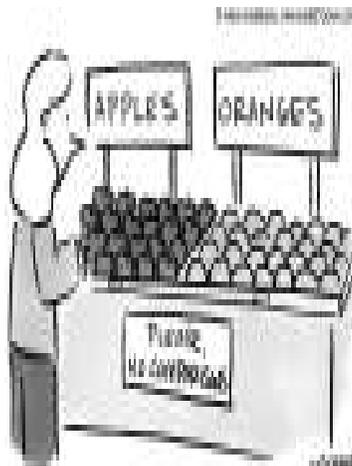


# MANUFACTURING MATTERS

## FALL 2007 FOCUS: BENCHMARKING



### BENCHMARKING TO IMPROVE PROFITABILITY

BY DOUG BOHN

The most successful companies are those that can deliver superior products and services at lower costs than their competitors. How do you know how you compare to your competitors when it comes to operational and productivity cost information? The only definitive way to understand that is through benchmarking.

Benchmarking is a process that has been in use for over 25 years. It was first used by Xerox when they realized that their Japanese competitors were selling copying machines at prices below Xerox's cost of manufacture. Xerox used benchmarking to make dramatic improvements in its operations and productivity by comparing its performance against their Japanese competitors. Then Xerox also went outside its industry to benchmark itself against other world class companies that exhibited superior performance in specific business processes. For example, they benchmarked their warehouse operations against LL Bean and their billing processes against American Express. In the 1980s, Xerox significantly improved its market share and profitability through benchmarking. Xerox was not alone, as other companies like Alcoa, GE, and Motorola all used benchmarking to deliver superior returns to their shareholders. Furthermore, Orr & Boss is aware of several leading chemicals and formulated product companies that regularly use the benchmarking process to set the strategic direction of the company.

#### Uses of Benchmark Study Results:

Companies can use benchmarking study results to:

1. Highlight areas of improvement and support their continuous improvement activities: Benchmark results will allow you to determine where your competitors are stronger. In this manner,

benchmarking can help you focus your manufacturing and technical resources in key areas where your performance may lag the industry. Thus, benchmarking can be used to allow you to "grab the low hanging fruit".

2. Develop manufacturing and marketing strategies: By knowing your position relative to that of your competitors, you will better be able to devise a manufacturing and marketing strategy to exploit your competitor's weakness in the marketplace.
3. Assist in scenario planning: Knowing the industry benchmarks will allow you to more accurately predict competitive responses. For instance, what will be the competitive response to price changes? Benchmark data will better enable you to predict these responses.

#### Benchmark Methodology:

In its most basic form, the benchmarking process consists of three phases: analysis of one's own organization, analysis of outside organizations, and implementation of process improvements based upon the analysis. These three phases can be broken down into seven steps.

1. Identify the benchmark needs: Benchmarking can be time and resource intensive and thus only those operations that are critical to the success of the organization should be benchmarked. For example, service levels, cycle times, and productivity measures are all metrics that can have a large impact on business results. A cross functional team can be used to determine those benchmark needs that are especially important.
2. Develop Performance Metrics: Before starting the data collection process, it is important to develop clear definitions of the metrics to be benchmarked. These definitions or standards will be used to

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*"If used properly, benchmarking can be a powerful tool that can and should be used more often in the chemicals industry." (Page 2)*

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judge your performance against the comparison companies. Successfully completing this step will help ensure that the remaining steps can be completed smoothly.

3. Understand your own performance (internal data collection): Before you can compare your company's results to other company's results, it is important to be sure that you understand your own performance. Having accurate and reliable operating data is an important step of the benchmarking process. Developing clear performance metrics (Step 2) will allow this step to go faster. It is important to note that it is not only important in this step to gather the data, but also to understand the business processes behind the data. Some sort of business process mapping or business activity flowcharting should be completed in this step.
4. Select Comparison Organizations: Companies can either choose direct competitors or best in class organizations that are outside of their industry. Most companies want to use benchmarking to understand how they compare to their direct competitors. However, some companies may want to go outside of their

industry to find the best in class performers. As previously mentioned, Xerox went outside of their industry and used LL Bean and American Express to benchmark their warehouse and billing processes.

5. Collect Outside Benchmarking Data: The data collection and analysis process can now begin with the outside organizations. It is imperative that the same performance criteria are used in this step as were used in Steps 2 and 3. Without "apples to apples" data, the comparisons will be meaningless.
6. Assess the Competitive Gap and Develop an Action Plan: Step 6 is where you make a direct comparison between your organization and the selected outside companies. This is the step where you assess the competitive gap and compare your business processes to that of the other organizations. Comparing the business processes will allow you to understand why the performance metrics are different and will help you develop an action plan to improve your own performance.
7. Implementation of the Action Plan: This can be the most formidable step in the entire process. This will likely require more time and re-

sources than the previous 6 steps. The benchmarking team formed at the beginning of the process typically drives the implementation process. The implementation plan will often result in changes to your company's business processes. These changes can be difficult and painful for the people that are used to doing their jobs in a certain way. Thus, it is important to get complete buy in from the organization. Also, the organization must have the skills necessary to make the changes quickly and permanently. Doing this requires knowledge of change in management techniques and the actual processes to be changed.

#### **Conclusion:**

There is no company that exhibits best in class performance across its entire organization. Thus, all companies can learn better ways of doing things from other organizations. If used properly, benchmarking can be a powerful tool that can and should be used more often in the chemicals industry. Orr & Boss is aware of several top performing chemical companies that continually use benchmarking to set the strategic direction of their company. Benchmarking is a well tested process to help your company improve its performance.

## **BENCHMARKING YOUR COMPANY'S SUPPLY CHAIN**

BY DOUG BOHN

Over the past decade or so, *Supply Chain Management* has emerged as one of the most critical business competencies to have across a broad range of industries. Orr & Boss recently worked with one North American industrial maintenance paint company that dramatically improved its customer service levels and profitability by focusing on enhancing its plant and supply chain operations. The CEO credits the company's transformation to "turning one of our biggest weaknesses – our supply chain – into a powerful competitive differentiator."

There are a number of critical supply chain metrics to benchmark yourself against. The key supply chain metrics that impact a company's profitability and balance sheet include service level, in-

ventory turns, cash conversion cycle time and overall supply chain costs. These are the key supply chain metrics that drive a company's share price and overall value. In addition to these, there are a number of other supply chain metrics that a company can track like Forecast Accuracy and Supply Chain Productivity. These are important metrics and can drive performance of the Key Supply Chain Metrics. However, by themselves, they do not directly impact a company's value and share price. The metrics discussed below are the key ones that senior executives in your organization should be concerned about.

#### **Key Supply Chain Metrics**

Service level, inventory turns, and the cash conversion cycle time are some of

the key supply chain metrics that world class companies track to measure their supply chain performance. Table 1 summarizes the industry averages of these metrics (See Table 1 on Page 3).

#### **Service Level:**

Service level is a measure of how well a company is satisfying its customers' needs. It is therefore perhaps the most important metric for a company to monitor. CEOs and supply chain managers understand that service level is a measure of how much business a company is losing due to supply chain issues. Based upon our decades of experience in this area, Orr & Boss' rule of thumb is that for every 1% increase

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**Table 1  
Business Metrics**

Supply Chain Metric	Coatings Industry Average
Service Level (OTIF)	80-90%
Inventory Turns	5.9
Finished Goods Inventory Turns	8.9
Cash Conversion Cycle Time	70 days

in fill rate, there is a corresponding 0.6% increase in sales. So in following this rule of thumb, if a company can increase its fill rate by 10%, sales should increase by 6%. Of course, perhaps it goes without saying that the inverse of this service level – sales relationship is also true.

Due to its strategic importance, best in class companies use the most difficult-to-meet standard for service levels -- On Time and In Full (OTIF). In using the OTIF standard, a company must deliver every line in a customer’s order by the agreed upon delivery date to score a 100% OTIF. So for example, missing just one item in an order is counted as a missed order. Thus OTIF is the highest standard and is a much more difficult metric to meet than fill rate. In certain formulated products industries, the OTIF average varies depending upon the segment but is generally between 80-90%.

**Inventory Turns:**

Inventory turns measure how fast a company cycles through its inventory. It is calculated in the following way:

$$\text{Inventory Turns} = \text{COGS}/\text{Inventory Costs}$$

Cost of Goods Sold (COGS) comes from the income statement. Inventory costs come from the balance sheet. Since inventory is on the balance sheet, driving it down reduces a company’s capital requirements and thus increases its Return on Assets (ROA). So for example, the average in the coatings industry is 5.9 turns, but there is a wide range of inventories. Orr & Boss know of companies with the number of annual turns as low as 4 and as high as 8. What this means is that some coatings companies are able to operate with about half the inventory of

their competitors. These are the lean companies that use their supply chain competence as a true competitive advantage.

**Finished Goods Inventory Turns:**

Finished Goods Inventory Turns (FGI Turns) metric is similar to the Inventory Turns metric but it focuses on finished goods inventory. The FGI Turns metric is a measure of how much inventory a company must carry to meet its customer’s order requirements. A low FGI Turns number may indicate that a supply chain has inefficient finished goods warehouses or a poorly optimized distribution network. The equation for FGI Turns is similar to the inventory turns equations and is given below:

$$\text{FGI} = \text{COGS}/\text{Finished Goods Inventory Costs}$$

The coatings industry average for this metric is 8.9 but there is a wide range of FGI turns, ranging from about 6.5 to 14. Again this indicates that successful companies are able to meet their customers’ requirements with less than half the finished good inventory than some of their competitors.

**Cash Conversion Cycle Time:**

The Cash Conversion Cycle Time metric is a measure of how fast a company is able to convert its investment in raw materials into revenues. In other words, it is the amount of time between when a company pays for raw materials (to satisfy a particular customer’s order) to when it receives payment from that customer. A long cash conversion cycle time effectively means that a company is letting customers “borrow” money for free. Companies can reduce

their Cash Conversion Cycle Time by decreasing the days outstanding of their accounts receivables, decreasing inventory levels, and increasing the days outstanding of their accounts payable. Companies with low cash conversion cycle times have low working capital requirements and thus a higher Return on Assets (ROA). The average Cash Conversion Cycle Time in the coatings industry is 70 days. The equation for calculating Cash Conversion Cycle Time is:

$$\text{Cash Conversion Cycle Time} = 365/\text{Inventory Turns} + \text{Days Outstanding of Accounts Receivable} - \text{Days Outstanding of Accounts Payable}$$

$$\text{Days Outstanding of Accounts Receivables} = (\text{Account Receivables})/(\text{Annualized Revenue}/365)$$

$$\text{Days Outstanding of Accounts Payable} = (\text{Account Payables})/(\text{Annualized Material Costs}/365)$$

**Conclusions**

The benefits of superior supply chain management are well documented. Recent benchmarking studies have strongly supported that companies with best-in-class supply chains spend significantly less on the supply chain and have higher profits than their direct competitors with inferior supply chains. Results also point to much faster growth rates for those companies with excellent supply chains.

World class companies fully understand that a supply chain can be a source of competitive advantage. Therefore, CEOs and supply chain managers work tirelessly to improve their supply chain efficiency. Service Levels, Inventory Turns, Finished Goods Inventory Turns, and the Cash Conversion Cycle Time are some of the *Business Metrics* that affect a company’s sales volume and working capital requirements. These metrics have a large impact on a company’s Return on Assets (ROA) and thus share price and overall company value.

**PREVENTING COMMON PITFALLS WHEN BENCHMARKING** BY KEVIN REID

Benchmarking can be a very useful tool for companies. Benchmarking compares metrics of one company with the metrics of other similar companies. Process benchmarking compares processes between companies to explain how companies have been

able to achieve their results. While benchmarking is a very useful tool, in order to get the best results, it is necessary to identify the pitfalls of benchmarking and avoid them.

### **Key Pitfalls**

Benchmarking pitfalls fall into two categories, execution and interpretation. Execution pitfalls occur during the design and data collection phases of a benchmarking project. Interpretation pitfalls occur after the data has been collected and is analyzed. The balance of this article suggests some things companies can do to avoid the most common pitfalls.

### **Execution**

#### **Identify benchmarking needs and how the data will be used**

The first step in any benchmarking program should be to define how the data will be used and prepare a scoping document to prevent the collection of unnecessary data. Remember, that for every piece of data that you measure in your own organization, similar data must be measured in the other benchmark companies.

Limit the benchmarking measures to those that are directly related to your concerns. If your concerns are cost related then there is no point in benchmarking service levels or quality.

#### **Have a plan**

Benchmarking projects can be expensive, can consume enormous amounts of resources, and can drag on for months if care is not taken. For these reasons, having a plan with a timeline is essential. The plan should show each step in the process and an expected timeline. Additionally, the plan should show who is responsible at each step in the process. Having a plan will avoid duplication of effort or missing critical steps in the process. Keeping to the timeline will prevent the project from dragging on.

#### **Define Metrics**

This is the most important step in the entire process. You cannot assume that any other company or even any other plant within an organization measures performance the same way that you do. For example, something as simple as measuring direct labor hours can be difficult because different companies define

the functions that are considered direct labor differently. Each definition needs to be as detailed as possible. In the example above the following would have to be defined:

1. The positions that are considered direct labor.
2. Are over time hours included in the calculation?
3. How are temporary employees included?
4. How are people who transfer in or out of a "direct" position tracked?
5. How do you count the hours for a position where one company does the function internally and another has an outside firm do the work? An example of this would be janitorial work.

Don't assume that everyone uses the same terminology. For some companies, direct labor would be those people that actually handle the product. In other companies, direct labor would include all those who are paid for overtime work. Having good definitions in the beginning will prevent having to go back and collect information over and over again because companies differed in their definitions.

#### **Selecting Comparison Organizations**

There is no such thing as a company that is exactly the same as your company. Look for companies that are similar in nature. If your company sells to mass marketers, and you sell locally to small retail outlets, there is little point in benchmarking distribution systems. However, it is sometimes valid to compare business processes within diverse organizations. For example, it is perfectly valid to compare an account receivable function in a small company with the same function in a much larger company. The basic requirements are the same for both.

#### **Collecting Outside Data**

Collecting data in companies other than your own can be difficult. Most companies hold their operational data very close to their chests. Sometimes it is possible to become part of a benchmarking study either through an industry trade group or through a consultant. In this way, the data remains confidential but best in class and industry average figures can be obtained without revealing any of the individual figures provided by the companies. Be wary of data that is published without

knowing how the data was defined.

### **Interpretation and Analysis**

#### **No Action Plan**

Many benchmark projects are completed and sit on a shelf with no action ever taken. As part of the very first step in the benchmarking process, you should have defined how the data was going to be used to improve your operation. Develop an action plan to improve those areas where you are not best in class, and even if you are best in class, remember that those that are not best in class are going to improve. The action plan should include the actions to be taken, an expected completion date, and a person who is responsible for making sure the action is done.

#### **Understand The Metrics**

Very often someone who is not intimately involved with the benchmarking process will decide that the data is not good or that it does not reflect their perception of things. It is important to listen to their concerns and explain how the data was defined and collected and why the data is a good comparison. It only takes a single person to poison an entire organization against the results of a benchmarking project, unless quick action is taken. Of course, if there is a problem with the data it must be corrected. It's absolutely critical that calculations be checked, rechecked and checked again for accuracy. It only takes one wrong calculation or conclusion to ruin the entire benchmarking effort.

#### **Don't Look At Data In Isolation**

It is important to look at the data as part of the whole story. The data and process metrics alone cannot tell the entire story. Interpret the data and use it with outside knowledge of the industry. Understand that outside influences such as regulatory agencies can have a huge affect. As an example, if all of your competitors are selling a particular type of product in one of your markets, don't jump to create a product without considering the effects that environmental regulations might have on your success and the longevity of the product in that market.

Benchmarking can be a very useful tool in determining how your company compares to others in similar businesses, but to get a truly good comparison, it's important to avoid the common pitfalls.

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