

# Profit Pulse : Sales Analysis

## 1. Database Schema:

- **Sales:** Stores sales information.
- **Products:** Stores product information.
- **Sales date:** Stores sales by dates details.

## 1. Retrieving Data from all tables

### • Sales\_Date

```
18 • SELECT
19      *
20 FROM
21      Sales_Dates;
22
```

Date	Month	Year	Quarter	MonthName	Weekday
2023-10-01	10	2023	4	October	Sunday
2023-10-02	10	2023	4	October	Monday
2023-10-03	10	2023	4	October	Tuesday
2023-10-04	10	2023	4	October	Wednesday
2023-10-05	10	2023	4	October	Thursday
2023-10-06	10	2023	4	October	Friday
2023-10-07	10	2023	4	October	Saturday
2023-10-08	10	2023	4	October	Sunday
2023-10-09	10	2023	4	October	Monday
2023-10-10	10	2023	4	October	Tuesday
2023-10-11	10	2023	4	October	Wednesday
2023-10-12	10	2023	4	October	Thursday
2023-10-13	10	2023	4	October	Friday
2023-10-14	10	2023	4	October	Saturday
2023-10-15	10	2023	4	October	Sunday

### • Sales

```
23 • SELECT
24      *
25 FROM
26      sales;
27
```

ProductID	Date	QuantitySold	SalesAmount	Discount	Profit	SalesChannel	SalesRegion	CustomerID
106	2023-10-16	5	1423.59747	9.21%	404.8912203	Online	West	C047
119	2023-12-12	9	3042.886422	19.26%	1021.187907	Online	East	C008
114	2023-11-28	12	5674.879181	18.35%	1790.527833	In-Store	East	C034
110	2023-12-09	1	150.6259523	11.83%	42.31383704	Online	South	C035
107	2023-12-19	1	464.5145219	14.30%	98.07011661	In-Store	South	C032
120	2023-10-03	15	2497.177568	9.16%	721.2980772	In-Store	East	C024
106	2023-10-20	2	569.4389879	7.82%	164.4408651	In-Store	West	C014
118	2023-11-28	16	4499.488476	11.96%	1561.627351	In-Store	South	C032
110	2023-11-05	8	1205.007619	10.30%	344.4026802	Online	North	C046
110	2023-10-19	13	1958.13738	13.75%	538.10068	In-Store	West	C043
120	2023-12-29	1	166.4785045	6.17%	49.67180716	Online	South	C016
103	2023-12-06	16	3817.344644	19.62%	1261.912446	In-Store	South	C004
107	2023-10-19	7	3251.601654	19.79%	642.5033393	Online	North	C037
102	2023-10-20	5	697.5974715	15.47%	224.781658	In-Store	North	C021
120	2023-12-10	3	499.4355136	13.04%	138.0967278	Online	East	C014

- Product

```

24 • SELECT
25 *
26 FROM
27 product;
28
29

```

ProductID	ProductName	ProductCategory	Brand	Price	CostPrice	StockQuantity
100	Product 100	Home Appliances	Brand Z	190.887	107.547	201
101	Product 101	Clothing	Brand Z	446.274	351.683	212
102	Product 102	Electronics	Brand Z	139.52	86.3341	156
103	Product 103	Electronics	Brand X	238.584	140.468	353
104	Product 104	Clothing	Brand Y	59.0504	30.2799	110
105	Product 105	Books	Brand Z	401.456	242.743	382
106	Product 106	Clothing	Brand X	284.719	195.522	372
107	Product 107	Furniture	Brand X	464.515	350.078	380
108	Product 108	Books	Brand X	103.031	55.2473	469
109	Product 109	Clothing	Brand X	304.761	240.306	471
110	Product 110	Books	Brand Y	150.626	102.632	420
111	Product 111	Furniture	Brand Z	203.163	153.754	416
112	Product 112	Electronics	Brand Y	242.73	187.196	198
113	Product 113	Electronics	Brand Y	141.282	102.333	198
114	Product 114	Home Appliances	Brand Y	472.907	290.154	371

product 5 x

- Date Column Format according to RDBMS

```

30 -- change datatype of Date column in sales_date and Sales table from text to date
31
32 • describe Sales_Dates ;
33 • alter table Sales_Dates modify column Date date;

```

#	Time	Action	Message	Duration / Fetch
1	16:19:10	use sales	0 row(s) affected	0.000 sec
2	16:19:14	SELECT * FROM Sales_Dates LIMIT 0, 1000	92 row(s) returned	0.031 sec / 0.000 sec
3	16:26:28	SELECT * FROM sales LIMIT 0, 1000	200 row(s) returned	0.031 sec / 0.000 sec
4	16:27:41	SELECT * FROM Sales_Dates LIMIT 0, 1000	92 row(s) returned	0.000 sec / 0.000 sec
5	16:28:37	SELECT * FROM sales LIMIT 0, 1000	200 row(s) returned	0.000 sec / 0.000 sec
6	16:30:06	SELECT * FROM product LIMIT 0, 1000	21 row(s) returned	0.032 sec / 0.000 sec
7	16:31:34	alter table Sales_Dates modify column Date date	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.062 sec

- **Sales Analysis:**

- What are the total sales and profit for each product category?

```

7 • SELECT
8     p.ProductCategory,
9     ROUND(SUM(s.SalesAmount)) AS total_sales,
10    ROUND(SUM(s.Profit)) AS Total_Profit
11 FROM
12     Sales s
13     RIGHT JOIN
14     product p ON s.ProductID = p.ProductID
15 GROUP BY p.ProductCategory;
16

```

Result Grid | Filter Rows: | Export: | Wrap Cell

	ProductCategory	total_sales	Total_Profit
▶	Home Appliances	132656	46854
	Clothing	149258	37539
	Electronics	79170	24115
	Books	89806	26522
	Furniture	62236	13314

Result 1 x

- How do sales vary across different regions or sales channels Online vs. In-Store)?

```

18 • SELECT
19     SalesChannel, FLOOR(SUM(SalesAmount)) AS SALES_BY_CHANNEL
20 FROM
21     sales
22 GROUP BY SalesChannel;
23
24
25

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: 15

	SalesChannel	SALES_BY_CHANNEL
▶	Online	274411
	In-Store	238715

Result 2 x

- **Profitability**

- Which products or categories have the highest profit margins?

```

6 • SELECT
7     p.ProductCategory AS PRODUCT_CATEGORY,
8     SUM(s.Profit) AS PROFIT_BY_CATEGORY
9 FROM
10    product p
11   RIGHT JOIN
12    sales s ON s.ProductID = p.ProductID
13 GROUP BY PRODUCT_CATEGORY
14 ORDER BY PROFIT_BY_CATEGORY DESC
15 LIMIT 3;

```

PRODUCT_CATEGORY	PROFIT_BY_CATEGORY
Home Appliances	46854.32623689999
Clothing	37539.49437158
Books	26521.51256284

Result 1 x

- What is the total profit generated by each brand

```

18 • SELECT
19     p.Brand, CEIL(SUM(s.Profit)) AS Total_Profit
20 FROM
21     sales s
22   RIGHT JOIN
23     product p ON s.ProductID = p.ProductID
24 GROUP BY p.Brand;
25

```

Brand	Total_Profit
Brand Z	52426
Brand X	38967
Brand Y	56952

Result 1 x

- Stock and Inventory:

- Which products have the highest stock quantity, and how does this correlate with sales?

```

6 • SELECT
7     p.ProductID,
8     p.StockQuantity,
9     SUM(s.QuantitySold) AS TotalSales
10  FROM
11     Product p
12  JOIN
13     Sales s ON p.ProductID = s.ProductID
14  GROUP BY
15     p.ProductID, p.StockQuantity
16  ORDER BY
17     p.StockQuantity DESC;

```

Result Grid | Filter Rows: | Exports: |

ProductID	StockQuantity	TotalSales
109	471	64
108	469	118
119	465	75
110	420	82
111	416	144
105	382	83
107	380	71

Result 3 x

- -Are there products with low stock but high sales performance?

```

45 • SELECT
46     p.ProductID,
47     MIN(p.StockQuantity) AS MIN_STOCK,
48     SUM(s.SalesAmount) AS SALES
49  FROM
50     sales s
51  RIGHT JOIN
52     product p ON s.ProductID = p.ProductID
53  GROUP BY
54     p.ProductID
55  HAVING
56     SUM(s.SalesAmount) < avg(s.SalesAmount)
57  ORDER BY
58     MIN_STOCK;

```

Result Grid | Filter Rows: | Exports: |

ProductID	MIN_STOCK	SALES
-----------	-----------	-------

Result 5 x

- **Customer Insights**
- Which customers are the most frequent buyers ?

```

6 • select p.ProductCategory, sum(s.Discount*100) as Discount, max(s.QuantitySold) as Quantity
7   from product p
8  left join sales s
9    on p.ProductID = s.ProductID
10  group by p.ProductCategory ;
11
12

```

ProductCategory	Discount	Quantity
Home Appliances	46330	18
Clothing	77640	19
Electronics	46727	19
Books	42819	19
Furniture	33214	19

Result 1 x

- Which customers generate the highest revenue ?

```

14
15 • select p.ProductCategory , max(s.Discount*100) as Discount
16   from product p
17  left join sales s
18    on p.ProductID = s.ProductID
19  group by p.ProductCategory
20  order by Discount desc;

```

ProductCategory	Discount
Clothing	2000
Home Appliances	1995
Electronics	1980.9999999999998
Furniture	1979
Books	1930.9999999999998

Result 2 x

What is the average discount provided to customers ?

```

7 • SELECT
8   SalesRegion, SUM(SalesAmount) AS SALES_BY_REGION
9   FROM
10    sales
11  GROUP BY SalesRegion;
12
13
14

```

SalesRegion	SALES_BY_REGION
West	124130.06397078998
East	142056.9612415
South	112233.94339389999
North	134685.8000357

Result 1 x

- **Region-based Performance:**

- Are there specific regions where certain product categories perform better?

```

15 • SELECT
16     s.SalesRegion as SALESREGION,
17     p.ProductCategory as PRODUCTCATEGORY,
18     Floor(SUM(s.SalesAmount)) AS TOTALSALES
19 FROM
20     sales s
21 join
22     product p
23 GROUP BY
24     SALESREGION,
25     PRODUCTCATEGORY
26 ORDER BY
27     TOTALSALES DESC;

```

SALESREGION	PRODUCTCATEGORY	TOTALSALES
East	Clothing	852341
North	Clothing	808114
West	Clothing	744900
East	Electronics	710284
North	Electronics	673429
South	Clothing	673403
West	Electronics	620750

- Which regions generate the most revenue?

```

7 • SELECT
8     SalesRegion, SUM(SalesAmount) AS SALES_BY_REGION
9 FROM
10     sales
11 GROUP BY SalesRegion;
12
13

```

SalesRegion	SALES_BY_REGION
West	124150.06397078998
East	142056.9612415
South	112233.94339389999
North	134685.8000557

- **Time-based Analysis:**
- What are the monthly or yearly sales trends?

```

6 • SELECT
7     YEAR(Date) AS Year,
8     MONTH(Date) AS Month,
9     SUM(SalesAmount) AS TotalSales
10    FROM
11     sales
12   GROUP BY YEAR(Date) , MONTH(Date)
13   ORDER BY Year , Month;
14

```

Year	Month	TotalSales
2023	10	194969.50174598998
2023	11	203998.7489546
2023	12	114158.51796130001

Result 1 x

- On which days of the week are sales highest?

```

16 • SELECT
17     DAYNAME(Date) AS DAY, SUM(SalesAmount) AS TOTAL_SALES
18    FROM
19     sales
20   GROUP BY day
21   ORDER BY TOTAL_SALES DESC;
22
23

```

DAY	TOTAL_SALES
Tuesday	95930.24918159998
Monday	90284.08702929999
Friday	81394.35179370001
Thursday	73249.6257443
Wednesday	60281.212407900006
Sunday	57274.51987889
Saturday	54712.72262619998

Result 2 x