**Step by Step Analysis on Supply Chain Data**

***Process***

**Data Cleaning**

Null Values: As in Data there are no null values, so we did not have to manage null values.

Duplicated: Check duplicates with the help of conditional formatting in excel.

**Analysis**

**Metrics measure**

Line Fill Rate LIFR%

In the fact\_order\_lines table used Pivot table to find the metrics



As we can see Total Order lines and Number of order lines shipped in full quantity is measured with counting total order\_id column and summing up values of In Full column (as column has values in 1’s and 0’s).

From the above to summed up values we can generate Line Fill rate (LIFR%) as below

LIFR% = (Number of Orders lines shipped in full quantity/ Total order Lines)\*100

We can apply this formula in Excel and its value is as below.



Volume Fill Rate VOFR%

Now to calculate VOFR% (Volume Fill Rate) again used pivot table on fact\_order\_lines



Total quantity ordered is the Sum of order\_qty column and Total Quantity Shipped is Sum of delivery\_qty column.

VOFR% = Total Quantity Shipped/ Total quantity Ordered\*100

Using this formula in excel its values is as below



Average Delay in Delivery

While doing **Data Transformation** added new column in fact\_order\_lines table “Delay in Delivery”

Using if else statement in Excel if(actual\_delivery\_date>agreed\_delivery\_date, actual\_delivery\_date – agreed\_delivery\_date, 0)

And then using Pivot Table calculated average of Delay in delivery as below



As there is an average of delay of half in delivery which is not a very good point in terms of customer satisfaction.

On Time Deliver OT%

In fact\_orders\_aggregate table, using pivot table on time delivery percent (OT%) is measured as below



Total orders are total count of order\_id

Number of orders delivered on time is sum of on\_time column

OT% = (Sum of orders delivered on time/Total Orders) \*100

In Full Delivery (IF%)

Using Pivot In Full Delivery is calculated as below



Numbers of Orders Delivered in full quantity is sum of in\_full column.

Total orders is total count of order\_id

IF% = (Sum of in full delivery/Total orders) \*100

On Time In Full Delivery (OTIF%)



Number of on time in full delivery is total sum of on time in full delivery column

Total orders is total count of order\_id

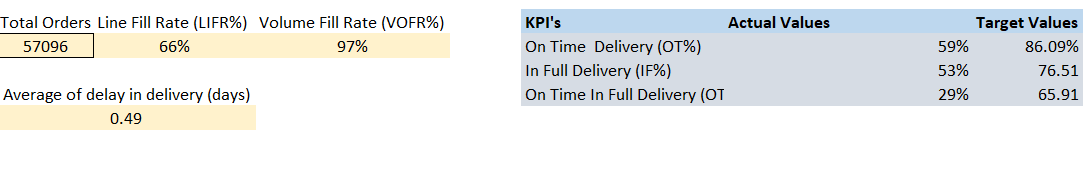
OTIF% = (Sum of otif/Total Orders) \*100

On Time Target, In-Full Target and On Time In Full Target

Using pivot table average of on time target, In-Full Target and On Time In Full Target is calculated



If we convert the above metrics measured in tabular form, it will look something like below:



***As we can see there is a huge gap between target values and actual values then we can say that a lot of efforts required in improving supply chain lines to meet target values and to improve customer experience.***

***The most important factor for customer satisfaction, On Time in Full Delivery, is the weakest of all which is 29%.***

***An average delay in delivery of 0.49 day is also not very good indicator which shows on an average it is expected the delivery to be delayed by half day. Which will make most customers to switch to our competitors.***

***Line Fill Rate indicates (LIFR) indicates room for improvement in order accuracy, while the Volume Fill Rate (VOFR) suggests that in terms of overall volume, the supply chain is working well. Addressing the issues affecting the LIFR can lead to a more accurate and efficient supply chain, ultimately benefiting customer satisfaction and operational efficiency.***

**Power BI Dashboard**

In Power BI dashboard, cleaned and transformed data in Excel form is loaded

* On table fact\_order\_lines, a measure Total Orders is made.

Total Order Lines = Count(fact\_order\_lines[order\_id])

Used this value to show on card on Dashboard.

* A new measure made Total Order Shipped in Full Quantity

Total Orders shipped In Full Quantity = SUM(fact\_orders\_aggregate[in\_full])

Using above two measures Line Fill Rate (LIFR%) is measured as below

* Line Fill Rate (LIFR%) = ([Total Orders shipped In Full Quantity]/[Total Orders])\*100

Other measures used are as follows.

* Total Quantity Ordered = SUM(fact\_order\_lines[order\_qty])
* Total Quantity Shipped = SUM(fact\_order\_lines[delivery\_qty])
* Volume Fill Rate(VOFR%) = ([Total Quantity Shipped]/[Total Quantity Ordered])\*100
* Average Delay in Delivery (days) = AVERAGE(fact\_order\_lines[Delay in Delivery])
* Max Delay in Delivery = MAX(fact\_order\_lines[Delay in Delivery])

Measures on table fact\_orders\_aggregate:

* Total Orders = COUNT(fact\_orders\_aggregate[order\_id])
* Number of Orders Delivered on Time = SUM(fact\_orders\_aggregate[on\_time])
* On Time Delivery (OT%) = ([Number of Orders Delivered on Time]/[Total Orders])\*100
* Number of Orders Delivered in Full quantity = SUM(fact\_orders\_aggregate[in\_full])
* In Full Delivery (IF%) = ([Number of Orders Delivered in Full quantity]/[Total Orders])\*100
* Number of On Time In Full Delivery = SUM(fact\_orders\_aggregate[otif])
* On Time In Full Delivery (OTIF%) = ([Number of On Time In Full Delivery]/[Total Orders])\*100

Measures on dim\_target\_orders table are as follows:

* On Time Target (%) = AVERAGE(dim\_targets\_orders[ontime\_target%])
* In Full Target (%) = AVERAGE(dim\_targets\_orders[infull\_target%])
* On Time In Full Target (%) = AVERAGE(dim\_targets\_orders[otif\_target%])

Using these measure created the Power BI Dashboard.