Leveraging the Power of Simple Analytical Tools & Daily Management Techniques to Achieve RAPID and SUSTAINED Supply Chain Transformation

Steve Clarke Consulting

SUPPLY CHAIN TRANSFORMATION

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Challenge

During my 25+ year career, I have found that efforts to improve supply chain performance are frequently ineffective for 2 primary reasons:

- **Short-term focused**

  Organizations are often concerned about results and not about building organizational capability, so results are not sustainable. They resort to unhealthy practices, such as offering customers deep discounts at the end of each quarter.

- **Long-term focused**

  Theoretically this is the correct approach, since it seeks to improve organizational capability. However, it often fails because projects are not selected based upon a strong understanding of the actual operational needs. The decision makers are typically too far removed from day to day realities.

Solution:

Rapid & Sustained Transformation

The combination of root cause analysis, daily management and supply chain capability building is a very powerful way to achieve rapid and long-term sustained transformation. There are three phases to the process:

Phase 1. Root cause analysis

Utilize simple techniques, such as Five-Why's and Pareto's Principle to quickly identify the "critical few" leverage points that will have largest impact on achieving strategic objectives.

Phase 2. Daily management

It is critical to maintain focus for when unplanned events occur in the supply chain. This approach continues to identify the "process muscle" required to keep improving performance.

Phase 3. Build capability

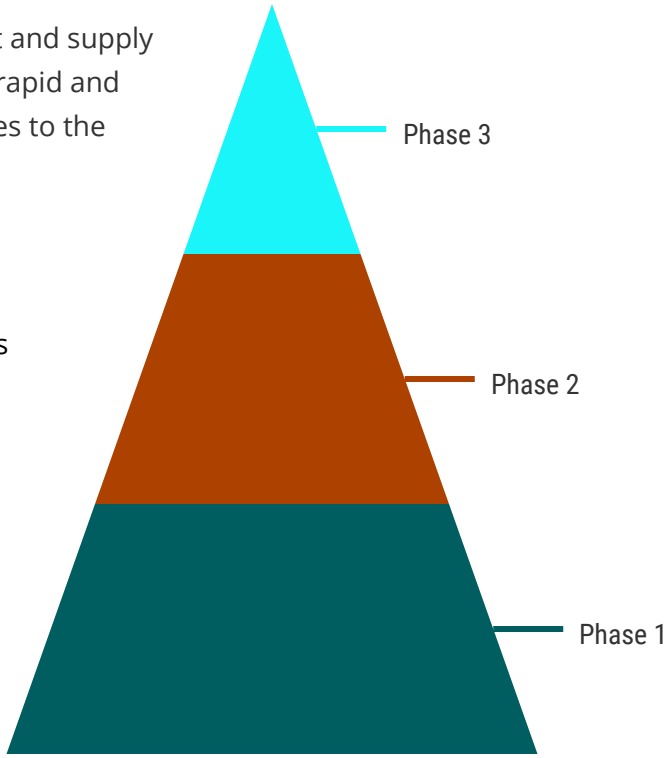


*Figure 1: Three-Phased **RST** approach*

The focus should now turn to a more holistic approach by using my supply chain capability model to understand the current state and appropriate initiatives required to reach the next level of maturity.

Phase 1: Root Cause Analysis

Everyone wants to achieve high levels of performance overnight, but we know that's not realistic. Fortunately, with the help of powerful root cause analysis tools and supply chain expertise, a data-driven approach can help you quickly identify the "critical few" leverage points that will enable your organization to make rapid and sustainable progress.

In the words of Kiichiro Toyoda, the founder of Toyota, "every defect is a treasure." In a manufacturing environment defects are generally associated with products and the manufacturing process. But the approach is equally effective in a supply chain setting. See the table below for examples of the type of data to collect based upon the strategic objectives of your organization.

Improvement Objective	Metric	"Defect" data
Customer Service	On-time delivery	Late deliveries
Cash Flow	Inventory turns	Item excess inventory
Purchasing costs	Purchase Price Variance	PPV per PO
Logistics costs	Logistics cost as % of revenue	Shipments with cost variances
Manufacturing costs	Work order variances (material/labor)	Work orders with variances
Compliance	Number of audit observations	Audit reports
Inventory compliance	Inventory record accuracy	Cycle count errors
Supplier compliance	On-time receipt	Late receipts
Safety	Number of recordable injuries or near misses	Accident reports
Inventory scrap	Scrap $	Scrap reports

Six Sigma

This data is relatively easy to access at most organizations, but generally very little is done with it.
Six Sigma DMAIC methodology can be used to analyze the data, diagnose the critical issues and deploy an action plan:

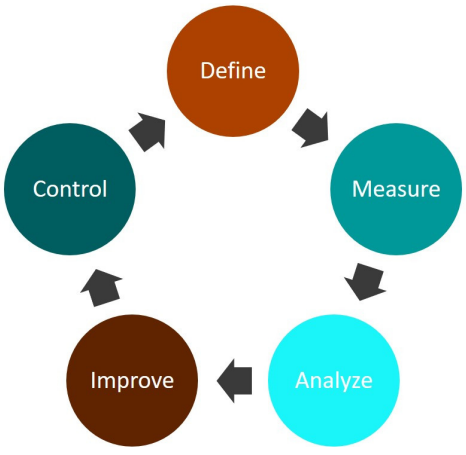


Figure 3: Six Sigma DMAIC Methodology

Move through the DMAIC cycle quickly. Organize a kaizen event and get it done in less than a month

Define

- Develop the problem statement, which should be quantified and time bound. For example, if inventory reduction is the strategic initiative, then the problem statement could read: Inventory turns for product family ABC is 3.6 at the end of Q1 2020 versus the target of 2.8, resulting in $2.6M excess inventory.
- Develop a project charter to provide clarity on scope, deliverables, milestones etc.

Measure

In many cases, the ERP system will contain all the data that you need. If not, don't let it deter you. Obtain at least 30 of the largest defects that are considered representative of the population. For example, for an inventory reduction initiative, identify the items with most excess inventory. The same causes tend to recur frequently, so by analyzing a small number of representative defects you will find the key issues.

Analyze

Now it it time to examine the defects to find out what caused them to occur. Ensure that this is done in a team setting, during a kaizen event. What you are listening for is which process failed, and where it broke down. It is not a witch-hunt to find out who screwed up. As described below, drill down to at least a Level 2 fix.

3 Levels of Fix

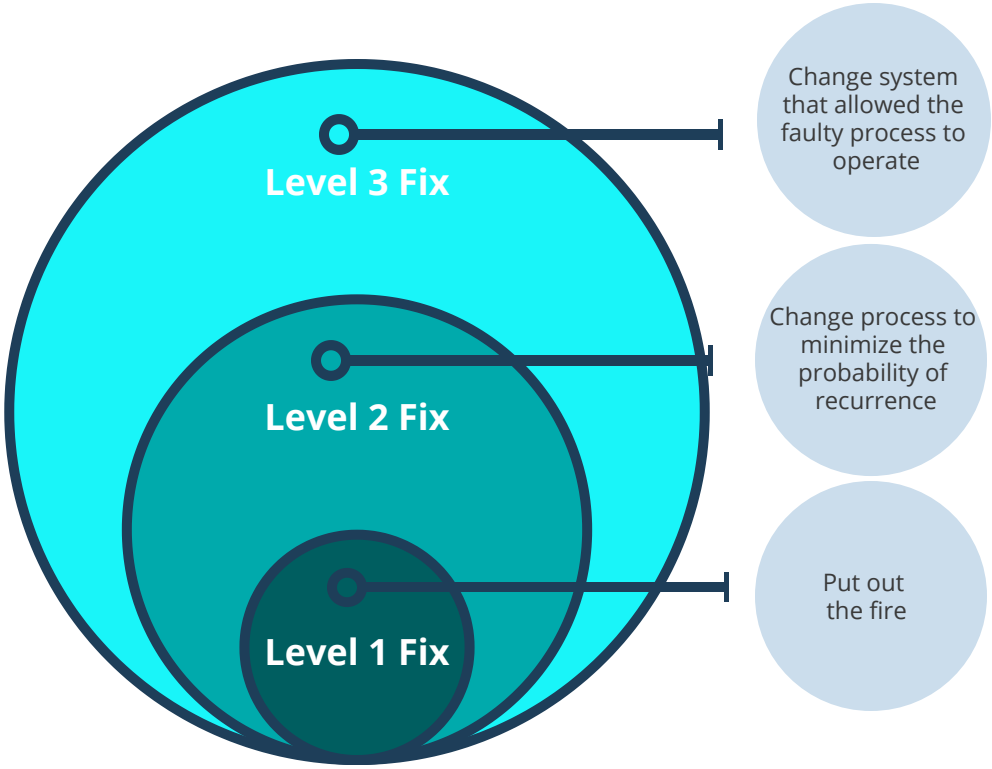


Figure 4: Three Levels of Fix

- Level 1 Fix

  In traditional organizations, each poor result triggers an independent investigation. They are satisfied to "put out the fire" until the next time.

- Level 2 Fix

  In more enlightened organizations, problems are viewed as part of the larger system. They move beyond the event orientation of "find and fix," as they look for the root cause and which process/sub-process is broken.

- Level 3 Fix

  The next level identifies how the system allowed the faulty process to operate in the first place. If you ask this question of many issues, you will tend to find some frequently recurring themes. The higher the level of fix, the higher the leverage, so your efforts will have a larger impact.

5-Why Tool

Peel back the layers of the onion

This leads to the 5 Why Tool, which can be used to drill down to the root cause. In the example below, we start with a puddle of oil on the shop floor. But by repeatedly asking why, we identify the evaluation policy for purchasing agents was the root cause. As discussed earlier, in a traditional company, they would have cleaned up the oil i.e. put out the fire. However, by drilling down to the root cause they will not only prevent the purchase of inferior gaskets, but any other items that were purchased purely focused upon price and not total cost of ownership.

Level of Problem	Corresponding level of countermeasure
There is a puddle of oil on the shop floor	Clean up the oil
Because the machine is leaking oil	Fix the machine
Because the gasket has deteriorated	Replace the gasket
Because we bought gaskets made of inferior material	Change gasket specifications
Because we got a good deal (price) on those gaskets	Change purchasing policies
Because the Buyer gets evaluated on cost savings	**Change the evaluation policy for Buyers**

Figure 5: Use 5-Why technique to get to root cause

Pareto's Principle

At this point, it is important to understand Pareto's Principle (aka the 80/20 rule). This rule applies to many situations in many disciplines, including business. It was quality guru Joseph M. Juran that suggested the principle and applied it to quality management.

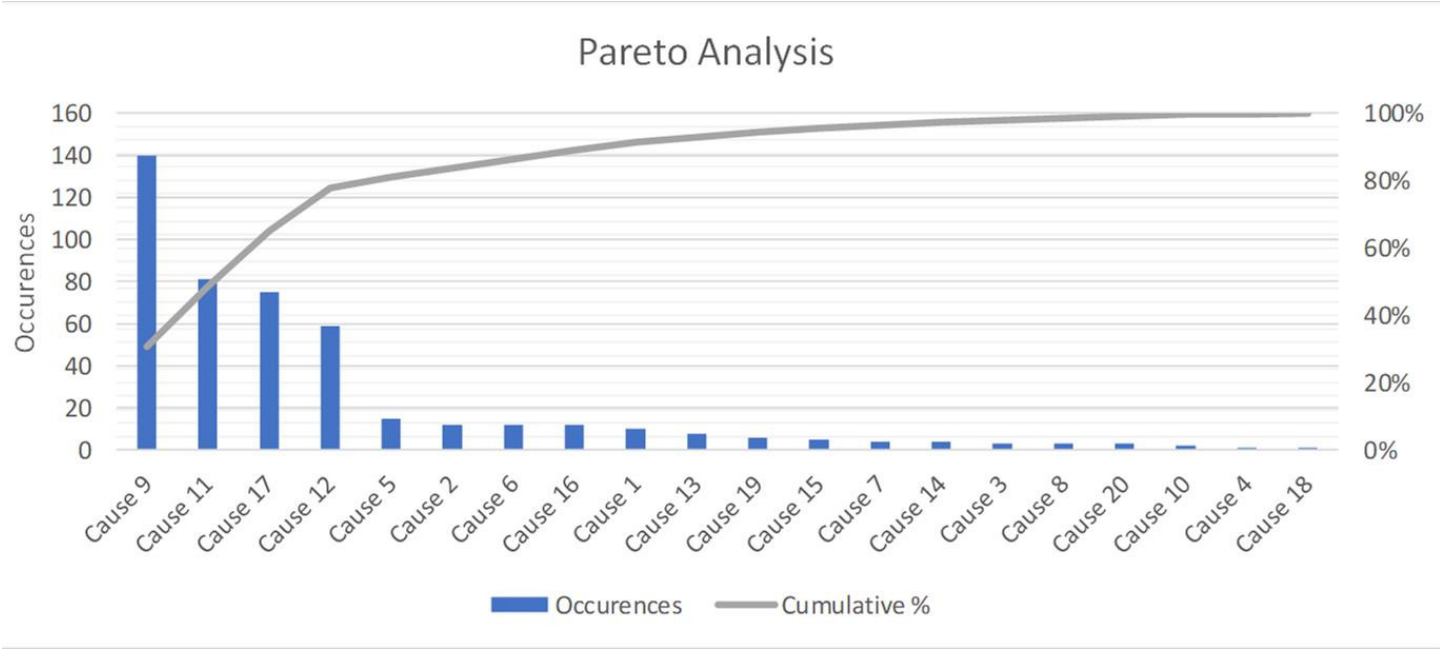


Figure 6: A Pareto chart identifies the critical few causes

Juran theorized that 20% of the defects cause 80% of the problems in most products. Since then it has been applied to many business situations:

- 80% complaints come from 20% customers
- 80% revenues come from 20% customers
- 80% sales generated by 20% products

In other words, we can focus on the critical few, and not waste our time on the trivial many.

Improve

Once the analysis is complete, it is time to transition to the "Improve" phase. For each of the causes identified in the pareto analysis, the team should brainstorm as many solutions as possible. Since some fixes are more complex and time-consuming than others, it will be helpful to utilize a impact/effort matrix to prioritize your projects. Each possible solution is scored on a scale of 1-5 based upon expected impact of the solution, and the level of effort required to implement it.

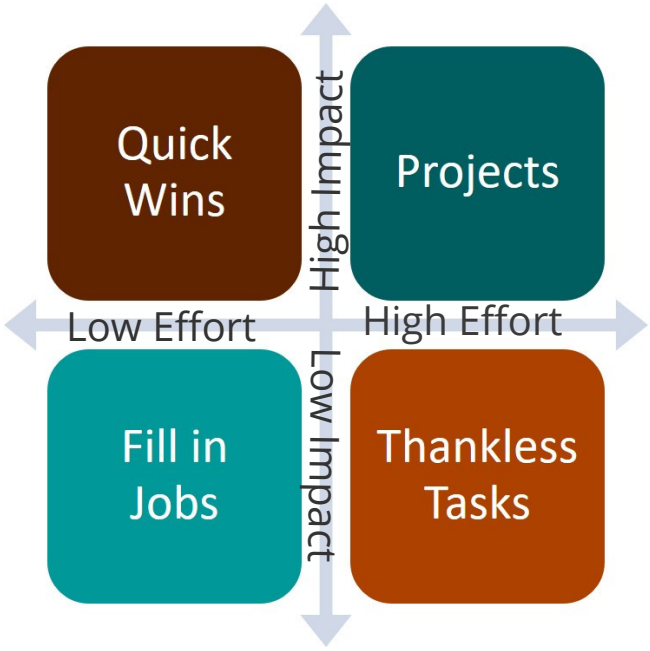


Figure 7: Impact/Effort matrix to prioritize improvement efforts

The "Quick Wins" (aka low hanging fruit) should be completed during the kaizen event if possible.
The "Projects" should be analyzed for resource availability, and may become the topic of other kaizen events at a later date. Each of these projects will contribute to building capability into the supply chain processes.

Control

Finally, we are at the "Control" phase. The objective here is to "sustain the gains." Since new operating practices have been developed, a training plan may be required in addition to a documentation plan, to ensure that process maps, work instructions etc. are updated. However, the most critical element of this phase is the monitoring plan.

Weekly or monthly targets should be established to align with projects' timing. The example below shows a sample format for an inventory reduction initiative.

	Inventory ($000)						
	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Plan		$825	$786	$754	$718	$698	$656
Actual	$906						

Figure 8: 6-month target plan

Generally metrics should be tracked in pairs. For example, since reduced inventory could reduce service levels, it is important to have another metric to ensure there are no unintended consequences from the inventory reduction, such as on-time delivery.

Phase 2: Daily Management

Supply chains are inherently dynamic due to unplanned events, such as demand changes or supplier issues. Therefore, it is critical to hold regular team meetings to review status, daily, if necessary so that timely actions can be taken to proactively impact the result. The meetings should be no more than 30 minutes, and preferably stand-up meetings to encourage energy, participation and to be quick.

There should be visual management boards, so employees and management can recognize at a glance how well the area is performing, and what problems exist. The boards are the focus of the team meetings. In an operations environment, the topics should be:

- Safety
- Quality
- Delivery
- Inventory
- Productivity

Figure 9: Visual management board

The key is open, honest discussions to understand the situation and collectively reach consensus on appropriate actions. Meetings should be led by area leaders, who must know what questions to ask, and how to ask them. It is critical to create an environment where employees feel comfortable discussing problems, and don't feel it is necessary to hide them.

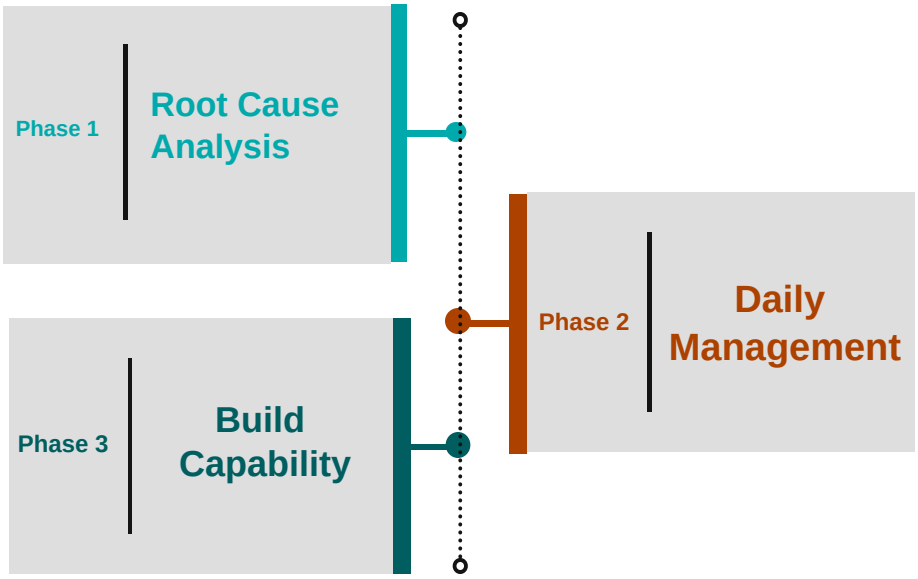
Focus should be on process-oriented thinking since processes must be improved for results to improve. Failure to achieve planned results indicates a failure in the process.

Leadership's role is to help the group develop a good understanding of the problem, so that root cause can be explored, if necessary. These meetings are also great opportunities to develop employee capabilities, by improving the way that people tackle problems and work in teams.

Figure 10: Kaizen teams address chronic problems

Through daily management, chronic problems will be uncovered. If these issues cannot be easily resolved, then they will become the subject of future kaizen events. In this way, "process muscle" is built and performance improved.

After implementing root cause analysis to address strategic objectives, and daily management is firmly established, your supply chain performance will undoubtedly have improved significantly. At this your organization is ready for Phase 3: Build Capability.



Phase 3: Build Capability

Once you have addressed the "low hanging fruit", it is time to develop the long-range roadmap. In most organizations, this exercise is performed by top management who are disconnected from the operational day to day realities. As a result, the roadmap is not informed by such realities and does not properly address the real issues. However, if your organization has effectively deployed the first 2 phases, then you will have developed a robust picture of the primary obstacles to reach the next level. This should inform the roadmap. In addition, we have developed a supply chain management maturity model, including an assessment tool to help improve capability across multiple domains:

- People capability
- Data accuracy
- Supply chain processes
- Technology
- Lean
- Metrics and analytics

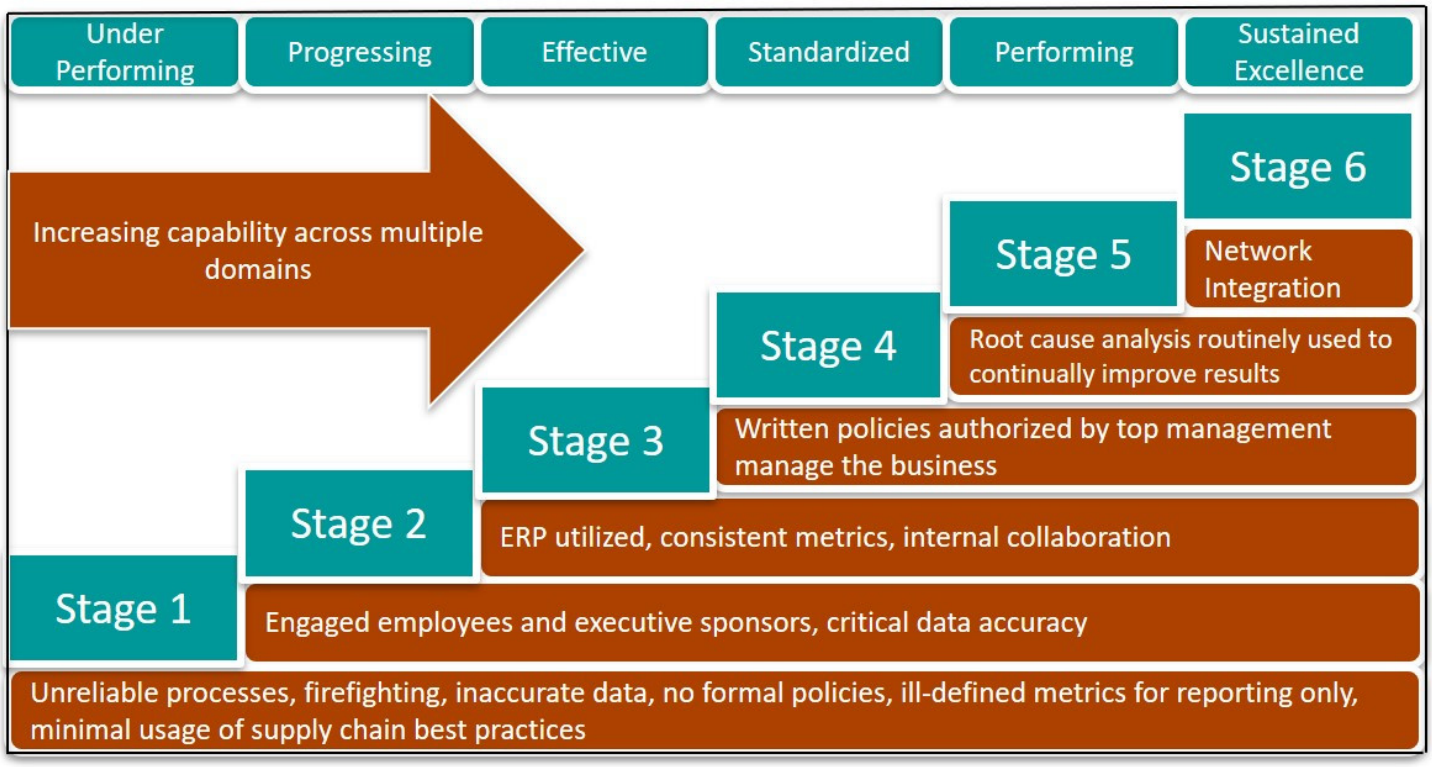


Figure 11: Six Stages of supply chain capability

Note: the details of this capability model & assessment tool are the subject of another paper that will be published in July 2020.

Success Stories!

Here are just a few examples of how I have successfully applied this approach to create value at multiple organizations, in several industries:

Customer Service

Improved on-time delivery from 44% to 93% in 3 months by daily management for a renewable energy manufacturer

Compliance

Improved material control in FDA regulated warehouse through process FMEA and addressing "critical few" risk failure modes

Cash Flow

Utilized root cause analysis to reduce future excess and obsolete inventory by 80% by eliminating speculative purchases for a packaging distributor

Customer Service

Improved on time delivery from 80% to 99% through root cause analysis of late deliveries, and daily management

Space Utilization

Improved space utilization by 30% in warehouse through root cause analysis of location cube utilization and excess inventory

Cost Reduction

Created $1M+ annualized savings through extensive spend analysis, supply base consolidation and negotiations

Conclusion

Organizations can kick start their supply chain transformation programs by effectively utilizing data and simple root cause analysis techniques to identify the few critical process gaps that will have the largest impact on strategic objectives. This approach will be much more successful, and faster, than embarking upon initiatives with a vague understanding of how they will directly impact results. In other words, let the data lead your project prioritization efforts, instead of building a business case for a project independent of the data. In addition, daily management will drive focus, responsiveness and create a much deeper understanding of the actual chronic, recurring process gaps that must be addressed.

The two phases outlined above can be successfully deployed within a matter of weeks, with the help of kaizen events. They will achieve "quick wins," which will help to create enthusiasm and credibility. They will also inform your long range roadmap, which will increase confidence that the most relevant initiatives have been selected, not pet projects selected in a conference room far away from operational realities.

Please visit our website at:

SteveClarkeConsulting.com

to learn more about our services, and read the testimonials and success stories from previous initiatives.

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