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Design of Appropriate Strategy for Dealing with Stagnating Sales - A Case Study from Indian Consumer Durable Industry

Sanjeeva[1], Akash Kumar[2]

[1]S.P. Jain Institute of Management and Research, Mumbai, Maharashtra, India, Indian Institute of Technology (ISM) Dhanbad, Jharkhand, India.
[2]Indian Institute of Technology (ISM) Dhanbad, Jharkhand, India.

Abstract - *This study was carried out to analyse the root cause of decreasing sales in a consumer durable industry and suggest corrective measures. On analysis of sales data, it was found that only 10% of SKUs contributed to 50% of sales, 30% of SKUs contributed to 40% of sales and remaining 60% of SKUs contributed to rest 10% of sales. Besides, field survey revealed that sales counters in market were not getting the supplies of SKUs which were in demand. On the other hand, manufacturing units had complained that sales team was not selling what was being manufactured.*

Based on a detailed analysis of the situation, an appropriate sales strategy was designed and implemented. This included implementation of a pull based replenishment system. This not only took care of mismatch between demand and supply but also increased sales, decreased inventory, improved availability and contributed to healthier cash flow.

Key Words: Pull based replenishment system, buffer, Dynamic buffer management system, Centralised data analytics system, Smart allocation, Distribution Partners/ Channel Partners, Sales Counter

1. INTRODUCTION

This case study is about an Indian consumer durable industry. The entity studied has a number of manufacturing hubs across the country. Before the study, the company followed forecast based production planning system and largely push based dispatch mechanism, mainly concentrated towards end of the month. Due to this, the company constantly faced inventory built up, mismatch between demand and supply and other issues like delayed payments.

To take care of above issues, we designed a sales strategy which constituted of, among others, pull based replenishment system. Objective of the solution was to improve availability at point of sale, increase sales, decrease inventory and improve cash flow.

In order to have good availability at point of sale, all the backend supply nodes should also have good availability. However, there is always a risk of excess inventory when we improve availability. Our replenishment model focused on availability improvement without increasing inventory. We also used a Centralised Data Analytics System (CDAS) guide for planning, production and replenishment.

As a part of pull based replenishment system, we defined buffer stocks of high selling and medium selling products at sales counters and replenishment warehouses. The buffer stocks were calculated on the basis of rate of outward movements of products at those locations and lead time of replenishment.

As buffers of various SKUs get consumed, signal goes to its replenishment point. Such replenishment signals finally travel to the manufacturing location. This enables production planning to be in sync with the actual sales.

Apart from pull based replenishment, other elements of sales solution included aspects like optimum product range, strong channel network, product awareness, effective influencer management, optimisation of sales force effectiveness through dynamic journey plan and aligning organisational processes in line with new agreed strategy.

2. AIM & OBJECTIVE OF THE CASE STUDY

This study was carried out with following objectives:

- To streamline the supply chain of the company
- To improve availability of fast selling and medium selling products
- To reduce the production of slow moving and discontinue the production of non-moving in nick of time.
- To take care of mismatch between demand and supply
- To improve sales
- To reduce the inventory
- To bring down number of days of outstanding with channel partners

3. COMPARATIVE DESCRIPTION OF PUSH & PULL SYSTEM

Forecast based Push System: The conventional approach is the forecast based push system. Forecast is a guess which often goes wrong.

The sheer volume of SKUs and associated decision points mean push systems use the peanut butter approach, where all products are treated roughly the same despite different demand profiles. Thus, we see the following: Forecasting gets done at the aggregate level. Product is then pushed to the

store weekly, without accounting for how individual SKUs sell for a particular store [1].

It leads to problems like high carrying costs, discounting, disposals, missed sales, weak customer loyalty, shortages, high debt loads, inventory disposals, emergency shipments, rescheduled production and attenuated profits.

Pull Based Replenishment System: We used a pull-based approach to retail replenishment that uses daily consumer-level demand to generate a true forecast.

Pull systems use demand data to drive both replenishment and production. Only immediate customer requirements are drawn from the protective inventories upstream. This approach is driven by actual consumption at the store (store/SKU/daily demand) as well as with forecasts. This allows for a much more granular approach than push systems [2].

By acting on actual demand, statistical variations are dampened rather than magnified, steadying on-hand inventory levels at every stocking location. Since goods only flow downstream to cover immediate need, inventory remains further up the supply chain, closer to the source. In contrast, many push systems put the majority of the inventory at the retail store.

Retailers who use push systems end up with more inventory than they need to cover immediate consumption. As a result, the biggest accumulation of inventory in a push supply chain resides at the retail node.

The pull-based method generally results in more frequent and flexible changeovers, more stable and predictable production schedules that adhere to optimal run sequences and run lengths that vary based on customer demand. Conversely, the push-based method is characterized by infrequent and lengthy changeovers, variable production schedules based on forecasted demand, frequent schedule "cut-ins" that violate optimal product sequencing rules, and production quantities that are some multiple of shift output rates [3].

4. ANALYSIS OF THE SITUATION

4.1 HBT Analysis

In this study, HBT analysis was carried out. We classified the SKUs in three categories, namely, Head, Belly and Tail based on their contribution to overall sales.

H (Head) SKUs contributed to 50% of sales. In terms of number of SKUs, H constituted only 10% of total number of SKUs.

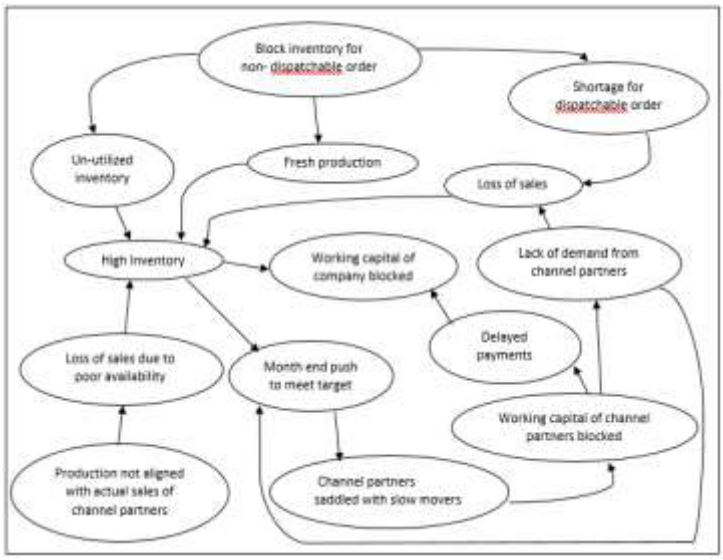
B (Belly) SKUs contributed to 40% of sales. In terms of number of SKUs, B constituted 30% of total number of SKUs.

T (Tail) SKUs contributed to 10% of sales. In terms of number of SKUs, T constituted 60% of total number of SKUs.

4.2 Supply Chain challenges

- Mismatch between demand and supply resulting in lower availability at point of sale.
- Inventory built up for company as well as for channel partners resulting into blocking of scarce working capital.
- Unhealthy practice of inventory blocking by sales team in anticipation of future orders leading to loss of sales on non-confirmation of the orders.
- High delivery lead time
- Longer order processing time.

4.3 Consequences of the challenges



5. METHODOLOGY

5.1 Buffer calculation

Bucket of days equivalent to lead time e.g. if lead time is one month, we need to look at sales during different periods of one month during last 3 months. Had the lead time been 15 days, we would have considered sales during different buckets of 15 days over last 3 months.

Based on the sales of last 3 months and assuming that the lead time of replenishment is one month, buffers are calculated as per below logic. In following illustration, A is the highest sale and B is the 2nd highest sale during last 3 months.

Buffer logic					**Buffer Value**	**Remark**
{(A-B)/A}*100	<=	30%			A	'A' is considered buffer because it is the highest monthly sales during last 3 months; yet does not exceed 2nd highest sale by more than 30%.
{(A-B)/A}*100	<=	60%	>=	30%	(A+B)/2	Average of two peaks considered, where difference in highest and second highest monthly sale value is between 30% to 60%.
{(A-B)/A}*100	<=	100%	>=	60%	B	'A' ignored as outlier or spike because it exceeded second highest sale value by more than 60%.

Applying above logic, buffers for various products were calculated as below:

Value wise buffer for each product (in USD)

Product	**Month 1**	**Month 2**	**Month 3**	**1st Highest (A)**	**2nd Highest (B)**	**{(A-B)/A}*100**	**Buffer**
P1	71,949	91,949	88,376	91,949	88,376	4%	**91,949**
P2	53,501	38,870	46,202	53,501	46,202	14%	**53,501**
P3	40,299	34,231	34,164	40,299	34,231	15%	**40,299**
P4	33,618	42,821	18,726	42,821	33,618	21%	**42,821**
P5	26,753	36,838	23,692	36,838	26,753	27%	**36,838**
P6	5,326	8,864	57,429	57,429	8,864	85%	**8,864**
P7	26,208	33,001	22,620	33,001	26,208	21%	**33,001**
P8	33,871	28,692	18,270	33,871	28,692	15%	**33,871**
P9	19,378	18,864	28,310	28,310	19,378	32%	**23,844**
P10	20,477	27,697	20,868	27,697	20,868	25%	**27,697**
P11	22,469	22,623	17,518	22,623	22,469	1%	**22,623**
P12	5,331	12,888	32,953	32,953	12,888	61%	**12,888**
P13	15,630	27,422	15,117	27,422	15,630	43%	**21,526**
P14	12,600	23,019	14,976	23,019	14,976	35%	**18,998**
P15	14,076	19,918	10,667	19,918	14,076	29%	**19,918**
P16	9,459	19,074	14,342	19,074	14,342	25%	**19,074**
P17	14,709	13,593	13,237	14,709	13,593	8%	**14,709**
P18	20,989	4,962	14,796	20,989	14,796	30%	**20,989**
P19	14,030	12,626	13,374	14,030	13,374	5%	**14,030**
P20	10,681	10,603	13,476	13,476	10,681	21%	**13,476**

5.2 Centralised Data Analytics System

We used a Centralised Data Analytics System (CDAS) to keep control on daily inventory at manufacturing as well as channel partner's premises. A connector was installed at our channel partners' IT system to track the data on actual sales across the counter and feed to CDAS.

We had estimated and built buffers (based on daily sales and replenishment lead time) of different products at all warehouses which catered to these channel partner i.e. warehouses at manufacturing location, warehouses for secondary distribution and warehouses of channel partners.

5.3 Components of Replenishment Lead Time

- **Order Lead Time**: The time from the moment a client is aware of a need for an item until the moment the client orders the item from supplying entity (i.e. manufacturing company).
- **Production Lead Time**: The time from the moment the supplier (i.e. manufacturing company) receives an order for an item until the moment the item is available to be transported to the client.
- **Transportation Lead Time**: The time from the moment an item is made available for transportation to a client until the moment the item is delivered to the client.

Replenishment Quantity = Buffer at site – Inventory at site – Inventory in transit

Replenishment Lead Time = Order Lead Time + Production Lead Time + Transit Lead Time

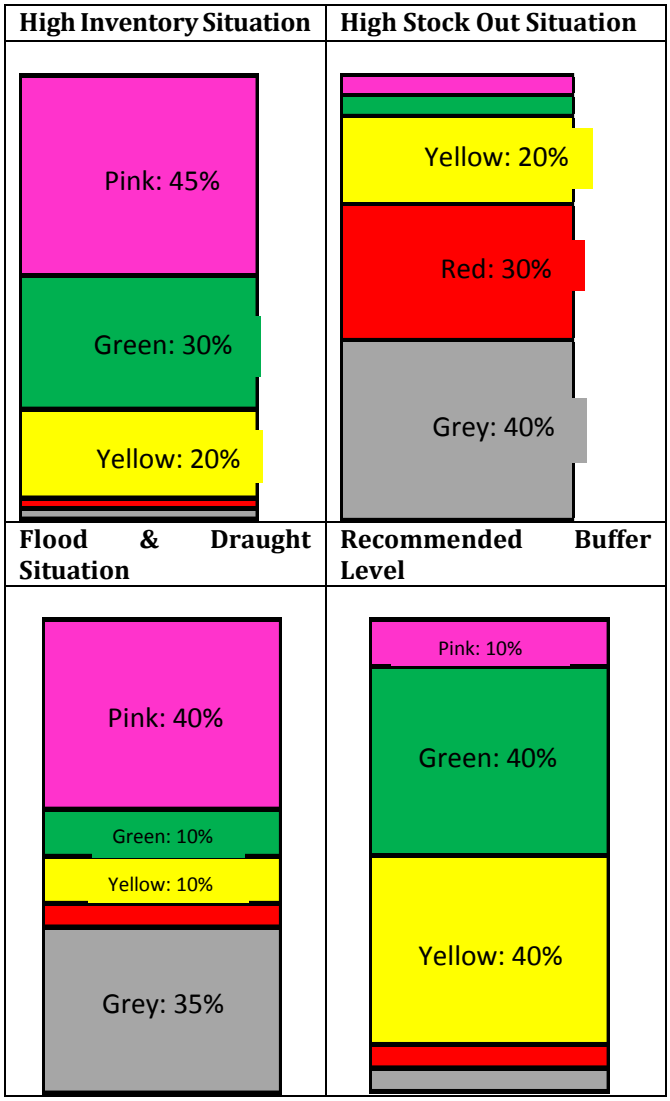
5.4 Colour Codes for the Stock

- If stock is more than buffer: Pink
- If stock is more than 66% of buffer but is less than 100%: Green
- If stock is more than 33% of buffer but is less than 66%: Yellow
- If stock is available but less than 33% of buffer: Red
- If stock exhausted: Grey

Ordering priority: Grey->Red->Yellow->Green & no Pink

Stock MIS and Recommended Stock Level

The CDAS compiles an MIS on percentage of total SKUs at a particular replenishment point and displays the information using colour codes as below:



In recommended situation, Pink inventory should be less than 10%, Green and Yellow inventory combined should be greater than 80% and Red and Grey inventory combined should be less than 10%.

5.5 Dynamic buffer management system

CDAS has in built algorithm which enables dynamic buffer management. That means, if sale of an SKU goes up, its suggested buffer level increases. Similarly, if lead time of replenishment decreases due to strengthened back end supply chain, the buffer level suggested by CDAS goes down. Thus, we can manage with lower inventory levels if our backend supply chain is strengthened.

If the stock at site is consistently in Grey or Red for duration equivalent to Replenishment Lead Time, then CDAS increases the buffer by 1/3rd.

If the stock at site is consistently in Green for duration equivalent to twice the Replenishment Lead Time, then CDAS decreases the buffer by 1/3rd.

5.6 Smart Allocation

As the buffer level at a point in the supply chain decreases, CDAS takes note of it and generates a production or replenishment signal. Priorities of production or replenishment of different SKUs are governed by an inbuilt algorithm based Smart Allocator in CDAS. Thus, SKUs under stock out situation get top priority for production or replenishment. Thus, sales orders are automatically generated by Smart Allocator and are reconfirmed by Sales Coordinators after discussion with channel partners.

Criteria for prioritising are as follows:

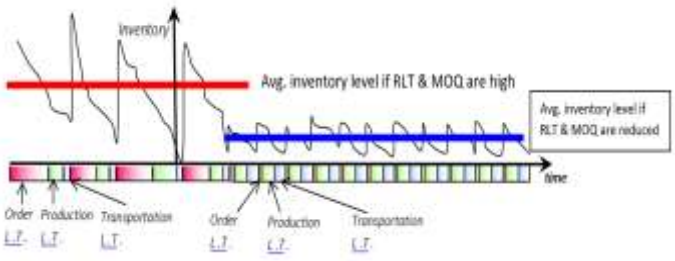
- Status of buffer stock: Grey gets priority over red, red gets priority over yellow and so on till pink.
- Level of buffer penetration: If both channel partners who need material are in red, the one with lower inventory would get priority.

	Channel Partner 1	**Channel Partner 2**
Demand	20	20
Available Stock	30	
Current status of stock	Grey	Red
Smart Allocation	20	10

Besides, for specific cases, we have added following additional criteria as logic for smart allocation:

- Order FIFO: Order first received would get priority.
- Truck load formation and availability: The order which is fully available to be serviced and has formed full truck load would get priority.
- Credit worthiness of channel partners: Channel partner with no dues pending would get priority.
- Required date of delivery: Earlier delivery date would get priority.

5.7 Impact of Reducing Replenishment Lead Time (RLT) & Minimum Order Quantity (MOQ)



Frequent replenishment with daily orders

- quicker response to changes in demand, avoiding shortages
- lower average inventory, thus less exposure to obsolescence

Therefore, concerted efforts were made to reduce Replenishment Lead Time and MOQ in following ways:

a) Order Lead Time got reduced because we moved to frequent replenishment model using Smart Allocator of CDAS as against push based ordering system prevailing earlier.
b) By reducing batch size of production, we reduced Production Lead Time.
c) Transportation Lead Time was reduced by network optimisation, using dedicated vehicles on certain routes and reducing turnaround time of loading by improving product traceability, vehicle yard management system and cutting down on non-value added activities.

5.8 Production criteria

Grey to produce or replenish first then Red and Yellow respectively.

I. Production policy for Sales counter orders:

a. For Head SKUs – Quantity produced is limited up to 30% above buffer level.
b. For Belly SKUs– Quantity produced is limited up to buffer level.
c. For Tail SKUs – Restricted for production. If there is demand, on case-to-case basis, production to be undertaken on prior approval from authorized person.
d. For Non-moving Tail (T0) SKUs – Blocked for production.

II. Production policy for Project orders:

The Pull based replenishment system caters generally to retail sales. Project orders are handled as per a separate policy. This is so because Project orders are spikes in demand and behave like 'Elephant in crockery shop'. That means, if same buffers cater to Project sales mindlessly, entire system would collapse. Therefore, following decision matrix is adopted for Project Sales.

a. If order size is less than 1/3rd of the buffer, then dispatch the order from buffer.
b. If (a) is not valid and the order is more than the production run size, then produce the entire order as Make to Order (MTO).
c. If (a) and (b) are not valid and the difference between the run size and the order size is less than the buffer, then produce order as MTO with run size. Balance stock goes to stock.
d. If (a) and (b) are not valid and the difference between the run size and the order size is greater than the buffer, then produce order as MTO with reduced run size.

5.9 Sales Solution

5.9.1 Managing sales universe and Channel Partner

- Sales counters universe mapping & sales counter penetration target setting. For example, we could target 25% to 40% of retail universe depending upon our capacity in a particular geography.
- Identification of channel partners based on set criteria.
- Rollout: Channel partners' agreement, channel partners' buffer setting, sales counters penetration target
- Execution of sales counters display and regular visits by sales team.
- Supply to channel partners based on his daily stock and sale information and buffers.
- There would not be any manual push to channel partners.

5.9.2 Appointment of Channel Partners

- Channel partner appointment to be based on the long-term goal of the Company, considering:
  i. Number of channel partners required to achieve the product-wise annual business plan for the territory;
  ii. Number of sales counters that each channel partner should have, in order to achieve the desired reach;
  iii. Expected productivity of each counter.
- Whenever an additional product category is to be assigned to a channel partner, it should be ensured that he/she has enough financial capability to handle the increased product portfolio.
- The channel partner should meet all the requirements that the portfolio demands, including financial status, logistical capabilities and the customer base.

5.9.3 Policy for products/territory offering to Channel Partners

- The prospective channel partner must have prior experience of distribution of a similar product line and adequate knowledge of the market/ territory.
- The prospective channel partner should not be dealing in a competitor's similar product line to avoid conflict of interest, or if the prospective channel partner is dealing in competitor's similar product line, he should present a plan to scale down the competition business and ramp up our business.
- The channel partner should be willing to distribute the agreed products at the agreed retail price to at least 20% of the retail universe in his territory for the first two months and going forward he should expand the base to 40% of the retail universe.
- The channel partner should have logistical capabilities to distribute the selected product portfolio in his assigned territory, in order to deliver the available ordered products to customer within 24 hours.
- The channel partner should be financially capable to handle the forward credit to the sales counters for the volume of business anticipated for his product/ territory.
- The channel partner should be willing to hold the stocks as per Buffer quantity suggested by CDAS software. The initial buffer to be set for fast moving & medium moving SKUs as per discussion between sales team and the channel partner.
- The channel partner should be willing to share the stock and secondary sales data with the Company for enabling the Company to give suggested order quantity and changes in buffer through CDAS software.
- The channel partner shall deploy one field person (Channel Partner Sales Representative) exclusively for demand generation through promoting and coordinating the sales of Company's products.
- The channel partner should be willing to play an active role in supporting the Company for Demand Generation activities, such as, conducting mason meets, contractor meets, architects meet, counter staff training, etc. in his territory.

5.9.4 Policy for planning and arranging required sales force

- With the end objective of capturing minimum 40% of the retail universe, the target number of sales counters are to be determined for the region.
- Ideally, each sales counter should be visited once every week.
- Average number of sales counter visits possible to do in a day to be decided based on the geography to be covered by the sales person and density of sales counters in the territory.
- Based on above points, the total required strength of the front-end sales team to be decided. For example, let's assume that 600 sales counters are to be covered for a region. Each sales counter needs to be visited once a week. One sales person can visit 8 sales counters per day. Then, for a 6 days working week, the strength of sales manpower needed would be 600/ (6*8) = 13.

5.9.5 Policy for sales counter visits – Permanent Journey Plan (PJP) and Dynamic Journey Plan (DJP)

- Product-wise mapping to be done for each sales counter, linking it to the channel partner appointed to distribute the product in the assigned territory.

- The PJP should be made at the start of the month for visiting each mapped sales counter minimum once a week during first fortnight of the month.
- The sales team to visit the sales counters and collect information about the secondary sales from channel partners in the past week and check for & record any issues faced by the sales counters.
- The sales counters to be classified into three categories, based on frequency of orders placed:
  a. A- class sales counter: Orders, on average, minimum once in a week
  b. B- class sales counter: Orders, on average, once in 15 days.
  c. C- class sales counter: Orders, on average, once in a month or no orders.
- Every 15th of a month, the sales counters' performance to be graded into A/B/C class.
- Based on the classification, DJP to be prepared, with rescheduling the PJP, in order to prioritize the visit to each C-class sales counter at least twice a week in the balance month, B- class sales counter at least once a week in the balance month & A- class sales counter at least once in the balance month.

This to be done in order to prioritize the available resources to focus on the area which needs attention to generate business.

5.9.6 Policy for identification and finalization of sales counters

The potential sales counters list to be made, along with the channel partner appointed for a vertical, based on the following parameters:

- The visibility of the counter
- The accessibility of the counter
- Traffic of end consumers in the catchment area of the counter
- Distance from competition stores as well as the Company's other sales counter (neighbour), in terms of maintaining exclusivity to avoid undue competition.
- The past credit record of the owner of the store.
- The amount of prime space, which the owner is willing to allocate for the Company's products' display.
- History and projection of sales from the sales counter.
- The Company's sales force to audit once in a month to ensure that the agreed products are on display.

6. THE PARADIGM SHIFT

Entity	Current practice	Suggested practice
Production planner	1) Production planning quantity as per • Monthly forecast plan 2) Priority as per • Urgencies of sales team	1) Production planning quantity as per • CDAS recommendations for Head and belly products 2) Priority as per colour codes • Grey->Red->Yellow->Green & no Pink 3) Production of T (slow moving) only against confirmed order only to the extent of order quantity with prior approval i.e. production to be undertaken on Make to Order basis. 4) Production of T0 (non- moving) stopped.
Production batch quantity for new / regular product	1) Produce based on current predefined MOQ (Minimum Order Quantity) quantity	1) Analyse MOQs and reduce MOQs wherever possible
Depot replenishment	1) Raise STPO (Stock Transfer Purchase Order) as per- • Monthly forecast plan 2) Priority as per- • Urgencies of sales team 3) Blocking of inventory	1) STPO as per CDAS recommendations for head and belly products. However, T & T0, if in stock, can be dispatched as per order. Additionally, concerted efforts were made to liquidate T & T0 through suitable schemes.

		2) Priority as per colour codes • Grey->Red->Yellow->Green & no Pink 3) Practice of inventory blocking was stopped.
Sales Solution	Legacy driven	Strategy & policy driven

7. RESULTS

- We can see that the overall inventory reduced remarkably during the study period.

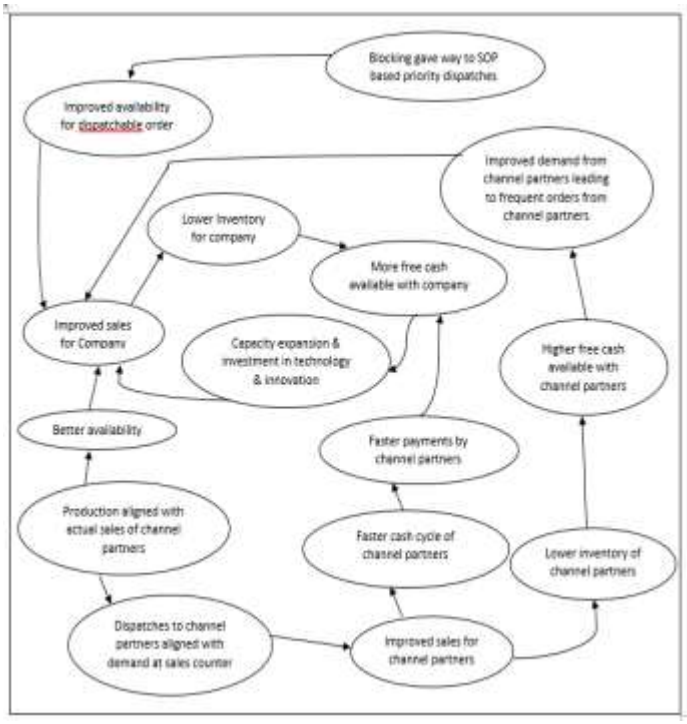
- **Order processing time trend (From Sales Order to Invoice)**

Due to better availability, the weighted average lead time from sales order to invoice has come down from 5.6 days to 3.7 days in 6 months (~33% reduction).

- Quarterly average overdue has reduced in spite of increase in sales of retail business in the company.

- Availability trend: The extent of grey and red SKUs at the plants have improved in last 6 months, with the production team focusing on producing the grey and red SKUs on top priority, leading to improvement in availability for dispatches. Availability of Head and Belly products improved above 90 % at all the point of sales which supported the sales growth.
- Sales increased by average 7 % in the first 6 months after the implementation of the solution.

- **Consequences of Pull based replenishment**



Disclaimer: For the sake of confidentiality, data sanitization has been done.

8. CONCLUSION

Thus, to improve sales and related parameters, apart from implementing pull based replenishment, following aspects of sales and marketing strategies were also strengthened:

- Having right ranges of products
- Having enough network of channel partners
- Having appropriate strategy for expansion in to white spaces
- Ensuring display of products at the counters of channel partners
- Strategy for influencers management
- Dynamic journey plan for sales force: The concept of Dynamic Journey Plan is a little different from the concept of Permanent Journey Plan. In DJP, our CDAS advises which sales counter is not performing as per agreed target and hence where the sales force needs to focus.
- Build attractive proposal for the sales counters to motivate them to display the Company's products and sell.
- Align internal sales organisation and process which focuses on demand generation from sales counters.

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BIOGRAPHIES

Sanjeeva, Bachelor of Technology from Indian Institute of Technology (ISM) Dhanbad, India, MBA from S P Jain Institute of Management and Research, Mumbai, India, Six Sigma Black Belt, has worked at senior management level in a number of reputed multinationals and presently heading Commercial and Supply Chain Management departments as a President in a leading consumer durable company.

Akash Kumar, Bachelor of Technology from Indian Institute of Technology (ISM) Dhanbad, India, presently working as Assistant Manager in Supply Chain Management in a leading consumer durable company.