

# distribution

## in the Supply Chain

### **When Less is Much More**

#### **BEFORE**

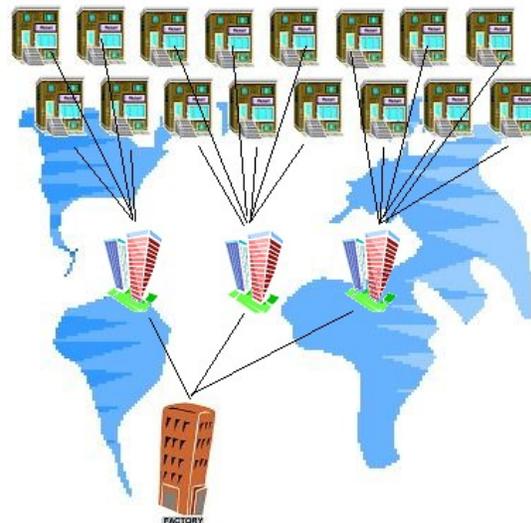
*“We are supplying a range of about six hundred and fifty different products to thousands of shops all over the country. In the past, we held about three months’ inventory, and it was never enough... Only about thirty percent of the time could we ship a complete order.”*

#### **AFTER**

*“With the new [Theory of Constraints based distribution] system, we are now able to respond to a shop within one day, with complete orders more than ninety percent of the time. Inventories are dropping fast; we expect to stabilize at roughly six weeks’ stock.”*

These two passages are from Dr. Eli Goldratt's business novel, *It's Not Luck*. For those of you who are not familiar with Goldratt's writing style, he takes real life success stories and packages them into fictional business novels. His technique makes for entertaining reading while it protects the identity of the actual organizations Dr. Goldratt helped in making the transition to Theory of Constraints-based systems.

One of the three organizations referred to as experiencing breakthroughs from application of Dr. Goldratt's Theory of Constraints (TOC) and its logical thinking processes in *It's Not Luck* is a manufacturing company that makes consumer products. The product line may be found in grocery stores, local corner drug stores, and specialty shops in malls and strip plazas. In the “before” snapshot, the manufacturer is building products based on sales forecasts, and attempting, also based on those forecasts, to control the distribution of the finished goods to its regional warehouses.



As businesses seek more and more to minimize risk to their organizations, manipulation of supply chains is being used as a method of reassigning risk to others. In this case study, shopkeepers reduce stock in an effort to reduce working capital requirements. That appears to make perfect sense only until sales drop as a direct result. Consider the indirect results as well. The product's reputation is damaged when consumers become increasingly frustrated as available shelf stock dwindles at the retail level and special orders arrive only 30% complete.

The manufacturer attempted to reduce risk by using the "common practice" method that some might even call it a "best practices" method. The company increased the finished goods stock. However, that is anything but the best method. Don't forget, consumers are predictable: they want what they want when they want it! Retail can be brutal. Anything short of a complete order is a failed order.

### **Common Sense**

Was common sense consulted? Are any or all of the missing items actually in stock? While they may not still be at the factory, might they be in one of the 25 regional warehouses or at one or more of the retailers around the country?

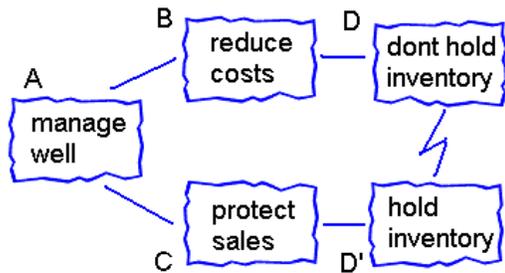
Often common sense and common practice are at odds. The old adage,

"Tell me how you will measure me, and I will show you my performance," rings true. Painfully true. Numerous measurements and policies exist in corporations around the globe to ensure that maximum throughput is achieved for any specific task or operation. How many organizations study the ramifications of this focus on local improvements? Ever been accused of being "penny wise and pound foolish"?

### **Cause and Effect**

Dr. Goldratt showed managers a better way in 1984 with the first release of his best selling business novel, *The Goal*. That first Goldratt book was set in a manufacturing environment and it presented the logic used to turn around UniCo in just three months (a supposedly fictional company, but in fact, a real organization). Within the logic, Goldratt introduced his "conflict cloud." *It's Not Luck* also frames conflicts by using conflict clouds. Actually, Goldratt's "Thinking Processes" based on cause and effect logic are first documented at some length in this sequel to *The Goal*. However, *It's Not Luck* stands on its own as a landmark testimony to applying scientific methods to the social issues found within business organizations.

But let us concentrate on the TOC Distribution Solution part of Goldratt's Theory of Constraints and first explain the generic conflict supply chain managers face.



The way to read the conflict diagram (or cloud) is from left to right. “A” is the goal of the system for which we are attempting to break the conflict. In order to achieve our goal, there are necessary conditions, or “needs” as described in “B” and “C.”

In order to manage well, we need to reduce costs and we need to protect sales.

In a conflict, needs create demand, or things that we “want” in order to meet our needs. In order to reduce costs we want to hold less inventory. In order to protect sales, we want to hold more inventory.

It is this disparity between the two conditions that defines our conflict. One cannot at the same time hold more inventory to protect sales and reduce inventory in order to reduce costs. In the diagram, each “connection” between the elements represents one or more assumptions. To break any conflict, we must attack at least one of the underlying assumptions. It is important to note that there are levels of correctness with regard to these

assumptions. Nevertheless, to break the conflict, we must break through the conventional wisdom that has created the conflict. For example, we say, “To protect sales, we must hold more inventory.” Why?

Everyone in the company can plainly see that we lose sales when we do not have the proper items in stock to meet demand. Our forecasts are accurate at some level, however; statistical probabilities are outside the scope of this document. For a thorough explanation, please review Dr. Goldratt's *Necessary and Sufficient — A look into the rule of Distribution* Volume 5 CD-ROM.

### Identify the Constraint

Many distribution strategies are based on the “push distribution” model where the manufacturer attempts to move as much inventory as possible into the supply chain as quickly as possible. In order for the plant to hit its sales projections, partial shipments are released. One department can improve its efficiencies by dumping on the next downstream department. Local optima rules.

Among the forces at work against the supply chain management team are inaccurate forecasts, variation in replenishment times, and the negative effects of using larger and larger batch size to optimize departmental efficiencies and reduce freight costs.

## The “Pull Distribution” Strategy

Consider the example from *It's Not Luck*. Take those 25 regional warehouses, each feeding 20 or more retail stores. It is impossible to forecast with any accuracy at the individual shop level. It would be better to forecast at the regional level. In fact, it would be several times more accurate. But is that good enough? The TOC Distribution Solution calls for a new warehouse at the factory or within the immediate area. The sales forecast at the company level will be much more accurate than even a regional forecast. Using a warehouse at the plant will actually allow for much smaller quantities to be held in order to protect sales.

In a pull approach, the end consumer is driving the supply chain. Dr. Goldratt has repeatedly made the argument that if the end consumer has not yet bought, then no one has truly made a sale. Local optima driven actions of simply shipping goods to the next link in the supply chain actually do more harm than good.



Often manufacturing facilities are measured by the dollar value of items shipped during a given monthly, quarterly or annual accounting period. Company policy is strictly adhered to during the first three weeks of the month. As the end of the period approaches, it seems that there is new found freedom in certain policies. Perhaps the company dictates that orders will be shipped only when 100% complete; that all items on a given sales order must ship together once all the line items needed for that order are finished, inspected and ready for shipment.

Ever ship a partial order? Nine out 10 times it is going to happen at the end of the month. Or quarter. Or year. Especially if the larger value items are ready and waiting for the availability of smaller ticket items. Well meaning employees will make a statement about this practice causing a significant increase in freight costs. What is the retort? “Not our concern.” The shipping department is measured by goods shipped; not by the increase in the cost of freight.

## Holistic Approach

What if every employee was measured by the progress of the whole entity, as defined by the accomplishing of goals set by the business owners? Unrealistic?

Let's look at the lessons of the case study in *It's Not Luck*. Dr. Goldratt is suggesting that we consider the

ramifications of all actions with regard to our supply chain. Is it possible to seek a procedure for our order fulfillment strategy that reduces finished goods inventory requirements and yet increases “due date performance”?

Is there an example of a publicly traded company that would serve to prove Dr. Goldratt’s claims? Is it possible to achieve such a “win win” solution?

### **Consider Apple’s Supply Chain.**

In 1997, Apple was turning inventory just 10 times a year. Dell Computer was turning inventory 40 times! The Apple “Think Different” slogan was alive and well and Tim Cook (whom Steve Jobs hired away from Compaq) was able to turn inventory over 180 times for the year 1998. According to the *IndustryWeek* article “What’s Really Driving Apple’s Recovery,” (*IndustryWeek* publication date: 3.15.1999) Cook was able to end December 1998 with just two days inventory on hand! Dell ended the month with seven days.

The Pull method does work. It is important to note that Dr. Goldratt was not involved with Apple’s turn-around. Logic works, regardless.

Some have discounted Goldratt's approach, simply because he used scientifically appropriate convention when he chose the name “Theory of Constraints.” Just like the Theory of Gravity, the word “theory” in no way means unproven or “pie in the sky.”

Apple and thousands of other organizations apply logic-based common sense solutions every day, proving that working theories not only exist, they work!

### **Summation**

The experience to be gained from *It’s Not Luck* for those dealing with supply chains can best be summarized by recounting an example of Dr. Goldratt’s love of the Socratic Method: Teaching by Asking.

- What to Change?
- What to Change to?
- How to Cause the Change?

In other words, what assumptions are wrong or no longer true in your organization's distribution model?



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