

## INVENTORY FLOW MANAGEMENT PROCESS: - FMCG (BEVERAGES) SECTOR

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### ABSTRACT

*Inventory flow management system provides framework for achieving goals of top-line management. India is going through FMCG revolution, all the big business houses are entering this sector like Field fresh (Air Tel), TATA with PepsiCo India etc. Our country also poses a big challenge to organized large FMCG particularly in beverages sector. A well managed inventory ensures that customers receive the products when they need them, in the quantities they need, and with the uniform high quality they expect. In this research paper, we discuss how to manage the flow of inventory through the FMCG manufacturing and distribution system. Globalization and integration of the world economy, the concept of extended enterprise has take root leading to an increasingly important role played by the entire inventory management system. The most important thing to an owner of business is to provide a quality product and service to his customers with the help of Inventory flow management system. Inventory flow management allows the management team to match the inventory to customer demand, while meeting the systems objectives for capacity, productivity, and profitability. In a competitive business environment, inventory flow is a critical part of business.*

### INTRODUCTION

Today inventory flow management is one of the most challenging and expensive aspect of supply chain management. Companies are constantly balancing inventory carrying costs and obsolescence with customer fulfillment requirements. Retaining too much stock increase unnecessary warehousing costs, ties up valuable capital, and can expose vendors to significant financial losses if demand drops. With little or no insight in to available upstream inventory, downstream manufacturers, distributors, and retailers cannot commit to large or rush orders with any confidence and may not even be able to deliver on forecast.

Inventory management is a high dynamic system which is sensitive to cost parameters and has been evolving over the years. Inventory management, also known in the management parlance as supply chain management, refers to the control of material flow from the suppliers of raw materials on one hand, and delivery of the finished product to customers on the other hand.

Most of the inventory flow management techniques are based on scientific principles and assume prior knowledge of mathematical and probability theories. Inventory management takes in to account other functions such as purchasing, production and marketing and its techniques aim at balancing out conflicting goals.

The inventory flow management system provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities. A well managed inventory flow management that customers receive the products when they need them, in the quantities they need, and with the uniform high quality they expect.

Inventory flow management allows the management team to match the inventory to customer demand, while meeting the systems objectives for capacity, productivity and profitability.

## INVENTORY AND SKU'S

Before discussing how to achieve a strong inventory flow, let us first define several inventory terms. Inventory consists of four types of stock.

1. **CYCLE STOCK:** cycle stock is the amount of stock required to meet basic customer demand.
2. **IN TRANSIT STOCK:** In transit stock that is reroute between locations that carry inventory.
3. **SPECULATIVE STOCK;** speculative stock is the additional required to meet a higher than normal short term demand for the product.
4. **SAFETY STOCK:** safety stock is the quantity of stock in excess of cycle stock that is maintained to compensate for uncertainties in demand and replenishment. It may be expressed in fixed quantity or in days of coverage.

**80:20 RULES:** A basic guideline for inventory management is the 80:20 rules, sometimes called the Pareto analysis, after the man who first observed it. The rule states that 80 percent of items in stock account for only 20 percent of demand. Conversely, 20 percent of items account for 80 percent of demand. The 80:20 rules are useful to determine inventory storage areas. Level A items the 20 percent of inventory items in greatest demand belong in the most convenient locations.

## THE NEED FOR INVENTORY FLOW MANAGEMENT

The ideal inventory flow management system would perfectly match supply with demand, eliminating the need for inventory. Operating construction on manufacturing, transporting, and warehousing all create imbalances in the systems that result in the need for inventory. There are two points, generally the effect the need for inventory flow management in FMCG sector.

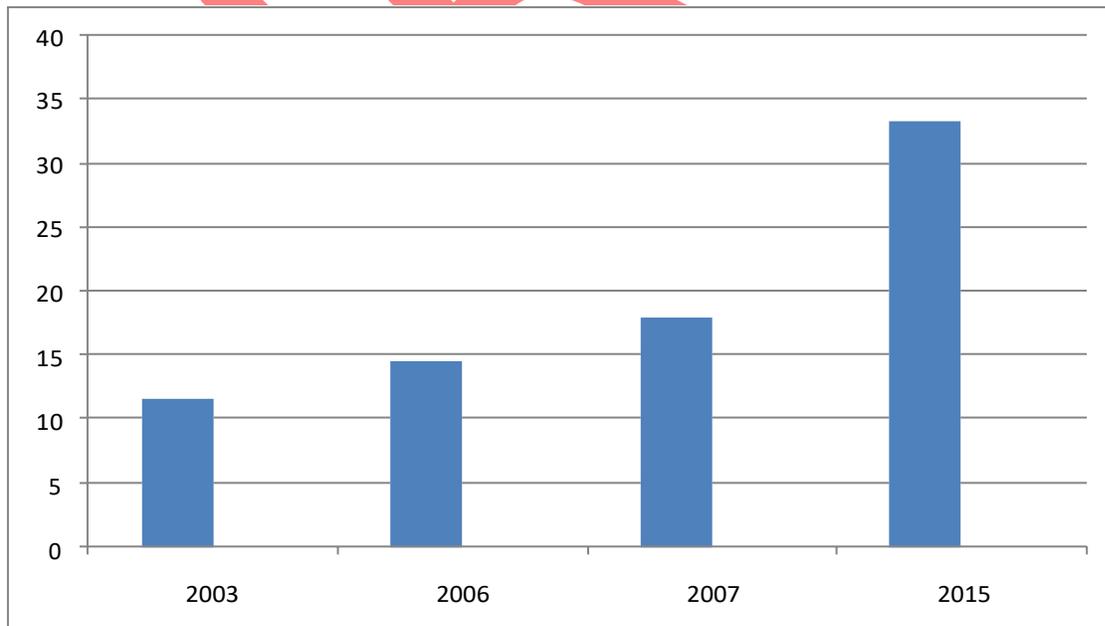
1. Errors in forecasting customer demand cause too much or too little product to be produced at the plant.
2. Seasonal or promotional changes affect customer demand for product.

Inventory shortage also creates imbalances in the system. For instance, labor shortage, transportation shortage, shortage of raw supplies and manufacturing capacity constraints all contribute to inventory shortage and unfulfilled customer demand.

## FMCG SECTOR SIZE AND TRENDS

- The Indian FMCG sector is an important contributor to the country's GDP
- It is the fourth largest sector in the economy and is responsible for 5% of the total factory employment in India.
- This has been due to liberalization, urbanization, increase in the disposable incomes and altered lifestyle.
- The overall middle income group accounts for over 60% of the sectors sales. Rural markets account for 56% of the total domestic FMCG demand.
- Total market size in excess of US \$ 13.1 billion
- The FMCG sector has been registering double. Digit growth in sales since the last couple of years: currently, with annual revenues of US \$ 14.74 billion, it is the one of the most promising sectors.
- The FMCG market is set to treble from US\$ 11.6 billion in 2003 to US\$ 33.4 billion in 2015
- The FMCG sector is witnessing rapid growth in rural areas and is estimated to grow by 40% compared to the growth of 25% in urban areas.
- PepsiCo has announced a US\$ 500 million investment in India over the next three year's
- FMCG companies have acquired about 15 companies and have spread their presence in more than a dozen countries.

INDIAN FMCG MARKET SIZE (in US \$ billions)



(Source: IBEF FMCG Analysis)

## **SCHEDULING PROBLEMS**

One of the most frequent contributors to inventory shortages is scheduling. There are three types of scheduling problem of FMCG sector.

- a) First, the schedule may be inadequate
- b) Second. The schedule may not be properly carried out.
- c) Third, the schedule may be disrupted by unpredictable events, such as bad weather or equipment breakdowns.

Effective inventory flow management will trade off conflicting operating and inventory constraints to achieve an effective compromise that maintains enough inventories to meet customer demand yet covers variation in the forecast.

## **THE COSTS OF INVENTORY**

Inventory is clearly needed, but there are costs associated with it, and these costs increase as inventory levels increase, especially when both direct and indirect costs are considered.

The larger the inventory, the greater the possibility of loss through damage, aging, obsolescence or theft and finally, the larger the inventory, the less efficient it is to handle. More time must be spent re-warehousing, double handling and rotating stock, using man-hours that might well have been used more effectively for some other task.

It is not uncommon in the beverage manufacturing industry for carrying costs to be as much as 25% of the total funds invested in inventories. This money tied up in inventory could be used elsewhere. So, an operation must carry sufficient inventory to keep out of stock or shortage situations to a minimum while costs associated with excess inventory.

## **BALANCING INVENTORY AND PRODUCTION REQUIREMENTS**

The inventory flow management principle just presented assumes that the plant has ample production capacity and flexibility, and well as sufficient storage area. The amount of needed for planning and scheduling the receipt of raw materials, ingredients, and packaging supplies must be taken in to account when projecting finished goods requirement.

Certain demand patterns, seasonal swings and promotional activities may require pre production specific SKU's to avoid production capacity bottlenecks. However, when goods are pre-produced, there may not be enough storage capacity at the production facility. In these situations, the inventory may have to be shipped to the distribution centers based on forecasted demand. If the facility has too many capacity constraints or an unbalanced infrastructure, the management team may need to modify the basic inventory flow management principles to accommodate their situation.

## **MATERIAL CONTROL IN THE FOOD AND BEVERAGE INDUSTRY**

Organizations today are required to be more proactive in the manner of product recall. The business model of yesterday demanded traceability from the distribution centers to the individual stores. In a recent survey of 48 companies in the food and beverage industry, the top reason for installing an automated material tracking and control system is to gain real time inventory visibility and accuracy and to effectively track and trace inventory the survey reported that 52% of the companies currently use bar coded labels to track raw materials, work in process and finished goods.

Controlling raw materials and finished goods inventory in real time is necessary in order to avoid the accidental movement of material. Working in a real time environment allows a company to place inventories instantaneously on held at either the SKU real time inventory expiration control can prevent the allocation of expired inventory from entering your processes or further down you distribution chain. In addition, transactional records such as employee, time ,line , location along, with many other attributes are automatically captured and logged providing the who, what, when, where and how of material flow.

Effectively managing the movements of materials throughout you're processing and distribution centers, and having the ability to react to rapidly changing business demands, require the right policies, procedures, and system. The marriage of technology and processes that are based on industry best practices is the key to an organizations success in meeting today's growing challenges.

### **PUSH AND PULL: TWO SYSTEMS OF INVENTORY FLOW MANAGEMENT**

The goal of inventory flow management is to match supply with demand on a timely basis. There are two basic approaches to managing inventory flow, most often referred to as production push and warehouse pull. Production push is the more traditional system. Warehouse pull is a newer method.

Most of the time, the pull system is better to the needs of the total beverage industry product and distribution system because it makes the actual customer demand the basis for replenishing inventory. However, in order to satisfy customer demand without interruption, a certain amount of inventory at the production facility must be ready to go out the door. This is where the productions push system works well. Both production push and distribution warehouse pull system are useful.

Both systems share five general characteristics.

1. PERIODIC DEMAND FORECAST: one, in both systems a periodic demand forecast is drawn up based on inputs from sales and distribution sources.
2. GENERATE PRODUCTION PLAN AND PRODUCTION SCHEDULE: Two, in both system the periodic demand forecast is used to generate a production plan and a production schedule.
3. INVENTORY VISIBILITY: Three, in both systems, information on inventory quantities and activity at each outlying location must be readily available to the central coordinating location. This is frequently referred to as inventory visibility.
4. INVENTORY POLICIES AT THE SKU LEVEL FOR EACH LOCATION: Four, both systems require inventory policies at the SKU level for each location. The policy guidelines are important to use for planning minimum and maximum quantities, as well as shipment sizes. These guidelines should be consistent with inventory flow principles and recognize infrastructure constraints.
5. RATIONALIZED PRODUCTION LOTS: Five, in both systems, production quantities are determined based on rationalized production lots and inventory quantities. A rationalized production lot is a realistic economic order quantity that takes into consideration such practical operating factors as syrup preparation and capacities, flexibility and capacity of production lines, flexibility of labor, and availability of materials.

In the production push system of inventory flow management, the periodic demand forecast is converted to a production plan and a production schedule.

The push production schedule is then converted to a transportation schedule that allocates quantities for shipment to each distribution point based on each forecast.

Quantities are shipped to each distribution point based on inventory recorder points production allocation and predefined shipping quantities. Distribution locations must accept these shipments.

In the production push system, the production facility or some other points of centralized planning and control manage and controls the movement of inventory between its location and distribution centers.

The push system is useful in situations where it is difficult to establish or maintain a timely flow of information between producing and distributing locations. The push system is also useful during promotion periods, when products must be pushed out of the producing location on an allocation basis.

In the warehouse pull system of inventory flow management, the demand forecast also serves as the basis for the production plan and production schedule modification are based on inventory replenishment considering distribution point. The transportation schedule is based

on distribution point. The transportation schedule is based on distribution point replenishment requests.

Then, each distribution centre monitors and adjusts the replenishment of inventory for its own location movement if inventory may be controlled by centralized or decentralized management.

**THE PULL SYSTEM:** The pull method for inventory flow management focuses on responding to customer demand. The customer is seen as an important source for determining which SKU's are needed, where and in what quantities. While the push system sends out items based on forecasted demand or a blanket allocation, the pull system sends out items based on what a distribution center requests, which in turn is based on customer demand. The pull system operates on the just-in-time principle to generate a quick flow of information and materials. Doing this cuts costs by eliminating waste, such as inventory that sits too long or a large safety stocks.

In general, the pull system does a better job than the push system of balancing the various operating factors in today's complex beverage system and making optimal use of today's technology. When the pull system of inventory management is integrated with production scheduling and resource planning, it facilitated matching supply with actual demand within the supply chain and a reverse flow of planning information from customer to suppliers.

In other words, it begins to look a lot like the seamless tube of customer satisfaction the straight, wide, unobstructed pipeline in which all function work together to deliver a quality production.

## **ADVANTAGE AND DISADVANTAGE OF THE PULL SYSTEM**

The pull has a number of advantages like

1. It is flexible
2. It allows inventory flow management to react to change more quickly and accurately than the pull system.
3. It promotes visibility. It is easy to see everything that goes through the system.
4. It lowers inventory costs.
5. It results in production that is better targeted to actual demand, which in turn results in better product availability and improved production quality.

The pull systems also have some disadvantages like

1. Its flexibility can be constrained by plant production capacity. If the plant operates close to production capacity, it will have difficulty responding to change in the pull system.

2. To work with maximum effectiveness, the pull system requires accurate, timely and good quality information.
3. Yields may be lower under the pull system than with the push system.
4. Since the pull system may reduce production line efficiencies, its implementation will require a responsive manufacturing organization.
5. If production is interrupted unexpectedly, the pull system's lower inventory may result in shortages and a greater change of stocking out.

## **PREPARING FOR INVENTORY FLOW MANAGEMENT SYSTEM IMPLEMENTATION**

If the FMCG changes from the push system of inventory management to the pull system, several factors need to be implemented to ensure the pull system's success.

First, the organization must be educated about the pull system, how it operates, and what to expect.

Second, the crossover must have the commitment of the management team and the support of senior management.

Third, performance measures must be established that are in line with supply chain objectives.

Fourth, timely and accurate information on inventory quantities and demand must be available for all location.

Fifth, an accurate forecasting system must be established, and there must be ownership in the system among sales and operations management.

Sixth, operation parameters, such as lead times, capacities, and cycle times, needed to be understood for productions, transport, and warehousing.

Seventh, good communication and information are essential, the complexity of today's business requires a responsive, integrated software system.

And finally, a transportation scheduling system is needed.

## **CONCLUSION**

The first priority of all employees in FMCG manufacturing and distribution system is to satisfy the customers demand for production. Controlling the flow of inventory to match customer's demand, while scheduling productions and transportation in a manner which can maximizes the use of resources is a constant, complex balance. Effectively managing the transportation of materials throughout your processing and distribution centers, and having the ability to reach to changing business demand, requires the right policies, produces, and systems.

The marriage of technology and processes that are based on industry best practices and achieving this balance effectively is the key objective of inventory flow management and an organizations success in today's growing challenges. Proper inventory management is a vital part of the "Seamless Tube" within the FMCG company system, where the common focus of every function

is customer satisfaction. The goal is to produce the highest quality product at the best cost, packaged and delivered according to customer demand.

Properly managed inventory ensures that customer and consumers have an uninterrupted supply of delicious, refreshing products of the FMCG companies. This is the highest form of customer service.

Today most of the industries/ companies implemented SAP and also implementing SAP, because SAP is giving the full fledged solution for their business requirement and it is meeting customer/ client requirements without huge customization.

For example, if you take FMCG industries, they want to know the status of their inventory on daily/ weekly/ monthly/ yearly basis. Because at the end of the day, management wants to know the movements of the goods/ products for their, further planning and also to maintain the balance between demand and supply.

For optimal inventory management processes, we need robust functionality for managing our logistics facilities. Support for inventory management helps us records and track of each material on the basis of the both quantity and value. We can reduce the cost for warehousing, transportation, order fulfillment, and material handling while improving customer service. We can significantly improve inventory turns, optimize the flow of goods and shorten routes within our warehouse or Hub/ distribution center. Additional benefits of inventory management include improved cash flow, visibility and fast and good decision making.

Inventory management offers one of the largest opportunities in supply chain management. End to end inventory visibility increase buyer purchasing power, minimizes inventory levels, ensures product balance, and ultimately reduces warehousing costs.

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