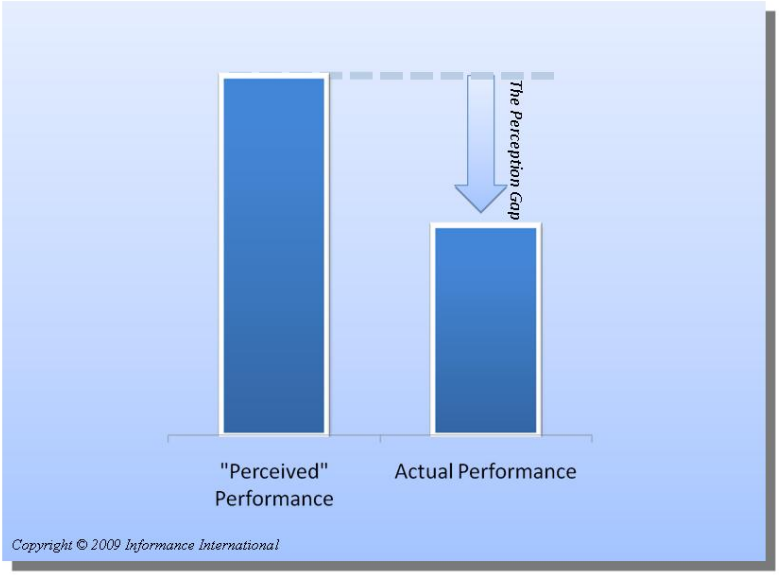
Closing the Perception Gap

Nearly every manufacturing company uses key performance metrics (KPIs), but few manufacturers really understand how these metrics relate to each other. Understanding the interactions between metrics and their associated effects can lead to a better understanding of what drives sustainable improvement. Most of the time, plants and companies sense that there is room for improvement, but determining a set of actionable diagnostic metrics is more elusive. What is a reasonable expectation for the improvement effort? Operational silos, confidentiality, competitive advantage strategies, and differing manufacturing approaches cause manufacturing professionals to resist looking outside their own plant for additional insight.

For many companies, benchmarking manufacturing performance in relation to actual practices has been key to driving and sustaining higher performance levels. When enterprises benchmark manufacturing performance and examine corresponding strategies of best-in-class performers (lines, plants, and even other companies), they close the gap between today’s performance and what could be. Benchmarking activities can be as simple as comparing shifts, lines and product categories. But when the benchmarking effort spans entire plants throughout the enterprise, and leverages insight from across the manufacturing community, there is a shift in perception about what is realistic and possible.

Figure 1 – The Perception Gap



A Foundation for Benchmarking

Examining performance metrics monthly, weekly or even daily is not enough. While successful benchmarking begins with a systematic approach to collecting information about performance, the key is to transform that data into insight. For example, understanding a metric such as Overall Equipment Effectiveness requires an examination of diagnostic components beyond availability, performance and quality. This enables management to formulate very specific and realistic action plans in context with existing practices.

What then are the pieces of insight that might be missing, those that are key to the benchmarking effort? The answer is a more revealing layer of metrics tied to manufacturing losses. Some lean practitioners call them the "big six loss buckets."

1. Shutdown losses (preventative maintenance, breaks, lunches, training exercises, and other miscellaneous production stops)

2. Operational downtime (adjustments or related equipment losses that are not direct failures during scheduled run time)

3. Changeover (changes in material, equipment or product)

4. Equipment failures (equipment unexpectedly becomes dysfunctional or inoperable)

5. Process failures (changes in defective raw materials, operating errors, leaks or

spills, supply and demand of key packaging material)

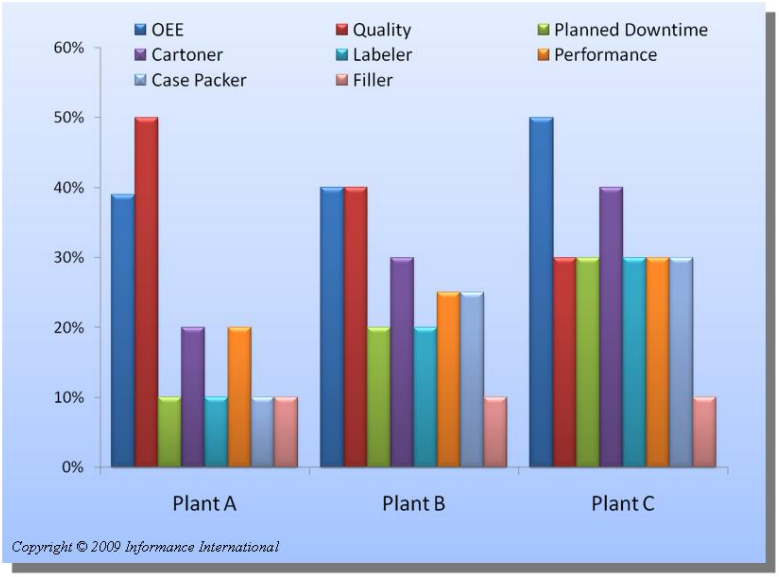
6. Production adjustment (time spent on changes in supply and demand that requires adjustments to production plans and demand of main product material)

These loss metrics provide granularity, particularly when comparing different industries. It enables manufacturers to understand the nuances of why one metric result may differ from another. The outcome is a more credible set of benchmark information that can be used to compare performance and best practices across industries.

Closing the Gap with Internal Benchmarks

When a company uses benchmarking across the enterprise, it builds a more realistic foundation for improvements. Even when products are somewhat different from plant to plant, or among the various lines, the company sets the stage for operational excellence. Why? By looking at one line's or one plant's metrics in context with other lines or plants, management can spot performance gaps. This allows plant management to leverage the experiences of one group to help another. In other words, rather than each group trying to solve a similar problem, they eliminate the delay that "trial and error" creates, and skip directly to a solution. It's the same as "learning from another's mistakes", but in this case it's "learning from another's success." It's almost always the case that one shift, line, or plant has overcome a challenge that another struggles with.

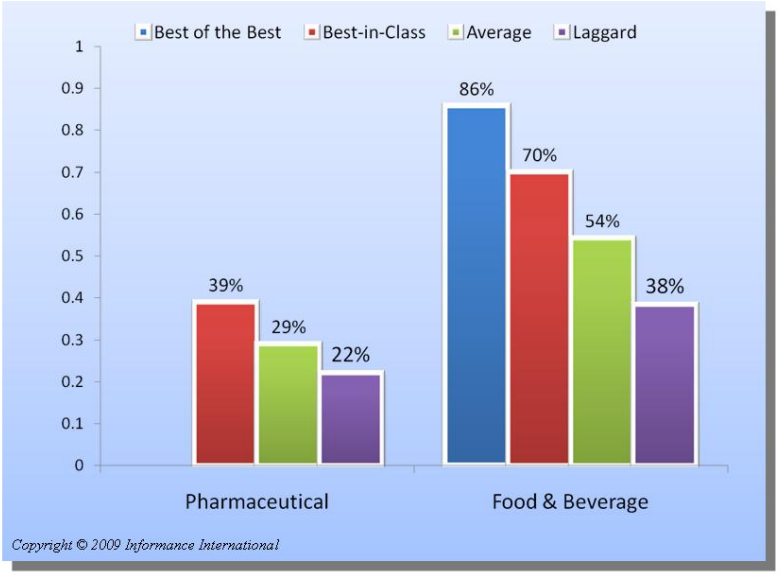
Figure 2 – Benchmark Plant Facilities Across an Enterprise



Building on this concept, the manufacturing company will look to the performance of others across the industry to gain insight on what is realistic and attainable. This might mean going directly to another firm to share and exchange insights.

More practical, however, and much more effective is viewing the industry as a whole. An aggregated view provides rich insight, and the ability to categorize performers as best-in-class, average, and poor. In this context, the individual manufacturer begins to see more clearly which areas may offer opportunities to impact overall performance.

Figure 3 – Benchmark Industry Against Industry

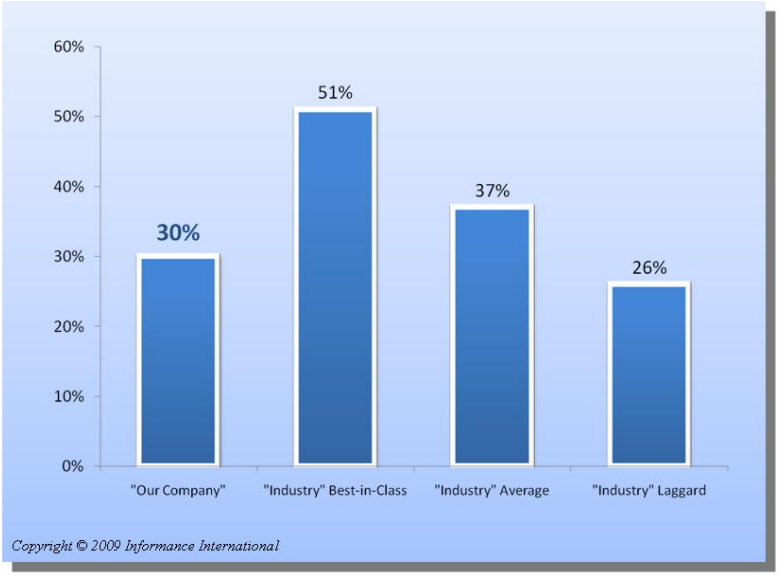


Closing the Gap by Looking To Other Industries for Insight

It's natural to look to across the same industry for insight about manufacturing performance. On the other hand, it's reasonable to expect that typically unrelated industries have insights to offer. For example, a pharmaceutical company might look first to its own industry for benchmark insights.

But, when there are similar processes taking place along the manufacturing line, like packaging, it is helpful to look to another industry - in this case, consumer goods, for even greater insight. In one recent benchmark study by Informance, "average" pharmaceutical manufacturers seemed to trail "best-in-class" performers in their own industry by a mere ten percentage points. However, when compared to performance in consumer goods, there was an astonishing gap in performance, even between best-in-class pharmaceutical companies and average CPG companies. Best-in-class pharmaceutical manufacturers, in fact, were only a very few percentage points ahead of the poorest performing group of CPG manufacturers. Considering that pharmaceutical companies typically have newer machinery than most CPG firms, the gap becomes an area for concern and further exploration. While compliance issues likely contribute to the shortfall, it cannot explain the significant disparity. Therefore, this avenue merits further investigation.

Figure 4 - Benchmark Enterprise Against Same Industry



With each new perspective, it becomes clear which areas teams should explore for improvement opportunities, and in which areas they already perform well. As the frequency of internal benchmarking increases, so does the velocity of the improvement initiative. Companies that make an effort to discover the underlying reasons behind their KPI results have a better chance of improving performance. Those that systematically measure KPIs and the underlying indicators typically achieve quantum leaps in productivity. Enterprises that close the loop by benchmarking manufacturing performance within and across facilities on an ongoing basis often become leaders in operational excellence. They usually break down the barriers of their own plants and seek to compare their performance against others in their own industry and other manufacturing industries. These best-in-class performers achieve their capacity goals, and reduce inventory and labor costs without capital investment. They leverage the proven best practices of other high performers.

Closing the Gap with Survey Data

Survey-based benchmarks provide the best estimation of performance "perception." Perception is important because it forms a basis of understanding, and in some cases may be the only information available. When comparing "best in class" benchmarks to the perceived norm in an industry, there is a basis to understand what it takes to close the gap. Context is what is important when understanding surveys.

In one recent survey on lean manufacturing, over 90% of respondents indicated that they were pursing Lean Manufacturing. However, when asked if there were dedicated roles and titles for people involved in the lean initiative, the result was

less than 50%. Continuing on, the survey asked how many had financial objectives associated with the lean initiative, the result dropped even further, to less than 30%. Sufficient context is critical to be able to evaluate accuracy.

Closing the Gap with Rich Real-Time Information

Internal benchmarking is an excellent place to begin a benchmarking effort. From there, companies typically move on to industry and cross-industry benchmarking for even greater insight. However, there are a wide variety of benchmark methodologies, through analyst firms, industry associations, and even consulting and technology companies. Real-time manufacturing intelligence benchmark studies are an example of research being conducted on a very broad and deep scale. One company, Informance International, known for measuring and analyzing manufacturing performance on actual (real-time) production, and delivering actionable intelligence across plant facilities and throughout enterprises, has conducted landmark benchmark research. Manufacturing companies routinely leverage this information as the standard to evaluate their own performance.

Conclusion - Closing the Gap from Perception to Reality

Performance expectations for a production line, plant or industry are formed from past performance and perceptions about what constitutes manufacturing excellence. Survey based benchmarks must be carefully considered for context. Internal benchmarking provides a credible set of standards for "peer performance" but will limit the ability to explore out of the box thinking on what "best in class" really looks like. Real time manufacturing intelligence benchmarks provide the most robust information and insight, particularly when data can be organized to assess performance gaps across manufacturing industries. All of these techniques can be used together to fill the void between perception and reality, and formulate a set of goals that can be attained along the way.

Bringing It All Together At Solutions2.0

At this year's Solution2.0 conference, a special benchmarking session will cover these topics and provide a framework for "closing the perception gap" in benchmarking.

The "Overall Equipment Effectiveness, the Reliability Index and Finding the Hidden Plant Benchmarking Review" workshop takes place on November 18, at 3:30 pm. The session will include the results from a recent benchmark study leveraging information from over 1000 global manufacturing operations across consumer packaged goods, food and beverage, pharmaceutical, chemical, and industrial. This blind benchmark study covers key metrics around capacity, throughput, downtime, and quality.

Prior to Solutions2.0, Reliabilityweb.com and Informance will conduct a survey of registered conference guests about performance perceptions. Guests are encouraged to attend the OEE & Reliability Index Benchmark session, during which delegates will receive an exclusive executive report they can leverage within their company after the conference.

To participate in the survey, please click here

About the Author

John Oskin has more than 20 years' experience in manufacturing, lean manufacturing, design for manufacturability and six-sigma methodology. Oskin spent 12 years driving manufacturing excellence at General Electric, where he doubled the output of one facility and influenced GE improvement initiatives globally. In 1995 he leveraged his reputation as a thought leader in manufacturing performance and founded FactoryWare, a company dedicated to helping global manufacturers improve line performance. He grew FactoryWare into a leading enterprise manufacturing intelligence firm, known today as Informance, an acknowledged leader in helping manufacturing companies accelerate operational performance initiatives, drive operating strategies for manufacturing performance. John remains with Informance as a guiding presence and to give customers and the manufacturing community access to his broad expertise. A graduate of the University of Louisville in mechanical engineering, Oskin publishes benchmark study reports by manufacturing industry every 18 to 24 months.

Article submitted by John Oskin

Executive Vice President, Informance International
