Health Pharma: managing supply chain

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Introduction

It was a bright morning of the first working day of May 2011. Like everyday, Mr Srinivas, Director (Technical) of Health Pharma Ltd (HPL) (a pseudonymous company) parked his car inside Health Nilayam[1] premises. However, things were not as bright for the organization as for the first time, it had registered a huge loss of INR 30 crores (USD 5.603 million)[2] in the financial year 2010-2011. Mr Srinivas summoned an urgent meeting that morning to review the situation.

Company background

HPL was founded by Mr Ramaraju in the year 1994. It started manufacturing its first product *N*-methyl-4-piperidone in 1996. By 2011, the company's turnover exceeded USD 100 million exporting its products to about 40 countries worldwide. The company manufactured 30 active pharmaceutical ingredients (APIs)[3]. HPL had two manufacturing plants at Hyderabad (Unit 1) and Visakhapatnam (Unit 2), which were located at the southern part of India.

The supply chain at HPL

The suppliers

The supply chain of HPL consists of a network of traders, agents, plants, distributors and suppliers. The purchase process started from the raw material stores in production units 1 and 2. An indent would be raised by the raw material stores based on the requirement. This indent would be passed to raw material purchases where a request for quotation was raised and would be sent to the selected suppliers. These suppliers would respond to the quotations with their best possible prices, and after a series of negotiations the purchase invoice was raised on the name of the supplier who was an order winner. These raw materials would reach HPL either through air, road or through sea. In case of purchases through sea route, the clearing agents would take an active part regarding the clearances at the port. In case of domestic purchases, the preferred mode of transportation was by road.

The customers

HPL customers were of three types. The first type of customers comprised of agents. The second type of customers were those who purchased through traders and the third type of customers where those who directly purchased from HPL. Traders played an active role in handling HPL exports. They were not liable to the terms and conditions of HPL but were entitled to get a commission from HPL as they were the intermediaries to let the transaction happen. These traders were located in different countries in which HPL operated and they would not hold the inventory but simply mediated the transaction between two parties and got benefited from the commission received from these two parties. HPL operated through traders in many countries. The agents were liable to the terms and conditions of HPL and were also liable to receive the commission from HPL. These agents would send the stock to distributors. Through these distributors, the finished good would reach the customer. Once a purchase order was received from any of these customers, the sales invoice would be generated based on the availability of stock.

The stock statement received from the production was a reflection of the consumption of raw materials and the availability of finished goods. Based on the requirement received from the marketing team, the purchase indent was prepared and the raw materials were purchased and also based on these requirements, the projections for the production was made at HPL.

The Indian API industry

In the financial year ending March 2011, the Indian API industry was valued at USD 5.7 billion and was expected to grow to USD 22 billion by 2020[4]. India was the second largest supplier of APIs to the global pharmaceutical market next to China. China produced close to 70 percent of world's generic APIs followed by India with about 19 percent. The Indian market was fragmented with top ten companies contributing to 44 percent of the market and about 1,325 companies accounting for the balance 56 percent. About 15-20 percent of the Indian pharmaceutical industry was contributed by APIs. Some of the major players in this segment were Dr Reddy's, Aurobindo Pharma, Orchid Chemicals, Divi's Lab, Ranbaxy among others. The domestic industry was extremely competitive as it comprised of a large number of small- and medium-sized players. Companies tend to compete on price which had resulted in the market being highly commoditized.

The meeting

Mr Srinivas was visibly worried when he entered the conference room. Mr Reddy, Purchase Manager, Mr Rao, Marketing Manager and Mr Hari, Production Manager were already present inside. Mr Srinivas greeted all of them with a wry smile, and then commenced the meeting:

> Srinivas: Good morning gentlemen! I hope you are all aware of the current crisis. This is the first time in the history of the company that our numbers are in red. I believe you are also aware that from June 2011 onwards, we were about to commence the operations in our third manufacturing unit at Jawaharlal Nehru Pharma City at Visakhapatnam. This was going to be our third manufacturing facility with an initial capital expenditure of INR 30 crores (USD 5.603 million[2]). However, it seems that we need to keep our plans on hold.

After a brief pause, Srinivas continued:

> In the recent past lot of irregularities were reported in the supply chain of HPL. For instance, one of the raw materials for the production of Dibenzo Suberenone was out of stock and so the production was stopped at unit 2. The consumption pattern of this material fluctuated a lot with the demand varying between 100 Kgs and 350 Kgs per day. On the other hand there were invoices in the waiting line for finished products. Another product Ebastine was about to expire as the product was not sold. At the year end most of our agents returned the finished goods which was about to expire worth INR 30 crores (USD 5.603 million). All these have contributed to the losses. All these disturbances are because of the result of serious inefficiencies resulted from ordering too much or too little of a product. This situation has generated more inventories. If these issues are not addressed now this can reduce the cash flow, hamper potential revenue and can erode the revenue realization by price discounts.

Briefly pausing to drink a glass of water, he then continued:

> From all this I can understand that these variabilities are a result of the uncertainties in demand and supply, but this entire situation is because of that the managers at HPL perceive demands different from the actual demand and order based on their own perceptions. At HPL most of the invoices are executed in bulk quantities. In addition, the partners in the supply chain on both the ends are located in different parts of the world which have an impact on the lead time in

transportation. I know if I speak to the managers at HPL involved in the supply chain, they state many reasons for the out of stock situations as well as the excess stock situations. I expect that every employee who is involved in the supply chain at HPL should be aware about the consequences of the situation and the induced inefficiencies in production, scheduling (capacity utilization), distribution, predominantly revenue generation and its realization.

At this point Reddy explained:

In the recent past we all were coming across certain inefficiencies in our processes. At the year end most of our agents returned the finished goods worth INR 30 crores (USD 5.603 million) which was about to expire. Ketorolac Tromethamine was nearing expiry as the product was not sold and so, we invoiced Ketorolac Tromethamine to Bharathi & Co. but for half the price which incurred a loss of INR 80 lakhs (USD 0.149 million).

Rao clarified:

This situation arose because Heinz Trading & Co. did not place the order this year. They are one of our regular customers and have been consistently placing orders worth INR 1.6 crores (USD 0.299 million) for the last three years. When I spoke with their purchase manager last week, they were in the process of sending us the purchase requisition. Accordingly, I told Hari to go ahead with the production of Ketorolac Tromethamine. But, to my surprise at the last minute they backed out for reasons unknown. Sir, we are maintaining certain terms and conditions with our agents but we do not have any control on our traders. Traders act as only commission agents in any country who facilitate the transaction.

Rao continued:

Sir, most of our customers are regular customers. There are few customers who keep sending the orders to us without fail from last four years. So, I have complete trust on some parties and accordingly I have forecasted their demand.

Srinivas objected:

So, as per what you say Heinz trading & Co who was also placing the order from last three years is a regular customer to us, but they did not place the order this time and we ended up in a loss of Rs.80 lakhs (USD 0.149 million)[2]. You know that most of our customers place the orders in bulk volumes. What if few of our customers do the same?

Are we using any software tools to forecast demand?

Rao replied:

No Sir! But I projected that the demand for our products would also increase based on an article I came across recently. The article estimated that the demand for anti depressant will increase by 26%, anti-hypertensive by 33%, anti diarrhoea by 18%. So, our existing customers will keep purchasing from us. Even if they don't purchase, our finished goods would anyways get sold in the market.

Srinivas replied:

Whatever you are telling is our scope for growth but not the actual demand. Being the upstream member of the supply chain our demand forecast is based on the actual demand plus some distortion, but the input available for demand forecast is not real, it is a distortion based on your perception and you are one of the partner close to the demand so the distortion is higher.

Hari interrupted:

Sir, Rao told to me over phone to go ahead with the production of Ketorolac Tromethamine so I told raw material stores to procure the raw material for production.

Reddy replied:

After I received the indent from raw material purchase I procured the raw material from China but that material is also lying unused and that too is nearing expiry.

Srinivas:

I know that. Why did it happen? As per Rao's forecast for Heinz trading & Co. you do not have to procure that excess raw material.

Reddy:

Yes sir, there was no need to procure excess but when I enquired from three suppliers they told that this raw material was not available and that material will be out of stock because of some macroeconomic condition with most of the suppliers. One of our suppliers in China had stock at that time and I thought of procuring in excess from them to avoid stock out situation. Last year production of few APIs was stopped 2-3 times. Hari had pointed out that backlog cost is more than inventory holding cost. Not only that we export the finished good as well as import the raw material. The transportation route includes both air and sea for imports and exports, road for domestic purchases and sales. Lead time is longer and moreover I tried to achieve. So, to avoid all this I procured in excess but it turned out bitter.

Srinivas:

The same situation has repeated again. Now too Dibenzo suberenone is out of stock and the production is stopped for that respective API.

Reddy:

The consumption of this material during production is too variable every day. Please have a look at the stock statement if it is consumed 100 kgs on the first day, on the second day 300 kgs consumed and on the third day 150 kgs and so on. The consumption pattern of this material is very uncertain, and because of this entire situation the production of the respective API is stopped.

Hari:

Yes, because Rao was continuously sending the request for production, based on that we are producing. He was pointing out that we are loosing the customers and backlog cost is high and there were invoice in the waiting line for finished products.

Rao:

This entire situation is because of the product promotion scheme.

Srinivas:

Noteworthy point here is that we announced this product promotion scheme to clear the finished good available with us and that is yielding inflated demand but not the actual demand. We should not consider this demand when we forecast in future.

Srinivas (pointing to Reddy):

Reddy you are aware that we received the stock returns from our agents worth INR 30 crores. I tried to find out why this has happened and I met few of our agents, distributors and some customers as well. Reddy you mentioned that to avoid stock out situation you had procured in excess and that turned out bitter. You also mentioned that backlog cost is more than inventory holding cost. Most of our agents, distributors also replicated the same behavior. To avoid stock out situations they inflated the demand at their end, this behavior is repeated by most our agents that is they distorted based on their perception as a result we were unable to see the actual demand. Based on this inflated demand, we took the capacity enhancement decisions which resulted in excess inventory holding with us, with most of our agents, distributors which lead to the huge loss of INR 30 crores.

Srinivas (pointing to Rao):

Rao there are invoices in the waiting line starving for finished products. So, what will you do to handle this situation?

Rao:

I sent the production request to Hari.

Srinivas:

Rao you are not aware that we are loosing sales opportunities because of misdistribution. When I met our agents and distributors I closely monitored their stock statements and I found that they are holding inventories of certain products which they are not selling. Finally, they will return that when it was about to expire. Rao to clear that stock we have to announce price discount.

> You all will be surprised to listen this if we ask them to return the non saleable stock all the invoices in the waiting line can be fulfilled and we can also minimize stock returns in future.
>
> I hope all of us got an idea about where we are doing mistakes and where we are prone to do mistakes. To avoid this situation we need to have information transparency in the organization as well as with our supply chain partners.

Srinivas called off the meeting.

The problem

Srinivas was concerned with the existing production inefficiency of HPL. He was aware that the manufacturing setup at HPL was organized as make to stock. Why not the operations can be reorganized to make to order? But most of the suppliers of raw material are located across the world. So, longer lead times may again induce efficiencies in production? Can enterprise resource planning implementation help improve communication among its supply chain partners and forecast sales better? Raju felt exhausted and confused. He settled into his office and ordered for a cup of coffee.

Keywords:
Supply chain,
Bullwhip effect,
Order fluctuation,
Decision making,
Management strategy

Notes

1. Corporate headquarters of HPL at Hyderabad, India.
2. INR 1 = USD 53.52 (approx.).
3. APIs are the components in the drug that provides some pharmaceutical value in the drug.
4. www.chemweek.com/markets/fine_chemicals_biotech/pharmaceutical_ingredients/CW-Conference-Indian-API-Market-to-Reach-$22-Billion-by-2020_33015.html (accessed 15 August 2011).

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