

This excellent article describes a recent implementation of the Theory of Constraints Distribution Solution in India – precisely what IDEA clients develop. What the article doesn't report is that this supply chain is based on solid win-win principles. To attain their success, first they virtually eliminated shortages. To capitalize on this operational improvement they needed collaboration from their distributors down the supply chain. When Dr. Reddy's rolled out a new program to the first wave of their distributors, 98% of 700 embraced the program. As a direct result, the company saw a sales lift of 20% within a month. The whole process took them only 12 weeks.

How did they do it? They focused relentlessly on a logically sequenced approach, one step at a time. The steps were completely documented in a Strategy and Tactic Tree which facilitates communication, understanding and agreement up and down the levels of the organization and across the various departments. All other initiatives were either killed or frozen until later. Can you even imagine the guts it took for top management to stop the myriad improvement projects in every department to focus on the one thing at a time that was most important?

Enjoy! -Henry Fitzhugh Camp

The Right Prescription; Dr Reddy's Laboratories Discusses Their Complex Supply Chain

By **Pamela Cheema**

Dr Reddy's Laboratories Ltd has fashioned an intricate and complex supply chain which has ramped up its growth. Pamela Cheema investigates.

Our car swings in through the black iron gates into the verdant campus of Dr Reddy's Laboratories on the outskirts of Hyderabad. The peaceful 140-acre campus, with its atmosphere of unhurried calm, belies the stature of a company which is today one of the top pharmaceutical companies in the country. Founded in 1984 by entrepreneur scientist, Dr K Anji Reddy, Dr Reddy's Laboratories Ltd. has leapfrogged over most other Indian pharmaceutical companies to cross \$1 billion in revenue. According to the latest figures, its consolidated revenues are at ₹74.7 billion (\$ 1.7 billion) in FY '11, surpassing its revenues of ₹70.3 billion (\$ 1.6 billion) in FY 2010. Its growth year-on-year has been a steady and encouraging 6 percent.

Despite slate-grey overcast skies which threaten a heavy downpour, Dr Ravi Prakash Mathur, Director, Supply Chain Management-Logistics, strides quickly around the campus pointing out buildings of interest, a Leadership Academy here, a biologics facility there. He exudes quiet confidence as he elaborates on the intricate and complex supply chain of his company which has put it in the vanguard of top pharmaceutical corporations in the country. Three years ago Dr Reddy's Laboratories Ltd. made a radical switch from the forecast based supply chain system to the replenishment mode of supply chain.

“This initiative involved the front end distribution system and operations and procurement as well,” says Dr Mathur. “It is an end-to-end solution which is aligned to

meet the needs of the market too. This has made us more agile in meeting market demands and helped us to meet the twin challenges of excess inventory and shortages in the system.” Dr Reddy’s Laboratories Ltd. was the first Asia Pacific pharmaceutical company outside Japan to be listed on the New York Stock Exchange in 2001. It was listed on the Bombay Stock Exchange in 1986.

A Decision-making System

Dr Mathur firmly believes that the forecast-based supply chain system has its own inherent limitations. Along with the vagaries of demand in the market, he notes that since the markets are very dynamic “a forecast can only be a forecast. It can’t be 100 percent accurate and you have to keep measuring its accuracy and its key performance indicators (KPIs).” In the replenishment-based system of supply chain, cognizance is taken of what has been consumed at various supply chain nodes and the previous supply chain node replenishes consumption at the front end leading to a more responsive system.

“The Israeli company, Teva, which is a very large generic pharmaceutical company, has adopted this system to an extent, but we don’t know if any other Indian pharmaceutical companies have adopted this system,” says Dr Mathur thoughtfully. “There are many global companies, not necessarily pharmaceutical companies, that have adopted this system which they call by different names. For instance, Wal-Mart is on the automatic replenishment system, while Toyota uses a pull-based system. Among Indian companies, Tata Steel works on the replenishment system. This is an easy decision-making system and you get the right number of orders, so you are manufacturing just what is needed and what is really required gets priority.”

Perfect Availability

Speaking easily and with great authority, he traces the supply chain from the suppliers who transfer raw and packing material to the material warehouses which in turn move it to the plants. These plants, in turn, forward the finished-goods to the finished-goods plant warehouses; the finished goods plant warehouses are connected to the regional warehouses from where products are sent forthwith to distributors who push them onwards to retailers and thence to the customer. “The role of our supply chain is that there should be perfect availability with no shortages,” emphasizes Dr Mathur. “We want adequate inventory at our central locations with daily consumption data along with more frequent replenishment.” While the supply chain with its complex interactions fulfils customer demand, the Research and Development facilities of the company control new products and execute the process of ongoing improvement in the company.

The Replenishment System of supply chain followed by Dr Reddy’s Laboratories underscores that if there is greater interdependence in a system, it may mean less freedom, but it also signifies that there are just one or two constraints in the system. On the other hand, in a system where there is more freedom, there are more constraints. Lack of interdependence leads to multiple constraints, which can create serious and terminal

blockages in a supply chain system. Hence, a supply chain system which has less freedom is more supple and easier to manage than one with great freedom.

In India the corporate has two central warehouses situated in Hyderabad and Ghaziabad which hold the maximum inventory for these regions. “The concept really is that we aggregate the goods at a central warehouse,” says Dr Mathur affably, “and the benefit of that aggregation is that we have maximum inventory near source and from that inventory we supply to further supply chain nodes.” Products are supplied in accordance with the consumption data which is uploaded daily on the company’s software; the objective of the intricate system is that the warehouses must always maintain enough inventory to satisfy any immediate reasonable demand.

Stellar Features

The Replenishment System of Supply Chain has several stellar features which has enabled it to power an efficient supply chain system. It assesses inventory at all stock locations, while enabling transfer of consumption data from all those locations. It truncates replenishment time and refills inventory as frequently as possible from the main warehouse to consumption points. It also maintains buffer inventories at every supply chain node.

Like its national operations, the international operations of Dr Reddy’s Laboratories Ltd. also resonate with planning and care. The United States, for instance, is an immeasurably lucrative market for the company. The company supplies its products to a central warehouse in the US, which is operated by a logistics service provider of the corporate and takes its orders from diverse American pharmacies. While certain drugs are shipped directly to the US after being packed in India, others are delivered to a co-packer where the products are packed and then delivered to the central warehouse. A co-packer functions as a packer of drugs for the company in the US. From the central warehouse the drugs are distributed to the regional distribution centers of the customer and transported onwards to pharmacies. “The drugs go via our central warehouse to American pharmacies,” says Dr Mathur, explaining carefully the line of distribution in the US.

Globally, Dr Reddy’s Laboratories supplies its products to the US, UK, Germany, Russia, Ukraine, Venezuela and South Africa. It’s financially lucrative markets are USA, UK, Germany, Russia and India.

Unfettered Distribution System

In India the company has a well-defined and uncluttered distribution system which allows products to flow smoothly to the consumer. Its two central warehouses in Hyderabad and Ghaziabad are also known as Global Distribution Centers as they are suppliers to both global and Indian markets. They feed 32 regional warehouses, some of which are located in Hyderabad, Kochi, Mumbai, Jaipur, Delhi, Jodhpur, Bhubaneshwar, Kolkata, etc. The company follows the hub and spoke model of warehouse systems due to the vast geography to which its supply lines cater. It has 200 vendors and more than 2,000

distributors just for India. It has seven formulation facilities and one biologic facility which constitute eight 'in house locations' (manufacturing plants), some of which are in Andhra Pradesh while two are in Himachal Pradesh. Dr Reddy's also has over 10,000 raw material and packing SKUs and over 2,900 finished goods SKUs.

The company has 170 employees who manage its supply chain in India and across the world ; it has eight logistics service providers like UPS, DHL and AFL who handle its international operations and 14 LSPs like TCI XPS and TNT who service its national operations.

The Pull Distribution System

The corporation's supply chain system is also distinguished by the use of a 'pull distribution system' or what is known in industry parlance as the 'simplified drum-buffer-ropes' system. "The drum is basically the rate of consumption, the rope is your lead time and buffers are nothing but our target inventories," says Dr Mathur expansively. "This theory means that at any time you should be able to meet market demand. It has been implemented in a few Indian companies like Godrej. Abroad, it is well-known and is being used in quite a few companies."

Buffers are target inventories which measure consumption and are so designated because they imply 'protection' from depletion at every supply chain node. It is mandatory that any penetration in this target inventory has to be replenished. They are considered 'buffers' as they protect the supply chain nodes at the back from the demand in the front. Says Dr Mathur: "Every supply chain node needs protection equivalent to the lead time from the previous supply chain node and to the amount of the highest day's sale that you have experienced at that node. I think we are unique in the pharmaceutical industry for using the buffer system the way we do."

Since buffers are designed to combat uncertainty, they are strategically positioned at every level of the supply chain. "We have buffers at the stockist level, the CFA and Global Distribution level," says Dr Mathur energetically, warming up to his subject. "There are buffers in production, packing material and raw material – our buffers are protecting each and every supply chain node."

Innovative Colour Coding System

Also present at all the supply chain nodes is an innovative colour coding system which calibrates the inventory and thus further refines the system. The four colours used indicate the level of inventory and enable prioritization of inventory in the system. The colours employed are green, yellow, red and black; green denotes sufficient inventory, yellow implies adequate inventory, red cautions that the buffer is in danger of depletion and needs to be replenished swiftly, while black indicates a depleted inventory or a stock-out. "When we are looking at our multiple SKUs, our highest priority is the SKUs in black which have to be attended to immediately, the next is red followed by yellow and green," explains Dr Mathur carefully, switching quickly to the relevant slide on his laptop

for easy clarification. “With this colour coding system, we achieve the dual target of keeping low inventory and high availability. Among the colours, yellow is the ideal one where you get to know that you have adequate inventory in the system.”

Crucial Lead Times

For any supply chain system to function superlatively in today’s bare-knuckle competition, lead times are also crucial and any lapses could lead to serious tripwires in the system. However, in Dr Reddy’s Laboratories, the system of warehouses and buffers at every supply chain node has been designed in such a way as to ensure the fulfillment of all demands. “To give you an example, we have warehouses in India, the US, UK and Russia which cater to local demands,” elaborates Dr Mathur. “With our supply chain system, we know that there is enough inventory at every node which ensures that there is enough lead time to meet local demands. So you can say that our lead time is immediate because we have inventory at every level, it is only the transportation lead time which will be the lead time.”

The transportation lead time, too, has been structured to satisfy all demands. In the north, goods are received in two or three days; the northeast may require a longer lead time, but the lead time increases only due to the distance traversed from the central warehouse to the regional warehouses in Guwahati and Kolkata. For international lead times, inventories are prepared to meet sea or air freight lead times. For sea freight which is by far lengthier, the lead time from India to the US will be 45 days, to the UK will be 26-30 days and end-to-end from India to Russia will be 30-35 days. These are average door-to-door lead times which are inclusive of customs clearance at both ends and pre-carriage and post-carriage to and from the ports.

For a supply chain with such seamless inventiveness and exceptional flow of operations, a company would have to be large in scale to merely afford such a logistics system, right? Dr Mathur pauses. “I don’t know about scale,” he says, weighing his words carefully, “but you definitely need a very robust back-end system, especially an excellent IT system, to be able to support such an initiative. One of the key features in this system is information flow, so the more robust the information flow from the front to the back, the more successful your system will be. But even more critical than this, is a change in the way you think, because in this system you are moving away from local optima to a global optimum.”

To assist in sea freight, an inland container depot (ICD) has been established in Hyderabad. The containers are loaded in a process known as ‘factory stuffing’, sealed and the customs procedures, too, are finalized at the ICD at Hyderabad. These containers, which are reefer containers, then travel by road to the port of Nhava Sheva, near Mumbai, in Maharashtra. On arrival, they are loaded on to mother ships which thereafter set sail for the United States and Europe. For air freight, the company uses the services of global airlines like Lufthansa and the Emirates. The products are flown from the airports of Hyderabad and Bangalore to Frankfurt, Paris and Amsterdam and from these major business centers, to their destinations across the globe.

Critical IT Support

A supply chain system whose various components are segued to achieve such a high degree of performance needs to be supported by a flawless information technology system. “We are on an ERP platform,” says Dr Mathur. “The orders are processed at the CFA level and then serviced from the same level. In India, from the CFA onwards to the stockist, there is an exchange of information on consumption and inventory from those stockists who are on the replenishment mode and this flows back into our software.”

When the stockist’s buffer is penetrated, the demand flows back into the CFA’s buffer. The CFA’s buffer acts as an ‘aggregate’ for all the stockists in that region and the aggregate consumption that has been recorded on that particular day has to be replenished by the Central Warehouse (Global Distribution Centre). While the information flows in on a daily basis, the demand is consolidated and shipped out only on the third day. The demand from international sources is also received on the company’s software on a daily basis.

In addition to the SAP software, Dr Reddy’s Laboratories also employs the Symphony software which is a platform for the procurement, operations and distribution solutions of the replenishment mode of supply chain. “Symphony is actually software that sits on top of SAP, so it triggers various transactions in SAP,” *[This software is similar to IDEA’s Elucidate, which interfaces in the same way.]* explains Dr Mathur while disclosing the functioning of their intricate IT systems. “Every night there’s a run wherein data is uploaded on to Symphony. Based on what the penetration is in the various target inventories, the process orders are generated into SAP. So actually Symphony interfaces with SAP. We have had this system for the last three years now.”

Continuing his incisive analysis of his company’s IT systems, Dr Mathur elaborates further that the Symphony software absorbs data in the ERP “and converts it into a visual decision making system, so whatever system data we have it gets displayed in terms of the various colour codes we use, so we know whether we have adequate inventory, more than adequate inventory or less than adequate inventory. So on a real time basis, we are able to see that for the entire globe, which SKU gets what priority!”

Cold Chain Facilities

Most of the products of Dr Reddy’s Laboratories Ltd do not require cold chain facilities. They are ambient temperature products which are stored in ambient conditions. Some products which do need cold chain facilities can be stored with the aid of active and passive cold chain solutions. Active cold chain solutions are proffered by third party logistics providers like TCI XPS for national operations and for international operations, DHL and Lufthansa. TCI XPS and the international logistics providers offer an environment in which products can be safely stored at correct temperatures and for the required number of hours. Generally, for products which need cold chains the corporate uses air freight due to shorter lead times. With air freight, lead times oscillate between 72-120 hours. For passive cold chain solutions, the company uses ‘white covers’ (these

are white sheets which contain thermal insulation) or thermocol boxes with ice packs which will maintain the products at the right temperatures and for the required number of hours.

The government of India is planning to introduce the 2D Barcode system in the country for industry as a whole to stem any aberrations in the market. The new system, which will not be limited to the pharmaceutical industry, will facilitate checks on expiry dates and also enable track and trace of products. “You will be hearing more about 2D in the days to come,” smiles Dr Mathur. “In the beginning, it will be used only for exports and it may be notified for use in just a few months from now. When it comes to the implementation of the 2D Barcode, India will be ahead of other countries—abroad, it will be implemented only in a few years from now.”

The replenishment based system of supply chain has its own powerful advocates among third party logistics providers. Mr. Ashutosh Dixit, Regional Director-South2, DHL Global Forwarding, which has been the international LSP for Dr Reddy’s Laboratories for the last seven years, believes that the system has elevated planning and “led to a smooth movement of goods. It has also helped us to reduce errors and handle supply chain in a superior way.” But, he points out, goods could move with more slick efficiency if the government pruned its paper work at origin and destination points.

Mr. F S Poonia, Assistant Vice President, TCI XPS, which has serviced the national operations of the company for 13 years, is also supportive of the replenishment mode “which has helped us in planning activities and reducing last minute hiccups despite bottlenecks like road permits, non-uniformity of taxes, lack of skilled manpower, scarcity of manpower, etc.” With supply chain systems streamlined with finesse and skill and a fast-expanding global footprint, the future of Dr Reddy’s Laboratories Ltd appears undimmed.

The author can be reached at pamela@logisticsweek.com

The original article can be found at the link below:

<http://logisticsweek.com/feature/2011/07/the-right-prescription-dr-reddy%E2%80%99s-laboratories-discusses-their-complex-supply-chain/>