

DATA ANALYSIS OF A SUPERSTORE

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Power BI



➤ At very first step I got this raw data of superstore. And then I performed Cleaning and transformation of data through excel to make it appropriate For further analysis through different tools.

Sample - Superstore - Microsoft Excel (Product Activation Failed)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	Order ID	Order Date	Ship Date	Ship Mode	Customer	Customer Segment	Country/R	City	State	Postal Cod	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Discount	Profit				
1	4962	CA-2016-1	7/3/2016	8/3/2016	First Class	AB-10015	Aaron Berj Consumer	United Sta	Seattle	Washingtc	98103	West	FUR-CH-1C	Furniture	Chairs	Global Pus	48.712	1	0.2	5.4801			
2	4963	CA-2016-1	7/3/2016	8/3/2016	First Class	AB-10015	Aaron Berj Consumer	United Sta	Seattle	Washingtc	98103	West	OFF-AR-1C	Office Sup	Art	Newell 330	17.94	3	0	4.6644			
3	4964	CA-2016-1	7/3/2016	8/3/2016	First Class	AB-10015	Aaron Berj Consumer	United Sta	Seattle	Washingtc	98103	West	OFF-ST-10	Office Sup	Storage	Carina 42"	242.94	3	0	4.8588			
4	8223	CA-2016-1	18/2/2016	24/2/2016	Standard Cl	AB-10015	Aaron Berj Consumer	United Sta	Arlington	Texas	76017	Central	OFF-ST-10	Office Sup	Storage	Akro Stack	12.624	2	0.2	-2.5248			
5	8802	CA-2018-1	13/5/2016	19/5/2016	First Class	AB-10015	Aaron Berj Consumer	United Sta	Oklahoma	Oklahoma	73120	Central	TEC-PH-1C	Technolog	Phones	Samsung C	221.98	2	0	62.1544			
6	8803	CA-2018-1	13/5/2016	19/5/2016	First Class	AB-10015	Aaron Berj Consumer	United Sta	Oklahoma	Oklahoma	73120	Central	FUR-BO-1C	Furniture	Bookcases	Sauder Fac	341.96	2	0	54.7136			
7	3200	CA-2019-1	18/12/201	22/12/201	Standard CAH	10030	Aaron Hav Corporate	United Sta	Philadelph	Pennsylv	19134	East	OFF-AR-1C	Office Sup	Art	Avery Fluo	18.704	7	0.2	2.338			
8	3312	CA-2018-1	20/3/2018	25/3/2018	Second Cl	AH-10030	Aaron Hav Corporate	United Sta	Gulfpotr	Mississipi	39503	South	FUR-FU-1C	Furniture	Furnishing	Eldon Imag	86.45	7	0	38.038			
9	5355	CA-2016-1	13/5/2016	19/5/2016	Standard CAH	10030	Aaron Hav Corporate	United Sta	Los Angele	California	90004	West	FUR-CH-1C	Furniture	Chairs	Iceberg Ne	279.456	6	0.2	20.9592			
10	5356	CA-2016-1	13/5/2016	19/5/2016	Standard CAH	10030	Aaron Hav Corporate	United Sta	Los Angele	California	90004	West	OFF-PA-10	Office Sup	Paper	EcoTones	8	2	0	3.84			
11	6129	US-2016-1	25/10/201	28/10/201	First Class	AH-10030	Aaron Hav Corporate	United Sta	San Franci	California	94109	West	OFF-BI-10C	Office Sup	Binders	GBC VeloB	49.408	4	0.2	18.528			
12	7164	CA-2016-1	22/4/2016	24/4/2016	Second Cl	AH-10030	Aaron Hav Corporate	United Sta	Troy	New York	12180	East	OFF-EN-1C	Office Sup	Envelopes	Staple env	247.84	8	0	121.4416			
13	7165	CA-2016-1	22/4/2016	24/4/2016	Second Cl	AH-10030	Aaron Hav Corporate	United Sta	Troy	New York	12180	East	OFF-BI-10C	Office Sup	Binders	ACCOHIDE	9.912	3	0.2	3.3453			
14	8804	CA-2016-1	31/12/201	1/1/2017	First Class	AH-10030	Aaron Hav Corporate	United Sta	New York	New York	10035	East	TEC-AC-1C	Technolog	Accessorie	Verbatim 2	34.77	3	0	11.4741			
15	8805	CA-2016-1	31/12/201	1/1/2017	First Class	AH-10030	Aaron Hav Corporate	United Sta	New York	New York	10035	East	OFF-LA-10	Office Sup	Labels	Avery 51	18.9	3	0	8.694			
16	9680	CA-2017-1	27/12/201	31/12/201	Standard CAH	10030	Aaron Hav Corporate	United Sta	San Franci	California	94122	West	OFF-ST-10	Office Sup	Storage	Fellowes S	323.1	2	0	61.389			
17	9681	CA-2017-1	27/12/201	31/12/201	Standard CAH	10030	Aaron Hav Corporate	United Sta	San Franci	California	94122	West	TEC-PH-1C	Technolog	Phones	Geemarc /	668.16	9	0.2	75.168			
18	1341	CA-2019-1	2/1/2019	4/1/2019	First Class	AS-10045	Aaron Sme Corporate	United Sta	Jacksonvill	North Car	28540	South	TEC-MA-1C	Technolog	Machines	Cisco CP-7	695.7	2	0.5	-27.828			
19	1342	CA-2019-1	2/1/2019	4/1/2019	First Class	AS-10045	Aaron Sme Corporate	United Sta	Jacksonvill	North Car	28540	South	OFF-BI-10C	Office Sup	Binders	Avery 3 1/	15.66	5	0.7	-12.528			
20	1343	CA-2019-1	2/1/2019	4/1/2019	First Class	AS-10045	Aaron Sme Corporate	United Sta	Jacksonvill	North Car	28540	South	OFF-BI-10C	Office Sup	Binders	Avery Recy	28.854	6	0.7	-21.1596			
21	1352	CA-2018-1	28/3/2018	31/3/2018	First Class	AS-10045	Aaron Sme Corporate	United Sta	Arlington	Virginia	22204	South	OFF-ST-10	Office Sup	Storage	Hanging Pe	31.4	2	0	7.85			
22	1834	CA-2019-1	1/8/2019	7/8/2019	Standard CAS	10045	Aaron Sme Corporate	United Sta	Austin	Texas	78745	Central	TEC-MA-1C	Technolog	Machines	Bady BDG:	1439.982	3	0.4	-263.997			
23	1835	CA-2019-1	1/8/2019	7/8/2019	Standard CAS	10045	Aaron Sme Corporate	United Sta	Austin	Texas	78745	Central	OFF-PA-10	Office Sup	Paper	Xerox 199	36.288	7	0.2	12.7008			
24	3040	CA-2019-1	1/8/2019	7/8/2019	Standard CAS	10045	Aaron Sme Corporate	United Sta	Pasadena	California	91104	West	FUR-TA-1C	Furniture	Tables	Lesro Shef	171.288	3	0.2	-6.4233			
25	4580	US-2016-1	27/7/2016	2/8/2016	Standard CAS	10045	Aaron Sme Corporate	United Sta	New York	New York	10035	East	OFF-PA-10	Office Sup	Paper	Xerox 195	65.78	11	0	32.2322			
26	9129	US-2019-1	4/9/2019	5/9/2019	First Class	AS-10045	Aaron Sme Corporate	United Sta	Redmond	Oregon	97756	West	OFF-BI-10C	Office Sup	Binders	Avery Trap	88.074	7	0.7	-58.716			
27	9538	CA-2018-1	25/9/2018	27/9/2018	First Class	AS-10045	Aaron Sme Corporate	United Sta	San Franci	California	94110	West	FUR-BO-1C	Furniture	Bookcases	Atlantic M	477.666	2	0.15	84.294			
28	350	CA-2018-1	1/9/2018	3/9/2018	First Class	AB-10060	Adam Bell Home Offi	United Sta	New York	New York	10009	East	TEC-AC-1C	Technolog	Accessorie	Sabrent 4-	6.79	1	0	2.3086			
29	351	CA-2018-1	1/9/2018	3/9/2018	First Class	AB-10060	Adam Bell Home Offi	United Sta	New York	New York	10009	East	OFF-PA-10	Office Sup	Paper	Xerox 188	24.56	2	0	11.5432			
30	352	CA-2018-1	1/9/2018	3/9/2018	First Class	AB-10060	Adam Bell Home Offi	United Sta	New York	New York	10009	East	OFF-BI-10C	Office Sup	Binders	Acco Hang	3.048	1	0.2	1.0668			

- After cleaning process I imported this data in mysql,where I performed Queries to get meaningful insights from data for business growth.

- I solved queries to get data for KPIs,charts,bars,tables etc. whose reference is given

Below:-

This is table overview in mysql:-

table name-superstore

The screenshot displays the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'abhay' selected, containing tables like 'sales', 'superstore', and 'webd'. The main editor window shows a query in 'SQL File 4' with the following SQL code:

```
2 • use abhay;  
3  
4 • select * from superstore;
```

Below the query editor, the 'Result Grid' shows the first 12 rows of data from the 'superstore' table. The columns include Row ID, Order ID, Order Date, Ship Date, Ship Mode, Customer ID, Customer Name, Segment, Country, City, State, Postal Code, Region, Product ID, Category, and Sub-Category. The data shows various orders from different customers across different regions and product categories.

Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	State	Postal Code	Region	Product ID	Category	Sub-C
1	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gule	Consumer	United States	Henderson	Kentucky	42420	South	FUR-BO-10001798	Furniture	Bookca
2	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gule	Consumer	United States	Henderson	Kentucky	42420	South	FUR-CH-10000454	Furniture	Chairs
3	CA-2016-138688	6/12/2016	6/16/2016	Second Class	DV-13045	Darrin Van Huff	Corporate	United States	Los Angeles	California	90036	West	OFF-LA-10000240	Office Supplies	Labels
4	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	Florida	33311	South	FUR-TA-10000577	Furniture	Tables
5	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	Florida	33311	South	OFF-ST-10000760	Office Supplies	Storag
6	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	FUR-FU-10001487	Furniture	Furnish
7	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	OFF-AR-10002833	Office Supplies	Art
8	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	TEC-PH-10002275	Technology	Phones
9	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	OFF-BI-10003910	Office Supplies	Binders
10	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	OFF-AP-10002892	Office Supplies	Appliar
11	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	FUR-TA-10001539	Furniture	Tables
12	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Los Angeles	California	90032	West	TEC-PH-10002033	Technology	Phones

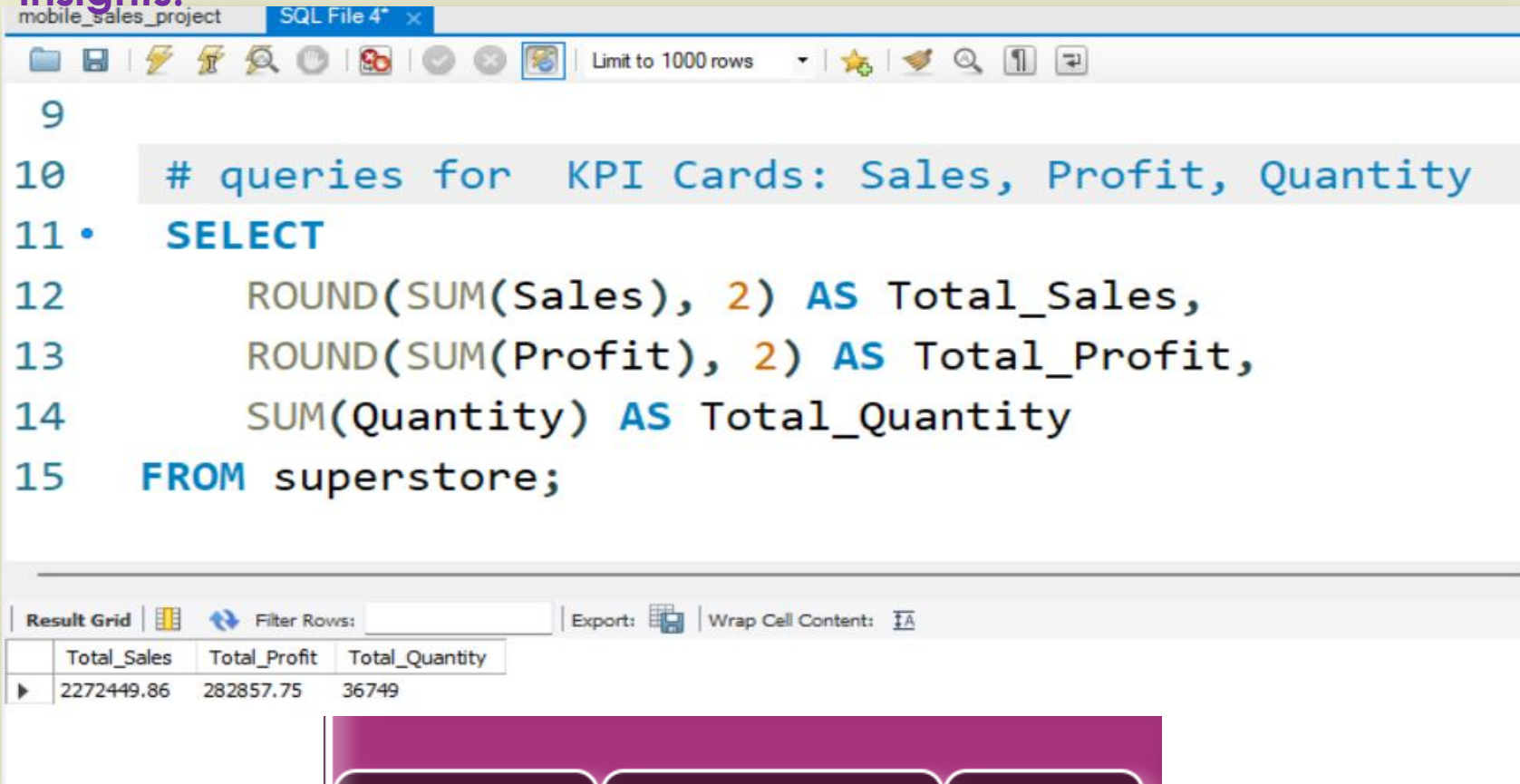
- This is the overall structure of table superstore on which I am Currently working on this project...

The screenshot shows the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'abhay' expanded, containing 'Tables' and 'Views'. The 'Tables' list includes 'abhay', 'sales', 'salesforawsandhadox', 'salesforsql', 'sql load the data', 'superstore', and 'webd'. The 'superstore' table is selected. The main editor shows the SQL query 'desc superstore;' in the 'SQL File 4*' tab. Below the query, the 'Result Grid' displays the table structure with columns: Field, Type, Null, Key, Default, and Extra. The table has 15 rows of data.

Field	Type	Null	Key	Default	Extra
Row ID	int	YES		NULL	
Order ID	text	YES		NULL	
Order Date	text	YES		NULL	
Ship Date	text	YES		NULL	
Ship Mode	text	YES		NULL	
Customer ID	text	YES		NULL	
Customer Name	text	YES		NULL	
Segment	text	YES		NULL	
Country	text	YES		NULL	
City	text	YES		NULL	
State	text	YES		NULL	
Postal Code	int	YES		NULL	
Region	text	YES		NULL	

❖ KPI METRICS SUMMARY FROM SUPERSTORE DATASET-(USING SQL AND POWERBI)

This query extracts Key Performance Indicators (KPIs) from the superstore dataset, providing essential business metrics for dashboard insights:

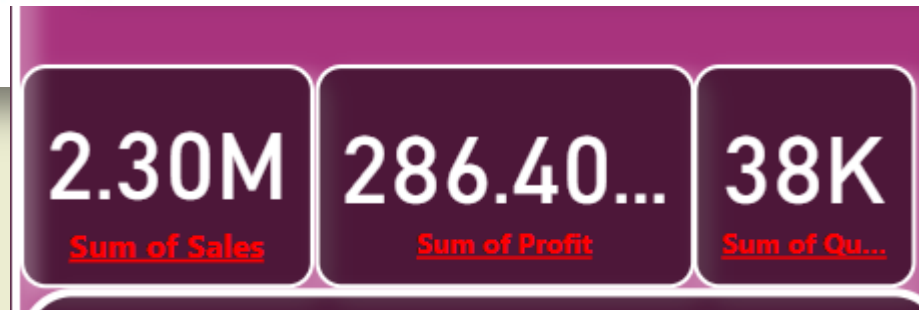


The screenshot shows a SQL IDE window titled 'mobile_sales_project' with a tab 'SQL File 4*'. The query editor contains the following SQL code:

```
9
10 # queries for KPI Cards: Sales, Profit, Quantity
11 • SELECT
12     ROUND(SUM(Sales), 2) AS Total_Sales,
13     ROUND(SUM(Profit), 2) AS Total_Profit,
14     SUM(Quantity) AS Total_Quantity
15 FROM superstore;
```

Below the query editor, the 'Result Grid' tab is active, displaying the results of the query in a table:

	Total_Sales	Total_Profit	Total_Quantity
▶	2272449.86	282857.75	36749



"KPI Summary: Sales, Profit & Quantity from Superstore Data"

- **SQL Query Purpose:-**

- To summarize total sales, total profit, and total quantity sold across all records. Uses aggregate functions and ROUND for cleaner display values.

- **SQL Query Breakdown:**

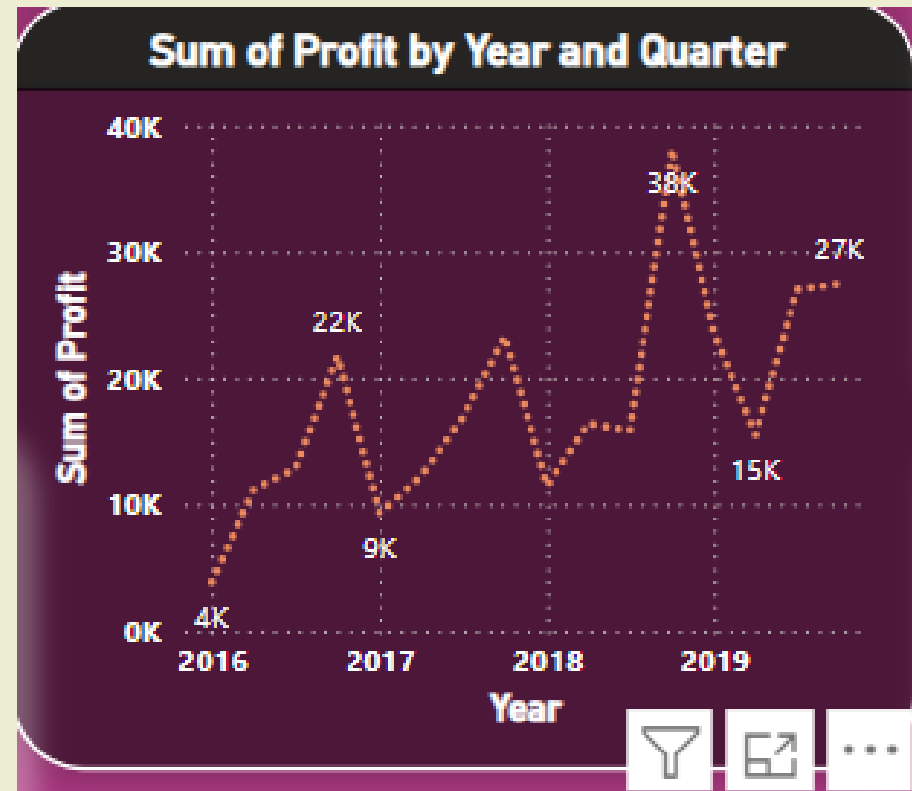
- SUM(Sales): Total revenue generated from all transactions.
- SUM(Profit): Overall profit after discounts and cost.
- SUM(Quantity): Total number of units sold. ROUND(..., 2): Formats sales and profit values to 2 decimal places for readability.

- **Dashboard Display:**

- The KPI cards (shown at the bottom of the image) visually represent:
 - Sales as ~2.30M
 - Profit as ~286.4K
 - Quantity as ~38K

Profit trend by year and quarter

```
mobile_sales_project SQL File 4* x
Limit to 1000 rows
28 #3. query for Profit by Year and Quarter
29 • SELECT
30     YEAR(`Order Date`) AS Year,
31     QUARTER(`Order Date`) AS Quarter,
32     ROUND(SUM(Profit), 2) AS Total_Profit
33 FROM superstore
34 GROUP BY YEAR(`Order Date`), QUARTER(`Order Date`)
35 ORDER BY Year, Quarter;
36
37
```



"Quarterly Profit Analysis (2016–2019)"

- **Profit Trend by Year and Quarter-**

This query visualizes quarterly profit performance over the years using the superstore dataset. It helps in identifying seasonal trends, growth patterns, and year-over-year performance.

SQL Query Purpose:- To calculate and display total profit grouped by both year and quarter of the order date. Useful for time series analysis and business trend tracking.

- **SQL Query Breakdown:-**

YEAR(Order Date): Extracts the year from the order date.

QUARTER(Order Date): Extracts the quarter (Q1 to Q4).

SUM(Profit): Total profit for each year-quarter.

ROUND(..., 2): Limits profit to 2 decimal places.

GROUP BY and ORDER BY :- organize data chronologically.

Graph Output (on Slide):-

- Title: "Sum of Profit by Year and Quarter"
- Visual: A line graph showing profit peaks and troughs per quarter from 2016 to 2019.
- Key Insights: Profit rose sharply in some Q4 periods (e.g., 38K in 2018 Q4). Consistent upward trend over time with minor dips (e.g., 9K in 2017 Q2).

Profit distribution by Category (Pie chart)

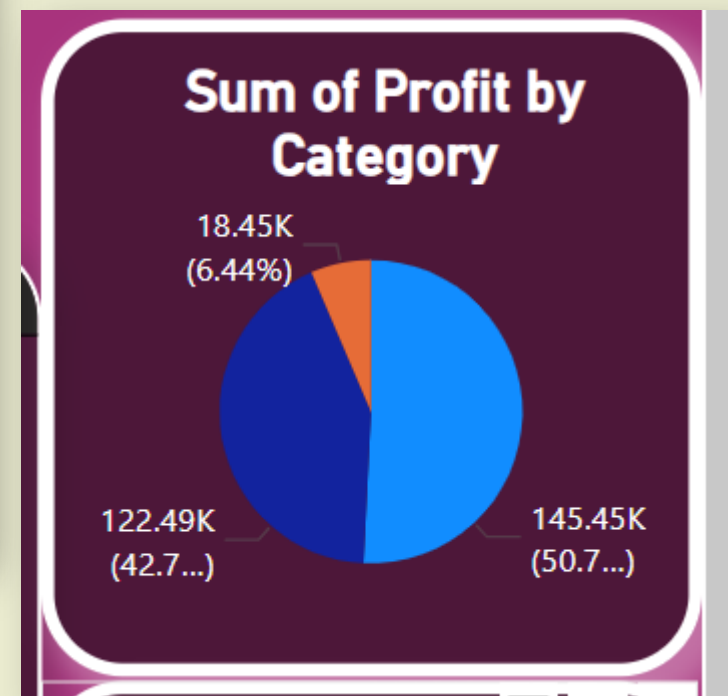
mobile_sales_project SQL File 4

Limit to 1000 rows

```
36
37
38 #query for Profit by Category (Pie)
39 • SELECT
40     Category,
41     ROUND(SUM(Profit), 2) AS Total_Profit
42 FROM superstore
43 GROUP BY Category;
```

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

Category	Total_Profit
Furniture	16980.77
Office Supplies	120489.89
Technology	145387.1



"Profit Contribution by Product Category"

Profit Distribution by Category (Pie Chart):-

This slide shows the distribution of total profit across different product categories using a pie chart. It helps identify which category contributes most to the business's overall profit.

SQL Query Purpose:-

To calculate total profit for each product category from the superstore dataset and visualize the results as proportions.

SQL Query Breakdown:-

- Category: Groups data by product category (e.g., Furniture, Office Supplies, Technology).
- SUM(Profit): Calculates total profit per category.
- ROUND(..., 2): Limits values to 2 decimal points for clarity.

Chart Output (on Slide):

- Title: "Sum of Profit by Category"
- Chart Type: Pie chart
- Segments show: Technology: ₹145.43K (≈50.7%) Office Supplies: ₹122.49K (≈42.7%) Furniture: ₹18.45K (≈6.44%)

Key Insights:- Technology is the most profitable category, contributing over half of total profits. Furniture contributes the least to overall profit, signaling possible underperformance or fewer sales.

“Profit Distribution by Region”

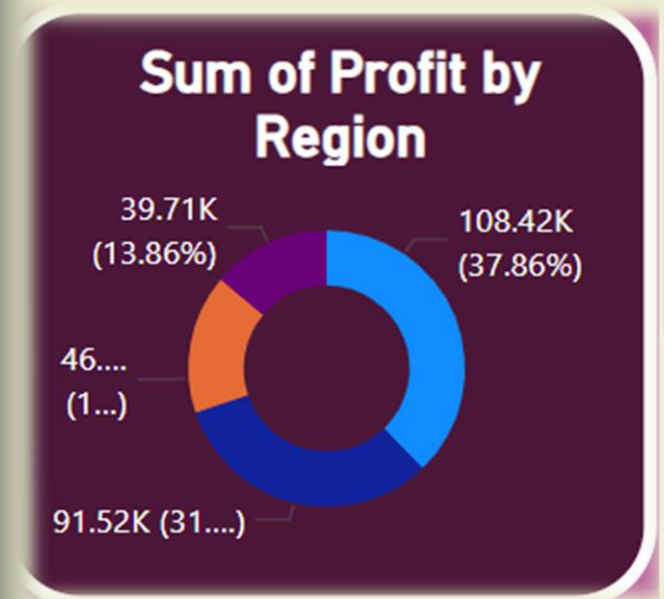
mobile_sales_project SQL File 4* x

Limit to 1000 rows

```
44
45
46 #query for Profit by region (Pie)
47
48 • SELECT
49     Region,
50     ROUND(SUM(Profit), 2) AS Total_Profit
51 FROM superstore
52 GROUP BY Region;
53
```

Result Grid

	Region	Total_Profit
▶	South	46035.69
	West	106021.15
	Central	40128.9
	East	90672.01



"Regional Profit Contribution Breakdown"

Profit Distribution by Region (Pie Chart)-

This slide visualizes the sum of profits from different regions using a pie chart. It helps identify regional performance in terms of total profit contribution.

SQL Query Purpose: To calculate and display total profit from each region using the superstore dataset.

Chart Output (on Slide):

- Title: "Sum of Profit by Region"
- Chart Type: Pie chart
- Segment details:
 - West: ₹108.42K (~37.86%)
 - East: ₹91.52K (~31.95%)
 - Central: ₹46.23K (~16.14%)
 - South: ₹39.71K (~13.86%)

Key Insights:-

West region is the top performer, generating the highest profit. South region contributes the least, indicating potential for strategic improvement.

- ☐ Alabama
- ☐ Arizona
- ☐ Arkansas
- ☐ California
- ☐ Colorado
- ☐ Connecticut
- ☐ Delaware
- ☐ District of Columbia
- ☐ Florida
- ☐ Georgia
- ☐ Idaho
- ☐ Illinois
- ☐ Indiana
- ☐ Iowa
- ☐ Kansas
- ☐ Kentucky
- ☐ Louisiana
- ☐ Maine
- ☐ Maryland

Sub-Category	Central	East	South	West	Total
Accessories	33,956.08	45,033.37	27,276.75	61,114.12	167,380.3
Appliances	23,582.03	34,188.47	19,525.33	30,236.34	107,532.1
Art	5,765.34	7,485.76	4,655.62	9,212.07	27,118.7
Binders	56,923.28	53,498.00	37,030.34	55,961.11	203,412.7
Bookcases	24,157.18	43,819.33	10,899.36	36,004.12	114,880.0
Chairs	85,230.65	96,260.68	45,176.45	101,781.33	328,449.1
Copiers	37,259.57	53,219.46	9,299.76	49,749.24	149,528.0
Envelopes	4,636.87	4,375.87	3,345.56	4,118.10	16,476.4
Fasteners	778.03	819.72	503.32	923.22	3,024.2
Furnishings	15,254.37	29,071.38	17,306.68	30,072.73	91,705.1
Labels	2,451.47	2,602.93	2,353.18	5,078.73	12,486.3
Machines	26,797.38	66,106.17	53,890.96	42,444.12	189,238.6
Paper	17,491.90	20,172.60	14,150.98	26,663.72	78,479.2
Phones	72,403.28	100,614.98	58,304.44	98,684.35	330,007.0
Storage	45,930.11	71,612.58	35,768.06	70,532.85	223,843.6
Supplies	9,467.37	10,760.12	8,318.93	18,127.12	46,673.5
Tables	39,154.97	39,139.81	43,916.19	84,754.56	206,965.5
Total	501,239.89	678,781.24	391,721.91	725,457.82	2,297,200.8

Year	Sum of Profit
2016	4K
2017	22K
2018	9K
2019	38K
2020	27K

Sub-Category	Sum of Profit
Copiers	56K
Phones	45K
Accessories	42K
Paper	34K
Binders	30K
Chairs	27K
Storage	21K
Appliances	18K
Furnishings	13K

Company Size	Percentage
145.45K	50.7%
122.49K	42.7...
18.45K	6.44%

Company Size	Percentage
108.42K	37.86%
91.52K	31.1%
46.0K	1.1%
39.71K	13.86%

Company Size	Count	Percentage
134.12K	134.12K	46.8...
91.98K	91.98K	32.12%
60.3K	60.3K	21.05%

Attached powerBI dashboard includes-

(Summary)

1. Key KPIs Displayed .
2. Trend Analysis: Profit by Year and Quarter
3. Profit Distribution Charts:
4. Technology leads in profit contribution.
5. Sum of Profit by Region (Middle Right - Pie Chart):
6. The West region contributes the most profit.
7. Sum of Profit by Segment (Bottom Right - Donut Chart):
8. Consumers are the largest profit-generating segment.
9. Profit Table: Profit by Sub-Category and Region
10. Horizontal Bar Chart: Sum of Profit by Sub-Category
11. Shows which product types are most profitable.

Business -insights

1. Profit Trends by Year and Quarter:-

There is a steady upward trend in profit from 2016 to 2019, peaking in 2018 (₹38K). Quarterly spikes imply seasonal buying patterns, possibly during end-of-year or promotional periods.

- **Recommendation:** Capitalize on high-profit quarters by increasing marketing spends and inventory ahead of these periods.

2.Profit by Category:- Technology contributes the highest profit (₹145.45K), over 50% of total profits. Furniture is significantly underperforming (₹18.45K).

- **Recommendation:** Increase focus on Technology through promotions and bundling. Reevaluate Furniture pricing, vendor terms, or reduce SKUs to improve profitability.

Business -insights

3. Profit by Region:-

West and East regions are top performers, contributing ~70% of total profit combined. South region underperforms significantly (₹39.71K).

- **Recommendation:** Allocate more resources and inventory to West and East regions. Investigate customer needs and delivery logistics in South to boost performance.

4.Profit by Segment:- Consumer segment yields the highest profit (₹134.12K). Home Office lags behind (₹60.3K).

- **Recommendation:** Double down on consumer-targeted campaigns. Explore product-market fit improvements for the Home Office segment.

Business -insights

5. Sub-Category Performance:- Copiers, Phones, and Accessories are the most profitable sub-categories. Items like Furnishings and Appliances generate the lowest returns.

- **Recommendation:** Focus promotions and stock investments on top sub-categories. Consider phasing out low-performing items or repositioning them in the market.

6. Regional Sub-Category :- Trends Performance varies by region—e.g., Phones sell well in the West, while Chairs do better in the East.

- Recommendation: implement region-specific product strategies to align inventory and marketing with local preferences.

-:STRATEGIC ACTIONS:-

- ❖ *Prioritize investment in Technology and Consumer segment.*
- ❖ *Perform deep-dive analysis on underperforming regions (South) and categories (Furniture).*
- ❖ *Use seasonal trends to plan sales campaigns and inventory buildup.*
- ❖ *Tailor marketing strategies regionally using sub-category insights.*

THANK-YOU..