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The Dangers of Benchmarks and Trend Analysis

Michael Lamoureux, Ph.D.
Sourcing Innovation
http://blog.sourcinginnovation.com

With the increase in predictive (and in some companies prescriptive) analytics, benchmarking and trend analysis is on the rise. On the surface this is a great thing, as this means organizations are collecting considerably more data then they have in the past. More data generally allows decisions to be made using hard, objective analysis versus soft, subjective analysis, and fact-based decisions are generally better than gut-based decisions.

However, as much of a blessing as benchmarks (and trend analysis) can be in an organization that has long been bereft of good data, they can also be a bane. Benchmarks, unless carefully prepared, and much more carefully consumed, come burdened with as many risks as they do rewards. The goal of this paper is to help you identify these risks and what other options are available to you.

The goal of this paper is to help you identify the risks of benchmarks and trend analysis and what other options are available to you.

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Benchmarking and Trend Analysis

Benchmarking is the process of tracking and comparing one's business process and performance metrics to one's historical business process and performance metrics, to a competitor's business process and performance metrics, or to industry average business process and performance metrics. Common dimensions typically measured by benchmarks are quality, time, throughput, cost, and spend. Trend analysis can then be defined as analyzing these benchmarks over time to estimate, or predict, future values.

Benchmarks are performed for a variety of reasons, which can include, but not be limited to, performance analysis, progress analysis, and opportunity analysis. A benchmark can allow an organization to determine how well it is doing with respect to a process or category, how much progress an organization has made with respect to a goal, or where the organization could improve its operations to gain a valuable benefit.

Performed properly, a benchmark can identify not only where an organization can improve, but what it could do to improve. Consider the following internal benchmarks against historical data:

Category	**Metric**	**Org. Benchmark**	**Prior Year**
Performance	On-time Fulfillment	75%	80%
Rate of Progress	ERP Migration	15%	35%
Opportunity	Service Spend	15% Ext Spend	10% Ext Spend

We see the opportunity to improve in each case. If on-time fulfillment is decreasing, then there is definitely something the organization can do to improve fulfillment as the organization once performed better. If the ERP migration project has slowed down significantly year over year, with a rate of progress less than half of that achieved in the previous year, then there is also something that could potentially be done to get the migration project back on track and speed up implementation. And if service spend has increased 50%, then there is obviously an opportunity to reduce it either through a strategic event or through the acquisition of more internal, employed, talent.

Performed properly, a benchmark can identify not only where an organization can improve...

Now consider the following internal benchmarks against industry averages culled from research groups, professional organizations, and analyst organizations that are composed of data from your organizational peer group (including your direct competitors):

Category	Metric	Organizational Benchmark	Peers
Performance	Invoice Payment Time	45 days	30 days
Progress	YoY e-Invoice Conversion	20%	30%
Opportunity	Early Payment Discounts	1%	3%

We see a potential opportunity in each case. The benchmarks illustrate that, with appropriate changes to processes and platforms, the invoice payment time could likely be reduced by a third, the supply base conversion to e-Invoice submission could be sped up, and, possibly related, to the first two metrics, there exists the possibility to receive more supplier discounts with early payments (but more investigation is definitely required). While every organization, and situation, is different and there are no guarantees that an organization could do as good as the industry average, when the industry average, independent of organizational metrics, is 50%, or even 15%, better, there's often a pretty good chance there's something the organization can do.

...not all perceived opportunities are real opportunities.

But not all perceived opportunities are real opportunities, some are, speaking scientifically, false positives. And, more importantly, there are also false negatives. Sometimes a benchmark will give an all-clear green light when, in fact, there is a significant opportunity or issue not being investigated. In our next two sections we will discuss some of the dangers of internal benchmarking and external benchmarking.

The Dangers of Internal Benchmarking

There are a number of dangers associated with internal benchmarking, but three of the biggest are:

- Hidden Opportunities (due to false negatives)
- Missed Opportunities (due to lack of knowledge)
- Complacency (due to lack of insight)

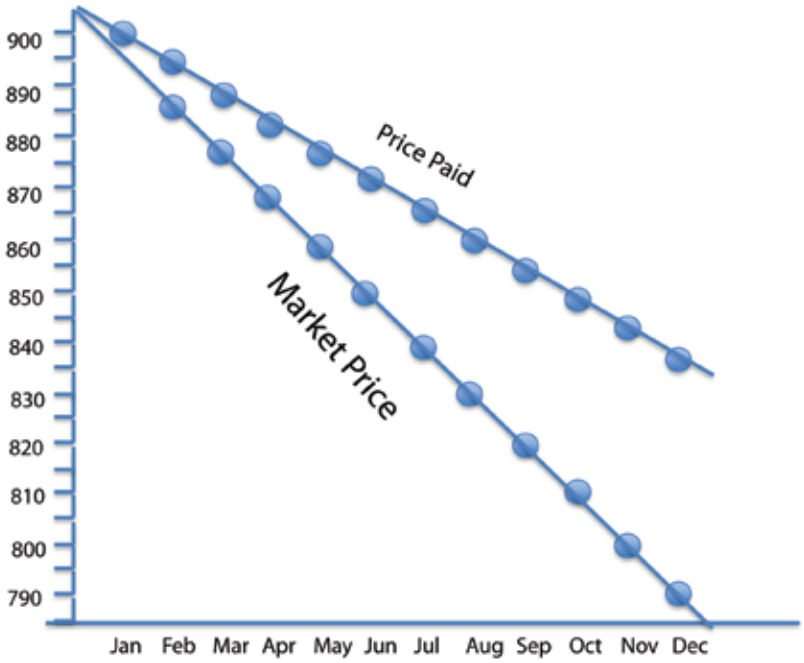
We will give an example of each internal benchmarking danger to drive the point home.

Hidden Opportunities (due to false negatives)

Benchmarks can hide many savings opportunities. For example, consider the following price analysis on the standard enterprise desktop system over the course of a year.

As per the below graph, the system has decreased in cost approximately 0.5% every month, which looks great considering that, over the course of the year, the system price has decreased 6%, which makes it look like the vendor is honouring it's best price contract. However, if the Sourcing team does not have any IT market expertise, it might not know that the average depreciation for IT systems of this nature is 12% to 18% a year and that an easily obtainable GPO benchmark pegged the average price decreasing about 1% a month and 12% over the course of the year, as follows.

Average Depreciation For IT Systems



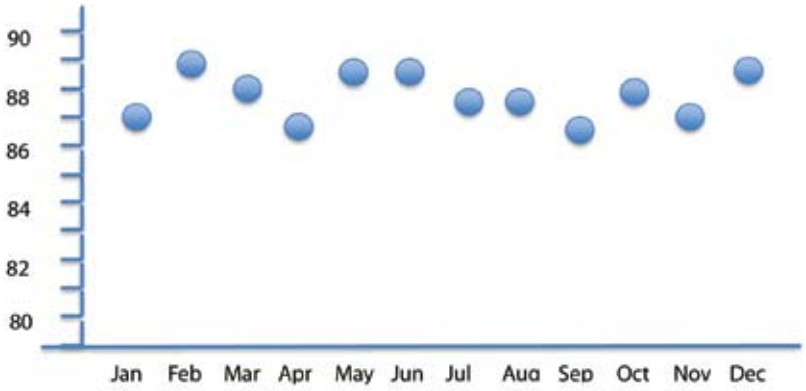
... If the Sourcing team does not have any market expertise, it might not know the industry average depreciation

If the organization bought, on average, 1000 systems per month as part of its staged global national upgrade process, it lost at least $5000 a month on hardware costs, which is pretty nominal, but that's $60,000 over the course of a year, which is the salary of another help desk / installation resource. Even tiny drips can eventually fill a large pool. (A lesson that the Sourceror's Apprentice will always remember.)

Missed Opportunities (due to lack of knowledge)

Benchmarks can hide many process improvements. For example, consider the following fulfillment time analysis from the China factories (on the Shanghai to San Francisco trade lane) which make traditional CPG goods (such as toys, low-end electronics, and press-board furniture) on demand and which ship using slow ocean freight subject to a 90 day delivery guarantee.

Fulfillment Time Analysis - (90 day delivery guarantee)



As per the above graph, it looks like everything is going just fine, but 90 days is a long time if demand for a product (line) unexpectedly takes off and your competition is getting their on-demand (and custom-manufactured) goods from Shanghai to San Francisco in 50 days or less (as they are using carriers who run more modern container ships that travel at an average of 20 knots, and get port to port in 40 days instead of the 60+ days that it takes your carrier's ships to travel because they are less fuel efficient and burn way too much fuel if they travel much faster than 12 to 15 knots). What would be the impact if the average delivery time was cut by 40 days?

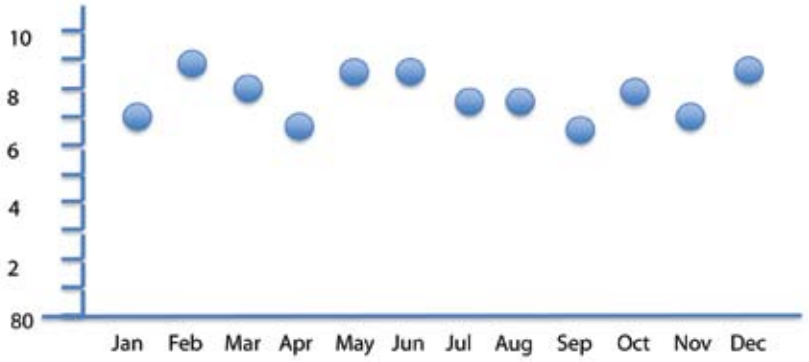
If the benchmark didn't show all green, an ambitious analyst would look at the stock-out history for product lines coming from China and identify all stock-outs less than 40 days, which could theoretically be significantly reduced, if not eliminated, if the delivery time could be reduced by 40 days. If the company's average stock-out rate on customer orders is 10% but 6% of those orders are received less than 40 days from expected shipment delivery, then there is the potential to reduce stock outs by up to 60% with faster fulfillment times. Even if the freight costs increase slightly (as the ships need to burn a bit more fuel, or at least burn more expensive higher-octane fuel), or production costs increase slightly (as the factory might have to work double shifts occasionally), it's worth investigating since freight costs are a small percentage of the overall costs and small production cost increases in low cost countries can be negligible as well if sales increase significantly.

Benchmarks can hide many process improvements....

Complacency (due to lack of insight)

Benchmarks can also hide the potential for performance improvements. The flip side of supplier fulfillment time is customer order delivery time, and benchmarks can also hide issues and opportunities here. For example, an annual benchmark might show an average monthly customer order fulfillment time between 7 and 9 days, as follows.

Average Order Fulfillment Time (days)



Since this is under the organizational goal of 10 days and quite good considering a central warehouse is serving all of North America, an analyst might be tempted to overlook it, but this doesn't mean that things can't be improved. What if the average delivery time could be reduced 30% to 40% with cross-docking and drop-shipping, or a mere 3 days was shaved off the average delivery time? What would that do to orders?

If an ambitious analyst ignored the benchmark and instead collected Point-of-Sale data from its three biggest retail customers with regards to stock-outs, and found that, for the top ten product lines, retailers experienced an average of 1 stock-out every two months that lasted 3 days, she might be inclined to dig further.

Why? If the company was primarily selling household goods and low-end electronics where customers need, or want, the item now, and generally aren't willing to wait to get exactly what they want (as they are with an automobile or high-end electronics product such as their home theatre that they only replace every few years), then it would be obvious to the analyst that the retail customers could definitely have sold more units if they did not have stock-outs,. It then follows that the organization could have sold more units to the retail customers if the organization could have delivered faster since each order delivered would sell out faster than the retail customer expected from an initial demand analysis, prompting the retail customer to order more. Thus, if a detailed analysis found that the stock-outs represented a considerable

An analyst ignoring the benchmark and collecting Point-of-Sale data instead, might be inclined to dig further.

sales loss, it's definitely worth figuring out if the organization can get its products to its retail customers even faster, regardless of whether or not current delivery commitments were being met. For example, if a detailed analysis indicated that stock outs were costing the organization 5% of the potential sales opportunities on the top 10 product lines, preventing even 60% of these stock-outs could be huge if the top 10 product lines represented 100M in sales! More precisely, it's a 3M opportunity.

These are just a few of the dangers of internal benchmarks, but enough to demonstrate that benchmarks and trend analysis don't necessarily find all the problems, and might even hide some of the problems that exist. But it's not just internal benchmarks that are dangerous, even external benchmarks against industry data can be devastating if improperly interpreted and used.

The Dangers of External Benchmarking

There are a number of dangers associated with external benchmarking, but three of the biggest are:

- Wasted Years (due to lack of validation)
- Innovation Stunting (due to lack of expertise)
- Blind Spots (due to lack of platforms)

Again, we will give an example of each benchmark danger to drive the point home.

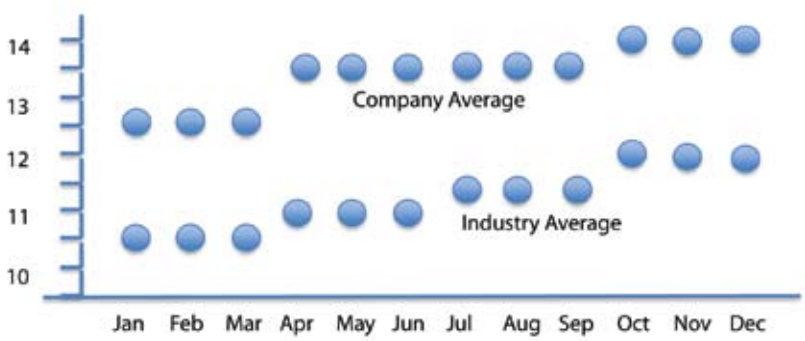
Wasted Years (due to lack of validation)

A benchmark against a market average could uncover a spend differential (per standard unit of measurement) so large that an analyst would assume it must be real and spend weeks, months, or even years trying to uncover the business model that will allow the company to realize that spend baseline, and, as a result, considerable savings, not realizing that something distinct about his company, and only his company, prevents the company from ever realizing that spend baseline.

External benchmarks against industry data can be devastating if improperly interpreted.

For example, consider the following graph which plots the average price paid per hour for a contingent labour warehouse worker by the company (top) against the industry average for the organization (bottom) .

Contingent Labour Costs (price per hour)



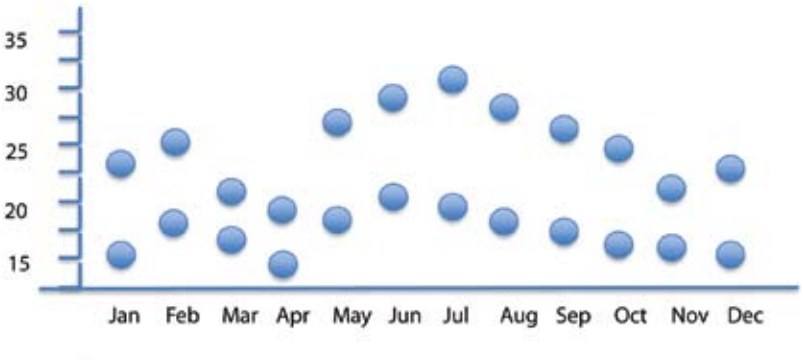
Looking at the above graph, an analyst might be swayed to believe that there must be a savings opportunity in contingent labour because the organization is spending, on average, 20% more than its peer group, which says it is likely organizations out there are spending 30% (or more) less than the organization (because the benchmark is an average). And while there are organizations out there spending 20%, and even 30% to 40% less, this doesn't mean that the organization will be able to save even a single penny. If the company's warehouses are in California, Massachusetts, and New York, which have state level minimum wages that are approximately 30% more than the federal average, it's not going to have a lot of wriggle room compared to competitors who maintain their warehouses in states which only mandate the federal minimum wage of $7.25.

Something distinct about a company may prevent it from ever realizing a particular spend baseline

Innovation Stunting (due to lack of expertise)

A benchmark against a market average could show that the organization is doing considerably better than its peers against a relevant metric, leading the organization to become complacent when, in fact, it still has a large opportunity in front of it. Take, for example, the sustainable energy utilization by the company. The organization might benchmark its performance and find that while its peer group is using between 14% and 21% (bottom) over the course of a year, it is using between 19% and 31% (top), and, in it's view, making considerable progress, as per the following graph.

Sustainable Energy Utilization

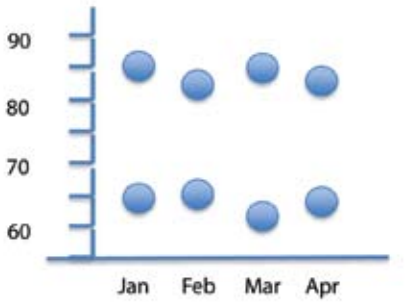


But what if the organization's factories are in locales where daylight hours are plentiful year round and the average number of sunny days is high. It might be the case that the organization could increase it's percentage of sustainable energy usage (from solar energy) by over 10% for a negligible cost increase. Given that the price of coal, oil, and natural gas is going to rise again, because these prices always rise over time, moving to sustainable energy is a great long-term investment.

A benchmark showing a company in the lead can prevent it from questioning whether it is the correct benchmark to begin with.

Blind Spots (due to lack of platforms)

A benchmark against a market average that shows the company considerably in the lead can prevent an organization from questioning whether or not it is even the right benchmark to begin with. For example, let's say the organization is tracking the percentage of invoices it receives electronically (top) and finds that it is receiving, on average, 20% to 30% more electronic invoices than its peer group (bottom), as follows.



It might believe that it is doing great and not even ask how many of these electronically received invoices are electronically processed. A leading organization not only receives at least 85% of its invoices electronically but automatically processes at least 85% of those without any manual intervention. Manual invoice processing is a tactical Procurement task that adds absolutely no value whatsoever. So if it is only processing 50% of invoices automatically, when it should be processing over 70% automatically, because a large number of invoices are coming in as PDFs and image files instead of EDI or XML formats that can be automatically validated and processed, the organization is not doing very well at all as it's not getting the efficiency out of its e-Invoicing solution that it should be.

These are just a few of the dangers of external benchmarks, but enough to demonstrate that benchmarks and trend analysis don't necessarily find all the problems, and might even cause the organization to overlook the fact that the benchmarks are ill-defined to begin with.

Avoid the Dangers with the Strategic Sourcing Lifecycle

By now you should be convinced of the dangers of benchmarking and how, in many cases, it does more harm to the organization than good. However, one can't avoid data collection and analysis, as anything that goes unmeasured can hide considerable, and costly, inefficiencies. So what does one do to capture the benefits while avoiding the dangers?

...in many cases, the answer to better benchmarking is strategic sourcing.

While there is no single methodology that will avoid every danger associated with benchmarking, in many cases, the answer to better benchmarking is strategic sourcing. In a properly defined and applied strategic sourcing lifecycle that captures the intricacies required to do modern sourcing, at least four of the six dangers outlined above would be mitigated. Three would be addressed in the sourcing phase and one would be addressed in the execution phase.

The following would be addressed in the Sourcing phase:

- **Missed Opportunities**

  as a well-defined RFX would ask suppliers for production lead time requirements and carriers for transit times and associated costs and the analyst would be able to compute the transit times for the different options and associated costs as well as the averages and figure out what the required fulfillment time should really be (and if the analyst had a platform that was designed for complex sourcing and included decision optimization, the analyst could build a model that would automatically figure out the right trade-off between cost and transit time using a variable constraint)

- **Wasted Years**

  as a detailed analysis on the market data from current and potential suppliers would illustrate that the expected costs for the organization, even from an optimized assignment, are higher than the market average (and an analyst would quickly discover this on quote validation) and the analyst has to look elsewhere for savings

- **Innovation Opportunities**

  as a well-designed RFX would ask for energy sources and associated costs and see that some suppliers could use more renewable energy upon a detailed analysis and should be required to do so

The following would be addressed in the Execution phase:

- **Hidden Opportunities**

  as the analyst would identify in the planning phase the need to monitor market average pricing on a quarterly basis to verify that the supplier is providing "best-cost" price decreases and (at least) quarterly monitoring would indicate that the market pricing is decreasing twice as fast as the supplier pricing (and accounts receivable could go after the supplier for immediate price reductions and credits versus trying to recover overpayments at contract end when the supplier no longer has a reason to make your organization happy)

Proper strategic sourcing will prevent Procurement complacency

Now, this still leaves the possibility of inefficiency due to organizational complacency, such as sales having sub-par customer delivery times, but Procurement can not be held accountable for functions beyond its control. However, proper strategic sourcing will prevent Procurement complacency as anytime analysis on RFX, model, or performance data reveals the potential for metric improvements, Procurement will be able to focus process improvement efforts in the right place. Plus, if it has a good analytics platform, it can analyze its own operations and have the chance to discover that while it is receiving the expected number of e-Invoices (> 85%, as promised by the e-Invoice platform vendor), only 60% are being automatically processed and too many are still arriving as PDF or image files, and not EDI or XML files. In other words, it has the potential to identify its own blind spots and do better with the right systems and processes, with a complex sourcing platform (that includes advanced analytics capability) being one of those systems.

In addition, while there is no guaranteed methodology to spot a blind spot, as that is the very definition of what a blind spot is, the full strategic sourcing lifecycle process that goes through each step of the planning, sourcing, execution, and analysis phases has at least as good of a chance of uncovering potential issues as any other organizational process, if not a better chance. The regular interaction the strategic sourcing lifecycle mandates between stakeholders and suppliers will regularly expose Procurement to new ideas and new views that can help Procurement identify possibilities for continuous improvement.

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