

White Paper

Establishing Lean Metrics – Using the Four Panel Approach as a Foundation for a Lean Scorecard

Brian D. Krichbaum

October 12, 2007

© Process Coaching Inc. All Rights Reserved
www.processcoachinginc.com



Establishing Lean Metrics – Using the Four Panel Approach as a Foundation for a Lean Scorecard

As you start the journey to becoming a lean thinker, it won't be long before the need to develop a data based reporting system becomes apparent. The concepts and practices that are collectively known as lean manufacturing are not difficult. In fact, they are often deceptively simple. But given the demands of managing a business, it can be challenging to maintain momentum over the long haul. When your data reporting system supports the lean concepts, it will be easier for you to stay consistent with lean principles. The Four Panel approach helps in developing this reporting system.

Quality	
Vision	Goals
Provide the highest quality products and services that consistently meet customers' expectations and our competitors' capabilities while continuously improving our manufacturing processes.	Reduce delivered defects to customers by 95% Reduced produced defects by 99% Respond to customer complaints within 1 day, and resolve their issue within 1 week.
Measures	Strategies
<ul style="list-style-type: none"> • Customers Returns – count of RSA's • PPM - End of Line Inspection Results • Complaint Response Time – From customer response log 	<ul style="list-style-type: none"> • Develop improved development verification systems - July 15 • Development and widespread implementation of mistake proofing techniques - Plan Apr 10; Implement - Aug 31 • Form complaint response team - Mar 3

Completed 4 Panel for Quality

In their white paper *“The Balanced Scorecard – Measures that Drive Performance”*, Robert S. Kaplan and David P. Horton establish the need for a data based reporting system for managing the critical success factors for a business. “No single perspective paints a comprehensive picture of a company’s health. You need an approach that balances several perspectives and provides measures that enable you to track performance.”¹

A management reporting system asks you to think of your company's mission and strategy from four key perspectives:

1. How do customers see us?
2. At what internal processes must we excel?
3. How can we continue to improve and create value?
4. How do we look to shareholders?²

¹ Kaplan, Robert. "The Balanced Scorecard - Measures that Drive Performance." Harvard Business Review January - February(1992)

² ibid

1. Establish the Categories for Measurement

We must organize our thinking into a framework to allow managers and employees to easily identify the critical success factors for the organization. With this framework established, it becomes easier to identify what metrics we need to use. Many organizations have so many metrics in place that management of the information becomes unwieldy. If you have dozens or even hundreds of metrics, then you need to step back and revisit your measurement plan, making sure that the *critical* success factors are clearly identified.

Typically manufacturing operations use five categories. If you are just getting started with your data based reporting system, you should start by using these five categories. They are field tested and effective, and they cover all four of the perspectives identified by Kaplan and Horton.

1. Safety – maintaining a safe workplace
2. People – development and retention of people who have the skills to deliver to the customer
3. Quality – meeting customer, governmental, and internal requirements
4. Responsiveness – are we responding to the needs of the customer?
5. Financial Performance – are we making money?

2. Develop the Vision Statement

To make sure your metrics are in fact the critical success factors for your business, it is necessary to take time to think through exactly what needs to be accomplished. If you don't know what success looks like, you probably won't recognize it when you see it.

It is important that each of the five categories have a vision statement. To develop them, brainstorm phrases that succinctly define the stance you are taking on the category. Use those phrases to create a statement that clearly communicates to your customers, managers, employees and stockholders the vision. The statement need not be a complete sentence; it will be used to develop the goals, measures and strategy for this category. The **vision statement** should be established by the executive team or the corporate operations group and must be consistent across all manufacturing operations of the company or division.

Vision

Provide the highest quality products and services that consistently meet customers' expectations and our competitors' capabilities while continuously improving our manufacturing processes.

3. Establish Goals

Goals
Reduce delivered defects to customers by 95% Reduced produced defects by 99% Respond to customer complaints within 1 day, and resolve their issue within 1 week.

Pull the operations leadership team together and discuss the key processes that support or drive the vision statement, concentrating on the “Vital Few” that really make a difference. Establish goals by determining how the processes need to change or improve to bring them into alignment with the previously agreed upon vision statement. State the output of each of these critical processes

and identify the level you would like to obtain.

If your company has multiple facilities, it is critical that the leader at each facility is included in the team to establish the goals. Without buy-in from local leadership, it is difficult to implement the system you are designing.

Process Examples

<p style="text-align: center;">Safety</p> OSHA Reporting Hazard Identification Ergonomic Management Near Miss Identification System	<p style="text-align: center;">People</p> Training Turnover Management Skills Assessment Employee Satisfaction System
<p style="text-align: center;">Quality</p> Defects per Unit (million) Supplier Quality Customer Complaint System Rework / Repair Management	<p style="text-align: center;">Responsiveness</p> On Time Delivery Customer Request Management System Inventory Management Field Service System
<p style="text-align: center;">Financial</p> Productivity Warranty Cost Management Investment Management Inventory Management	

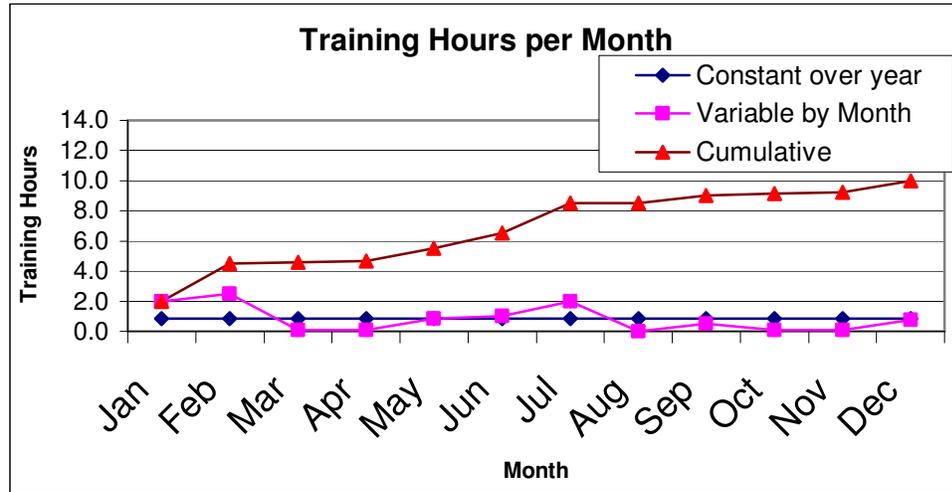
4. Define the Metrics

Determine how the performance of the process will be measured for each goal statement. But think about how you will collect and manipulate the data - a good measure that is easy to chart is better than a perfect measure that requires a lot of work. The methods used to obtain, measure, and calculate data need to be clearly defined as slight differences can significantly change the reported results.

The **metrics** must be numerical targets. Absolute numerical targets, ratios or percentages all can be used. The targets can be constant across the year, variable by month, or they can be cumulative. For example, we may set a training

Measures
<ul style="list-style-type: none"> • Customers Returns – count of RSA's • PPM - End of Line Inspection Results • Complaint Response Time – From customer response log

target for a facility at 10 hours per associate for the year. But the training plan doesn't call for the same number of training hours each month. If the targets aren't set with this in mind, the measures will be out of control even while we perform exactly to plan.



Lean Metric Examples

Safety	People
Reportable Incidents Days worked without a lost time accident Ergonomic Management	Targeted Training Hours Voluntary Turnover Production to Skilled Trades Ratio
Quality	Responsiveness
Delivered Quality Rework / Repair Cost Customer Complaints	On Time Delivery Manufacturing Lead Time Inventory Turns
Financial	
Margin \$ Manufacturing Space Used Conversion Cost (Labor \$ / Unit)	

Metrics fall into two categories, results and drivers. Driver metrics can have a profound impact on the performance of a business because they provide immediate feedback on how a process is running. They facilitate immediate improvement and provide a tool to allow managers to immediately change the behaviors which are causing the issues. For example, a scrap metric will provide the operations team data on which product lines are producing the most scrap, allowing for direct intervention to *drive* improvements. Financial metrics on the other hand are generally results, as they report after the fact and are difficult to dissect to determine causes.

Keep this in mind when designing the metrics. With slight changes to the definition of the metrics, they can be changed from results to drivers. While data based reporting systems have both result and driver metrics, the most effective systems have a driver to results ratio of 4:1.

5. Plan Your Strategy

For each goal, establish at least one strategy statement, describing the major process changes and improvement efforts. Put some urgency behind the strategies by setting deadlines or target dates for implementation.

A data based reporting system won't improve your results. It is just a tool which can make the difficult task of running a business a little easier. The strategies that are deployed to drive the improvements needed are how the actual gains are realized. Without a sound strategy to make the changes required, it is unlikely that really significant gains will be had or maintained in the long run.

Strategies
<ul style="list-style-type: none">• Develop improved development verification systems - July 15• Development and widespread implementation of mistake proofing techniques - Plan Apr 10; Implement - Aug 31• Form complaint response team - Mar 3

6. Help for Getting Started

I have developed a template for the 4 Panel Approach which is available for download. You can get a copy at www.processcoachinginc.com/forms/4Panel.xls.

The next steps in implementing your own data based reporting system are discussed in detail in my white paper entitled "[Establishing Lean Metrics – A Quick Start to your Data Based Reporting System](#)".