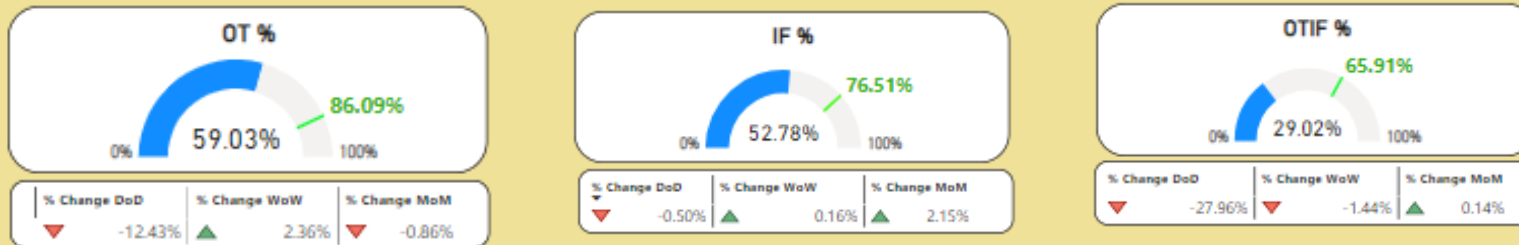# Alitq Mart Delivery Analysis

Problem Statement

- ATLIQ MART is an FMCG manufacturer supplying its goods to customers in Vadodara, Surat and Ahmedabad.
- The Company wants to expand its business by going to other cities.
- Recently, it is observed that some of the customers stopped placing the orders. It is claimed that the orders are either not being delivered on time or in full quantity.
- Peter Pandey, a junior analyst in the company is tasked to identify the customers and products that require attention.

Key metrics to track for::

- On-Time-Delivery (OT%) = (Total Orders delivered on time)/(Total number of orders)
- In-Full-Delivery (IF%) = (Total Orders delivered in full quantity)/ (Total number of orders)
- On-Time-In-Full Delivery (OTIF%) = (Total number of orders delivered completely on time)/(Total number of orders)
- Line Fill Rate (LIFR%) = (Total number of lines delivered in full quantity) /(Total lines)
- Volume fill Rate (VOFR%) = (Total lines delivered)/ (Total lines ordered)

OT, IF, OTIF with respect to the targets
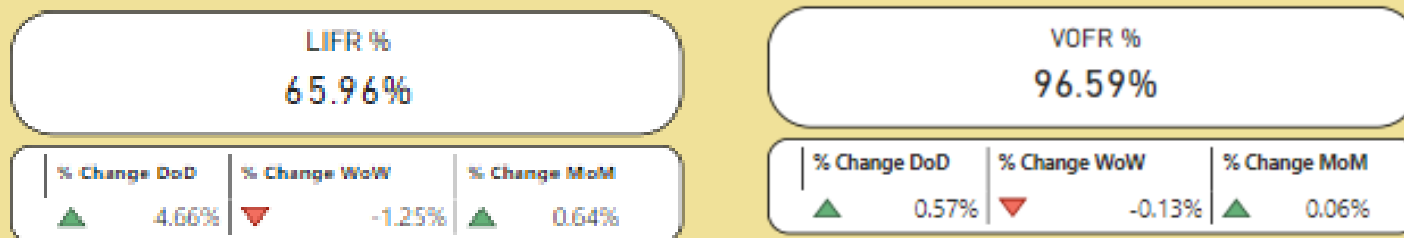
OT %

86.09%

59.03%

0%   100%

% Change DoD	% Change WoW	% Change MoM
▼ -12.43%	▲ 2.36%	▼ -0.86%

IF %

76.51%

52.78%

0%   100%

% Change DoD	% Change WoW	% Change MoM
▼ -0.50%	▲ 0.16%	▲ 2.15%

OTIF %

65.91%

29.02%

0%   100%

% Change DoD	% Change WoW	% Change MoM
▼ -27.96%	▼ -1.44%	▲ 0.14%

- We can see that the metrics like OT, IF, OTIF are below the target values
- There is also some drop in Day-on-Day, Week-on-week, Month-on-month change for some metrics

Line FIll Rate and Volume Fill Rate:

LIFR %
65.96%

% Change DoD	% Change WoW	% Change MoM
▲ 4.66%	▼ -1.25%	▲ 0.64%

VOFR %
96.59%

% Change DoD	% Change WoW	% Change MoM
▲ 0.57%	▼ -0.13%	▲ 0.06%

- Line Fill Rate is 65.96% and Volume Fill rate is 96.59%.
- While there is an increase in day-on-day and month-on-month change, there is a decline in week-on-week change.

City wise split of the metrics:

City	OT %	IF %	OTIF %	LIFR	VOFR
Vadodara	57.98%	51.56%	27.78%	63.69%	96.37%
Surat	61.21%	52.55%	30.07%	66.69%	96.65%
Ahmedabad	58.16%	54.20%	29.33%	67.56%	96.76%

- OT%, IF%, OTIF% are far away from the targets in Vadodara, Ahmedabad.

Examining the customers of each cities:

Vadodara:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.08%	66.97%	19.92%	73.51%	97.37%
Coolblue	28.65%	22.25%	7.14%	29.19%	92.83%
Elite Mart	72.20%	16.61%	9.72%	29.74%	92.92%
Expert Mart	72.04%	60.45%	39.90%	75.44%	97.45%
Expression Stores	70.49%	63.54%	41.59%	77.36%	97.70%
Info Stores	71.14%	62.59%	41.33%	76.23%	97.59%
Lotus Mart	27.83%	67.29%	19.69%	74.05%	97.27%
Propel Mart	74.08%	61.31%	42.48%	76.03%	97.71%
Rel Fresh	71.33%	58.43%	36.99%	74.14%	97.39%
Sorefoz Mart	73.70%	60.80%	41.13%	75.88%	97.69%
Vijay Stores	74.97%	17.91%	10.55%	29.89%	93.05%
Viveks Stores	70.21%	60.32%	39.32%	75.27%	97.63%

- Coolblue, Elite Mart, Vijay Stores, Lotus Mart and Acclaimed Stores have comparably low values of OT, IF, OTIF.
- Among those Acclaimed Stores, Coolblue, Lotus Mart have values of OT% much below the target.

Examining the delay time(days) for each customer and Line

Customer Name	-1	0	1	2	3
Acclaimed Stores	6.89%	18.97%	31.93%	24.98%	17.22%
Coolblue	7.10%	19.52%	29.55%	27.40%	16.42%
Lotus Mart	7.92%	17.84%	30.94%	26.70%	16.59%

- Analyzing the number of days delayed for each of these stores, we can see that only 24-30 percent of lines are being delivered on or before time for each store.
- We can also observe that only 25-27% of lines of each category are delivery on or before time.

Surat:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.84%	22.38%	6.93%	29.37%	92.77%
Atlas Stores	72.34%	59.57%	39.80%	75.69%	97.61%
Chiptec Stores	70.84%	60.48%	38.92%	75.58%	97.56%
Expression Stores	69.36%	58.19%	35.27%	73.27%	97.38%
Info Stores	70.74%	19.35%	9.43%	30.06%	92.84%
Logic Stores	70.48%	59.52%	37.98%	74.11%	97.32%
Lotus Mart	28.18%	68.74%	21.28%	74.83%	97.44%
Propel Mart	72.84%	58.77%	39.63%	75.05%	97.65%
Rel Fresh	72.58%	56.89%	37.12%	74.74%	97.52%
Vijay Stores	72.59%	58.34%	38.12%	74.42%	97.34%
Viveks Stores	71.01%	59.83%	39.56%	74.84%	97.50%

- Acclaimed stores, Info Stores, Lotus Mart have metrics far away from targets.
- Here Acclaimed Stores and Lotus Mart have values of OT much below the target values.

Examining the delay time(days) for each customer and Line

Customer Name	-1	0	1	2	3
Acclaimed Stores	7.54%	20.63%	30.33%	25.73%	15.77%
Lotus Mart	6.91%	18.26%	30.75%	26.49%	17.60%

- Examining Customer wise and line wise distribution of delay times we observe a similar thing. i.e, 25-27 % of lines are delivered on or before time to the stores, Dairy products have comparably more delays.

Ahmedabad:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.40%	66.08%	19.10%	73.01%	97.28%
Atlas Stores	71.31%	59.98%	39.32%	75.26%	97.54%
Chiptec Stores	72.41%	60.22%	38.55%	75.64%	97.61%
Coolblue	29.61%	67.19%	20.34%	74.02%	97.39%
Elite Mart	72.69%	58.98%	38.83%	75.72%	97.63%
Expert Mart	73.05%	59.15%	38.29%	75.52%	97.42%
Logic Stores	71.17%	60.77%	39.59%	74.68%	97.58%
Lotus Mart	28.33%	23.83%	7.97%	30.77%	93.22%
Propel Mart	74.00%	59.17%	40.70%	75.80%	97.76%
Rel Fresh	73.07%	60.62%	40.33%	74.73%	97.37%
Sorefoz Mart	71.63%	17.67%	10.70%	30.87%	92.99%
Vijay Stores	69.83%	58.29%	35.94%	73.70%	97.29%

- Acclaimed stores, Lotus Mart, Sorefroz Mart have values of the metrics way below the target.
- Other Stores like Cool blue also need improvement to match their target OT value.

Customer Name	-1	0	1	2	3
Acclaimed Stores	6.98%	19.71%	29.25%	27.17%	16.89%
Coolblue	6.73%	20.26%	28.68%	27.24%	17.08%
Lotus Mart	6.43%	19.85%	29.96%	25.53%	18.23%

- Upon examining the distribution of days delayed for each customer we see a behavior similar to vadodara. i.e, only 25-30 % of the lines are being delivered on or before time.
- While in most of the line categories, 25-27 % are delivered on or before time, Diary products comparably have greater number of delays.

LIFR and VOFR for Customers and Lines

City	OT %	IF %	OTIF %	LIFR	VOFR
Vadodara	57.98%	51.56%	27.78%	63.69%	96.37%
Surat	61.21%	52.55%	30.07%	66.69%	96.65%
Ahmedabad	58.16%	54.20%	29.33%	67.56%	96.76%

- Each of the city has LIFR of greater than 63% and VOFR greater than 96%. This implies that very few number of lines are not being delivered as per the demand.

Vadodara:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.08%	66.97%	19.92%	73.51%	97.37%
Coolblue	28.65%	22.25%	7.14%	29.19%	92.83%
Elite Mart	72.20%	16.61%	9.72%	29.74%	92.92%
Expert Mart	72.04%	60.45%	39.90%	75.44%	97.45%
Expression Stores	70.49%	63.54%	41.59%	77.36%	97.70%
Info Stores	71.14%	62.59%	41.33%	76.23%	97.59%
Lotus Mart	27.83%	67.29%	19.69%	74.05%	97.27%
Propel Mart	74.08%	61.31%	42.48%	76.03%	97.71%
Rel Fresh	71.33%	58.43%	36.99%	74.14%	97.39%
Sorefoz Mart	73.70%	60.80%	41.13%	75.88%	97.69%
Vijay Stores	74.97%	17.91%	10.55%	29.89%	93.05%
Viveks Stores	70.21%	60.32%	39.32%	75.27%	97.63%

- CoolBlue, Elite Mart and Vijay Stores have very low value of LIFR,while each of them have VOFR greater than 92%.
- For Vijay Stores and Elite Mart, Beverages have least value of LIFR and diary products have least value for Cool blue stores.

Surat:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.84%	22.38%	6.93%	29.37%	92.77%
Atlas Stores	72.34%	59.57%	39.80%	75.69%	97.61%
Chiptec Stores	70.84%	60.48%	38.92%	75.58%	97.56%
Expression Stores	69.36%	58.19%	35.27%	73.27%	97.38%
Info Stores	70.74%	19.35%	9.43%	30.06%	92.84%
Logic Stores	70.48%	59.52%	37.98%	74.11%	97.32%
Lotus Mart	28.18%	68.74%	21.28%	74.83%	97.44%
Propel Mart	72.84%	58.77%	39.63%	75.05%	97.65%
Rel Fresh	72.58%	56.89%	37.12%	74.74%	97.52%
Vijay Stores	72.59%	58.34%	38.12%	74.42%	97.34%
Viveks Stores	71.01%	59.83%	39.56%	74.84%	97.50%

- Acclaimed Stores and Info Stores have least values of LIFR, while VOFR for each is greater than 92%.
- Among the line categories, Food and Dairy have comparably least LIFR.

Ahmedabad:

Customer Name	OT %	IF %	OTIF %	LIFR	VOFR
Acclaimed Stores	29.40%	66.08%	19.10%	73.01%	97.28%
Atlas Stores	71.31%	59.98%	39.32%	75.26%	97.54%
Chiptec Stores	72.41%	60.22%	38.55%	75.64%	97.61%
Coolblue	29.61%	67.19%	20.34%	74.02%	97.39%
Elite Mart	72.69%	58.98%	38.83%	75.72%	97.63%
Expert Mart	73.05%	59.15%	38.29%	75.52%	97.42%
Logic Stores	71.17%	60.77%	39.59%	74.68%	97.58%
Lotus Mart	28.33%	23.83%	7.97%	30.77%	93.22%
Propel Mart	74.00%	59.17%	40.70%	75.80%	97.76%
Rel Fresh	73.07%	60.62%	40.33%	74.73%	97.37%
Sorefoz Mart	71.63%	17.67%	10.70%	30.87%	92.99%
Vijay Stores	69.83%	58.29%	35.94%	73.70%	97.29%

- Lotus Mart and Sorefroz Mart have least values of LIFR, while VOFR for each is greater than 92%.
- Among the line categories while all of them have similar values of LIFR, Food category has comparably the least value of LIFR.
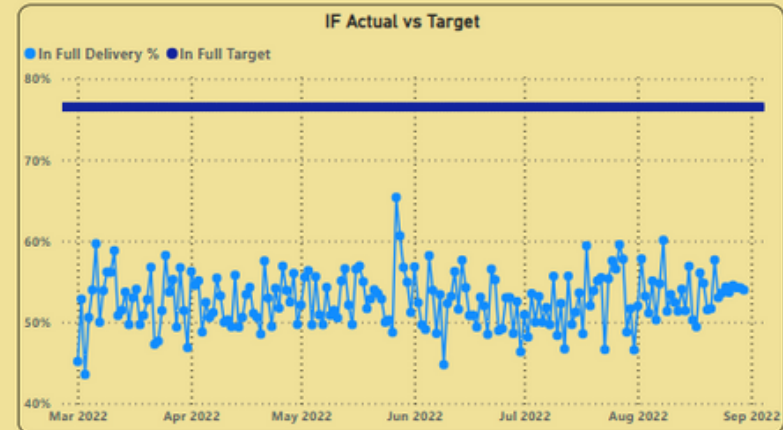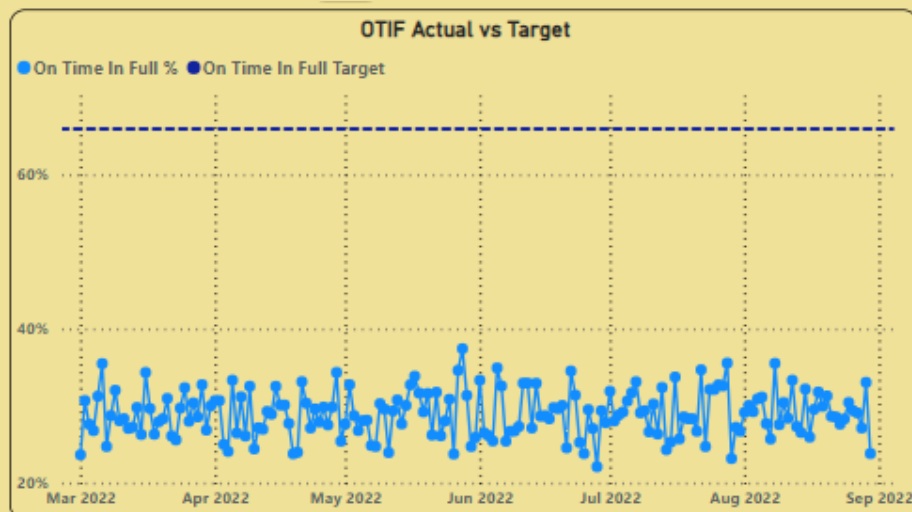
Timely variation

OT% and Target over time
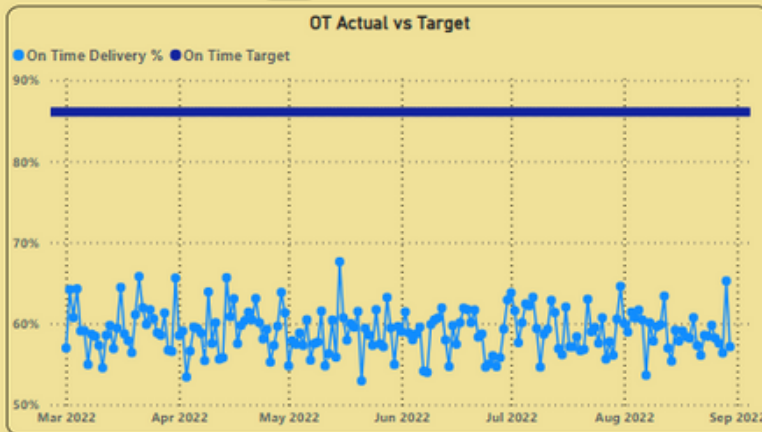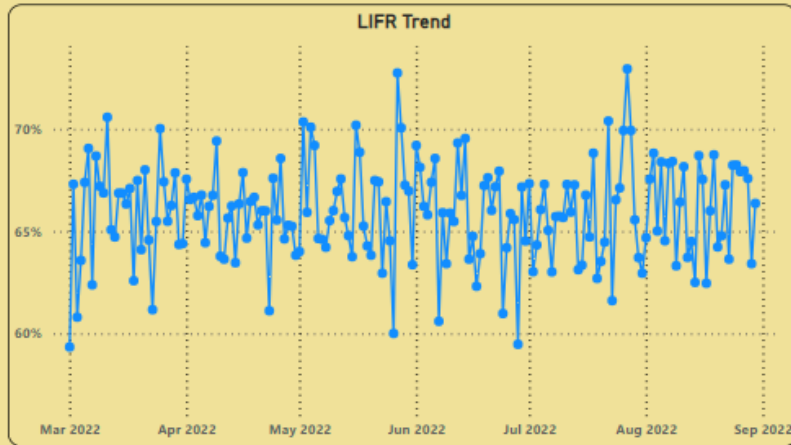

IF% and Target over time
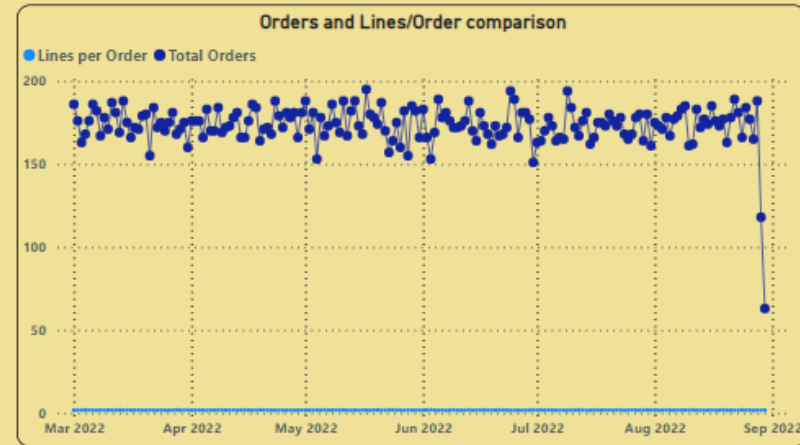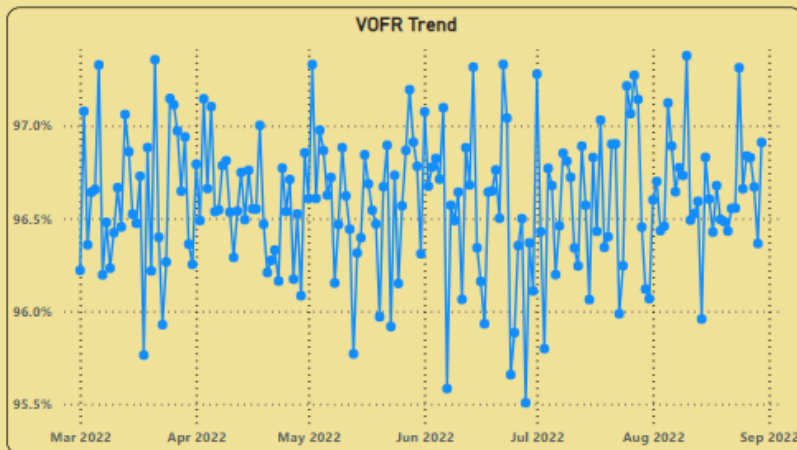

OTIF% and Target over time

LIFR% over time

Total Orders and Lines/Order over time

VOFR% over time

- Examining the overall trend of IF, OT, OTIF, we see that the target value is never reached.
- This can be attributed to stores like Acclaimed stores, Cool blue, ELite Mart, Info Stores, Lotus Mart, Sorefroz Mart and Vijay Stores which have the values much below their respective targets.

Insights:

- To improve values of the metrics , customers like Acclaimed Stores, Coolblue, EliteMart, Info Stores, Lotus Mart, Sorefroz Mart, Vijay Stores needs to be focused.
- Among the line Categories, Diary has a greater demand, so we need to have enough inventory to match the demand.
- Very few line items are not being delivered in full quantity as the values of VOFR% is high for all the cities and customers.
- Irrespective of the number of orders, the average number of lines per each order is around two.
- Number of days of delay should be optimized to the customers mentioned above in order to increase values of the metrics.