Atliq Mart - Supply Chain

Analysis Complete - Harsh Pimpalkar

Problem Statement

Atliq Mart is a Growing FMCG manufacturer headquarter in Gujarat, India. It is currently operational in three cities Surat, Ahmedabad and Vadodara. They want to expand to other metros/ Tier 1 cities in next 2 years.

Atliq Mart is currently facing a problem where a few customers did not extend their annual contracts due to service issues. It is speculates that some of the essential products were either not delivered on time or not delivered in full over a continued period, which could have resulted in
bad customer service. Management wants to fix this issue before expanding to other cities and requested their supply chain analytics team to track the "On time", and "In Full" delivery service level for all the customers daily basis so that they can respond swiftly to these issues.

The Supply Chain team decided to use a standard approach to measure the service level in which they will measure "on-time-delivery (OT) %", "In-Full-Delivery (IF) %" , And "On Time In Full (OTIF) % " of the customer orders daily basis against the target service level set for each
Customer.

Task:

Peter Pandey is the data analyst in the supply chain team who joined AtliQ Mart recently. He has been briefed about the the task in the stakeholder business review meeting. Now imagine yourself as Peter Pandey and play the role of the new data analyst who is excited to build this dashboard and perform the following task:

1. Create the metrics according to the metrics list.
2. Create a dashboard according to the requirements provided by stakeholders in the business review meeting. You will be provided with the transcript of this business review meeting in comic form.
3. Create relevant insights not provided in the metric list/stakeholder meeting.
   Following are the tables used in this project:
4. dim_customers.csv
5. dim_products.csv
6. dim_date
7. dim_targets_orders
8. fact_order_lines.csv
9. fact_orders_aggregate.cs

Overview

Que. 1.

Starting with simple overview of dataset present.

a) Columns presenting each table
b) Total customers present
c) Total Products with their categories available
d) Total cities they are currently operating insert

Overview of Each Table

```
-- Customers Table
SELECT * FROM dim_customers;
```

This table presents vital customer information that will be useful for our analysis and decision-making processes.

```
-- Products Table
SELECT * FROM dim_products;
```

This table clearly and accurately represents all of the essential information about the product, providing a comprehensive overview for users to easily understand and make informed decisions.

```
-- Dates table
SELECT * FROM dim_dates;
```

This table clearly displays the dates, months, and weeks with confidence.

```
-- Target_orders table
SELECT * FROM dim_target_orders;
```

This table represents the target orders for the ontime%, infull% and ontime and infull %.

```
-- Order_lines table
SELECT * FROM fact_order_lines;
```

This table clearly represent the information about the orders providing a comprehensive overview for the users to easily understand .

```
-- Ordes Aggregated table
SELECT * FROM fact_orders_aggregate;
```

Aggregated table on the orders.

```
-- To get total customers present
SELECT COUNT(distinct customer_id) AS Total_Cusotmers FROM dim_customers;
-- Total Customers are 35.

-- To get total products with their categories available
SELECT COUNT(DISTINCT product_id) AS Total_products FROM dim_products;
-- Total producta are 18.

-- To get total cities they are currently operating in
SELECT COUNT(DISTINCT city) AS Total_cities FROM dim_customers;
-- Atliq currently operating in 3 cities.

-- What are total number of products and total number of customers?
SELECT COUNT(DISTINCT customer_id) AS Total_Customers, COUNT(DISTINCT product_id) AS Total_Products
FROM fact_order_lines;

-- What is the average order quantity by customers?
SELECT customer_id, AVG(order_qty) AS Avg_order_qty FROM fact_order_lines GROUP BY customer_id;

-- What is the average delivery rate time for orders by city?

SELECT city, AVG(DATEDIFF(actual_delivery_date, agreed_delivery_date)) AS Avg_delivery_date
FROM fact_order_lines JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
GROUP BY city;

-- What is the average delivery time for on-time orders by city
```

```
SELECT city, AVG(DATEDIFF(actual_delivery_date, agreed_delivery_date)) AS Avg_delivery_date
FROM fact_order_lines JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
JOIN fact_orders_aggregate ON fact_order_lines.order_id = fact_orders_aggregate.order_id
WHERE fact_orders_aggregate.on_time = 1
GROUP BY city;
```

Que. 2

What are total orders, total orders on time, total order infull and total orders (on time infull) (OTIF) by city.

```
WITH  city_order_data AS
      (
        SELECT
          dim_customers.city,
          fact_orders_aggregate.order_id,
          fact_orders_aggregate.on_time,
                    fact_orders_aggregate.in_full,
                    fact_orders_aggregate.otif
               FROM fact_orders_aggregate
          JOIN dim_customers ON fact_orders_aggregate.customer_id = dim_customers.customer_id
              ),
all_order_data AS
        (
          SELECT
            city_order_data.city,
                        COUNT(DISTINCT city_order_data.order_id) AS Total_orders,
                        SUM(CASE WHEN city_order_data.on_time = 1 THEN 1 ELSE 0 END ) AS total_on_time,
                        SUM(CASE WHEN city_order_data.in_full = 1 THEN 1 ELSE 0 END) AS total_in_full,
                        SUM(CASE WHEN city_order_data.otif = 1 THEN 1 ELSE 0 END) AS total_otif
                    FROM city_order_data
                    GROUP BY city_order_data.city
                    )
 SELECT
  all_order_data.city,
    all_order_data.total_orders,
    all_order_data.total_on_time,
    all_order_data.total_in_full,
    all_order_data.total_otif,
  (SELECT
    COUNT(DISTINCT order_id) FROM fact_orders_aggregate) AS overall_total_order
     FROM all_order_data;
```

Output

	city	total_orders	total_on_time	total_in_full	total_otif	overall_total_order
▶	Ahmedabad	11061	6433	5995	3244	31729
	Surat	9696	5935	5095	2916	31729
	Vadodara	10972	6362	5657	3048	31729

Analyzing the Delivery Performance

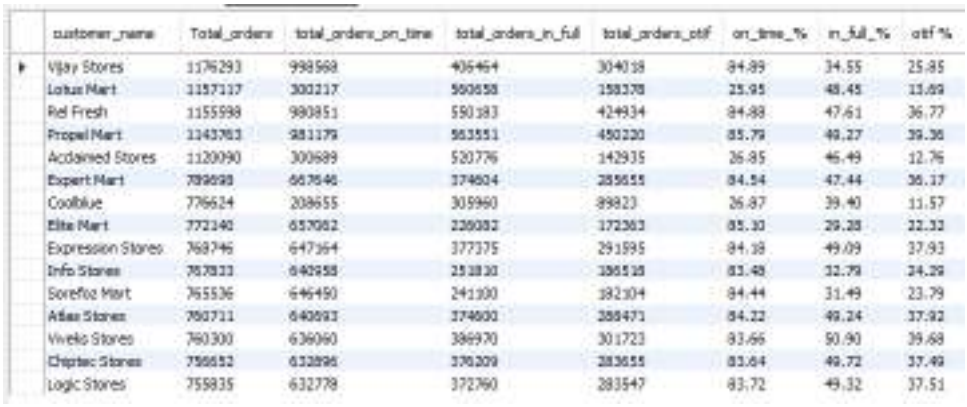
Que. 3

Provide insight regarding the share distribution of previous question metrics by customers.

```
WITH customer_metrics AS
  (
    SELECT
      c.customer_name,
            SUM(ol.order_qty) AS Total_orders,
            SUM(CASE WHEN o.on_time = 1 THEN ol.order_qty ELSE 0 END) AS total_orders_on_time,
            SUM(CASE WHEN o.in_full = 1 THEN ol.order_qty ELSE 0 END) AS total_orders_in_full,
            SUM(CASE WHEN o.otif = 1 THEN ol.order_qty ELSE 0 END) AS total_orders_otif
        FROM fact_order_lines ol
        JOIN dim_customers c  ON ol.customer_id = c.customer_id
        JOIN fact_orders_aggregate o ON ol.order_id = o.order_id
        GROUP BY c.customer_name
    )
  SELECT
    customer_name,
        Total_orders,
        total_orders_on_time,
        total_orders_in_full,
        total_orders_otif,
        ROUND(total_orders_on_time/Total_orders *100,2) AS 'on_time_%',
        ROUND(total_orders_in_full/Total_orders *100,2) AS 'in_full_%',
```

```
    ROUND(total_orders_otif/Total_orders *100,2) AS 'otif %'
FROM customer_metrics
ORDER BY Total_orders DESC;
```

Output



customer_name	Total_orders	total_orders_on_time	total_orders_in_full	total_orders_otif	on_time_%	in_full_%	otif %
Vijay Stores	1176293	998968	406464	304018	84.89	34.55	25.85
Lotus Mart	1157117	300217	560658	158378	25.95	48.45	13.69
Rel Fresh	1155598	980851	550183	424934	84.88	47.61	36.77
Propel Mart	1143763	981179	563551	450220	85.79	49.27	39.36
Acclaimed Stores	1120090	300689	520776	142935	26.85	46.49	12.76
Expert Mart	789693	667646	374614	255655	84.54	47.44	32.37
Coolblue	776624	208655	305960	89823	26.87	39.40	11.57
Elite Mart	772140	657082	226082	172363	85.10	29.28	22.32
Expression Stores	768746	647364	377375	291595	84.18	49.09	37.93
Info Stores	767833	640958	251830	186518	83.48	32.79	24.29
Sorefoz Mart	765536	646490	241100	182104	84.44	31.49	23.79
Atlas Stores	760711	640693	374600	288471	84.22	49.24	37.92
Vivelo Stores	760300	636060	386970	301723	83.66	50.90	39.68
Chptec Stores	758652	632896	376209	283655	83.64	49.72	37.49
Logic Stores	755835	632778	372760	283547	83.72	49.32	37.51

From the above results, we can observed the following insights:

- Vijay Stores has the highest total number of orders, with a total of 1,176,293.
- Lotus Mart has the lowest percentage on time orders of 25.95%.
- Rel Fresh has the highest percentage of in-full orders, at 47.61%.
- Propel Mart has the highest percentage of orders delivered on-time and in-full (OTIF), at 39.36%.
- Acclaimed Stores has the lowest percentage of in-full orders, at 46.49%.
- Expert Mart has the highest percentage of on-time orders, at 84.54%.
- Coolblue has the lowest percentage of in-full orders, at 39.40%.
- Elite Mart has the lowest percentage of orders delivered on-time and in-full (OTIF), at 22.32%.
- Expression Stores has the highest percentage of in-full orders, at 49.09%.

Overall, we can see that there is significant variation in the performance metrics across customers. Some customers have high percentages of on-time and in-full orders, while others have low percentages. This suggests that there may be opportunities to
improve delivery performance for certain customers. Additionally, the variation in performance across customers may indicate that different customers have different needs and expectations when it comes to delivery.

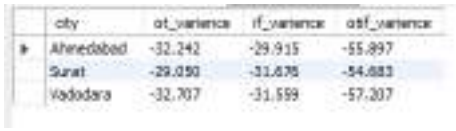
Que. 4

Calculate % variance between actual and target from on time(OT), infull(IF) and "ON_Time and In Full" metrics by City.

```
WITH actual AS
  (
    SELECT
      dim_customers.city,
            SUM(CASE WHEN fact_orders_aggregate.on_time = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.order_id
            SUM(CASE WHEN fact_orders_aggregate.in_full = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.order_id
            SUM(CASE WHEN fact_orders_aggregate.otif = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.order_id) *
        FROM fact_orders_aggregate
        JOIN dim_customers ON fact_orders_aggregate.customer_id = dim_customers.customer_id
        GROUP BY dim_customers.city
     ),
     target AS (
    SELECT
      dim_customers.city,
            SUM(dim_target_orders.ontime_target_pct) / COUNT(DISTINCT dim_target_orders.customer_id) AS target_ot,
            SUM(dim_target_orders.infull_target_pct) / COUNT(DISTINCT dim_target_orders.customer_id) AS target_if,
            SUM(dim_target_orders.otif_target_pct) / COUNT(DISTINCT dim_target_orders.customer_id) AS target_otif
        FROM
      dim_target_orders
```

```
        JOIN dim_customers ON dim_target_orders.customer_id = dim_customers.customer_id
        GROUP BY dim_customers.city
  )
    SELECT
      actual.city,
           ROUND((actual.actual_ot - target.target_ot) / target.target_ot * 100, 3) AS ot_varience,
           ROUND((actual.actual_if - target.target_if) / target.target_if * 100, 3) AS if_varience,
           ROUND((actual.actual_otif - target.target_otif) / target.target_otif * 100, 3) AS otif_varience
       FROM actual
       JOIN target ON actual.city = target.city;
```

Output



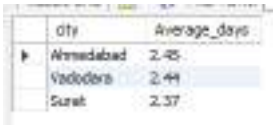
	city	ot_varience	if_varience	otif_varience
▶	Ahmedabad	-32.242	-29.915	-55.897
	Surat	-29.050	-31.676	-54.883
	Vadodara	-32.707	-31.599	-57.207

Que.5

provide the average number of days between order placement and delivery for all orders by city.

```
SELECT
  c.city,
    ROUND(AVG(DATEDIFF(delivery_date, order_date)),2) AS Average_days
FROM
  fact_order_lines ol
JOIN
  dim_customers c ON ol.customer_id = c.customer_id
GROUP BY
    c.city
ORDER BY
    Average_days DESC;
```

Output



	city	Average_days
▶	Ahmedabad	2.45
	Vadodara	2.44
	Surat	2.37

From the above result , we observed the following insights.

Average delivery days are of **2 and half** day for each city.

Que. 6

Analyze the trend of on time delivery over the months.

```
SELECT
  MONTH(order_date) AS month,
    COUNT(order_id) AS Total_orders,
    SUM(CASE WHEN fact_order_lines.On_Time = 1 THEN 1 ELSE 0 END) AS on_time_orders,
    (SUM(CASE WHEN fact_order_lines.On_Time = 1 THEN 1 ELSE 0 END) / COUNT(fact_order_lines.order_id) *100 ) AS on_time_pct
FROM
    fact_order_lines
GROUP BY
      MONTH(order_date)
ORDER BY
        MONTH(order_date);
```

	month	Total_orders	on_time_orders	on_time_pct
▶	3	9755	6970	71.4505
	4	9402	6712	71.3891
	5	9756	6882	70.5412
	6	9389	6656	70.8915
	7	9685	6954	71.8018
	8	9109	6431	70.6005

From the above visualization,

it clearly represents that the **month 7 (July Month) as the highest On Time** deliveries.

Que. 7

Analyze the trend of In Full delivery over the months.

```
SELECT
    MONTH(order_date) AS Month,
        COUNT(order_id) AS Total_orders,
        SUM(CASE WHEN fact_order_lines.In_Full = 1 THEN 1 ELSE 0 END ) AS in_full_orders,
        (SUM(CASE WHEN fact_order_lines.In_Full = 1 THEN 1 ELSE 0 END) / COUNT(fact_order_lines.order_id) * 100) AS in_full_pct
FROM
      fact_order_lines
GROUP BY
        MONTH(order_date)
ORDER BY
        MONTH(order_date);
```

	Month	Total_orders	in_full_orders	in_full_pct
▶	3	9755	6418	65.7919
	4	9402	6187	65.8051
	5	9756	6467	66.2874
	6	9389	6168	65.6939
	7	9685	6381	65.8854
	8	9109	6040	66.3080

From the above visualization,

it clearly represents that the **May and August Month as the highest In Full** deliveries.

Que. 8

Analyze the trend of In Full and On time delivery over months.

```
SELECT
    MONTH(order_date) AS Month,
        COUNT(order_id) AS Total_Orders,
        SUM(CASE WHEN fact_order_lines.On_Time_In_Full= 1 THEN 1 ELSE 0 END) AS otif_orders,
        (SUM(CASE WHEN fact_order_lines.On_Time_In_Full = 1 THEN 1 ELSE 0 END) / COUNT(fact_order_lines.order_id) * 100)  AS otif_
  FROM
    fact_order_lines
  GROUP BY
    MONTH(order_date)
  ORDER BY
    MONTH(order_date);
```

Month	Total_Orders	otif_orders	otif_orders_pct
3	9755	4682	47.9959
4	9402	4491	47.7664
5	9756	4647	47.6322
6	9389	4497	47.8965
7	9685	4710	48.6319
8	9109	4353	47.7879

From the above visualization,

it clearly represents that the **July Month as the highest On time and In Full** deliveries.

Customer Performance

Que. 9

Top 5 customers by total_quantity_orderd, in full quantity ordered and "on time and infull" quantity ordered.

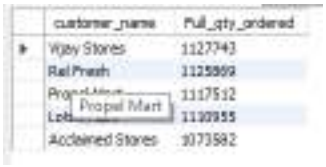
```
-- Top 5 Cusotmers by Total_quantity_ordered

  SELECT
  dim_customers.customer_name,
    SUM(fact_order_lines.order_qty) AS Total_order_qty
 FROM
  dim_customers
 JOIN fact_order_lines ON dim_customers.customer_id = fact_order_lines.customer_id
 GROUP BY dim_customers.customer_name
 ORDER BY Total_order_qty DESC
 LIMIT 5;
```

customer_name	Total_order_qty
Vijay Stores	1176293
Lotus Mart	1157117
Rel Fresh	1155598
Propel Mart	1143763
Acclained Stores	1120090

```
-- Top 5 Cusotmers by in_full_qty_ordered

 SELECT
  dim_customers.customer_name,
    SUM(fact_order_lines.delivery_qty) AS Full_qty_ordered
FROM
    dim_customers
JOIN
      fact_order_lines ON dim_customers.customer_id = fact_order_lines.customer_id
GROUP BY dim_customers.customer_name
ORDER BY Full_qty_ordered DESC
LIMIT 5;
```



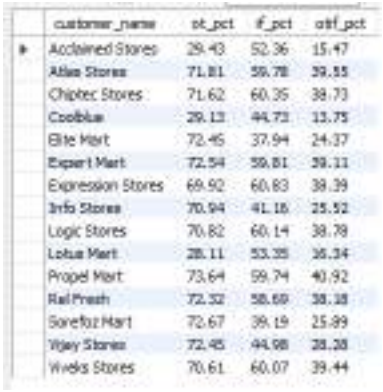

```
-- Top 5 Customers by "OTIF" ordered Quantity.

WITH otif_ordered_qty AS
    (
      SELECT
        fact_order_lines.customer_id,
               SUM(CASE WHEN fact_orders_aggregate.otif = 1 THEN fact_order_lines.delivery_qty ELSE 0 END) AS OTIF_Qty
           FROM fact_order_lines
           JOIN fact_orders_aggregate ON fact_order_lines.order_id = fact_orders_aggregate.order_id
           GROUP BY fact_order_lines.customer_id
       )
    SELECT
    dim_customers.customer_name,
        otif_ordered_qty.OTIF_Qty
    FROM otif_ordered_qty
    JOIN dim_customers ON otif_ordered_qty.customer_id = dim_customers.customer_id
    ORDER BY OTIF_Qty DESC
    LIMIT 5;
```

Que. 10

Provide actual OT%, IF%, AND OTIF% by Customers.

```
WITH actual AS
      (
        SELECT
          dim_customers.customer_name,
                   SUM(CASE WHEN fact_orders_aggregate.on_time = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.o
                   SUM(CASE WHEN fact_orders_aggregate.in_full = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.o
                   SUM(CASE WHEN fact_orders_aggregate.otif = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT fact_orders_aggregate.orde
               FROM fact_orders_aggregate
               JOIN dim_customers ON fact_orders_aggregate.customer_id = dim_customers.customer_id
               GROUP BY dim_customers.customer_name
      )
    SELECT
      actual.customer_name,
           ROUND(actual.actual_ot, 2) AS ot_pct,
           ROUND(actual.actual_if, 2) AS if_pct,
           ROUND(actual.actual_otif,2) AS otif_pct
        FROM
      actual
        ORDER BY actual.customer_name;
```



customer_name	ot_pct	if_pct	otif_pct
Acclaimed Stores	29.43	52.36	15.47
Atlas Stores	71.81	59.78	39.55
Chiptec Stores	71.62	60.35	38.73
Coolblue	29.13	44.73	13.75
Elite Mart	72.45	37.94	24.37
Expert Mart	72.54	59.81	39.11
Expression Stores	69.92	60.83	38.39
Info Stores	70.94	41.16	25.52
Logic Stores	70.82	60.14	38.78
Lotus Mart	28.11	53.35	16.34
Propel Mart	73.64	59.74	40.92
Rel Fresh	72.32	58.69	38.18
Sorefoz Mart	72.67	39.19	25.99
Vijay Stores	72.45	44.98	28.28
Vivaks Stores	70.61	60.07	39.44

Que. 11

Categories the orders by Product category for each customer in descending Order.

```
WITH customer_orders AS (
    SELECT
      dim_customers.customer_name,
            dim_products.category,
            COUNT(DISTINCT fact_order_lines.order_id) AS Total_Orders
        FROM   fact_order_lines
        JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
        JOIN dim_products ON fact_order_lines.product_id = dim_products.product_id
        GROUP BY dim_customers.customer_name, dim_products.category
        )
       SELECT
      customer_orders.customer_name,
            SUM(CASE WHEN customer_orders.category = "dairy" THEN customer_orders.Total_Orders ELSE 0 END) AS 'Dairy',
            SUM(CASE WHEN customer_orders.category = "food" THEN customer_orders.Total_Orders ELSE 0 END) AS 'Food',
            SUM(CASE WHEN customer_orders.category = "beverages" THEN customer_orders.Total_Orders ELSE 0 END) AS 'Beverages',
      SUM(customer_orders.Total_Orders) AS "Total_Orders"
       FROM
      customer_orders
       GROUP BY customer_orders.customer_name
       ORDER BY "Total_Orders" DESC ;
```

customer_name	Dairy	Food	Beverages	Total_Orders
Acclaimed Stores	2603	759	783	4145
Atlas Stores	1322	506	475	2303
Chiptec Stores	1320	488	482	2290
Coolblue	1825	540	526	2891
Elite Mart	1330	497	495	2322
Expert Mart	1366	523	492	2381
Expression Stores	1336	483	512	2331
Info Stores	1361	475	483	2319
Logic Stores	1378	490	474	2342
Lotus Mart	2653	758	751	41 4162
Propel Mart	1965	720	738	3423
Rel Fresh	1987	731	743	3461
Sorefoz Mart	1352	465	517	2334
Vijay Stores	2023	758	702	3483
Vivaks Stores	1339	470	469	2278

Que. 12

Categories the orders by Product category for each city in descending order.

```
WITH customer_orders AS
  (
    SELECT
      dim_customers.city,
            dim_products.category,
            COUNT(DISTINCT fact_order_lines.order_id) AS total_orders
        FROM
      fact_order_lines
        JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
        JOIN dim_products ON fact_order_lines.product_id = dim_products.product_id
```

```
     GROUP BY dim_customers.city, dim_products.category
    )
    SELECT
   customer_orders.city,
         SUM(CASE WHEN customer_orders.category = "dairy" THEN customer_orders.total_orders ELSE 0 END) AS 'Dairy',
         SUM(CASE WHEN customer_orders.category = 'food' THEN customer_orders.total_orders ELSE 0 END) AS 'Food',
         SUM(CASE WHEN customer_orders.category = 'beverages' THEN customer_orders.total_orders ELSE 0 END) AS 'Beverages',
         SUM(customer_orders.total_orders) AS "Total_Orders"
    FROM customer_orders
    GROUP BY customer_orders.city
    ORDER BY "Total_Orders" DESC ;
```

city	Dairy	Food	Beverages	Total_Orders
Ahmedabad	8763	2951	3011	14725
Surat	7728	2742	2630	13100
Vadodara	8669	2970	2981	14620

Insight

Ahmedabad City has the highest number of total order rather than the other two.

Que. 13

Find the top 3 Customers from each city based on their total orders and what is their OTIF%.

```
WITH customer_orders AS (
    SELECT
      dim_customers.city,
           dim_customers.customer_name,
           COUNT(fact_orders_aggregate.order_id) AS Total_orders,
           CONCAT((ROUND((COUNT(CASE WHEN otif = 1 THEN (otif) END) / COUNT(otif) * 100),2)), "%") AS "OTIF%",
           ROW_NUMBER() OVER(PARTITION BY dim_customers.city ORDER BY COUNT(fact_orders_aggregate.order_id) DESC) AS Ranking
    FROM fact_orders_aggregate
        JOIN dim_customers ON fact_orders_aggregate.customer_id = dim_customers.customer_id
        GROUP BY dim_customers.city, dim_customers.customer_name
  )
    SELECT * FROM customer_orders WHERE Ranking IN (1,2,3);
```

city	customer_name	Total_orders	OTIF%	Ranking
Ahmedabad	Coolblue	1219	20.34%	1
Ahmedabad	Acclaimed Stores	1194	19.10%	2
Ahmedabad	Lotus Mart	1179	7.97%	3
Surat	Lotus Mart	1203	21.28%	1
Surat	Acclaimed Stores	1126	6.93%	2
Surat	Expression Stores	842	35.27%	3
Vadodara	Coolblue	1218	7.14%	1
Vadodara	Acclaimed Stores	1190	19.92%	2
Vadodara	Lotus Mart	1188	19.69%	3

Que. 14

Calculate the average lead time for each customer.

```
SELECT
  c.customer_name,
    ROUND(AVG(DATEDIFF(delivery_date, order_date)),2) AS Average_Time
FROM
    fact_order_lines ol
JOIN
      dim_customers c ON ol.customer_id = c.customer_id
GROUP BY
      c.customer_name
ORDER BY
        Average_Time;
```

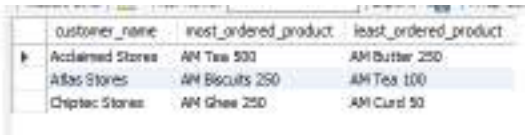
customer_name	Average_Time
Propel Mart	2.14
Atlas Stores	2.15
Elite Mart	2.15
Rel Fresh	2.16
Sorefoz Mart	2.16
Wavy Stores	2.18
Chiptec Stores	2.18
Expert Mart	2.19
Info Stores	2.20
Logic Stores	2.22
Vivelo Stores	2.22
Expression Sto...	2.23
Acclaimed Stores	3.23
Coolblue	3.28
Lotus Mart	3.30

Product Performance

Que. 15

Which product was most and least ordered by each customer?

```
WITH customer_products AS
  (
    SELECT
      dim_customers.customer_name,
           dim_products.product_name,
           COUNT(fact_order_lines.product_id) AS Product_count
        FROM fact_order_lines
        JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
        JOIN dim_products ON fact_order_lines.product_id = dim_products.product_id
        GROUP BY dim_customers.customer_name, dim_products.product_name
     )
     SELECT
      customer_products.customer_name,
           MAX(CASE WHEN customer_products.product_count =
          (SELECT MAX(product_count) FROM customer_products c2 WHERE c2.customer_name = customer_products.customer_name) THEN
                   customer_products.product_name ELSE NULL END ) AS most_ordered_product,
           MIN(CASE WHEN customer_products.product_count =
          (SELECT MIN(product_count) FROM customer_products c2 WHERE c2.customer_name = customer_products.customer_name) THEN
                   customer_products.product_name ELSE NULL END) AS least_ordered_product
     FROM customer_products
   GROUP BY customer_products.customer_name
     ORDER BY customer_products.customer_name
   LIMIT 3;
```



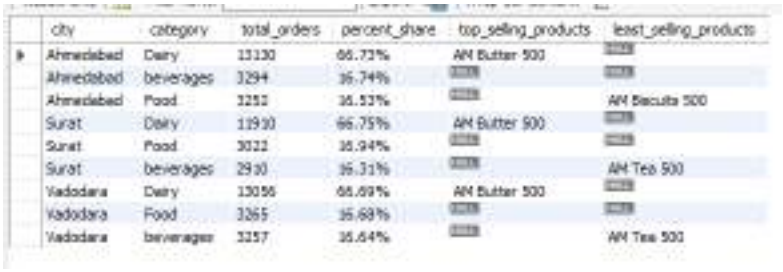
customer_name	most_ordered_product	least_ordered_product
Acclaimed Stores	AM Tea 500	AM Butter 250
Atlas Stores	AM Biscuits 250	AM Tea 100
Chiptec Stores	AM Ghee 250	AM Curd 50

Que. 15

Try to distribute the total product orders by their categories and their % share, also show each city's top and worst selling products.

```
WITH city_categories AS
  (
    SELECT
        dim_customers.city,
               dim_products.product_name,
               dim_products.category,
        COUNT(fact_order_lines.order_id) AS total_orders
         FROM fact_order_lines
         JOIN dim_customers ON fact_order_lines.customer_id = dim_customers.customer_id
         JOIN dim_products ON fact_order_lines.product_id = dim_products.product_id
         GROUP BY dim_customers.city, dim_products.category
      ),
```

```
    categories_totals AS
       (
      SELECT
        city,
        SUM(CASE WHEN category = 'dairy' THEN total_orders ELSE 0 END) AS 'dairy_total',
               SUM(CASE WHEN category = 'food' THEN total_orders ELSE 0 END) AS 'food_total',
               SUM(CASE WHEN category = 'beverages' THEN total_orders ELSE 0 END) AS 'beverages_total',
               SUM(total_orders) AS total_orders
           FROM city_categories
           GROUP BY city
         )
         SELECT
      city_categories.city,
            city_categories.category,
      city_categories.total_orders,
            CONCAT(ROUND((city_categories.total_orders/categories_totals.total_orders)*100,2) , "%")AS percent_share,
            MAX(CASE WHEN city_categories.total_orders =
          (SELECT MAX(total_orders) FROM city_categories c2 WHERE c2.city = city_categories.city) THEN
            city_categories.product_name  ELSE NULL END) as top_selling_products,
            MIN(CASE WHEN city_categories.total_orders =
          (SELECT MIN(total_orders) FROM city_categories c2 WHERE c2.city = city_categories.city) THEN
            city_categories.product_name ELSE NULL END) as least_selling_products
         FROM city_categories
         JOIN categories_totals ON city_categories.city = categories_totals.city
         GROUP BY city_categories.city, city_categories.category
         ORDER BY city_categories.city, percent_share DESC;
```

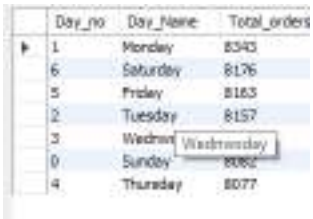


city	category	total_orders	percent_share	top_selling_products	least_selling_products
Ahmedabad	Dairy	13130	66.71%	AM Butter 500	
Ahmedabad	beverages	3294	16.74%		
Ahmedabad	Food	3252	16.53%		AM Biscuits 500
Surat	Dairy	11930	66.75%	AM Butter 500	
Surat	Food	3022	16.94%		
Surat	beverages	2930	16.31%		AM Tea 500
Vadodara	Dairy	13056	66.69%	AM Butter 500	
Vadodara	Food	3265	16.68%		
Vadodara	beverages	3257	16.64%		AM Tea 500

Que. 16

Analyze the customer orders count distribution by day of week.

```
SELECT
    WEEKDAY(order_date) AS Day_no,
    CASE WEEKDAY(order_date)
    WHEN 0 THEN 'Sunday'
        WHEN 1 THEN 'Monday'
        WHEN 2 THEN 'Tuesday'
        WHEN 3 THEN 'Wednwsday'
        WHEN 4 THEN 'Thursday'
        WHEN 5 THEN 'Friday'
        WHEN 6 THEN 'Saturday'
     END AS Day_Name  ,
  COUNT(order_id) AS Total_orders
 FROM
  fact_order_lines
 GROUP BY
  Day_Name
 ORDER BY
    Total_orders DESC;
```



Day_no	Day_Name	Total_orders
1	Monday	8343
6	Saturday	8176
5	Friday	8163
2	Tuesday	8157
3	Wednwsday	
0	Sunday	
4	Thursday	8077

Insights

- The cities with the most customers are Ahmedabad and Vadodara.
- Some customers, such as Sorfex Mart in Vadodara and Info Stores in Surat, have much higher in-full percentages than on-time percentages.
- Among all the customers, Vijay Stores placed the highest number of orders.
- Expert Mart has the highest percentage of on-time orders at 85.54%.
- Coolblue and Elite Mart have the lowest in-full and on-time performance for orders.
- The average delivery time for Delivering is 2 days, and half a day for each city.