Improving Inventory Performance and Bottom-Line Profits

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Abstract. This paper presents a simple logic and technique for measuring inventory performance and managing inventory dollars. It shows how data in your current MRP, ERP or SCM system can be used more effectively to identify and prioritize improvement opportunities. It demonstrates successful strategies for inventory reduction like measuring performance by inventory segment and focusing on the dollars. This methodology was developed by 35 materials and purchasing managers to make the planner/buyer job easier and to help them reduce excess inventories, increase turns, avoid shortages, and improve company profits.

Introduction. It is interesting to note that most inventory performance metrics like inventory turns are dollar-driven, yet the systems used to plan and manage inventories, such as MRP and ERP, are all quantity-driven. Quantity-driven systems are necessary to make sure we have enough of the right parts at the right time but they aren't nearly as helpful in managing the inventory investments we make every day.

Regardless of the specific metric used, senior management measures our performance as inventory and supply chain managers in terms of dollars. Have you ever heard a CEO or a CFO say, "We have too many parts in the storeroom"? It is much more likely that they have said, "We have too many dollars tied up in inventory." Since top management measures inventory performance in dollars, shouldn't we be using tools that help us do the same?

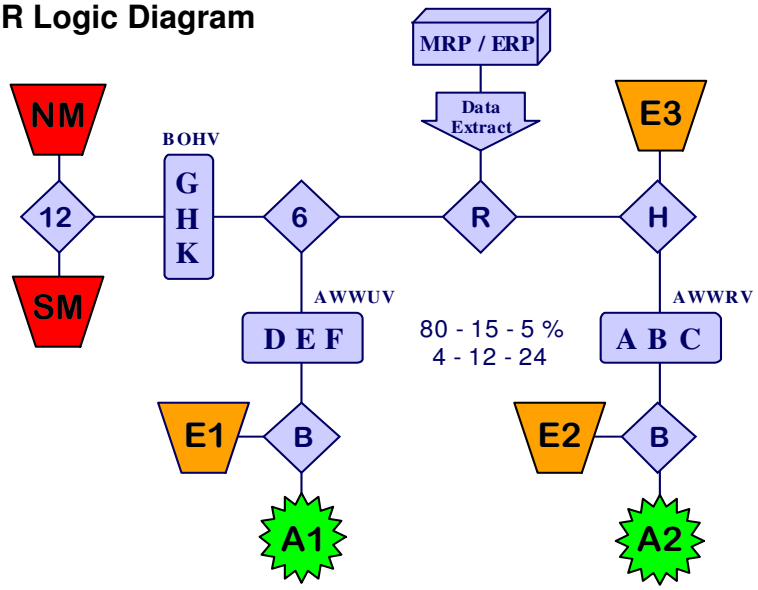
Perhaps it is time to consider a new way to manage inventory dollars and measure inventory performance. One that is dollar-driven yet within the control of the planner/buyer; one that considers both future requirements and past usage; one that distinguishes between good and bad inventories; one that measures performance by inventory segment; and one that provides tools to actually help us do a better job.

The Inventory Quality Ratio. A simple method of measuring inventory performance and managing inventory dollars has been successful in reducing inventories 20% to 40% by increasing the effectiveness of planners and buyers. This method is called the Inventory Quality Ratio (IQR). The IQR logic was developed collectively by the materials and/or purchasing managers of 35 companies over a two-year period and was used by them to reduce inventories a total of $500 million (average 25% reduction) while improving on-time deliveries to their customers. This dollar-driven logic has since been used successfully by planners and buyers in other manufacturing and distribution companies to reduce inventories and improve company cash flow and profits.

Using the data from any MRP/ERP system, the IQR logic divides inventory into three groups: items with future requirements, items with no future requirements but with recent past usage, and items with neither. As shown in Figure 1, the items in these groups are then stratified into

typical ABC-type classifications based on their future dollar requirements (ABC), their past dollar usage (DEF), or their current dollar balances (GHK), respectively. A target inventory level or rule is set for each item based on its classification. The balance on hand of each item is compared to the rule, and the dollars of each item are categorized as either Active (A1 or A2), Excess (E1, E2 or E3), Slow Moving (SM) or No Moving (NM). These are called the inventory quality categories.

Figure 1. IQR Logic Diagram



$$IQR = \frac{A1 + A2}{A1 + A2 + E1 + E2 + E3 + SM + NM} = \frac{\text{Active Inventory Dollars}}{\text{Total Inventory Dollars}}$$

The Inventory Quality Ratio is the ratio of the active inventory dollars to total inventory dollars. In a theoretically perfect situation (i.e., with no excess, slow moving or no moving inventories), the IQR would be 100%. Using very generous inventory rules of 4-12-24 weeks of supply for A-B-C items, respectively, the IQR for most of the over 400 companies we have surveyed is in the 30% to 45% range (with the exception of the automotive industry). This means that approximately 60% of the inventory dollars are tied up in excess, slow or no moving items. Further, we found that slow and no moving inventories account for about 10% of the dollars and that one category, Excess 2 (E2), typically accounts for 30% to 50% of the total inventory dollars. (Most companies using the IQR logic today are using rules that are much more aggressive, like 2-6-12 weeks of supply or even 1-2-6 weeks of supply.)

All of the companies surveyed were running MRP or ERP systems, and many were already employing lean manufacturing and pull principles, APICS certified planners and ISM certified buyers. The best-educated practitioners using the latest tools still found it difficult to manage inventory dollars. Their systems were providing lots of data for planning part quantities but they were missing the dollar focus. The IQR logic uses both future requirements and past usage, along with dynamic A-B-C classifications and a dollar focus to help planner/buyers:

- Quickly identify good, bad and excess inventories
- Measure performance by inventory segment (supplier, commodity, etc.)

- Set realistic reduction objectives and track improvement over time
- Avoid shortages of purchased parts and finished goods
- Drill down on problem areas and prioritize corrective action
- Enhance the effectiveness of ERP systems with a dollar focus
- Monitor inventory movement as the demands change
- Rebalance inventories among various supply chain locations
- Better manage financial reserves and avoid future write-offs.

Each of these capabilities will be demonstrated during the Conference session.

Strategies and Results. The balance of this paper presents three strategies for reducing excess inventories and improving inventory performance. It also shows the results achieved by three companies using the IQR methodology. The three strategies are as follows:

Identify and Reduce the Excess. The biggest opportunities for inventory reduction in most companies are with the Excess 2 inventories. These are parts for which there are future requirements but the balances on hand exceed the rule. The IQR logic identifies excess inventories according to the inventory rules (expressed in days or weeks of supply) that the planners and buyers have set for their particular manufacturing or distribution environment.

Excess inventories represent not only the biggest but also the best opportunities for inventory reduction. This is true for several reasons:

- Reducing excess inventories reduces inventory dollars on the balance sheet; so turns, return on assets and all of the financial ratios improve. But unlike scrapping obsolete inventories, there is no negative financial impact from inventory write-offs.
- Reducing excess inventories improves cash flow by deferring incoming purchases until the excess inventory is consumed and replenishment is actually needed. Generally, there is a dollar-for-dollar improvement in cash flow from reducing excess inventories.
- Very simply, the less excess inventories we have today, the less likely we are to have slow moving or obsolete inventories in the future, so it reduces future write-offs.

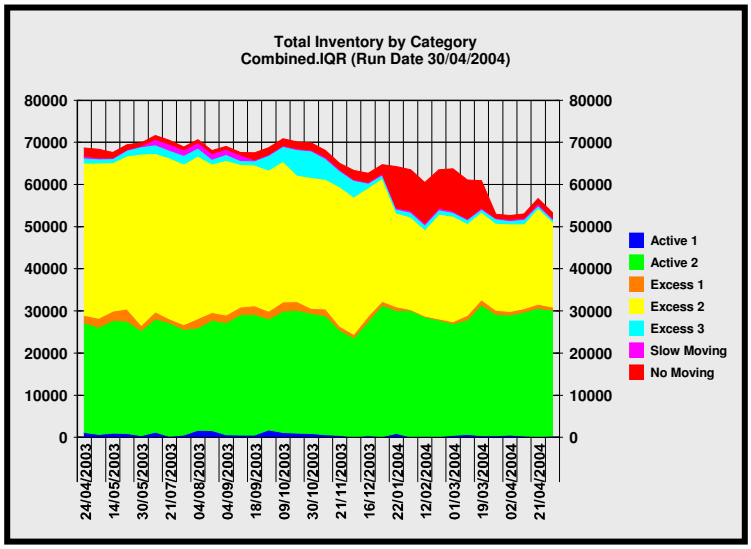


Figure 2. Excess inventory reduction. First year results by an international pharmaceutical company.

Figure 2 shows the results achieved by an international pharmaceutical company. By using the IQR logic to identify their excess inventory dollars they were able to reduce their Excess 2

inventories by €18 million or 46% in the first twelve months. They increased their IQR 17 points from 40% to 57%, increased their active inventories by €2 million, and reduced overall inventory investment by 22%.

Focus on the Dollars. A high-tech manufacturer was grappling with unprecedented technological changes and sales growth. Their inventory investment and obsolescence exposure were increasing while their turns were decreasing. They had recently implemented a new ERP system, were using the latest replenishment techniques, and had experienced planners and buyers. But as their Materials Director said, "The results just weren't there."

After seeing the IQR logic, they realized that they were spending too much time managing their C class items and not enough time on their A items. They were managing part quantities but not inventory dollars. They decided to use the IQR logic along with their new ERP system to manage purchased parts by focusing on the A and B items and developed a three-step plan. First they identified open purchase orders for parts they had too much of and rescheduled deliveries. Second, they disposed of, or found other uses for, their high value obsolete items. Third, they decided to fine tune the safety stock and order quantities in their ERP system with information from IQR so that their replenishment orders were in synch with their overall inventory objectives.

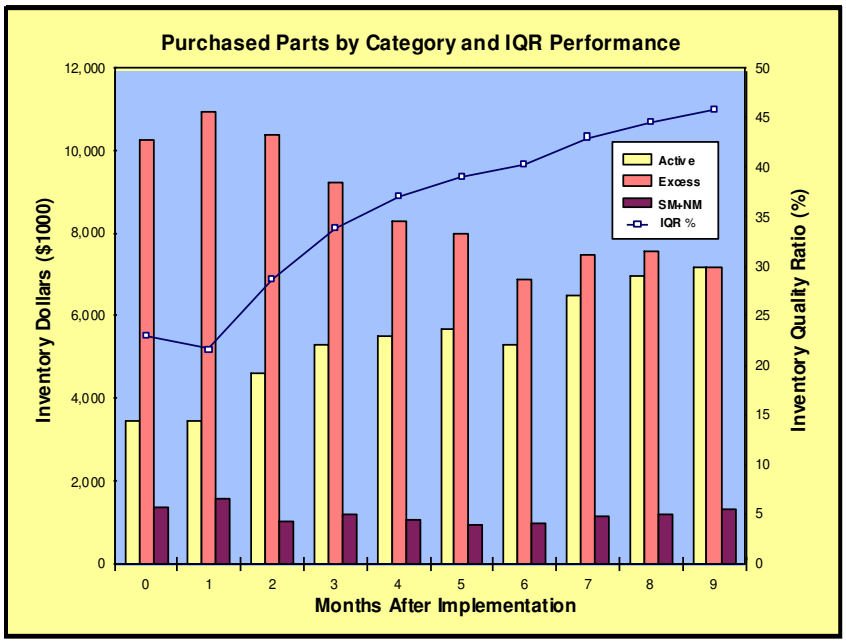


Figure 3. Purchased Parts Inventory Performance and Excess Inventory Reduction.

As shown in Figure 3, a major benefit was a $3.8 million (35%) reduction in excess inventories. This was accomplished while the planners and buyers were grappling with a 25% sales increase and the introduction of new product lines. Under these circumstances buyers are usually consumed by just getting the new parts in the door—their primary objective being to avoid shortages. By each buyer working only their three largest dollar opportunities each week, they were able to double their IQR% in nine months. The dynamic, demand-driven A-B-C classes in IQR helped them to work smarter, not harder.

Use Continuous Improvement. One well-known industrial products company started using IQR when it was already turning raw materials 30 times per year. They changed the

performance parameters from 4-12-24 weeks to a much more aggressive 1-2-6 weeks, which lowered their IQR and gave them new targets to pursue. This methodology helped them to increase their raw material turns to 42 times per year.

Whatever a company's current inventory performance may be, there are usually additional gains that can be made by setting new objectives and measuring individual improvement. Reports and charts have been developed using the basic IQR data to monitor and track inventory performance over time. The IQR methodology lets each planner or company set the performance parameters to match their specific business environment and to change them as the situation warrants.

Conclusions. Today's systems are quantity-driven yet senior management measures our inventory performance in terms of dollars. Inventory turns are widely used to report past performance but they are not useful for managing current inventories. We can do a better job of managing inventory dollars if we use a dollar-driven approach that will not only measure our performance but will also help us to be proactive about managing our inventory investments.

To be productive, employees need the right tools. And to be effective, they need the right focus. Planner/buyers have a difficult job, but we have not given them the tools or the dollar focus they need to be bottom-line oriented. Most of a buyer's time is spent fighting fires and getting the right parts in the door to avoid shortages. Seldom do they have the time or the motivation to reduce inventories.

The Inventory Quality Ratio provides an effective way to measure inventory performance and to manage inventory dollars. The technique and tools are available to help identify good and bad inventories, to assess performance by inventory segment, to prioritize reduction opportunities, to set meaningful inventory targets, to measure and track continuous improvement, and to make the planners' and buyers' jobs easier.

The IQR methodology is being used by companies in a wide range of manufacturing environments. These companies have improved their inventory performance, reduced excess and obsolete inventories, increased inventory turns, reduced write-offs, and improved their cash flow and bottom-line profits.