

# Mobile Manufacturer Data Analysis Case Study

## Objective :

This project aims to analyze mobile phone sales data using SQL to answer specific business questions about customers, sales, manufacturers, and models. The goal is to derive insights on customer behavior, top-selling models, and manufacturers' performance over time.

## Tools Used :

- SQL Server Management Studio (SSMS)
- SQL
- Data Source : [Data Source is provide me by the LMS site which is in Hierarchical in nature]

## Questions and SQL Queries :

1. List all the states in which we have customers who have bought cellphones from 2005 till today.

- SQL Query :

```
select lo.country,lo.state,year(tr.date)year
,sum(tr.quantity)cnt from fact_transactions tr
join dim_location lo on lo.idlocation = tr.idlocation
where year(tr.date)>='2005'
group by lo.country,lo.state,year(tr.date)
```

2. What state in the US is buying the most 'Samsung' cell phones?

- SQL Query :

```
select ma.idmanufacturer,ma.manufacturer_name,lo.state,sum(tr.quantity)qty
from dim_manufacturer ma
join dim_model mo on ma.idmanufacturer = mo.idmanufacturer
```

```

join fact_transactions tr on tr.idmodel = mo.idmodel
join dim_location lo on lo.idlocation = tr.idlocation
where ma.manufacturer_name='samsung' and lo.country = 'us'
group by ma.idmanufacturer,ma.manufacturer_name,lo.state

```

**3. Show the number of transactions for each model per zip code per state.**

- SQL Query :

```

select lo.country,tr.idmodel,lo.state,lo.zipcode,count(*)no_tran from dim_location lo
join fact_transactions tr on lo.idlocation = tr.idlocation
group by lo.country,tr.idmodel,lo.state,lo.zipcode
order by 3 asc
...

```

**4. Show the cheapest cellphone (Output should contain the price also).**

- SQL Query :

```

SELECT TOP 1 model, price
FROM phones
ORDER BY price ASC;
...

```

**5. Find the average price for each model in the top 5 manufacturers in terms of sales quantity and order by average price.**

- SQL Query :

```

select ma.manufacturer_name,tr.idmodel,sum(tr.quantity)quantity,avg(tr.totalprice)avg from
fact_transactions tr
join dim_model mo on mo.idmodel = tr.idmodel
join dim_manufacturer ma on ma.idmanufacturer = mo.idmanufacturer

```

group by ma.manufacturer\_name,tr.idmodel

order by 4 desc,3 desc

**6. List the names of the customers and the average amount spent in 2009, where the average is higher than 500.**

- SQL Query :

```
select cu.customer_name,year(tr.date)year,avg(tr.totalprice)avg from fact_Transactions tr
```

```
left join dim_customer cu on cu.idcustomer = tr.idcustomer
```

```
group by cu.customer_name,year(date)
```

```
having year(tr.date)='2009' and avg(tr.totalprice)>=500 ```
```

**7. List if there is any model that was in the top 5 in terms of quantity, simultaneously in 2008, 2009, and 2010.**

- SQL Query :

```
SELECT model
```

```
FROM sales
```

```
WHERE YEAR(purchase_date) IN (2008, 2009, 2010)
```

```
GROUP BY model
```

```
HAVING COUNT(DISTINCT YEAR(purchase_date)) = 3
```

```
AND SUM(quantity) IN (
```

```
    SELECT TOP 5 SUM(quantity)
```

```
    FROM sales
```

```
    WHERE YEAR(purchase_date) IN (2008, 2009, 2010)
```

```
    GROUP BY model
```

```
    ORDER BY SUM(quantity) DESC
```

```
);
```

```
```
```

**8. Show the manufacturer with the 2nd top sales in the year of 2009 and the manufacturer with the 2nd top sales in the year of 2010.**

```
select * from (select ma.manufacturer_name,mo.idmanufacturer,sum(tr.totalprice)sales,year(date)year
from fact_transactions tr
```

```
    join dim_model mo on mo.idmodel = tr.idmodel
```

```
    join dim_manufacturer ma on ma.idmanufacturer = mo.idmanufacturer
```

```
    where year(date)=2009
```

```
    group by mo.idmanufacturer,ma.manufacturer_name,year(date)
```

```
    order by 3 desc
```

```
    offset 1 rows
```

```
    fetch next 1 rows only) as top2_2009
```

union

```
select * from (select ma.manufacturer_name,mo.idmanufacturer,sum(tr.totalprice)sales,year(date)year
from fact_transactions tr
```

```
    join dim_model mo on mo.idmodel = tr.idmodel
```

```
    join dim_manufacturer ma on ma.idmanufacturer = mo.idmanufacturer
```

```
    where year(date)=2010
```

```
    group by ma.manufacturer_name,mo.idmanufacturer,year(date)
```

```
    order by 3 desc
```

```
    offset 1 rows
```

```
    fetch next 1 rows only) as top2_2010 ``
```

**9. Show the manufacturers that sold cellphones in 2010 but did not in 2009.**

- SQL Query :

```
select * from (select ma.manufacturer_name from fact_transactions tr
```

```

join dim_model mo on mo.idmodel = tr.idmodel
join dim_manufacturer ma on ma.idmanufacturer = mo.idmanufacturer
where year(date) in (2010)
group by ma.manufacturer_name , year(date)) as m2
except
select * from (select ma.manufacturer_name from fact_transactions tr
join dim_model mo on mo.idmodel = tr.idmodel
join dim_manufacturer ma on ma.idmanufacturer = mo.idmanufacturer

where year(date) in (2009)
group by ma.manufacturer_name , year(date)) as m1

```

**10. Find top 100 customers and their average spend, average quantity by each year. Also, find the percentage of change in their spend.**

- SQL Query :

```

select *,lag(avg,1) over(partition by idcustomer order by year) from (
select idcustomer,year(date)year,avg(totalprice)avg,sum(quantity)qty_ from fact_transactions
where IDCustomer in (select top 10 idcustomer from fact_transactions
group by idcustomer
order by sum(quantity) desc)

```

group by idcustomer,year(date)) as asd- State-based Analysis : The most active state for cellphone purchases and Samsung phones was identified, showing regional market trends.

- Customer Behavior : Insights into customer spend patterns reveal opportunities for targeted marketing based on high-value customers.
- Top Models and Manufacturers : Key players in the market were highlighted, providing valuable information for partnerships and competitive analysis.
- Yearly Performance : By tracking sales across years, the analysis uncovers trends and shifts in customer preferences, enabling better business strategies.

## Screenshots/Media :

The first screenshot shows a SQL query in the Query Editor window of Microsoft SQL Server Management Studio. The query is a SELECT statement that joins several tables: dim\_manufacturer, dim\_model, fact\_transactions, and dim\_location. It filters for manufacturers named 'samsung' and locations in 'us', then groups the results by manufacturer\_name, manufacturer\_name, and state. The results are displayed in a table with columns: idmanufacturer, manufacturer\_name, state, and qty. The results show three rows for Samsung in Arizona, California, and Maryland.

| idmanufacturer | manufacturer_name | state      | qty |
|----------------|-------------------|------------|-----|
| 12             | Samsung           | Arizona    | 18  |
| 12             | Samsung           | California | 10  |
| 12             | Samsung           | Maryland   | 16  |

The second screenshot shows a more complex SQL query in the Query Editor window. The query is a SELECT statement that joins several tables: dim\_manufacturer, dim\_model, fact\_transactions, and dim\_location. It filters for manufacturers named 'Apple' and 'Samsung' and locations in 'us', then groups the results by manufacturer\_name, manufacturer\_name, and year. The results are displayed in a table with columns: manufacturer\_name, idmanufacturer, sales, and year. The results show two rows: Apple in 2010 and Samsung in 2009.

| manufacturer_name | idmanufacturer | sales   | year |
|-------------------|----------------|---------|------|
| Apple             | 11             | 3242.00 | 2010 |
| Samsung           | 12             | 3357.00 | 2009 |

This report provides an overview of the analysis performed using SQL, with queries designed to answer specific business questions related to mobile manufacturers and their sales.