SUPPLY CHAIN OPTIMIZATION

Supply Chain Challenge
BY CODEBASICS

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 metro/tier1 cities in the next 2 years.

AtliQ Mart is currently facing a problem where a few key customers did not extend the annual contract 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 on a 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 OnTime in full (OTIF) % of the customer orders on a 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
Create the metrics according to the metrics list.

1.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 the form of a comic.

1.Create relevant insights that are not provided in the metric list/stakeholder meeting.
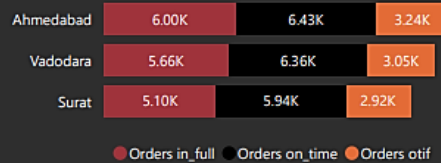
KEY FINDINGS

Dairy is the most popular product category.

ORDERS
AT A GLANCE

Orders	Orders in_full	Orders on_time	Orders on_time_in_full
32K	17K	19K	9208

Order Analysis by City

	Orders in_full	Orders on_time	Orders otif
Ahmedabad	6.00K	6.43K	3.24K
Vadodara	5.66K	6.36K	3.05K
Surat	5.10K	5.94K	2.92K

● Orders in_full ● Orders on_time ● Orders otif

Quantity Ordered vs Quantity Delivered

	Total Quantity Ordered	Total Quantity Delivered
Dairy	10565K	10204K
Food		
beverages		

● Total Quantity Ordered ● Total Quantity Delivered
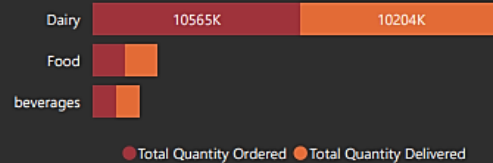
Order Analysis by Customer

Lotus Mart	Acclaimed Stores	Vijay Stores	Rel Fresh	Coolblue	Propel Mart	Logic Stores	Info Stores	Expressi... Stores	Sorefoz Mart	Expert Mart	Atlas Stores	Chiptec Stores	Elite Mart	Viveks Stores
3.6K	3.5K	2.5K	2.5K	2.4K	2.4K	1.7K	1.7K	1.7K	1.7K	1.7K	1.6K	1.6K	1.6K	1.6K

Top 6 customers constitute approximately 53% of total orders.

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METRICS
AT A GLANCE

Orders On Time
59.02%
-31.42% | 86.09%
Actual vs Target

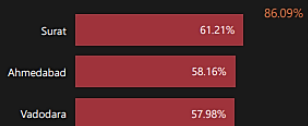**Orders In Full**
52.82%
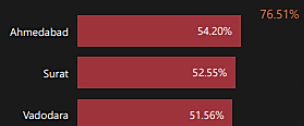-31.02% | 76.51%
Actual vs Target

Orders OnTime_InFull
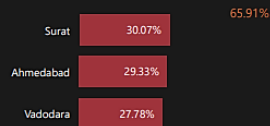**29.02%**
-56.02% | 65.91%
Actual vs Target

Actual vs Target

Surat	61.21%
Ahmedabad	58.16%
Vadodara	57.98%

86.09%

Actual vs Target

Ahmedabad	54.20%
Surat	52.55%
Vadodara	51.56%

76.51%

Actual vs Target

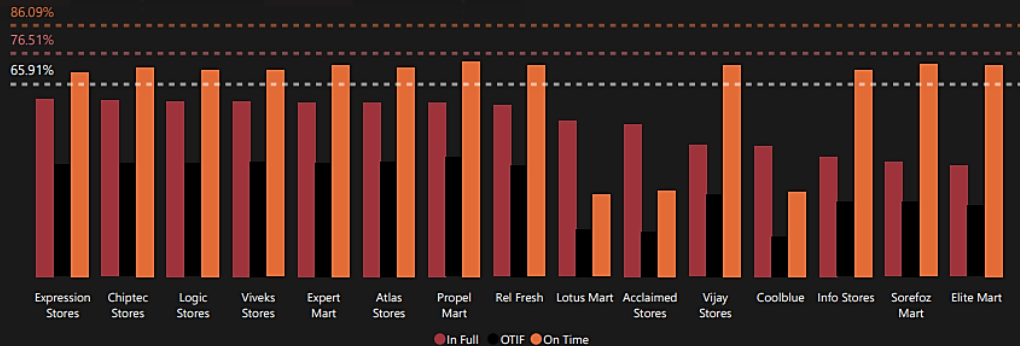|	
Surat	30.07%
Ahmedabad	29.33%
Vadodara	27.78%

65.91%

➢ Consumer wise analysis indicates that **Lotus Mart, Acclaimed Stores, and Coolblue** (top consumers) have significantly lower OT%, IF% and OTIF% values than others.

➢ Average OT%, IF% and OTIF% values fall considerably short of Targeted values.

➢ Though there is no significant difference among cities in terms of gap between actual and target values, Vadodara has the highest gap.

Actual vs Target

86.09%
76.51%
65.91%

Expression Stores | Chiptec Stores | Logic Stores | Viveks Stores | Expert Mart | Atlas Stores | Propel Mart | Rel Fresh | Lotus Mart | Acclaimed Stores | Vijay Stores | Coolblue | Info Stores | Sorefoz Mart | Elite Mart

● In Full ● OTIF ● On Time

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57.10K Order Lines

37.66K Order Lines In Full

65.96% LIFR

Our performance in VOFR% is noteworthy but in LIFR% is not at all convincing.

13.43M Quantity Ordered

12.97M Quantity Delivered

96.59% VOFR

- Detailed analysis of Ahmedabad consumers indicates that **Lotus Mart** (though the top consumer) have surprisingly lowest LIFR% and VOFR% values.

- Similarly, top consumers from Surat (**Acclaimed Stores**) and Vadodara (**Coolblue**) have the lowest LIFR% and VOFR% levels.

city	LIFR	VOFR
Ahmedabad		
Acclaimed Stores	73.01%	97.38%
Atlas Stores	75.26%	97.55%
Chiptec Stores	75.64%	97.62%
Coolblue	74.02%	97.33%
Elite Mart	75.72%	97.56%
Expert Mart	75.52%	97.48%
Logic Stores	74.68%	97.56%
Lotus Mart	30.77%	93.29%
Propel Mart	75.80%	97.72%
Rel Fresh	74.73%	97.51%
Sorefoz Mart	30.87%	93.05%
Vijay Stores	73.70%	97.29%
Surat	**66.69%**	**96.65%**
Vadodara	**63.69%**	**96.33%**

city	LIFR	VOFR
Ahmedabad	**67.56%**	**96.79%**
Surat		
Acclaimed Stores	29.37%	92.88%
Atlas Stores	75.69%	97.56%
Chiptec Stores	75.58%	97.64%
Expression Stores	73.27%	97.33%
Info Stores	30.06%	92.97%
Logic Stores	74.11%	97.34%
Lotus Mart	74.83%	97.46%
Propel Mart	75.05%	97.55%
Rel Fresh	74.74%	97.51%
Vijay Stores	74.42%	97.34%
Viveks Stores	74.84%	97.46%
Vadodara	**63.69%**	**96.33%**

city	LIFR	VOFR
Ahmedabad	**67.56%**	**96.79%**
Surat	**66.69%**	**96.65%**
Vadodara		
Acclaimed Stores	73.51%	97.33%
Coolblue	29.19%	92.82%
Elite Mart	29.74%	92.85%
Expert Mart	75.44%	97.48%
Expression Stores	77.36%	97.68%
Info Stores	76.23%	97.60%
Lotus Mart	74.05%	97.25%
Propel Mart	76.03%	97.59%
Rel Fresh	74.14%	97.45%
Sorefoz Mart	75.88%	97.65%
Vijay Stores	29.89%	93.02%
Viveks Stores	75.27%	97.48%
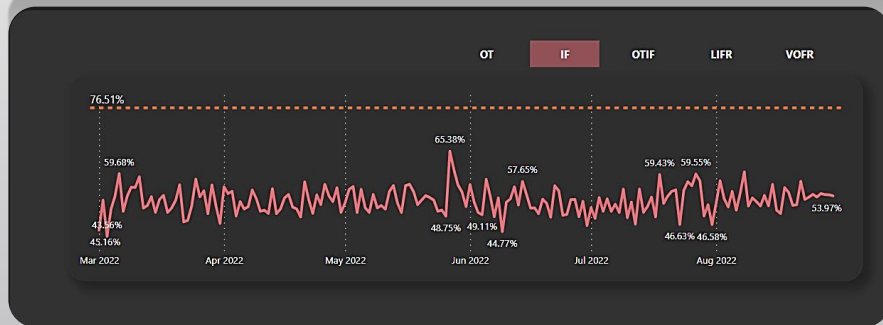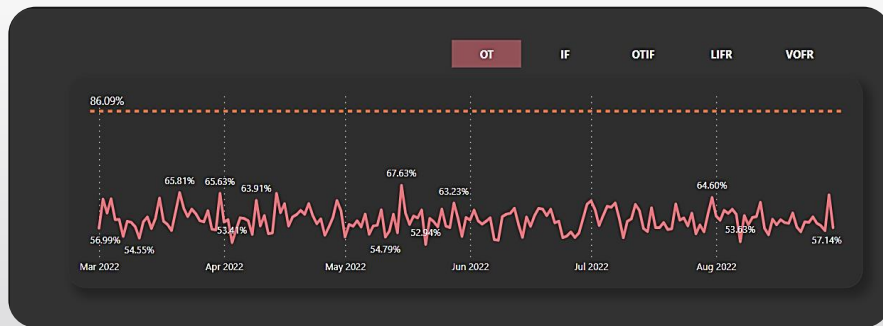
Daily analysis indicates that actual OT% and IF% values are lower than targeted levels and not even a single day, it reaches target values.
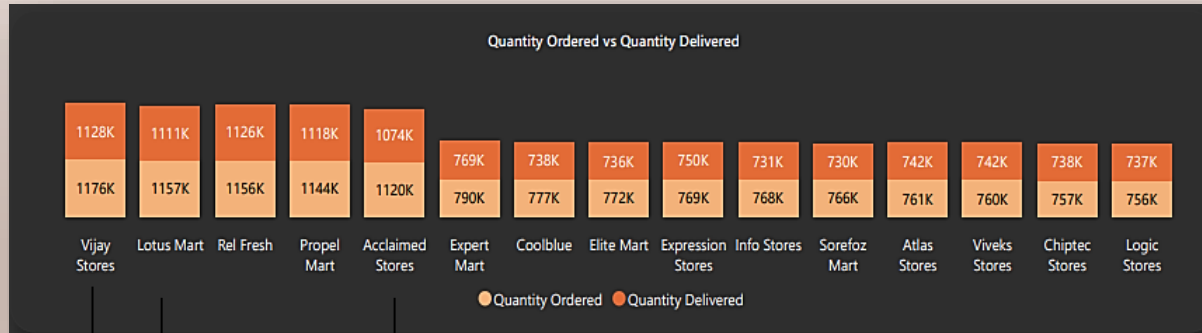
Daily OTIF% values are again significantly lower than target. The max value ever reached is just 37.42% at the end of May.
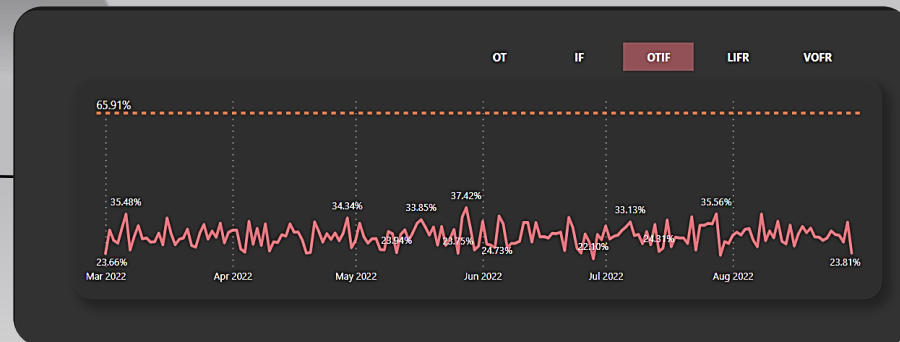
Detailed analysis of metrics at consumer level points out some interesting facts:

	Acclaimed Stores	Atlas Stores	Chiptec Stores	Coolblue	Elite Mart	Expert Mart	Expression Stores	Info Stores	Logic Stores	Lotus Mart	Propel Mart	Rel Fresh	Sorefoz Mart	Vijay Stores	Viveks Stores
IF	52.36%	59.78%	60.35%	44.73%	37.94%	59.81%	60.83%	41.16%	60.14%	53.35%	59.74%	58.69%	39.19%	44.98%	60.07%
OT	29.43%	71.81%	71.62%	29.13%	72.45%	72.54%	69.92%	70.94%	70.82%	28.11%	73.64%	72.32%	72.67%	72.45%	70.61%
OTIF	15.47%	39.55%	38.73%	13.75%	24.37%	39.11%	38.39%	25.52%	38.78%	16.34%	40.92%	38.18%	25.89%	28.28%	39.44%
LIFR %	58.93%	75.48%	75.61%	51.53%	52.74%	75.48%	75.28%	53.05%	74.39%	60.08%	75.62%	74.54%	53.40%	59.23%	75.06%
VOFR %	95.89%	97.55%	97.63%	95.06%	95.21%	97.48%	97.50%	95.28%	97.45%	96.02%	97.62%	97.49%	95.35%	95.88%	97.47%

➤ Service performance is terrible for one of our top consumers-**Coolblue.**
➤ OT% metric analysis shows the poorest delivery for our top **customers-Lotus Mart, Coolblue and Acclaimed Stores** as we are not able to deliver all the line items inside the order on time.
➤ As a result, OTIF% metric analysis also shows the similar results.
➤ LIFR% and VOFR% figures again indicate our poor performance in delivering total item lines and quantity ordered.

Quantity Ordered vs Quantity Delivered

	Vijay Stores	Lotus Mart	Rel Fresh	Propel Mart	Acclaimed Stores	Expert Mart	Coolblue	Elite Mart	Expression Stores	Info Stores	Sorefoz Mart	Atlas Stores	Viveks Stores	Chiptec Stores	Logic Stores
Quantity Ordered	1128K	1111K	1126K	1118K	1074K	769K	738K	736K	750K	731K	730K	742K	742K	738K	737K
Quantity Delivered	1176K	1157K	1156K	1144K	1120K	790K	777K	772K	769K	768K	766K	761K	760K	757K	756K

● Quantity Ordered ● Quantity Delivered

The maximum gap between quantity ordered and delivered was faced by **Vijay Stores** (48K), followed by **Lotus Mart** (46K), **Acclaimed Stores** (46K).

Delayed_by_Days	Ahmedabad	Surat	Vadodara	Total
-1	1243	1094	1270	3607
0	12531	12050	12417	36998
1	2934	2389	2932	8255
2	1819	1458	1859	5136
3	1149	851	1100	3100
Total	19676	17842	19578	57096

Chart (city): Ahmedabad, Surat, Vadodara
- -1
- 0: 21.95% | 21.10% | 21.75%
- 1: 5.14% | 5.14%
- 2
- 3

Delayed_by_Days	beverages	Dairy	Food	Total
-1	584	2454	569	3607
0	6171	24521	6306	36998
1	1377	5557	1321	8255
2	843	3452	841	5136
3	486	2112	502	3100
Total	9461	38096	9539	57096

Chart (category): beverages, Dairy, Food
- -1
- 0: 10.81% | 42.95% | 11.04%
- 1: 9.73%
- 2: 6.05%
- 3

➢ Approximately 29% of the total order lines were not delivered on time.
➢ Maximum orders got delayed for consumers in **Ahmedabad** and **Vadodara**.
➢ If we look at the product category, maximum order lines got delayed for **Dairy** products.

Table 1

Delayed_by_Days	Ahmedabad	Surat	Vadodara
-1	1243	1094	1270
0	12531	12050	12417
1	2934	2389	2932
Acclaimed Stores	478	475	510
Atlas Stores	176	151	
Chiptec Stores	167	180	
Coolblue	477		495
Elite Mart	172		154
Expert Mart	154		169
Expression Stores		167	159
Info Stores		142	176
Logic Stores	156	174	
Lotus Mart	480	512	496

Table 2

Delayed_by_Days	Ahmedabad	Surat	Vadodara
-1	1243	1094	1270
0	12531	12050	12417
1	2934	2389	2932
2	1819	1458	1859
Acclaimed Stores	444	403	399
Atlas Stores	55	64	
Chiptec Stores	49	66	
Coolblue	453		459
Elite Mart	53		62
Expert Mart	66		66
Expression Stores		79	72
Info Stores		79	75
Logic Stores	63	75	

Table 3

Delayed_by_Days	Ahmedabad	Surat	Vadodara
-1	1243	1094	1270
0	12531	12050	12417
1	2934	2389	2932
2	1819	1458	1859
3	1149	851	1100
Acclaimed Stores	276	247	275
Atlas Stores	40	27	
Chiptec Stores	35	27	
Coolblue	284		275
Elite Mart	24		36
Expert Mart	29		28
Expression Stores		42	38
Info Stores		43	29

In-depth analysis of delayed order lines indicates that maximum orders lines got delayed in case of our top consumers- **Acclaimed Stores, Coolblue, and Lotus Mart**.

INSIGHTS

As observed earlier also, our performance has not been up to the mark. Though **Acclaimed Stores, Coolblue, and Lotus Mart** are the key consumers our service towards them has been terrible and probably, they wouldn't want to renew the contracts.