

Bigmart

EKBANA NEPAL

2017

Teams:

Buying Team:

This team is responsible for buying the items for the supply chain. This team is also responsible to set MBQ for items in a store.

Supply Team (Central Warehouse (CWH)):

This team maintains the Central Warehouse and is also responsible for picking the items from the warehouse and dispatching it to the stores. The picking is done by the persons known as pickers.

Store Team:

This team manages the stores of Bigmart.

Constants:

Minimum Order Quantity (MOQ):

This is the minimum quantity that the supply team will deliver to a store. This quantity is set by the Supply Team and differences from item to item. The supply team will always send the quantity in multiple of MOQ to the stores.

Minimum Base Quantity (MBQ):

This is the minimum base quantity of a goods that needs to be maintained in the store. This is set by the buying team. It differs from item to item and store to store. So a store will have its unique set of MBQ for the all the items store holds. This quantity is directly related to how much a particular item has to be kept in the store. Hence buying team will tweak this quantity to emphasize a specific product or for seasonal demand. There are three types of MBQ:

- a) Seasonal MBQ: This MBQ is set by the buying team in anticipation of seasonal demand due to festival or other reasons. This MBQ will have an effective (including expiration date). Hence the MBQ will be active only for that time period. Also the Seasonal MBQ will be a multiplier and affect all the stores for that particular item. So the user will enter the number of times the MBQ needs to be increased for a product. For e.g. If the user enters Seasonal MBQ as 2 then it will double the MBQ of that item for all the stores.
- b) Temporary MBQ: As the name states this MBQ is of temporary nature. Buying team will use this to temporarily change the MBQ of a product for a store for a given time. Hence as Seasonal MBQ it will have an effective and expiration date. But unlike Seasonal MBQ it will have an absolute value and will only affect that particular store.
- c) Normal MBQ: This is the default MBQ for an item of a store. This is also set by the Buying team. In the absence of the other above MBQs, this will be the effective MBQ.

Weekly Sales Figure:

This is the weekly sales figure of a product. This figure is received from the genesis system. 11 of these weekly sales figure is used to calculate the average daily sales for the item. (Current Sales Calculation is explained).

Store Information:

The store will have ranking and categorization based on multiple factors. The categorization is as follows:

- a) Overall Ranking: This shows where the store ranks in the Bigmart overall. This rank is later used during the allocation of goods. If a goods is in short supply then the store with the lowest ranking will have its shipments downsized.
- b) Category Ranking: This shows the ranking of a store for that division of goods. The ranking is done in Division level of the items. This is used same as the overall ranking but it overrules the overall ranking. In absence of Category Ranking, Overall Ranking will be used.
- c) Cluster: This is defined as a group of stores grouped together on the basis of its size. Currently there are only two clusters: Top 6 & Small. This cluster is used in the final stages of allocation to reduce the number of SKUs being delivered for that day.

Current Stock:

Current stock defines the quantity of item that is available. This stock number is unique for all items across all stores. This quantity is retrieved from Genesis System.

Central Warehouse Stock:

This is the quantity of item that is available in Central Warehouse. It is unique for each of the item. This quantity is retrieved from Genesis System.

Vendor Lead Time and Product Lead Time:

Vendor lead time is the time taken by a vendor to fulfill an order whereas Product lead time is the time taken for an order of that product to be fulfilled. Vendor Lead time applies to all the products supplied by that vendor. Product Lead Time on the other hand only applies to the particular product. Product Lead time will always overwrite Vendor Lead Time when both of them are present.

Stock Hold days:

Stock hold days is used by Billing team. Each SKU will have its own set of Stock Hold Days.

Current Sales Calculation :

System Should have automatically calculate average sales number for each sku in each store. Current average sales calculation takes account of 91 days of weekly sales. Out of 13 sales number derived system automatically removes highest number and takes 2nd highest sales number as average sales number but if 2nd highest sales number is 20% more than 3rd highest sales number then 3rd number is taken into account.

in new system user should be able to select either largest number or 2nd largest number or 3rd largest number or keep current calculation but tweak

Order triggers:

There will be two conditions where the orders will be triggered. They are as follows:

Sales Rate Trigger:

In this the order for a SKU will be triggered by the sales rate at which the SKU is being sold. Here the condition is based on the sales rate and the number of hold day for that item in the store. The demand for an SKU will be calculated as below:

$(\text{Sales rate} \times \text{No. of Stock hold days}) - \text{Current Stock in Store}$

This basically says how much quantity of SKU will the store be short of at the end of stock hold. Now this demand quantity will be normalized to MOQ as follows:

If $(\text{Demand amount} \geq 25\% \text{ of MOQ and Demand amount} < \text{MOQ})$

Then Send MOQ quantity.

Otherwise send the nearest multiple of MOQ

So here if the demand quantity is less than 25% of MOQ then the store will not be supplied by that particular SKU for that cycle. This 25% rate will need to be configurable.

MBQ Trigger:

In this the order for a SKU will be triggered by the amount of stock that remain in a store. Each store will have a MBQ for a SKU that it holds. Here if the stock of a store falls less than 70% of the MBQ of that SKU then the order for that SKU will be triggered. The Required quantity will be calculated as follows:

$\text{Roundup}[(\text{MBQ} - \text{Stock}) / \text{MOQ}] \times \text{MOQ}$

The above formula basically finds the nearest multiple of MOQ and multiplies it by MOQ. This will give the required quantity. Here the 70% rate will need to be configurable.

Final Allocation:

Here we take the greater quantity of the above-calculated Triggers.

Final Allocation Prorated to CWH:

Here the final allocation will be done for the stores pro rated to the quantity available in the Central Warehouse. This step will basically divide the stock of SKU available at the Central Warehouse to the stores on the basis of demands.

Corrections made over the Final Allocation prorated to CWH:

In this step we make the correction over the final allocation that was calculated. In some of the SKU the total allocation made for the stores might be over the stock available in CWH. This will need to be reduced from the order. It is done by reducing the MOQ order quantity from the least ranked store. The ranking might be Category level or overall level. Here the category level ranking will get preference.

Reducing the SKU count to match the capacity of CWH:

The central warehouse has a daily capacity of around 200 SKUs. If the final average allocation of SKUs crosses this mark then the number of SKUs needs to be reduced. Currently one way of doing it is to eliminate the SKUs that is only going to the small stores. In future there might be other processes. So this part needs to be configurable.

Order Allocation Workflow:

