ATLIQ MART

SUPPLY CHAIN ANALYSIS

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PROBLEM STATEMENT

• AtliQ Mart is a growing FMCG manufacturer headquartered 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 the next 2 years.

• AtliQ Mart is currently facing a problem where a few key customers did not extend their annual contracts due to service issues. It is speculated 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.

KEY METRICS

- Orders are nothing but a unique request placed by a customer on a given date.
- Within an order, a customer could request multiple items. Each of these items requested within the order is called an order line

1. On - Time Delivery (OT%)

An order level measure , it determines if an order is delivered as per the agreed time with the customer. This metric is important for the warehouse & distribution team. An order is On Time only when all the line items inside the order is delivered on time.

2. In - Full Delivery (IF%)

An order level measure, It determines if an order is delivered in full as per the requested quantity by the customer This metric is important for the supply planning team. An order is In Full only when all the line items inside the order is delivered in full.

3. On Time - In Full Delivery (OTIF%)

An order level measure, It determines if an order is both in full and on time as per the customer order request. This metric is important for all the sub functions in the supply chain team. An order is OTIF only when all the line items inside the order are delivered ON TIME and IN FULL. Measures reliability of an order from customer POV
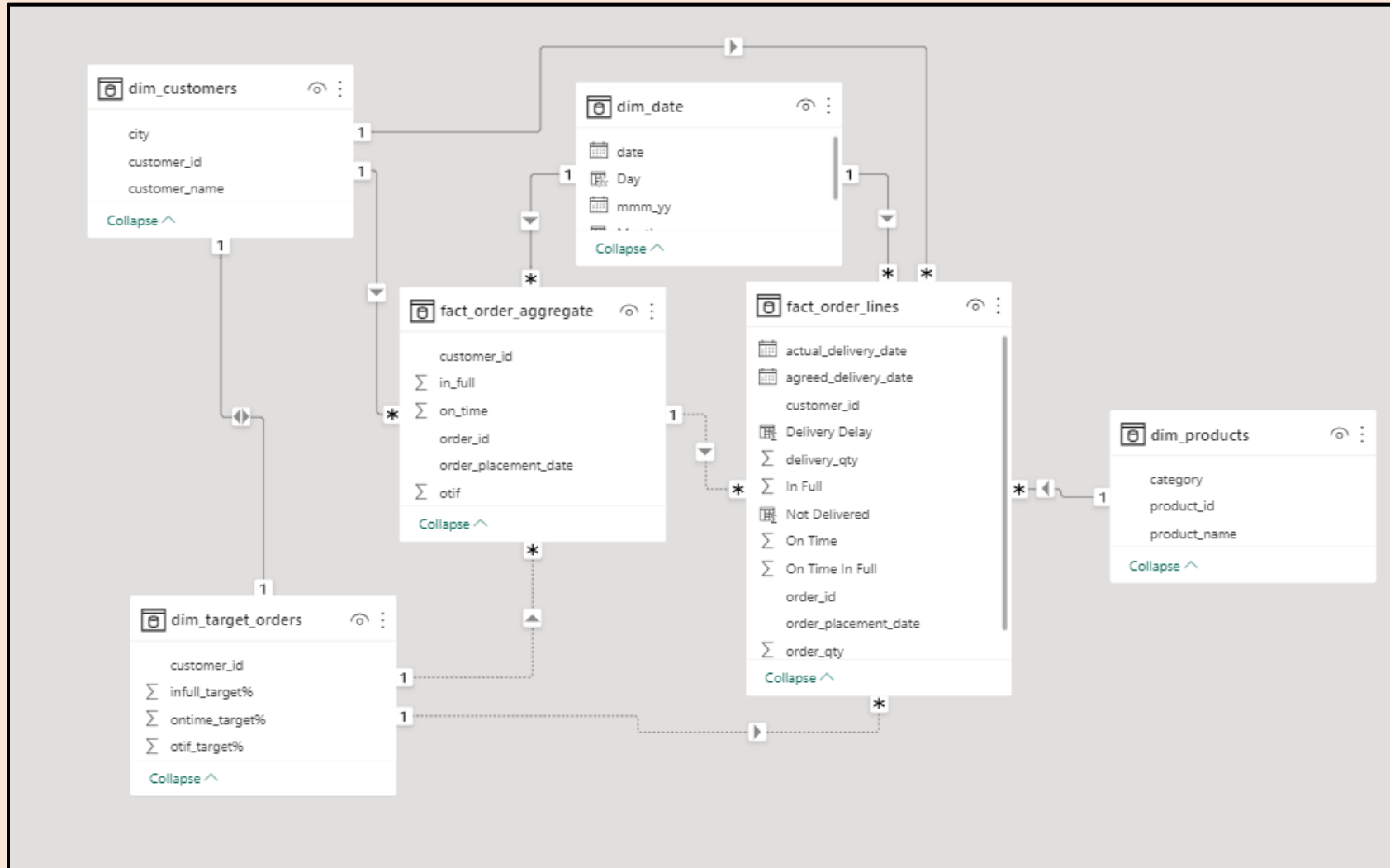
KEY METRICS

4. Line Fill Rate (LIFR) %

- Line Fill Rate is an important metric for the supply planning team to understand how many lines they shipped out of the total lines ordered. This metric does not consider the delivery time of the order.
- Let's say you order 4 notebooks and 2 pens from Amazon. Amazon is able to ship you 4 notebooks and 1 pen. The line item pen is failed because you requested 2 nos. So Line Fill Rate for Amazon for your order is order lines fulfilled / lines ordered => 1/2 => 50 %.
- LIFR is the % of customers you satisfy over a period of time, so it is a metric from customer POV

5. Volume Fill Rate (VOFR%)

- Volume fill rate or case fill rate is a similar metric useful for the supply planning team to understand the total quantity they are able to ship for a customer per order or for a given period of time.
- Volume Fill rate will be total quantity shipped / total quantity ordered => 5/6 => 83 %.
- VOFR% is useful for internal inventory planning POV answering the question, How well did you match the in stock inventory to customer demand.
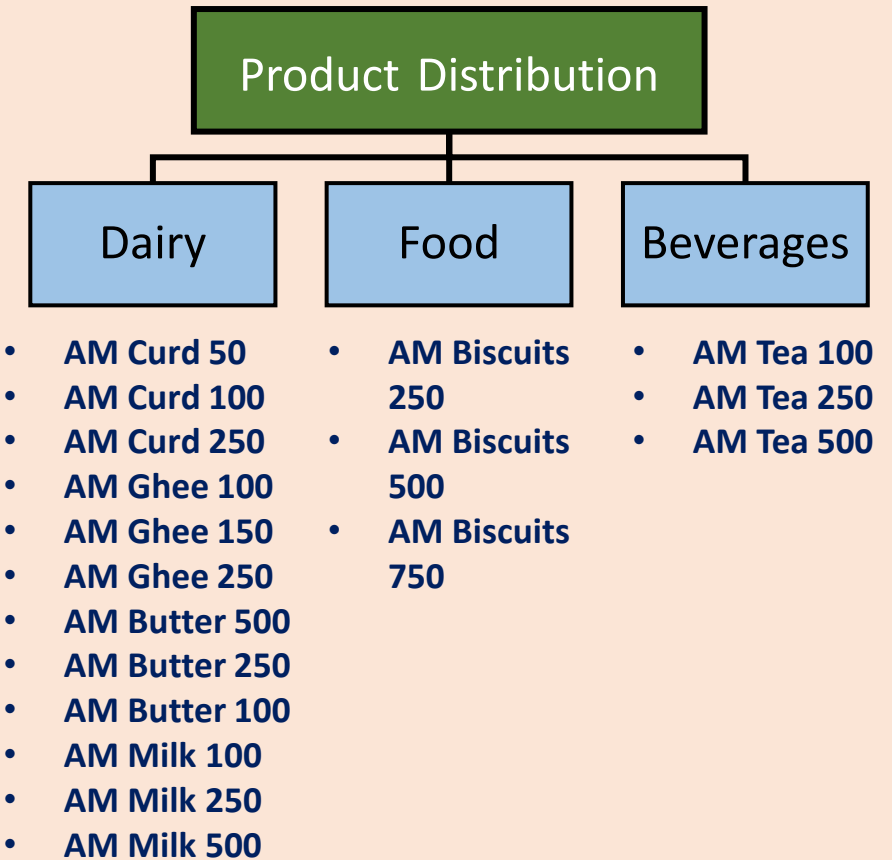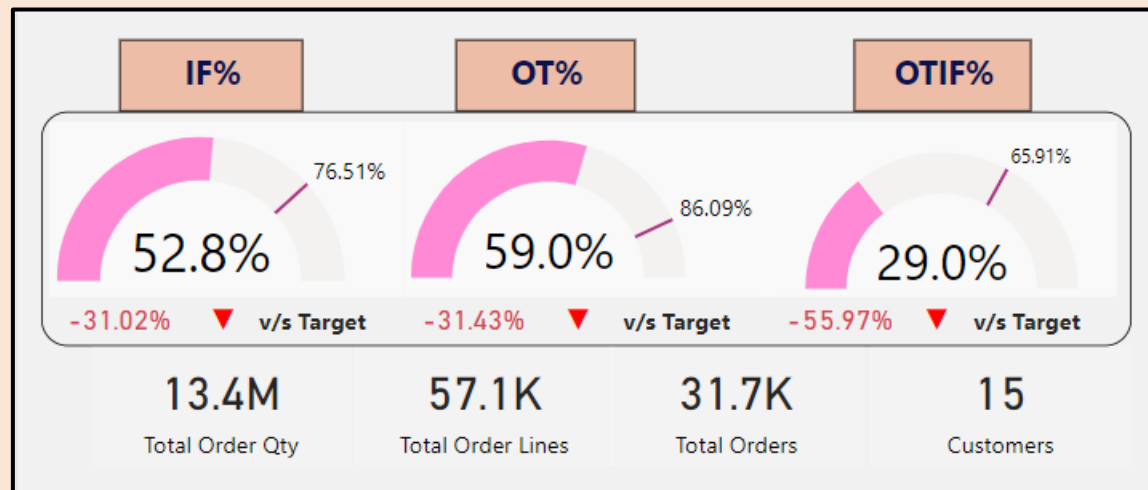
DATA MODEL

Insights

○ Data collected ranges from 1st March, 2022 till 30th August, 2022.

IF%	OT%	OTIF%
76.51%	86.09%	65.91%
52.8%	59.0%	29.0%
-31.02% ▼ v/s Target	-31.43% ▼ v/s Target	-55.97% ▼ v/s Target

Total Order Qty	Total Order Lines	Total Orders	Customers
13.4M	57.1K	31.7K	15

VOFR%	LIFR%	Total Order Qty	Not Delivered Qty
96.59%	65.96%	13.43M	457.78K

- Total 31.7 K orders were placed from 15 customers accounting to a total of 13.4 Million in quantity.
- Key metrics , IF%, OT% and OTIF% all fall behind their target by 31.02%, 31.43% and 55.97% respectively indicating poor customer service in terms of delivery.
- VOFR% is quiet high at **96.59%** which means we are able to live up to the volume demand of the customers, however, LIFR% of 65.96% suggest that the company is able to **fully** delivery around 66% of the line items ordered.
- LIFR% being less than VOFR% indicates that even though quantity demand has been positively met with, the "variety" of items delivered in full is comparatively low.
- This could be due to a variety of factors such as inventory management, supplier reliability, or demand forecasting. Efficient resource allocation must be done to improve LIFR%.
- Around 458K units were not delivered out of 13 Million units.

...Lets Focus on the IF%, OT% and OTIF% of customers

Customer	Order count	OTIF%	OT%	IF%
Coolblue	2437	13.75%	29.13%	44.73%
Acclaimed Stores	3510	15.47%	29.43%	52.36%
Lotus Mart	3550	16.34%	28.11%	53.35%
Elite Mart	1637	24.37%	72.45%	37.94%
Info Stores	1669	25.52%	70.94%	41.16%
Sorefoz Mart	1661	25.89%	72.67%	39.19%
Vijay Stores	2468	28.28%	72.45%	44.98%
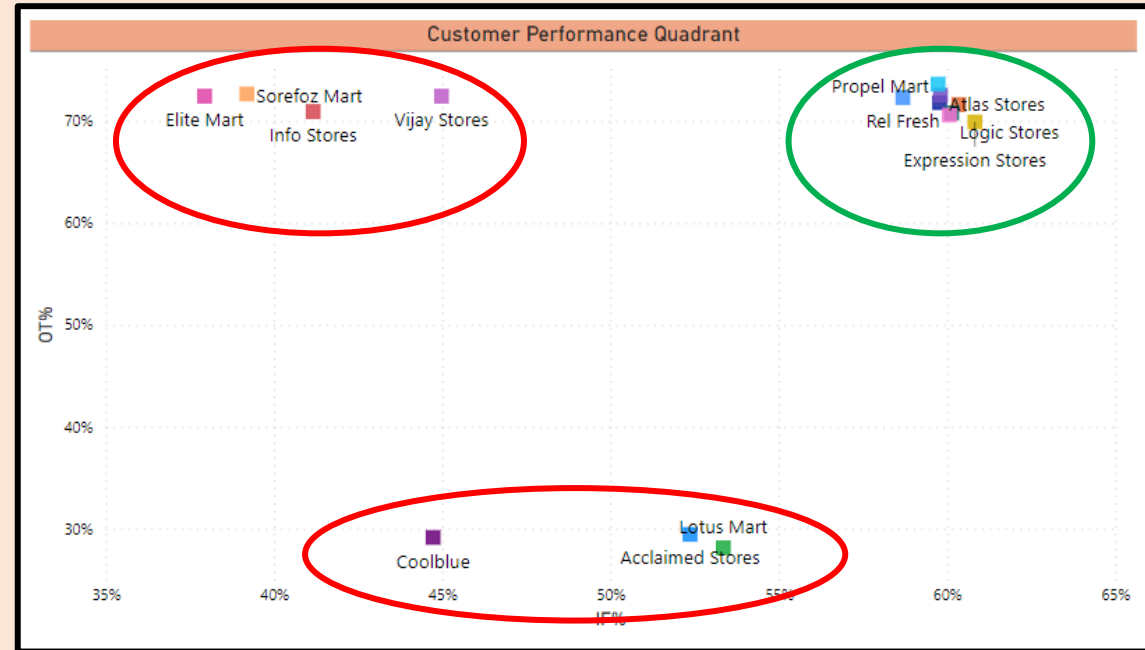
- The delivery performance for these 7 customers is concerning.
- The more red a customer is, the more is the difference between metric target and the actual metric.
- **Coolblue, Acclaimed Stores and Lotus Mart** are top 3 customers facing worst OTIF%.
- Dark green under order count indicates the most orders from a customer. We can see that, Acclaimed stores and Lotus Mart have ordered the most and yet the delivery performance is the worst.

From the quadrant (OT% vs IF%) ,
- Propel mart, Atlas stores, Rel fresh, Logic Stores and Expression stores have experienced good **OT% and IF%.**
- Coolblue, Acclaimed Stores and Lotus Mart face major issues with **on time delivery** and mediocre in full delivery.
- Elite Mart, Sorefox Mart, Info Stores and Vijay Stores struggle majorly receiving **in full deliveries** but have good **OT%**
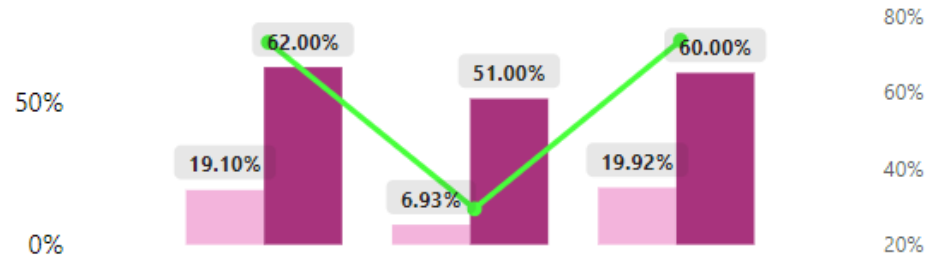
City wise Metrics : OTIF%
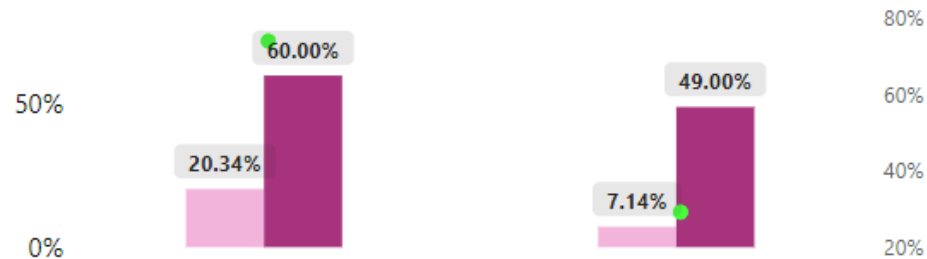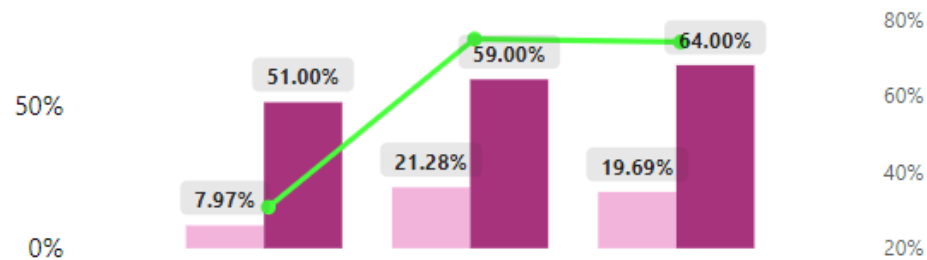
Customer Delivery Delay Analysis

-1 : Delivered a day before. 0 : On time Delivery. 1 : One day delay 2 : Two day Delay 3 : Three day delay
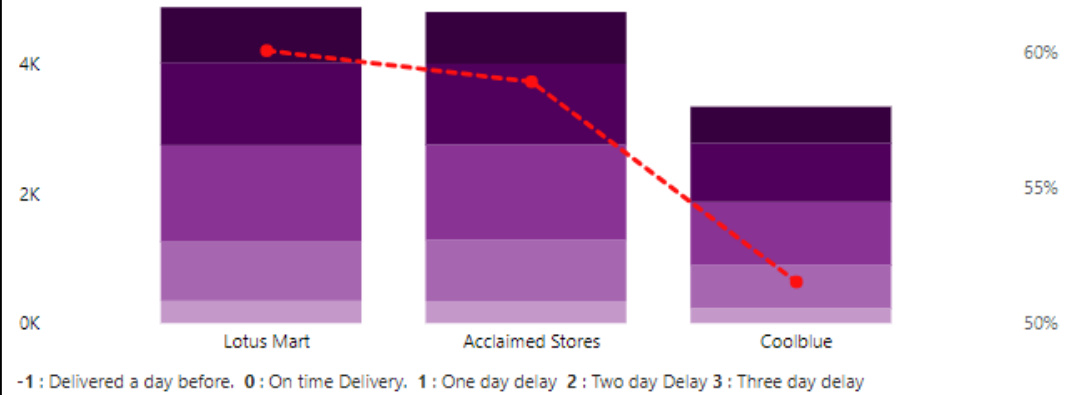
- For Acclaimed Stores, **Surat** has seen worst LIFR%, OTIF% at **6.93%** where as target was 51%.

- For Lotus Mart, **Ahmedabad** has seen worst LIFR%, OTIF% at **7.97%** where as the target was 51%.

- For Coolblue, OTIF% must be improved in **Vadodara** region, its very less at **7.14%** where as target is 49% along with LIFR%. WORST out of the three.

- From Delay Delivery Analysis for the three stores, all three stores have **faced delays** in delivery which makes sense since they have a very poor OT%. The delivery delay can go as long as 3 days which is very poor service.

- Low LIFR% indicates failure in delivering all line items to the company.
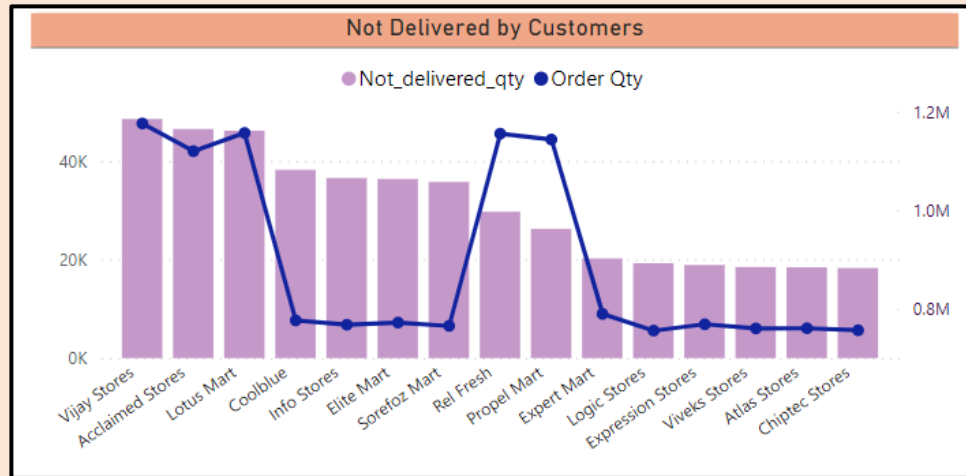
Not Delivered by Customers

Customer Performance Quadrant : IF% vs LIFR%

- Vijay Stores ,Acclaimed, Lotus and Coolblue are top 4 customers in terms of quantities not delivered.
- Vijay Stores has highest order quantity and highest not delivered items as well which is concerning because he is buying in huge numbers and thus we need to fulfill the orders.
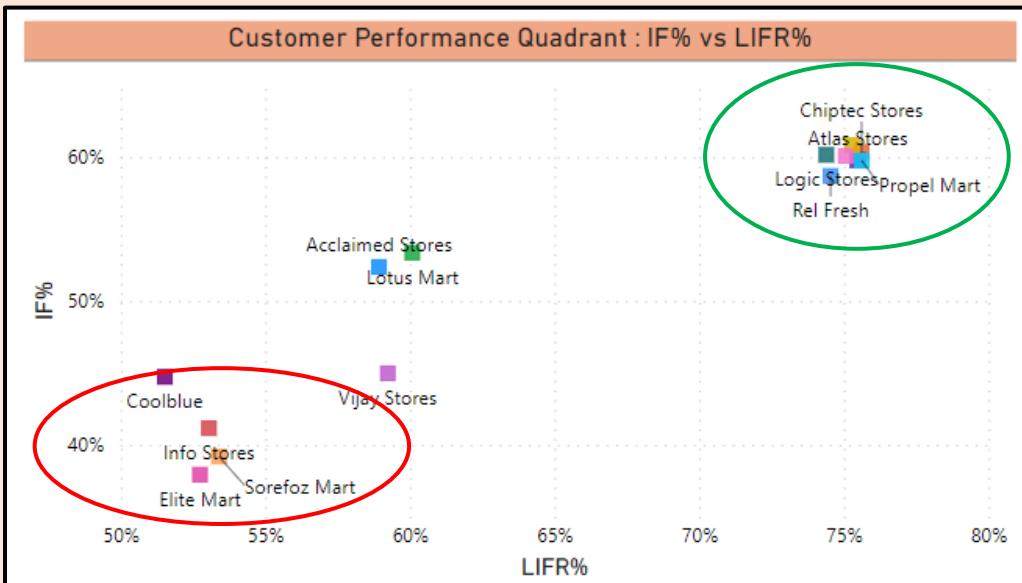
- From the customer performance quadrant we saw that, Elite Mart, Sorefoz Mart, Info Stores and Vijay Stores struggled receiving in full orders.
- A low **IF%** means that a smaller percentage of orders are being delivered complete.
- A low **LIFR%** suggests that AtIQ is not able to fully deliver all the line items that customers have ordered.
- Elite mart has lowest IF% along with a low LIFR%. It also has the biggest gap between IF% and IF% Target.

Reasons for Low IF% and LIFR% could be many. For example, inventory management, logistics, demand forecasting or specific issues with certain products.

Lets check which cities contribute to the bad demand fulfilment of our customers.
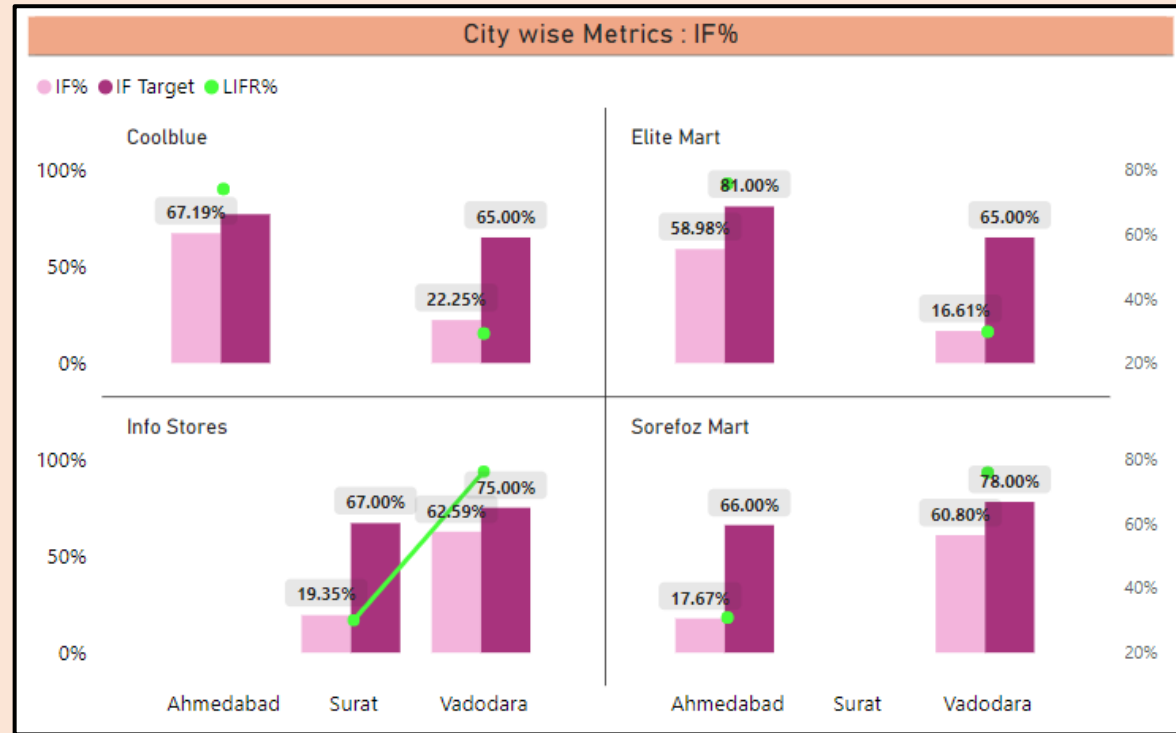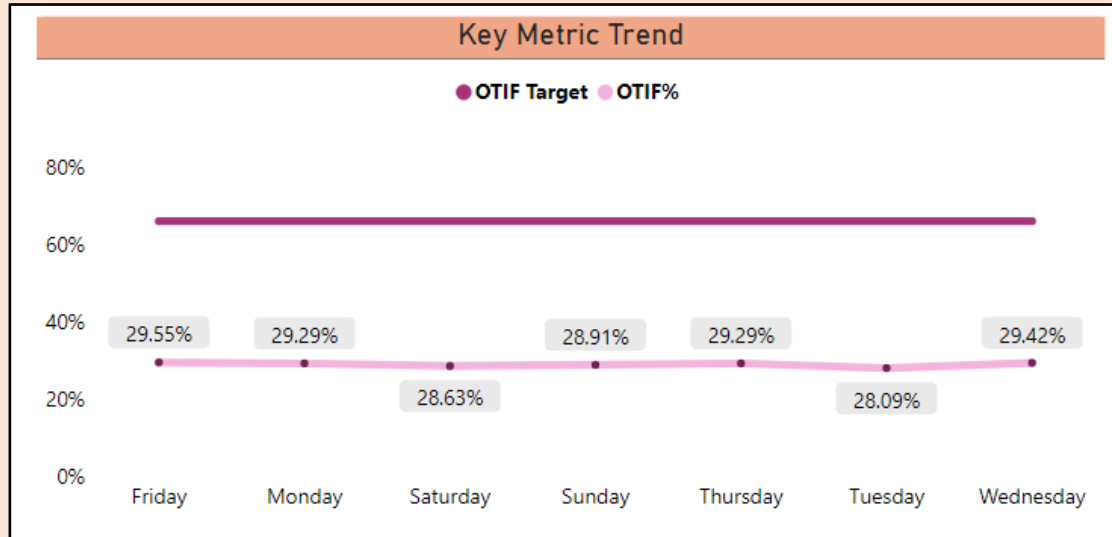

- For Coolblue and Elite mart, Vadodara branch needs attention as their IF% and LIFR% are lowest amongst the cities.
- For Info Stores, Surat branch should be looked into.
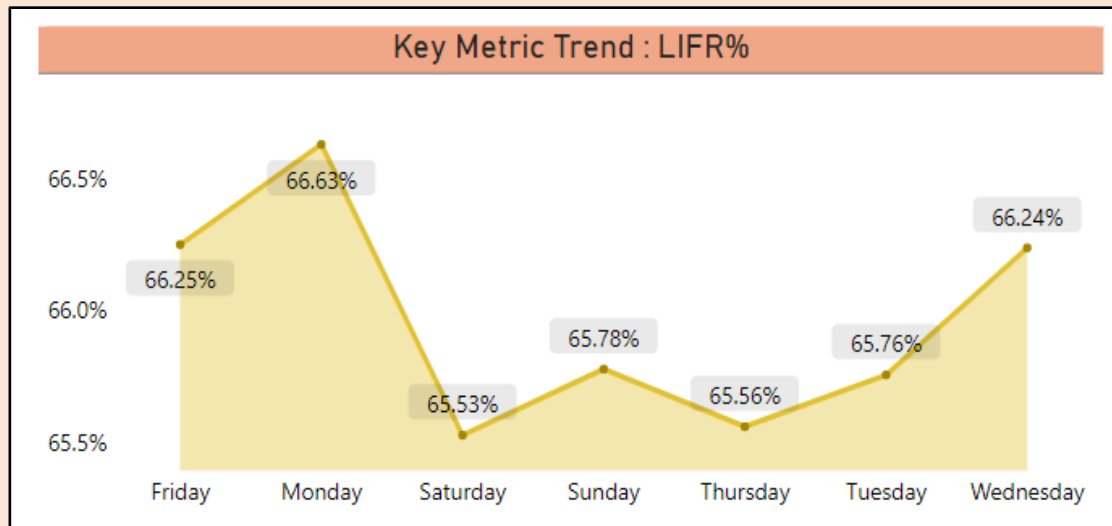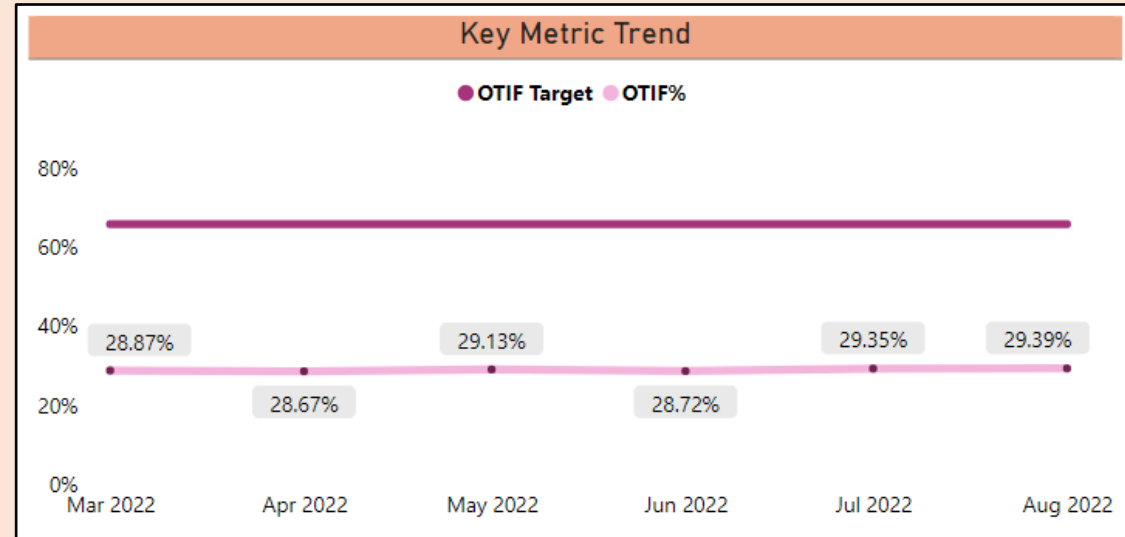- For Sorefoz mart, Ahmedabad Branch should be looked into

Proper stock management and careful supply to the respective branches in the three cities must be done so that all branches receive full orders and their variety of orders is also satisfied.

Daily

Key Metric Trend
- OTIF Target
- OTIF%

29.55%	29.29%		28.91%	29.29%		29.42%
		28.63%			28.09%	

Friday · Monday · Saturday · Sunday · Thursday · Tuesday · Wednesday

Key Metric Trend : LIFR%

66.25% · 66.63% · 65.53% · 65.78% · 65.56% · 65.76% · 66.24%

Friday · Monday · Saturday · Sunday · Thursday · Tuesday · Wednesday

Monthly

Key Metric Trend
- OTIF Target
- OTIF%

28.87% · 28.67% · 29.13% · 28.72% · 29.35% · 29.39%

Mar 2022 · Apr 2022 · May 2022 · Jun 2022 · Jul 2022 · Aug 2022

- Overall OTIF% has been fairly stable albeit below target across days and months.
- Overall LIFR%, even though the graph shows highest on Mondays, but value wise, its more or less similar i.e between 65% to 67%

For more insights into metric trends across timeframe can be found in the dashboard.

We have seen that few customers face low OTIF%, LIFR%, etc but now lets analyze the situation on product level

Category & Product Demand
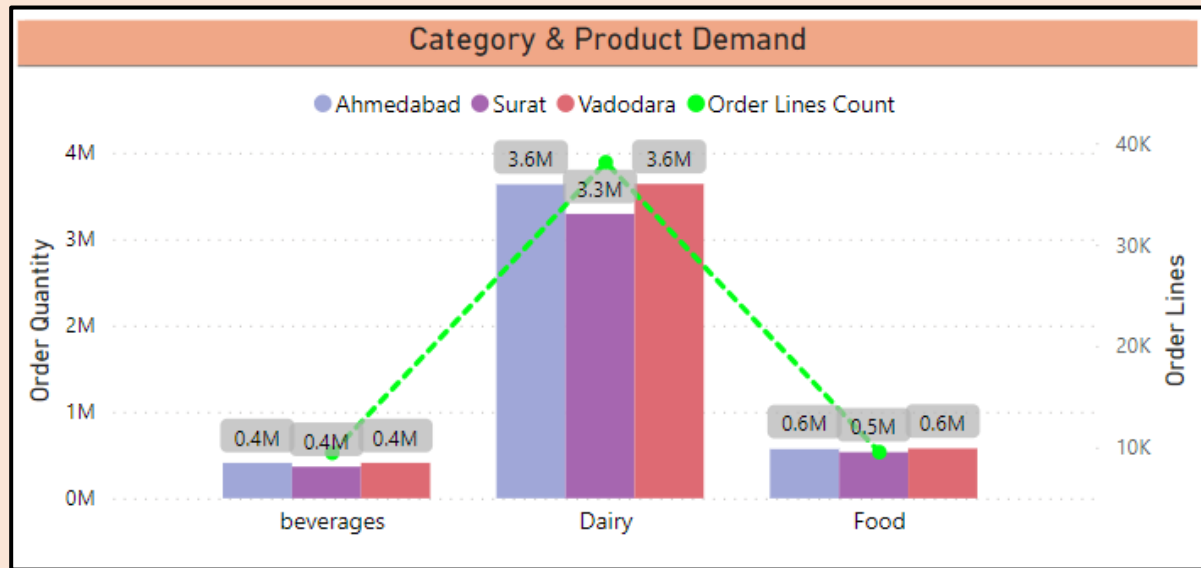
- In terms of demand, Dairy has been the most ordered category with almost 10.5 Million units which is around 78% of all units ordered.
- Product variety is also the highest in dairy with order lines amounting at around 40K.
- Across all the categories, the city wise distribution is even in their respective categories.


Product Quadrant
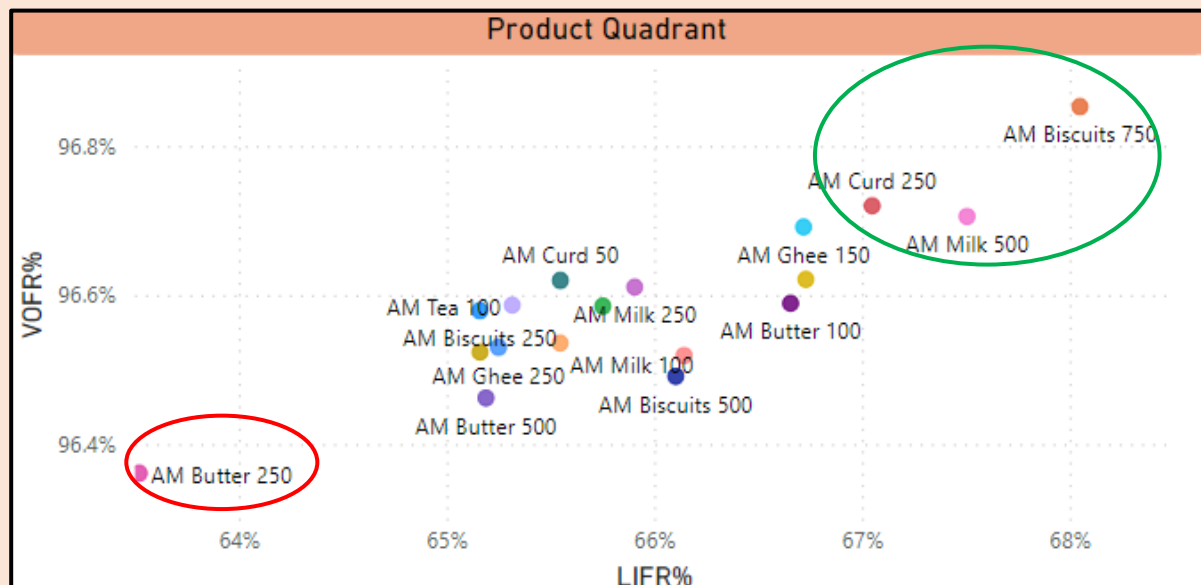
- AM Biscuits 750gm, AM Curd 250 and AM Milk 500 have great VOFR% and LIFR%.
- In general too, VOFR is good between 96% & to 97%.
- AM Butter 250gm has lowest LIFR% of all.

Lets check product level LIFR% for customers experiencing incomplete orders.

❖ *We had found that for CoolBlue and Elite mart, there was a need to look at Vadodra branch. For Info store, Surat was the branch and for Soferoz, it was Ahmedabad.*
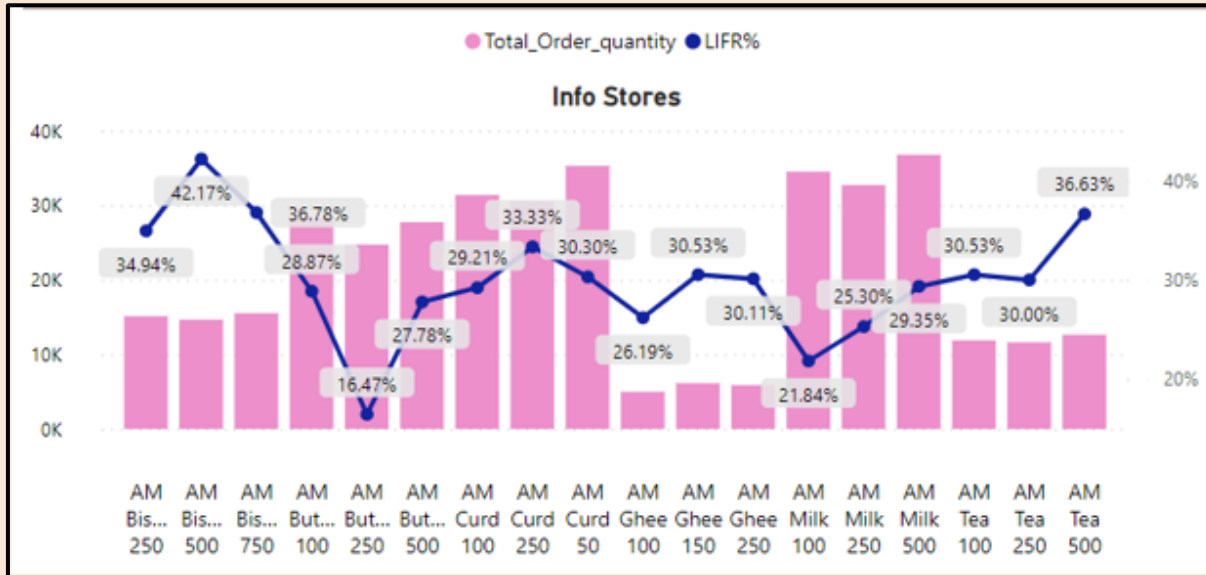
1. <u>Coolblue and Elite Mart in Vadodara.</u>
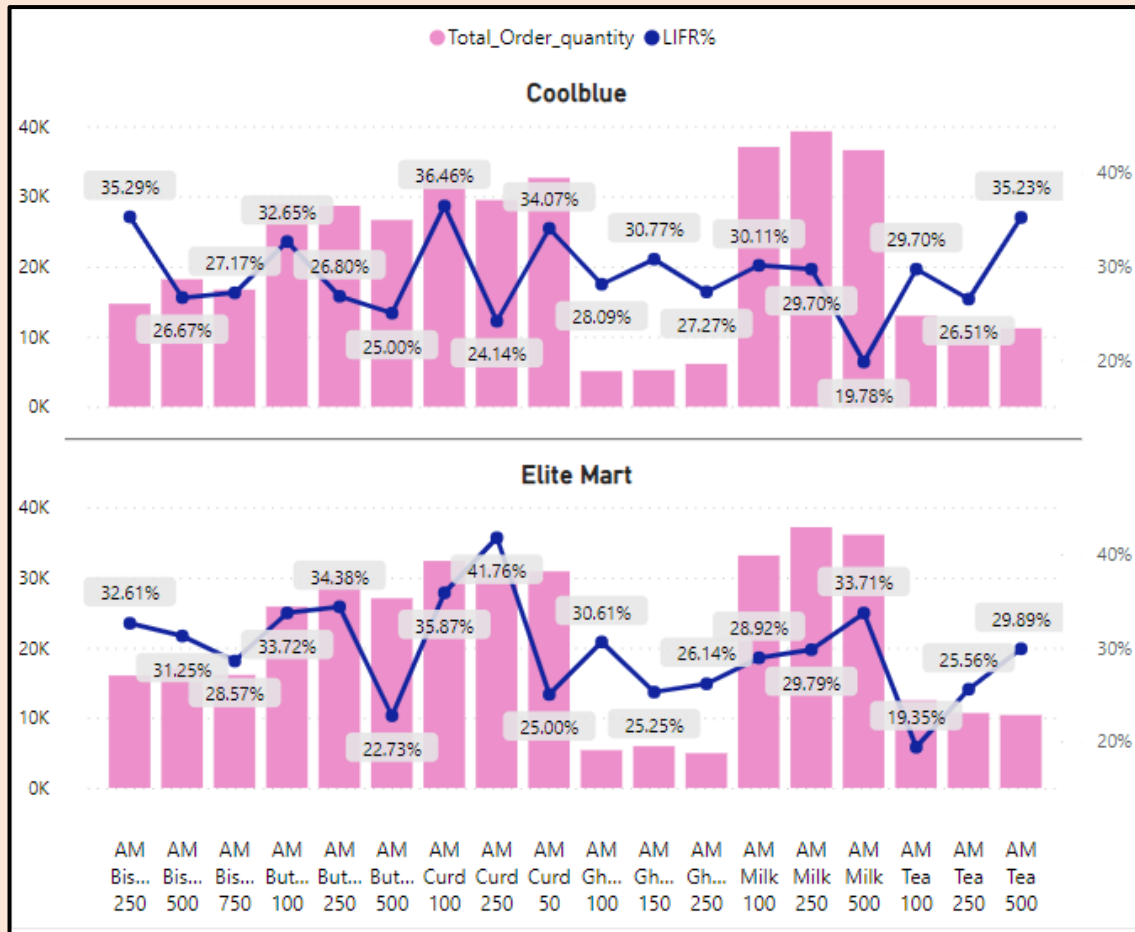
- For Vadodara branch of Coolblue, all AM Milk products have highest combined units ordered followed by AM Curd.

- **AM Milk 500** has lowest LIFR% at 19.78% followed by **AM Curd 250** at 24.14% and **AM Butter 500** at 25%.

- Thus, AtliQ needs to focus on these products especially AM Milk 500 because it has very high demand and very low LIFR%.

- AM Tea 100 has lowest LIFR% at 19.35% followed by AM Butter 500 at 22.73%, AM Curd 50 at 25% and AM Ghee 150 at 25.25%.

- Thus, AtliQ needs to focus on these products especially AM Butter 500 and AM Curd 50 because it has high demand and low LIFR%.

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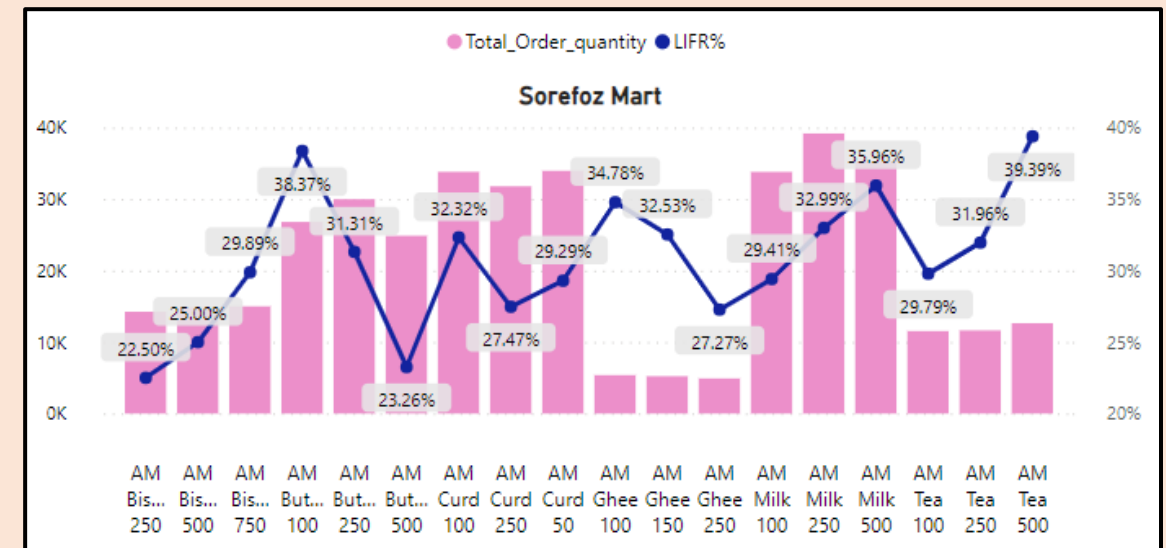
2. Info Stores in Surat.

- **AM Butter 250** has lowest LIFR% at 16.47 followed by **AM Milk 100** at 21.84%.
- These two products have high demand as well thus AtliQ needs to focus on stock for these products for Info Stores in Surat.

3. Sorefoz Mart in Ahmedabad.

- Here, **AM Biscuit 250** and 500 have low LFIR% at 22.5% and 25% respectively. Even **AM Butter 500** has low value at 23.26%.

Summary

1.Order Volume: A total of 31.7K orders were placed by 15 customers, accounting for a total of 13.4 Million in quantity.

2.Service Level: Key metrics (IF%, OT%, and OTIF%) are all below their targets, indicating poor customer service in terms of delivery.

3.Delivery Performance: The delivery performance for Coolblue, Acclaimed Stores, and Lotus Mart is concerning, with major issues in on-time delivery and mediocre in full delivery.

4.Product Demand: Dairy has been the most ordered category with almost 10.5 Million units which is around 78% of all units ordered.

5.Branch Performance: For CoolBlue and Elite mart, there is a need to look at the Vadodra branch. For Info store, Surat was the branch and for Soferoz, it was Ahmedabad.

6.Product Performance: AM Milk 500, AM Butter 500, and AM Curd 50 have high demand but low LIFR%, indicating a need to focus on these products.

7.Customer Performance: Vijay Stores, Acclaimed, Lotus, and Coolblue are top 4 customers in terms of quantities not delivered.

8.Delivery Delay: All three stores (CoolBlue, Acclaimed Stores, and Lotus Mart) have faced delays in delivery which can go as long as 3 days

Recommendation

Based on these insights, here are some recommendations:

1.Improve Delivery Performance: Focus on improving the 'On time' and 'In Full' delivery service level. This could be achieved by optimizing the supply chain processes, improving inventory management, and enhancing supplier reliability.

2.Focus on High Demand Products: Prioritize the stock for high demand products like AM Milk 500, AM Butter 500, and AM Curd 50 to ensure they are always available for delivery.

3.Branch Specific Attention: Pay special attention to the branches that are underperforming, like the Vadodra branch for CoolBlue and Elite mart, Surat for Info store, and Ahmedabad for Soferoz.

4.Customer Specific Attention: Prioritize the delivery for top customers like Vijay Stores, Acclaimed, Lotus, and Coolblue who have high quantities of undelivered items.

5.Reduce Delivery Delay: Work on reducing the delivery delay which can go as long as 3 days. This could be achieved by improving the logistics and transportation processes.

6.Regular Monitoring: Set up a regular monitoring system to track the 'On time' and 'In Full' delivery service level for all the customers on a daily basis.