**Approach & Result**

**Document**

Have some open questions regarding the data for **Problem 1**. Primarily around Day by day change in stock available which seemed to be not in sync with the other variables like **Last GRN qty at Store** & **Stock in transit**. Would have been able to do a more comprehensive analysis if the below doubts were clarified.

1. There is no clarity on when the stock in transit reaches the store

2. Below interpretation of **Last GRN qty at Store** and **Last Good Receipt Note (GRN) date at Store** leads to results which seem to be out of sync with other values

Assuming that **Last Good Receipt Note (GRN) date at Store** denotes the date on which the stock was received but is not available for sale on the same day**. Last GRN qty at Store** given against a system date is the quantity which becomes available for sale on that date in addition to the value given in the column **AVAILABLE STOCK (Units).** For instance, for the below data point, it was assumed that the 28-May-2016 was the date when stock was received at store, but it became

available for sale on 8-June-2016. Thus, total stock available for sale on 8-June-2016 was 471.

**System**

**Date**

**AVAILABLE STOCK (Units)**

**Last Good Receipt Note (GRN) date at**

**Store**

**Last GRN qty at**

**Store**

6/8/2016 172.00 5/28/2016 299

Based on above assumptions, daily sales were calculated based on a day by day change in available stock. But, these daily sales didn’t match with the last 14 days actual sales values

I believe this could be driven by insufficient data given on stock in transit or because of some discrepancies in data related to **Last GRN qty at Store** and **Last Good Receipt Note (GRN)** date at Store against a systems

date

Constrained by above doubts, were able to infer limited insights as summarized below.

1. **Daily average sales quantity** was calculated for each product at every store using the **“Actual Sale in**

**Last 2 weeks (Total)”** data. The sales for last 2 weeks were first converted to sales quantity by using the **“Retail price”** and then an average was taken.

**Daily Average Sales**

**Products**

Natural Sour Apple

Chandann agore Depot

Howrah

Depot

Hugli

Depot

Kolkata

Depot

Nadia

Depot

North 24

Parganas

Depot

Cocktail 3.2 litres 124 193 114 246 97 144

Penne with Roasted

Vegetables 4.5 kg 123 188 114 232 99 146

Pinapple Chunk 8 kg 126 194 114 245 96 147

Sugar 5 kg 123 200 109 231 100 150

Vintage 12 Yr Old 700ml 121 193 114 236 96 145

**Below insights were inferred from the above analysis:**

**Kolkata Depot** has the highest sales for all products

Each product is sold in approximately same proportion of the total sales at each store

2. As observed from the data below, the actual lead time (days) from DC to store (calculated by taking average of **“DC to Store Lead Time”**) and ideal lead time (days) had huge differences.

Depot Average Lead Time(Days) Actual Lead Time(Days) Chandannagore Depot 12 9

Howrah Depot 10 7

Hugli Depot 22 15

Kolkata Depot 5 3

Nadia Depot 23 18

North 24 Parganas Depot 18 12

***Therefore, it is suggested that Depots should take steps to reduce the actual lead time (days)***

3. There were huge differences between the average quantity received at store denoted by “**Average GRN Quantity**” in the below table (calculated by taking average of **“Last GRN qty at Store”**) and **Sales** (calculated in the first point). Almost all the products were ordered in quantity less than required as indicated by sales. Cells highlighted indicates the products which were ordered in quantity more than

required. This indicates that stores were not able to predict sales correctly.

Natural Sour

Apple Cocktail

3.2 litres

Penne with Roasted Vegetables 4.5 kg

Pinapple

Chunk 8 kg

Sugar

5 kg

Vintage

12 Yr Old

700ml

**Chandannagore Depot**

Average GRN Quantity 97 215 84 71 113

Sales 124 123 126 123 121

Gap -27 92 -42 -52 -8

**Howrah Depot**

Average GRN Quantity 44 27 125 53 44

Sales 193 188 194 200 193

Gap -149 -161 -69 -147 -149

**Hugli Depot**

Average GRN Quantity 68 224 63 52 20

Sales 114 114 114 109 114

Gap -46 110 -51 -57 -94

**Kolkata Depot**

Average GRN Quantity 30 180 256 84 238

Sales 246 232 245 231 236

Gap -216 -52 11 -147 2

**Nadia Depot**

Average GRN Quantity 164 25 156 143 61

Sales 97 99 96 100 96

Gap 67 -74 60 43 -35

**North 24 Parganas Depot**

Average GRN Quantity 307 60 114 54 177

Sales 144 146 147 150 145

Gap 163 -86 -33 -96 32

***Stores should implement some models that could predict their sales appropriately***

4. Time taken by the product to reach the shelf from the store warehouse is very high.

This is calculated by averaging “**Days since last GRN at Store”.** As mentioned earlier, it has been assumed that the day on which the product become available for sale is later then its delivery day.

**Products**

Chandann agore

Howrah

Hugli

**Depots**

Kolkata

Nadia

North 24

Parganas

Natural Sour Apple

Depot

Depot

Depot

Depot

Depot

Depot

Cocktail 3.2 litres 6 8 6 2 5 10

Penne with Roasted

Vegetables 4.5 kg 11 10 6 11 4 3

Pinapple Chunk 8 kg 3 6 7 10 5 3

Sugar 5 kg 11 8 3 8 10 2

Vintage 12 Yr Old 700ml 4 3 2 10 11 6

**Suggestions**

Stores should take measures to reduce this time and to ensure that the stock is available for sale within 1-2 days after the orders are received from depot.

It is observed that for few products this time is very less from which it can be concluded that stores can reduce this time but are not doing it properly.