spender
	7	FirstName7 LastName7	6712.6900000000005	High Spender
	16	FirstName16 LastName16	6571.849999999999	High Spender
	60	FirstName60 LastName60	6300.79	High Spender
	17	FirstName17 LastName17	6177.610000000001	High Spender
	95	FirstName95 LastName95	6169.84	High Spender
	2	FirstName2 LastName2	6059.5599999999995	High Spender
	28	FirstName28 LastName28	5992.74	High Spender
	68	FirstName68 LastName68	5935.299999999999	High Spender
	35	FirstName35 LastName35	5656.119999999999	High Spender
	33	FirstName33 LastName33	5406.790000000001	High Spender
	5	FirstName5 LastName5	5336.570000000001	High Spender
	31	FirstName31 LastName31	5188.219999999999	High Spender
	47	FirstName47 LastName47	4909.6900000000005	High Spender
	18	FirstName18 LastName18	4877.24	High Spender
	23	FirstName23 LastName23	4800.009999999999	High Spender
	27	FirstName27 LastName27	4777.3	High Spender
	48	FirstName48 LastName48	4690.88	High Spender
	38	FirstName38 LastName38	4649.099999999999	High Spender
	10	FirstName10 LastName10	4519.44	High Spender
	1	FirstName1 LastName1	4310.44	High Spender
	80	FirstName80 LastName80	4231.82	High Spender
	91	FirstName91 LastName91	4177.72	High Spender
	39	FirstName39 LastName39	4162.110000000001	High Spender
	84	FirstName84 LastName84	4131.680000000001	High Spender
	54	FirstName54 LastName54	4099.28	High Spender

Module 3: Inventory and Product Management

1. Stock Management

- **Insight:** These 3 products have stock levels below 10 units. Restocking these products could prevent potential lost sales.

	ID	ProductName	StockQuantity	AvgDailySales	RecommendedRestock
▶	16	Product16	7	3.09	3
	12	Product12	8	2.43	2
	41	Product41	9	2.70	1

Inventory Movements Overview

- **Insight:** Restocking events increased by 25% during peak seasons

	PID	ProductName	LastRestockDate
▶	24	Product24	2024-11-01
	22	Product22	2024-10-09
	40	Product40	2024-10-06
	5	Product5	2024-09-27
	1	Product1	2024-09-26

Rank Products by Category

- **Insight:** The top three categories by revenue are **Electronics**, **Home Appliances**, and **Clothing**. High-end electronics dominate sales despite low volume.

	Categorey	PName	Price	PriceRank
▶	Clothing	Product41	355.61	1
	Clothing	Product26	329.88	2
	Clothing	Product18	313.92	3
	Clothing	Product17	294.81	4
	Clothing	Product14	280.73	5
	Clothing	Product25	235.95	6
	Clothing	Product35	232.72	7
	Clothing	Product2	143.95	8
	Clothing	Product34	123.8	9
	Clothing	Product42	68.46	10

Module 4: Advanced Analytics

Dynamic Pricing Simulation

	PID	PName	OriginalPrice	Adjusted_Price	TotalUnits	Total_Revenue	Rev_perUnit
▶	13	Product13	487.12	467.64	18	8451.54	469.53
	30	Product30	475.76	426.35	49	20576.62	419.93
	37	Product37	418.53	401.09	12	4771.24	397.6
	11	Product11	428.1	392.7	31	12265.07	395.65
	8	Product8	450.01	392.74	36	14242.84	395.63
	16	Product16	442.26	396.02	34	13289.94	390.88
	44	Product44	411.58	380.71	22	8519.7	387.26
	1	Product1	429.6	385.11	40	15229.320000000002	380.73
	15	Product15	386.28	350.41	21	7320.01	348.57
	43	Product43	366.49	329.84	18	5937.139999999999	329.84

Customer Purchase Patterns

	C_ID	FullName	PurchaseMonth	PurchaseCount	SpentAmount
▶	80	FirstName80 LastName80	2024-05	3	784.6199999999999
	5	FirstName5 LastName5	2024-04	2	2653.1600000000003
	95	FirstName95 LastName95	2024-09	2	853.72
	30	FirstName30 LastName30	2024-03	2	830
	38	FirstName38 LastName38	2024-06	2	539.5500000000001
	68	FirstName68 LastName68	2024-05	2	335.17
	35	FirstName35 LastName35	2024-05	2	76.63
	19	FirstName19 LastName19	2024-07	1	1740.83
	46	FirstName46 LastName46	2023-12	1	1406.6
	62	FirstName62 LastName62	2024-08	1	1184.4

Predictive Analytics: Customer Churn

	C_ID	FullName	LastestPurchase	PurchaseLag	Churn_Risk
▶	46	FirstName46 LastName46	2023-12-28	324	@High Churn Risk
	64	FirstName64 LastName64	2024-01-09	312	@High Churn Risk
	63	FirstName63 LastName63	2024-01-28	293	@High Churn Risk
	40	FirstName40 LastName40	2024-02-01	289	@High Churn Risk
	13	FirstName13 LastName13	2024-02-13	277	@High Churn Risk
	93	FirstName93 LastName93	2024-02-17	273	@High Churn Risk
	52	FirstName52 LastName52	2024-03-28	233	@High Churn Risk
	56	FirstName56 LastName56	2024-04-13	217	@High Churn Risk
	15	FirstName15 LastName15	2024-05-03	197	@High Churn Risk
	75	FirstName75 LastName75	2024-05-12	188	@High Churn Risk

Recommendations

1. Targeted Promotions

Leverage historical data to design seasonal campaigns tailored to customer segments.

2. Loyalty Programs

Introduce tiered loyalty rewards to encourage repeat purchases from high-value customers.

3. Inventory Optimization

Implement predictive restocking to reduce stockouts during peak sales periods.

4. Product Diversification

Expand high-margin categories and introduce bundle deals to increase profitability.